Step By Step Project Guide

PROJECT NAME – WAVEX WATERCRAFT

Power BI

Power BI Masterclass

from Scratch by Navin B

*Welcome to this **Step By Step Project Guide***

Use this book as a reference guide. The steps and numbering here generally correspond to what you've seen in the video lessons.

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Step 1 - Data Discovery

This step involves gathering project specific data and requirements from the company or client.

A. Gathering Relevant Data

Project – WaveX Watercraft Company

Company Business – Manufacturers Jet Ski's / Watercrafts

Data Provided – WaveX Company 2022 Sales Data (Text File), WaveX Company Data (Excel), WaveX Company Distributor List (PDF)

B. Project-Specific Requirements

Create two Power BI reports – Sales Report & HR Report

1. Exclude Data from 2018
2. Exclude Sales Data from discontinued product WR3
3. Create sales forecast for the next two years

Step 2 - Import Data

This step involves importing data to the Power BI desktop.

1. **Install Power BI Desktop (Instructions given in the video)**

2. **Download Project data files in your local computer**
   Data Provided – WaveX Company 2022 Sales Data (Text File), WaveX Company Data (Excel), WaveX Company Distributor List (PDF)

3. **Import Data in Power BI Desktop**
   - Open Power BI Desktop
   - Go to Home
   - Click on **Get Data**
   - From the list select relevant data type (Excel / Text / PDF)
   - Select the files from your local computer
   - Select relevant tables as suggested in the video
   - Click on "**Load**" button
   - Import all the 3 files provide by WaveX

Step 3 - Data Transformation

This step involves transformation of data and creating newer columns

Open Power Query Editor

- Open Power BI Desktop
- Go to Home
- Click on **Transform Data**
- Select **Transform Data** from the dropdown

1. **Rename Table**
   - Make sure you are inside Power Query Editor
   - Select table name '**Page001**' from the Queries Panel
   - In Query Settings Panel on the right, In **Name** textbox rewrite the name as "**Distributor**"
   - Perform similar action for below Tables
     - "WaveX Company – 2022_Sales_Data" change the name to "**2022_Sales_Data**"
     - "Product Name" change the name to "**ProductName**" (as its better to avoid blank spaces)

2. **Remove Top Rows**

   A.
   - *We will remove null or not required top rows from various tables*
   - Select the **Distributor** Table in Power Query Editor
   - Go to Home Tab
   - Click on **Remove Rows**
   - From dropdown select **Remove Top Rows**
   - Write "**2**" in the text box popup (as we want to remove top 2 rows)

   B.
   - Select the **Category** Table in Power Query Editor
   - Go to Home Tab
   - Click on **Remove Rows**
   - From dropdown select **Remove Top Rows**
   - Write "**3**" in the text box popup (as we want to remove top 3 rows)

   C.
   - Select the **ProductName** Table in Power Query Editor
   - Go to Home Tab
   - Click on **Remove Rows**
   - From dropdown select **Remove Top Rows**
   - Write "**3**" in the text box popup (as we want to remove top 3 rows)

3. **Remove Bottom Rows**

A.

- *We will remove null or not required bottom rows from various tables*
- Select the **ProductName** Table in Power Query Editor
- Go to Home Tab
- Click on **Remove Rows**
- From dropdown select **Remove Bottom Rows**
- Write "**10**" in the text box popup (as we want to remove 10 bottom rows)

B.

- Select the **Category** Table in Power Query Editor
- Go to Home Tab
- Click on **Remove Rows**
- From dropdown select **Remove Bottom Rows**
- Write "**10**" in the text box popup (as we want to remove 10 bottom rows)

4. **Use First Row as Header**

A.

- Select the **Category** Table in Power Query Editor
- Go to Home Tab
- Click on **Use First Row as Headers**

B.

- Select the **Payment_Methods** Table in Power Query Editor
- Click on **Use First Row as Headers**

C.

- Select the **ProductName** Table in Power Query Editor
- Click on **Use First Row as Headers**

D.

- Select the **Distributor** Table in Power Query Editor
- Click on **Use First Row as Headers**

5. **Rename Columns**

- *We will be removing spaces in the Column Name (Not required but a good practice)*
- Select the **Distributor** Table in Power Query Editor
- Double click on the Column Name "**Distributor FirstName**" change text to "**DistributorFirstName**" (removing blank space in between)
- Perform similar action for below Tables
    - "Distributor LastName" change the name to "**DistributorLastName**"

- "Distributor Email" change the name to "**DistributorEmail**" (as its better to avoid blank spaces)

6. **Unpivot Columns**

A1. Unpivot Category Table

- *We will transform Columns and make them Rows*
- Select the **Category** Table in Power Query Editor
- Go to **Transform Tab**
- Click on the **First Column Product ID**
- **Press Shift and scroll to the far right**
- Click on the **Last Column WM3**
- Click on **Unpivot Columns** (In the Transform tab)

A2. ***Here we will promote the first row by Using First Row as Headers Step***

- Step Select the **Category** Table in Power Query Editor.
- Go to **Home Tab**
- Click on the **Use First Row as Headers**

B1. Unpivot ProductName Table

- Select the **ProductName** Table in Power Query Editor
- Go to **Transform Tab**
- Click on the **First Column Product ID**
- **Press Shift and scroll to the far right**
- Click on the **Last Column WM3**
- Click on **Unpivot Columns** (In the Transform tab)

B2. ***Here we will promote the first row by Using First Row as Headers Step***

- Step Select the **ProductName** Table in Power Query Editor.
- Go to **Home Tab**
- Click on the **Use First Row as Headers**

7. **Column Quality**
   - *This step will provide further information about all the columns*
   - Make sure you are inside Power Query Editor
   - Go to **View Tab**
   - Check the **Column Quality** checkbox

8. **Remove Blank Rows**
   - Select the **Sales** Table in Power Query Editor

- In Column Quality section is showing 27% as Empty
- Click on the **First Column Name "Date"**
- Go to **Home Tab**
- Click on **Remove Rows**
- From dropdown select **Remove Blank Rows**
- In Column Quality section the Empty rate is now 0%

9. Remove Duplicates

- Select the **Sales** Table in Power Query Editor
- *In the Sales Table **OrderID - 1015** has been duplicated multiple times*
- Click on the **First Column Name "OrderID"**
- Go to **Home Tab**
- Click on **Remove Rows**
- From dropdown select **Remove Duplicates**
- There will now be only one **OrderID 1015**

10. Append Queries

- *We will append 2022_Sales_Data table to the Sales Table*
- Select the **Sales** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Append Queries**
- From the dropdown select **Append Queries**
- In the Append Popup make sure **Two Tables** radio button is selected
- From the dropdown select **2022_Sales_Data**
- Press OK button

11. Choose Columns

- *We will hide **Payment Status** and **Shipping Status** Columns*
- Select the **Sales** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Choose Columns**
- From the dropdown select **Choose Columns**
- In the Choose Columns popup uncheck **Payment Status** and **Shipping Status** check boxes
- Press OK button

12. Merge Queries

- *We will merge **Sales** and **Payment_Methods** table**s***
- Select the **Sales** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Merge Queries**
- From the dropdown select **Merge Queries**

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- In the Merge popup make sure Join Kind is Left Outer
- From the dropdown select **Payment_Methods**
- **Select the PaymentID column** in both the tables (As shown in the video)
- Press **OK** button
- In the Sales Table go to the **newly created column Payment_Methods**
- *Now we will have to expand the Merged Content*
- Next to column name Payment_Methods **click on the small icon**
- From the dropdown **uncheck all**
- Now only select **PaymentMethod**
- Press **OK** button

13. Clean (Format)

- *To clean each row and change multiple lines data into single line*
- Select the **Distributor** Table in Power Query Editor
- Go to **Transform Tab**
- Select the **Country & City Column**
- Click on **Format**
- From the dropdown select **Clean**

14. Split Column

A1. Split by Delimiter

- *To split one column into two or more*
- Select the **Distributor** Table in Power Query Editor
- Go to **Transform Tab**
- Select the **Country & City Column**
- Click on **Split Column** icon
- From the dropdown select **By Delimiter**
- In the Split Column by Delimiter popup make sure in **Select or enter delimiter** section "**(**" symbol is written
- In the Split at section select **Left-most delimiter** radio button
- Press **OK** button
- This will create two Columns

A2. Rename New Columns

- *We will rename the new Columns*
- Make sure you are in **Distributor** Table in Power Query Editor
- Double click on the "Column – Country & City.1" (the column with country names) and rename it to "**Country**"
- Double click on the "Column – Country & City.2" (the column with country names) and rename it to "**City**"

15. Trim

- *To remove extra spaces*
- Select the **Distributor** Table in Power Query Editor
- Go to **Transform Tab**
- Select the "**City" Column**
- Click on **Format**
- From the dropdown select **Trim**
- Select the "**Country" Column**
- Click on **Format**
- From the dropdown select **Trim**

14B. Split Column (Continued)

A1. Split Column by Number of Characters

- Select the **HR** Table in Power Query Editor
- Go to **Transform Tab**
- Select the **Gender Column**
- Click on **Split Column** icon
- From the dropdown select **By Number of Characters**
- In the popup make in **Number of Characters textbox write** "**2**" as we want to split "G-" i.e 2 character from G-Male or G-Female data which is present in the Gender Column
- In the Split section select **Once, as far left as possible** radio button
- Press **OK** button
- This will create two Columns – **Gender.1** and **Gender.2**

A2. Rename one of the new Columns

- *We will rename the new Column*
- Make sure you are in **HR** Table in Power Query Editor
- Double click on the "Gender.2" (the column where Male / Female is written) and rename it to "**Gender**"

A3. Hide one of the new Columns

- *We will rename the new Column*
- Make sure you are in **HR** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Choose Columns**
- From the dropdown select **Choose Columns**
- In the Choose Columns popup uncheck **Gender.1** column check box
- Press OK button

B1. Split Column by Positions

- Select the **HR** Table in Power Query Editor
- Go to **Transform Tab**
- Select the **DateOfJoining Column**

- Click on **Split Column** icon
- From the dropdown select **By Positions**
- In the popup make in **Number of Characters textbox write** "**0, 5**" as we want to split "DOJ_ " i.e starting from 0 and ending at the 5 position will be length of the 1st Column
- In the Split section select **Once, as far left as possible** radio button
- Press **OK** button
- This will create two Columns – **DateOfJoining.1** and **DateOfJoining.2**

B2. Rename one of the new Columns
- *We will rename the new Column*
- Make sure you are in **HR** Table in Power Query Editor
- Double click on the "DateOfJoining.2" (the column actual date is written without the initial "DOJ_ ") and rename it to "**DateOfJoining**"

B3. Hide one of the new Columns
- *We will rename the new Column*
- Make sure you are in **HR** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Choose Columns**
- From the dropdown select **Choose Columns**
- In the Choose Columns popup uncheck **DateOfJoining.2** column check box
- Press OK button

16. Replace Values

A. Replace values in Country Column
- *To replace data values – Similar to replace feature in Microsoft word*
- Select the **Distributor** Table in Power Query Editor
- Go to **Home Tab**
- Select the "**Country" Column**
- Click on **Replace Values**
- In Replace Values popup in Value to Find textbox write "**US**" and in Replace with textbox write "**United States**"
- Select the "**Country" Column**
- Click on **Replace Values**
- In Replace Values popup in Value to Find textbox write "**UK**" and in Replace with textbox write "**United Kingdom**"

B. Replace values in City Column
- *To replace data values – Similar to replace feature in Microsoft word*
- Select the **Distributor** Table in Power Query Editor
- Go to **Home Tab**
- Select the "**City" Column**
- Click on **Replace Values**

- In Replace Values popup in Value to Find textbox write "**)**" and in Replace with textbox keep it blank " "

17. Capitalize Each Word

- *To format a column and Capitalize each Word (Good for Capitalizing City & Country Names)*
- Select the **Distributor** Table in Power Query Editor
- Go to **Transform Tab**
- Select the "**City" Column**
- Click on **Format**
- From the dropdown select **Capitalize Each Word**

18. Merge Columns

- *We will Merge two columns and make them one*
- Select the **Distributor** Table in Power Query Editor
- Select the **DistributorFirstName** and **DistributorLastName** Column (**Hold Shift** while clicking on the column names, so that both are together selected)
- Go to **Add Column Tab**
- Click on **Merge Columns** icon
- In the Merge Columns popup in the New Column Name textbox type "**FullName**" and in Separator dropdown select "**Space**" option
- Press **OK** button
- A new column called FullName will be now created

19. Extract

A. Extract Text Before Delimiter

- Select the **Distributor** Table in Power Query Editor
- Select the **DistributorEmail** Column
- Go to **Add Column Tab**
- Click on **Extract** icon
- From the dropdown select **Text Before Delimiter**
- In the Text Before Delimiter popup in the Delimiter textbox type "**@**"
- Press **OK** button
- A new column called Text Before Delimiter will be now created, we don't require this for our project but consider this step as part of your practice

B. Extract Text After Delimiter

- Select the **Distributor** Table in Power Query Editor
- Select the **DistributorEmail** Column
- Go to **Add Column Tab**
- Click on **Extract** icon
- From the dropdown select **Text After Delimiter**
- In the Text After Delimiter popup in the Delimiter textbox type "**@**"
- Press **OK** button

- A new column called Text Before Delimiter will be now created, we don't require this for our project but consider this step as part of your practice

B2. Rename the new Columns

- Make sure you are in **Dsitributor** Table in Power Query Editor
- Double click on the column name "Text Before Delimiter" (the column where Email ID without website name is written") and rename it to "**Email**"
- Double click on the column name "Text After Delimiter" (the column where Email ID without website name is written") and rename it to "**EmailService**"

B3. Hide Columns in Distributor Table

- *We will hide not required columns*
- Make sure you are in **Distributor** Table in Power Query Editor
- Go to **Home Tab**
- Click on **Choose Columns**
- From the dropdown select **Choose Columns**
- In the Choose Columns popup uncheck **DistributorEmail, Email and Email Service** column check boxes
- Press OK button

20. Filter

A1. Method1 – Using Individual Selection

- *As per project instructions, we will filter out or exclude product name WR3*
- Select the **Sales** Table in Power Query Editor
- Select the **ProductID** Column
- **Click on the small down arrow icon** next to ProductID column
- In the dropdown **Uncheck WR3**
- Press **OK** button

A1. Method2 – Using Text Filters (Same Result as above Method 1)

- *As per project instructions, we will filter out or exclude product name WR3*
- Select the **Sales** Table in Power Query Editor
- Select the **ProductID** Column
- **Click on the small down arrow icon** next to ProductID column
- Select **Text Filters** from the dropdown
- Select **Does Not Contain…**
- In the **Filter Rows popup** in the Keep Rows where 'ProductID' section where "**does not contain**" is already selected, from the dropdown select **WR3**
- Press **OK** button

B. Date Filters

- *As per project instructions, we will filter out or exclude 2018 sales data*
- Select the **Sales** Table in Power Query Editor
- Select the **Date** Column

- **Click on the small down arrow icon** next to Date column
- Select **Date Filters** from the dropdown
- Select **Custom Filter**
- In the **Filter Rows popup** in the Keep Rows where 'Date' section, Select "**is after or equal to**" from the dropdown
- Next to it in the Enter or select Value click on **Calander icon**
- In the calendar **select 1st Jan 2019**
- Press **OK** button

21. & 22. Add Column (Date Function)

A. Creating Month Name New Column

- Select the **Sales** Table in Power Query Editor
- Select the **Date** Column
- Go to **Add Column Tab**
- Click on **Date** icon
- From the dropdown select **Month,** then **Name of Month**
- This will create a new **Month Name Column**

B. Creating Year of Sale New Column

- Select the **Sales** Table in Power Query Editor
- Select the **Date** Column
- Go to **Add Column Tab**
- Click on **Date** icon
- From the dropdown select **Year,** then again select **Year**
- This will create a new **Year Column**

23. Move

- *This step is just for example to learn how to quickly Move Columns within a table*
- Select the **Sales** Table in Power Query Editor
- Select the **Month Name** Column
- Go to **Transform Tab**
- Click on **Move** icon
- From the dropdown select **To Beginning**
- This will move **Month Name** Column to the beginning
- Also change the column name from **Month Name** to "**MonthName**"

24. Duration

A1. Finding Years of Experience from Joining Date - 1

- *We will be first using Date function in this step, using the AGE option*
- Select the **HR** Table in Power Query Editor

- Go to **Add Column Tab**
- Select the "**DateofJoining" Column**
- Click on **Date** icon
- From the dropdown select **Age**
- This will create a new **Age.1 Column** and the format is in Duration

A2. Finding Years of Experience from Joining Date - 2

- *We will now be using Duration function in this step*
- Select the **HR** Table in Power Query Editor
- Go to **Add Column Tab**
- Select the "**Age.1" Column**
- Click on **Duration** icon
- From the dropdown select **Total Years**
- This will create a new **Total Years Column** and the format is in Duration

A3. Changing Data Type of the new Total Years Column

- Select the **HR** Table in Power Query Editor
- Go to **Home Tab**
- Select the "**Total Years" Column**
- Click on **Data Type: Decimal Number** dropdown
- From the dropdown select **Whole Number**
- Also change the column name from **Total Years** to "**TotalYears**"
- Go to Choose Column in Home Tab, and from the popup **hide the Age.1** column as we don't want it

25. Column From Examples

A. Adding text "Grade" to the existing Job Grade Number

- Select the **HR** Table in Power Query Editor
- Go to **Add Column Tab**
- Select the "**JobGrade" Column**
- Click on **Column from Examples**
- From the dropdown select **From Selection**
- In the Add Column from Examples section in the new Column1, in the first row write "4 Grade" and press enter (See the video for specifics)
- Press **OK**
- Change the name of newly created Merged Column, by double clicking on the column name and name it "**EmployeeGrade**"

B. Adding text "Years" to the existing TotalYears Number

- Select the **HR** Table in Power Query Editor
- Go to **Add Column Tab**
- Select the "**TotalYears" Column**
- Click on **Column from Examples**
- From the dropdown select **From Selection**

- In the Add Column from Examples section in the new Column1, in the first row write “9 Years” and press enter (See the video for specifics)
- Press **OK**
- Change the name of newly created Merged Column, by double clicking on the column name and name it “**YearsInService**”

26. Conditional Column

A. Categorizing Employees Staying Near & Far from the office. Employees living greater than or equal to 10 miles away from office, will be categorized as Staying Far, and the others will be categorized as Staying Near

- Select the **HR** Table in Power Query Editor
- Go to **Add Column Tab**
- Select the “**DistanceFromHome” Column**
- Click on **Conditional Column**
- In the Add Conditional Column popup in the If Column name section from the dropdown **select DistanceFromHome** column
- In the Operator section from the dropdown select “**is greater than or equal to**”
- In Value textbox write “**10**”
- In output textbox write "**Stay Far**”
- In Else textbox write "**Stay Close**”
- In new Column name text box in the popup write “**DistanceStatus**”
- Press **OK** to close the popup
- This will create a new Column **DistanceStatus**

B. Categorizing Employee due for promotion or not. Employees with 5 or more years since last promotion will be categorized Due For Promotion, others will be categorized as Not Due

- Select the **HR** Table in Power Query Editor
- Go to **Add Column Tab**
- Select the “**YearsSincePromotion” Column**
- Click on **Conditional Column**
- In the Add Conditional Column popup in the If Column name section from the dropdown **select YearsSincePromotion** column
- In the Operator section from the dropdown select “**is greater than or equal to**”
- In Value textbox write “**5**”
- In output textbox write "**Due For Promotion**”
- In Else textbox write "**Not Due**”
- In new Column name text box in the popup write “**PromotionStatus**”
- Press **OK** to close the popup
- This will create a new Column **PromotionStatus**

27. Custom Column

A. Creating a new Profit Column

- Select the **Sales** Table in Power Query Editor
- Go to **Add Column Tab**
- Click on **Custom Column** icon
- In the Custom Column popup in the New Column Name textbox, write the column name as "**Profit**"
- Please add each column as shown in the video. In the Custom Column the Formula is, **=[#"Sales($)"]-(([#"QuantitySold "]*[# "CostPerUnit($) "])+[#"Tax+ShippingCost"])**
- Press **OK**
- New **Profit** Column will now be created
- ***Change Data Type of this new Column***
- Go to **Home**
- Make sure **Profit Column** is Selected
- In **Data Type** dropdown select **Whole Number**

B. Creating a new Profit Per Unit Column

- Select the **Sales** Table in Power Query Editor
- Go to **Add Column Tab**
- Click on **Custom Column** icon
- In the Custom Column popup in the New Column Name textbox, write the column name as "**ProfitPerUnit**"
- Please add each column as shown in the video. In the Custom Column the Formula is, **=[Profit]/ [#"QuantitySold "]**
- Press **OK**
- New **ProfitPerUnit** Column will now be created
- ***Change Data Type of this new Column***
- Go to **Home**
- Make sure **ProfitPerUnit Column** is Selected
- In **Data Type** dropdown select **Whole Number**

Step 4 - Data Modeling and DAX

This step managing and building relationships amongst the data tables, and then enhancing the data logic and creating new performance indicators by using DAX

1. **Removing Table Relationships**
   - Save & Close Power Query Editor and go to Home
   - Click on Model View (left side panel icon in home screen)
   - Select **Home**
   - Click on **Manage Relationship** icon
   - In the Manage Relationship popup **Shift select all the Tables**
   - Click **Delete button**
   - Click **Delete button** again and click **Close** button
   - This will remove all the auto created relationships between the tables

2. **Creating Star Schema Data Model**
   - Click on Model View (left side panel icon in home screen)
   - Select **Home**
   - Pull 3 Tables, which are **HR, Payment_Methods and 2022_Sales_Data**, to one side of the model view screen (See the video for more information)
   - Place **Sales Table in the middle**, surrounded by **Distributor, Category and ProductName** table
   - **Now link the surrounding tables to the Sales Table**
   - In the **Distributor Table**, click on **DistributorID**. Then drag it and place it over DistributorID in **Sales Table**
   - In the **Category Table**, click on **ProductID**. Then drag it and place it over ProductID in **Sales Table**
   - In the **ProductName Table**, click on **ProductID**. Then drag it and place it over ProductID in **Sales Table**
3. **Creating Measure - 1**

   A1. Creating a Total Profit Measure
   - Make sure you are in the **Report View**
   - Click on **Sales Table** from Data Panel (on the right-hand side in the report view)
   - Click on **Table Tools** in the top menu section
   - Click on **New Measure** icon
   - In the Calculation text box write the formula "**TotalProfitMeasure = sum(Sales[Profit])**" (Refer to the video for proper steps)
   - Press **Enter**
   - This will create a new measure - **TotalProfitMeasure**

   A2. Creating a Total Quantity Sold Measure
   - Make sure you are in the **Report View**
   - Click on **Sales Table** from Data Panel (on the right-hand side in the report view)
   - Click on **Table Tools** in the top menu section

- Click on **New Measure** icon
- In the Calculation text box write the formula "**TotalQuantitySoldMeasure = sum(Sales[QuantitySold])**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **TotalQuantitySoldMeasure**

4. Creating Calculated Column - 1

A1. Creating a Distance in Kilometers Column

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Column** icon
- In the Calculation text box write the formula "**DistanceInKmsColumn = HR[DistanceFromHome]*1.609**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new column - **DistanceInKmsColumn**

A2. Creating a Total Production Cost Column

- Make sure you are in the **Report View**
- Click on **Sales Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Column** icon
- In the Calculation text box write the formula "**TotalProductionCostColumn = Sales[CostPerUnit($)]*Sales[QuantitySold]**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new column - **TotalProductionCostColumn**

5. Creating Quick Measure - 1

A1. Creating a Year on Year % Change in Sales Measure

- Make sure you are in the **Report View**
- Click on **Sales Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **Quick Measure** icon
- In the Quick Measure Panel click on the dropdown, go to Time Intelligence and select Year-over-year change
- From the Data panel at the right, inside the Sales table, **drag the Sales($) Column** and place it on the **Base Value field** in the Quick Measure panel
- Then **drag Date column** and place it on the **Date field** in the Quick Measure panel
- Click **Add button** in the Quick Measure panel
- This will create a new measure – **Sales($) YoY%**

6. **Creating Measure - 2**

A1. Creating Total Employees Count Measure

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**TotalEmployees = COUNTROWS(HR)**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure – **TotalEmployees**

A2. Creating Average Age of Employees Measure

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**AverageAgeEmployees = AVERAGE(HR[Age])**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **AverageAgeEmployees**

A3. Creating Average Job Satisfaction of Employees Measure

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**AverageJobSatisfaction = Average(HR[JobSatisfation])**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **AverageJobSatisfaction**

A4. Creating Distance Near Measure using Calculate Filter Function

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**DistanceNear = CALCULATE([TotalEmplyees],HR[DistanceStatus]="Stay Close")**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **DistanceNear**

A5. Creating Distance Far Measure using Calculate Filter Function

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**DistanceFar = CALCULATE([TotalEmplyees],HR[DistanceStatus]="Stay Far")**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **DistanceFar**

A6. Creating Percentage Distance Near Measure using Divide Function

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**%DistanceNear = DIVIDE([DistanceNear],[TotalEmplyees],0)**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **%DistanceNear**

A7. Creating Percentage Distance Far Measure using Divide Function

- Make sure you are in the **Report View**
- Click on **HR Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Measure** icon
- In the Calculation text box write the formula "**%DistanceFar = DIVIDE([DistanceFar],[TotalEmplyees],0)**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new measure - **%DistanceFar**

7. Creating Calculated Column - 2

A1. Creating a Total Production Cost Column

- Make sure you are in the **Report View**
- Click on **Sales Table** from Data Panel (on the right-hand side in the report view)
- Click on **Table Tools** in the top menu section
- Click on **New Column** icon
- In the Calculation text box write the formula "**TotalProductionCost = Sales[CostPerUnit($)]*Sales[Quantity Sold]**" (Refer to the video for proper steps)
- Press **Enter**
- This will create a new column - **TotalProductionCost**

8. **Organizing Measures & Calculated Columns by placing them inside a separate folder (Optional)**
   - Click on **Model View icon** from left hand side panel
   - Inside Model View click on the right-hand side data panel **click on one of the newly created Measures** in the **HR Table dropdown** (follow the video for more information)
   - In the properties panel, make sure in **Home Table** section it is showing as **HR**
   - Inside the **Display folder text field** write the name of the new folder "**Measure_HR**"
   - Press **Enter**
   - This will **place the selected measure inside** the newly created Measure_HR folder
   - **Follow the process** until all the measures inside the HR table list are placed inside the **Measure_HR** folder

Step 5 - Creating Visualizations & Reports

This step involves creating reports and visualizations based on our data

- Go to **Report View**
- In the **Page name section** where "Page 1" is written, **double click on the name**
- Change the name to "**Sales**"

1. **Change Background**
   - Go to **Report View**
   - In Visualization Panel click on **Format Icon**
   - Click on to **Canvas Background**
   - In **Image** section press **Browse**
   - Go to the folder where you have saved the Background provided in this course and **Select Background1.jpg** (Download the backgrounds from the resource section)
   - Click **Open**
   - In **Canvas Background** panel, decrease the **Transparency to 0%**
   - From **Image Fit** dropdown **select Fit**

2. **Textbox**

   A1. Generating Textbox
   - Make sure you are in **Report View** and the **Sales Page**
   - Click on **Insert** from Top Menu
   - Click on **Text Box**
   - Click on the generated Text Box inside the report, write "**SALES REPORT**"
   - **Select text "SALES REPORT"** inside the text box
   - Increase the Font Size to **20**
   - Click on **'B' (Bold)** icon
   - Click on **Center Align** Icon (Refer to the video for more information)
   - Properly place the text box as shown in the video

   A2. Formatting Textbox
   - Make sure the **Text Box inside the report is selected**
   - In **Format -> General**, Click on **Properties** dropdown
   - Change the **Height** to **57**
   - Change the **Width** to **837**
   - Inside **Properties** section -> Click on **Position** dropdown
   - Change **Horizontal** to **92**
   - Change **Vertical** to **10**
   - In Format -> General, Click on **Effects** dropdown
   - In **Background section** increase the **transparency to 100%**
   - ***Now we will change the color of the text inside the text box***
   - Click on **Text Box**
   - **Select text "SALES REPORT"** inside the text box

- From the Text Box panel **click on text color** picker and **Select White** (Refer to the video for more information)
- ***Now we will add border inside the textbox***
- In **Format -> General**, Click on **Effects** dropdown
- Inside **Effects** section -> Click on **Visual Border** dropdown
- In Visual Border **click the 'On' button**, In **Color - Select White** and In **Rounded Corners** write "**10 px**"

3. New Card

A1. Generating New Cards

- Make sure you are in **Report View** and the **Sales Page**
- In the Visualizations Panel **click on the Card (new) icon**
- In the report section **click on the newly generated Card**
- Go to **Sales Table** in Data Section at the right
- From the table, **drag Sales($) column** and place it in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- Then **drag QuantitySold column** and place it in the **Data Section**, below Sales($)
- Then **drag Profit column** and place it in the **Data Section**, below QuantitySold
- Then **drag ProfitPerUnit column** and place it in the **Data Section**, below Profit
- ***Now we will change the Text of these Cards***
- Make sure the **Card inside the report is selected**
- In the Visualization Panel in the **Data Section**
- **Click on the down arrow** next to "**Sum of Sales($)**" -> then select **Rename for this visual**
- In the **Data Section** write the new text as "**Total Sales**" and **Press Enter**
- **Click on the down arrow** next to "**Sum of QuantitySold**" -> then select **Rename for this visual**
- In the **Data Section** write the new text as "**Total Quantity**" and **Press Enter**
- **Click on the down arrow** next to "**Sum of Profit**" -> then select **Rename for this visual**
- In the **Data Section** write the new text as "**Total Profit**" and **Press Enter**
- ***Now we will change the Aggregation and Text of one of the Card KPI***
- **Click on the down arrow** next to "**Sum of ProfitPerUnit**" -> then select **Average** from the list
- The Card text now changes to "Average of ProfitPerUnit"
- **Click on the down arrow** next to "Average of ProfitPerUnit" -> then select **Rename for this visual**
- In the **Data Section** write the new text as "**Avg Profit Per Unit**" and **Press Enter**

A2. New Card basic text formatting

- Make sure you are in **Report View** and the **Sales Page**
- Make sure the **Card inside the report is selected**
- Go to **Format -> Visual**
- Click on the **Callout** dropdown
- In Callout -> go to **Values** section

- Change Font size to **30**
- In Horizontal Alignment click on **Center Align** Icon

A3. Changing Data Format of New Card KPIs

- Make sure you are in **Report View** and the **Sales Page**
- Make sure the **Card inside the report is selected**
- Go to **Sales Table** in Data Section (at the right) -> **Click on Sales($) column** from the list
- In **Column Tools** click on the **"$" sign** you will find in the **top panel** (Refer to the course video)
- Next to the sign in the **decimal places text box** write "**0**" (As we want to **limit the decimal places to 0**, please refer to course video for more information)
- Now in the **Sales Table** -> **Click on ProfitPerUnit column** from the list
- In **Column Tools** click on the **"$" sign** you will find in the **top panel**
- Next to the sign in the **decimal places text box** write "**0**" (As we want to **limit the decimal places to 0**)
- Now again in the **Sales Table** -> **Click on Profit column** from the list
- In **Column Tools** click on the **"$" sign** you will find in the **top panel**
- Next to the sign in the **decimal places text box** write "**0**" (As we want to **limit the decimal places to 0**)
- Incase Average Profit Per Unit card is still showing decimal places, in that case follow the below process
- Now select **Card inside the report**
- Click on **ProfitPerUnit**
- Go to **Format -> Visual**
- Click on the **Callout** dropdown
- In Callout -> go to **Values** section
- Scroll down to **Value Decimal Places** section and write "**0**" in the textbox and press **Enter**

A4. New Card advance formatting

- Make sure you are in **Report View** and the **Sales Page**
- Click on Sales Report **Textbox** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on New Card** Visualization
- Again click on New Card Visualization
- In **Format -> Visual**, Click on **Shape**
- In Shape dropdown select **Rounded Rectangle**
- ***Now we will add decimal places to Total Quantity Card***
- In **Format -> Visual**, Click on **Callout**
- In Callout section -> In **Apply Settings to Series**, from the dropdown select **Total Quantity**
- Scroll down and go to **Value Decimal Places**, in text box write "**2**"
- Now In Callout section -> In **Apply Settings to Series**, from the dropdown select **All**
- Go down to **Label** and in the text section **click on B** (Bold) icon
- ***Now we will remove border***
- **Click on New Card** Visualization

- In **Format,** go to **General**
- Click on **Effects**
- In **Visual Border**, **Turn off** by clicking the On Off button next to the text

4. Bar Chart

A1. Generating Bar Chart

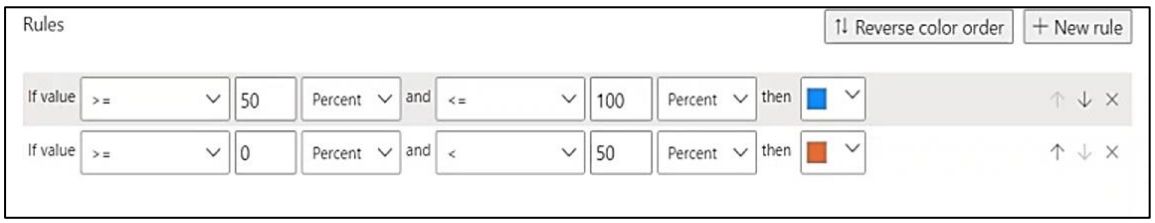
- Make sure you are in **Report View** and the **Sales Page**
- In the Visualizations Panel **click on the Stacked Bar Chart icon**
- Rearrange the generated chart in the report (Refer to the course video)
- In the report section **click on the newly generated Stacked Bar Chart**
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, **click on Sales($) column checkbox**, which will add the data to **X-axis** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- Now go to **Category Table** in the same Data Section
- In the Category table list, **click on CategoryType column checkbox**, which will add the data to **Y-axis** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)

A2. Format Bar Chart

- Make sure you are in **Report View** and the **Sales Page**
- **Click** on the newly created **Bar Chart**
- In Format -> General, click on **Title**
- In the **Text** section write "**Sales By Category**"
- In same section, click on '**B**' (Bold) icon, change color to **White** and make it **Center Align**
- ***Now we will hide axis titles and change axis colors***
- Make sure **Sales By Category chart is selected**
- In Format -> Visual, click on **Y-axis dropdown** and **Turn Off Title** from this section
- In Y-axis section, click on **Values** -> change **color** to **White,** and make it **Bold**
- Then In Format -> Visual, click on **X-axis dropdown** and **Turn Off Title** from this section
- In X-axis section, click on **Values** -> change **color** to **White,** and make it **Bold**
- Now Click on **Sales Report Textbox** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on Sales By Category chart**
- Again click on **Sales By Category chart**
- In **Format -> General**, Click on **Title**
- In Title section, change the text **color** to **White**, make it **Bold** and **Center Align**
- ***Now we will add data labels***
- *Make sure* **Sales By Category chart** is selected
- In **Format -> Visual**, Turn On **Data Labels**
- Scroll down to **Options**, from dropdown select "**Inside End**"

A3. Adding Conditional Formatting to Bar Chart (Learning 6 as mentioned in the video)

- Make sure you are in **Report View** and the **Sales Page**
- **Click** on the newly created **Sales By Category chart**
- In Format -> Visual, click on **Bars**
- In the Bars panel, Go to **Colors** Section
- Click on the ***fx*** icon
- In the Default color – Bars popup, in **Format style** dropdown list select **Rules**
- Make sure in **What field should be base this on?** Section, it is showing as "Sum of Sales($)"
- Make sure the content of the **Rules section is similar to the below image** (refer to the course video for more information). And Click Ok



- Now we will **Resize** the chart
- In **Format -> General**, Click on **Properties** dropdown
- Change the **Height** to **295**
- Change the **Width** to **417**

5. Column Chart

A1. Generating Column Chart (Multiple Column)

- Make sure you are in **Report View** and the **Sales Page**
- Click on **Sales by Category Chart**
- **Copy and paste** the chart in the Sales report
- **Position the second copy pasted chart** (Refer to the course video)
- **Click on the second** copy pasted chart
- In the Visualizations Panel **click on the Clustered Column Chart icon**
- ***Now our Copy pasted bar chart has changed to a Clustered Column Chart***
- In Visualization Panel **remove the CategoryType** which is current present in **X-axis**, by clicking on "x" icon (Refer to course video for specific instruction)
- Go to **Distributor Table** in Data Section at the right
- In the Distributor table list, **drag FullName** column to X-axis in the Visualizations Panel
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, **drag TotalProductionCost** column to Y-axis in the Visualizations Panel and place it below Sales($) column in Y-axis

A2. Formatting Column Chart (Multiple Column)

- Make sure you are in **Report View** and the **Sales Page**
- Click on the Column Chart

- In **Format -> General**, Click on **Title**
- In Title section, write Text "**Top Distributors**" (This changes the chart name to Top Distributors)
- In **Format -> Visual**, Click on **Legend**
- Inside Legend section, in the **Options** dropdown select "**Top Right**"
- Inside Legend section, in the **Text** dropdown, make the color **White**, and select **Bold**
- Now click on the **Build Visual** icon (Next to format icon. See the course video for more details)
- ***We will now change the name of Legends***
- In **Y-axis** section in the Visualizations panel, click on the downward arrow next to text "**Sum of Sales($)**". Then select Rename for this Visual option. And then rename it to "**Selling Price**" or "**Sales**"
- In **Y-axis** section in the Visualizations panel, click on the downward arrow next to text "**Sum of Total Production Cost**". Then select Rename for this Visual option. And then rename it to "**Cost Price**"
- ***Now we will Turn Off Data Labels in this chart***
- In Format -> Visual, **Turn of Data Labels** Section

A3. Filtering Data in Column Chart (Multiple Column) (Learning 7 as mentioned in the video)

- Make sure you are in **Report View** and the **Sales Page**
- Click on the **Top Distributors** Column Chart
- Click on the Filters Panel next to the Visualizations Panel
- In **FullName** field **click the downward arrow**
- In **Filter Type** dropdown select **Top N**
- In **Show Items** make sure **Top N** is selected, then in the adjacent text box write"**4**"
- Then from the **Data Panel** inside the Sales Table, **drag the Sales($) column** and place it in **By Values** section, which is below the Show Items section
- Click on **Apply Filter**

A4. Changing Data Format in Column Chart (Multiple Column)

- Make sure you are in **Report View** and the **Sales Page**
- Make sure the **Top Distributors** Column Chart **is selected**
- Go to **Sales Table** in Data Section (at the right) -> **Click on TotalProductionCost column** from the list
- In **Column Tools** click on the **"$" sign** you will find in the **top panel** (Refer to the course video)

B1. Generating Column Chart (Single Column) & Hierarchy (Learning 8 as mentioned in the vide)

- Make sure you are in **Report View** and the **Sales Page**
- Click on **Top Distributors Chart**
- **Copy and paste** the chart in the Sales report
- **Position the second copy pasted chart** (Refer to the course video)

- **Click on the second** copy pasted chart
- In Visualization Panel **remove FullName from X-axis** and **Selling Price and Cost Price** from the **Y-axis**, by clicking on "x" icon (Refer to course video for specific instruction)
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, **drag** column to X-axis in the Visualizations Panel
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, **select the Sales($) YoY%** checkbox, which will add it to the Y-axis in the Visualizations Panel
- Then in the Sales table list, **select Date** checkbox, which will add it to the X-axis in the Visualizations Panel
- Select the chart
- Click on **Drill Up** Icon, until the chart changes to **Quarter-on-Quarter** data (As shown in the course video)
- Arrange the Chart
- In **Format -> Visual**, Turn On **Data Labels**
- In Format -> General, click on **Title**
- In the **Text** section write "**Sales Growth**"

9. Line Chart

A1. Generating Line Chart

- Make sure you are in **Report View** and the **Sales Page**
- Click on **Sales Growth Chart**
- **Copy and paste** the chart in the Sales report
- **Position the second copy pasted chart** (Refer to the course video)
- **Click on the second** copy pasted chart
- In the Visualizations Panel **click on the Line Chart icon**
- ***Now our Copy pasted bar chart has changed to a Line Chart***
- In Visualization Panel **remove the Sales($) YoY%** which is current present in **Y-axis**, by clicking on "x" icon (Refer to course video for specific instruction)
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, **drag Sales($)** column to Y-axis in the Visualizations Panel
- Select the chart
- Click on **Drill Up** Icon, until the chart changes to **Yearly** data (As shown in the course video)
- Arrange the Chart

A2. Formatting Line Chart

- Make sure you are in **Report View** and the **Sales Page**
- Click on the Line Chart
- In **Format -> Visual**, Click **Data Labels** dropdown
- Scroll down go to **Values** Section -> Select **Color Light Blue**, and make it **Bold**
- Scroll up to **Options** section, from dropdown select "**Above**"
- In Format -> General, click on **Title**
- In the **Text** section write "**Sales & Forecast**"

A3. Creating Line Chart Forecast (Learning 10 – as mentioned in the video)

- Make sure you are in **Report View** and the **Sales Page**
- Click on the Line Chart
- Go to the **3rd Icon in Visualizations** Panel, which is **Analytics** (next to Format)
- Click on **Forecast** and **Turn it On**
- In **Forecast** Section, Inside **Options** panel
- Write **Forecast Length** as "**2**"
- In **Units** Select "**Years**" from dropdown
- In **Confidence Interval** select "**99%**" from dropdown
- Click on the **Apply button**
- Then scroll down and click on **Forecast Line** section
- Change **color** to **White**
- In **Style** selected "**Dashed**" from the dropdown
- Decrease **transparency** to **62%**
- Now scroll down and click on **Tooltip Title** section
- In Tooltip Text write "**Sales Forecast**"

11. Maps

- In Power BI Desktop click on **File** Menu at the Top
- Click **Options and Setting**
- Select **Options**
- In **Global** section, select **Security**
- Then **in Maps and filled Maps visuals** make sure "**Use Map and filled Map visuals**" checkbox **is checked**, if not checked please check it
- Press **OK** button

A1. Generating Maps Visualization

- Make sure you are in **Report View** and the **Sales Page**
- Go to **Distributor Table** in Data Section at the right
- In the **Distributor table** list, **click on Country column checkbox**, which will add the data to **Location** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- This step **will generate a Map** Chart inside our Report
- Now Go to **Sales Table** in Data Section at the right
- In the **Sales table** list, **click on Sales($) column checkbox**, which will add the data to **Bubble Size** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- Arrange the Map Visualization

A2. Format Maps Visualization

- Make sure you are in **Report View** and the **Sales Page**
- **Click** on the newly created **Map Visualization**
- In Format -> Visual, click on **Bubbles**
- In the **Size Section** increase the **Size** to 20
- Now Click on **Sales By Category chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on Map Visualization**
- Again click on **Map Visualization**
- In Format -> General, click on **Title**
- In the **Text** section write "**Sales By Country**"

13. Donut Chart (Holds similar elements to Learning 12 – Pie Chart – Which will be executed later)

A1. Generating Donut Chart

- Make sure you are in **Report View** and the **Sales Page**
- Click on **Sales Growth Chart**
- **Copy and paste** the chart in the Sales report
- **Position the second copy pasted chart** (Refer to the course video)
- **Click on the second** copy pasted chart
- In the Visualizations Panel **click on the Donut Chart icon**
- ***Now our Copy pasted bar chart has changed to a Donut Chart***
- In Visualization Panel **remove Date** which is current present in **Legend**, by clicking on "x" icon (Refer to course video for specific instruction)
- Then in Visualization Panel **remove Sales($) YoY** which is current present in **Values**, by clicking on "x" icon (Refer to course video for specific instruction)
- Go to **Sales Table** in Data Section at the right
- In the **Sales table** list, **click on Sales($) column checkbox**, which will add the data to **Values** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- Then in the Sales table list, **drag PaymentMethod** column to **Details** section in the Visualizations Panel

A2. Format Donut Chart

- Make sure you are in **Report View** and the **Sales Page**
- **Click** on the newly created **Donut Chart**
- In Format -> Visual, **Turn OFF** the **Legend**
- In Format -> Visual, click on **Detail Labels**
- In the **Options Section**, in the **Position** dropdown, select **"Outside"**
- Then in the **Options Section**, in the **Label Contents** dropdown, select **"All Detail Labels"**
- Then click on **Values** (inside the In the **Data Labels Section**)
- Change Color to **White**, and make it **Bold**
- In Format -> General, click on **Title**
- In the **Text** section write "**Sales By Payment Method**"

14. Slicer

A1. Generating Slicer

- Make sure you are in **Report View** and the **Sales Page**
- In the Visualizations Panel **click on the Slicer icon**
- Rearrange the generated chart in the report (Refer to the course video)
- In the report section **click on the newly generated Stacked Bar Chart**
- Go to **Sales Table** in Data Section at the right
- In the Sales table list, click the downward arrow next to Date, then click downward arrow next to Date Hierarchy, then **click on the Year column checkbox**, which will add the data to **Field** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)

A2. Format Slicer

- Make sure you are in **Report View** and the **Sales Page**
- **Click** on the newly created **Slicer**
- In Format -> Visual, click on **Slicer Settings**
- In the **Options Section**, in the **Style** dropdown, select **"Dropdown"**
- In the **Options Section**, inside the **Selection** panel, **Turn OFF Multi Select**
- In Format -> Visual, **Turn OFF Slicer Header**
- In Format -> Visual, click on **Values**
- Increase **Font Size** to "**14",** Make it **Bold, select** Color as **White**
- Inside the **Values** section, click on **Background**
- Select color "**Blue**"
- In Format -> General, click on **Effects**
- Open the Background Panel and increase **Transparency** to **100%**

14B. Creating New Report Page, Changing Background and Creating Report Title (Not part of Slicer Step, but have already been covered in Previous Steps)

- Go to **Report View**
- In the **Page name section** (where we have Sales Page now), click on "**+**" icon
- **Double click on the name**, where Page 1 is written
- Change the name to "**HR**"
- Make sure you are in **Report View** and the **HR Page**
- In Visualization Panel click on **Format Icon**
- Click on to **Canvas Background**
- In **Image** section press **Browse**
- Go to the folder where you have saved the Background provided in this course and **Select Background2.jpg** (Download the backgrounds from the resource section)
- Click **Open**
- In **Canvas Background** panel, decrease the **Transparency to 0%**
- From **Image Fit** dropdown **select Fit**
- In the **Report View,** go to **Sales Page**

- Select Text Box "**SALES REPORT**" (Which we have previous created)
- Copy the Text box
- Go to **HR Report Page**
- Paste the copied "**SALES REPORT**" text box
- **Select text "SALES REPORT"** inside the text box
- Change the text to "**HR REPORT**"

15. Navigational Buttons

A1. Generating Navigational Buttons

- Make sure you are in **Report View** and the **HR Page**
- Click on **Insert** from Top Menu
- Click on **Button Icon**
- From the dropdown Select **Back** option (4th Option)
- Resize the button
- In Format -> Button, click on Shape
- Scroll down and Turn ON Fill section
- Inside the Fill section, reduce the Transparency to "0%"
- Now we will create Navigation of the button
- Make sure you are in **Report View** and the **HR Page**
- **Click on the button in HR Report Page**
- In Format -> Button, **Turn ON Action**
- Inside Action, In **Type** dropdown select "**Page Navigation**"
- Inside Action, In **Destination** dropdown select "**Sales**" (Name of Sales Page)
- Now **copy** the Button, and **Go to Sales Page**
- **Paste the Button in Sales Page**
- In Format -> Button, **Turn ON Action**
- Inside Action, In Destination dropdown select "**HR**" (Name of Sales Page)

16. Area Chart

A1. Generating Area Chart

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Area Chart icon**
- Resize the chart
- Go to **HR Table** in Data Section at the right
- In the HR table list, **click on Department column checkbox**, which will add the data to **X-axis** in the **Data Section** below the Visualizations Panel (Refer to the course video for more information)
- In the HR table list, **click on Age column checkbox**, which will add the data to **Y-axis** in the **Data Section** below the Visualizations Panel
- ***Now we will change the Aggregation of the Age Column in the Y-axis***
- **Click on the down arrow** next to "**Sum of Age**" -> then select **Average** from the list
- The text now changes to "**Average of Age**"

A2. Format Area Chart

- Make sure you are in **Report View**
- Go To the **Sales Report Page**
- Now Click on **Sales & Forecast Line chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now go back to the **HR Report Page**
- Now **click on Average Age By Department Area Chart**
- Again click on **Average Age By Department Area Chart**
- In **Format -> Visual**, Click **Data Labels** dropdown
- Scroll down go to **Values** Section -> Select **Color White**, and make it **Bold**
- In the **Value Decimal Places** write "**0**" in the textbox and press **Enter**
- Resize the chart

12. Pie Chart

A1. Generating Pie Chart

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Pie Chart icon**
- Resize the chart
- Go to **HR Table** in Data Section at the right
- In the HR table list, **drag** the **Gender** column to **Details** field in the Visualizations Panel (Refer to the course video for more information)
- In the HR table list open Measure_HR folder, **drag** the **TotalEmployees** measure to **Values** field in the Visualizations Panel

A2. Format Area Chart

- Go To the **Sales Report Page**
- Now Click on **Sales By Payment Method Donut chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now go back to the **HR Report Page**
- Now **click on Pie Chart**
- **Again click on the TotalEmployees By Gender Pie Chart**
- In **Format -> Visual**, Click **Data Labels** dropdown
- Scroll down go to **Values** Section -> Make it **Bold**
- In the **Value Decimal Places** write "**0**" in the textbox and press **Enter**
- Resize the chart
- **We will remove Title from this pie chart**
- In **Format -> General**, Turn **OFF Title**

17. Add Image

A1. Add Image to the Report

- Make sure you are in **Report View** and the **HR Page**

- Click on **Insert** from Top Menu
- Click on **Image** icon
- Go to the folder where you have saved the Background & Image provided in this course and **Select Office1.jpg** (Download the backgrounds from the resource section)
- Click **Open**
- Resize the Image (Refer to the course video)

18. Card Visualization

A1. Generate Card Visualization (Total Employee Count)

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Card icon**
- Resize the card
- Go to **HR Table** in Data Section at the right
- In the HR table list open **Measure_HR** folder, and Check the **TotalEmployees checkbox**, which will then be added to the Fields section in the Visualizations Panel

A2. Format Card Visualization

- Make sure you are in **Report View** and the **HR Page**
- Select the **Card Visualization**
- In **Format -> Visual**, Turn OFF **Category Label**
- In Format -> General, Turn ON **Title**
- In the **Text** section write "**Total Employees**", make it **Center Align**
- Click on **Spacing** Section
- In **Vertical Spacing** write "0 px"
- Resize card visualization
- In Format -> General, click on **Effects**
- Open the Background Panel and increase **Transparency** to **100%**
- In Format -> General, click on **Title**
- Change Color to **White,** make it **Bold**
- In **Format -> Visual**, click on **Callout Value**
- Change Color to **White**

B. Generate Card Visualization & Format (% Distance Far)

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Card icon**
- Resize the card
- Go to **HR Table** in Data Section at the right
- In the HR table list open **Measure_HR** folder **Click on %DistanceFar** measure from the list
- In **Measure Tools** click on the **"%" sign** you will find in the **top panel** (Refer to the course video)
- Next to the sign in the **decimal places text box** write "**0**" (As we want to **limit the decimal places to 0**, please refer to course video for more information)

- Now in the **Measure_HR** folder, and Check the **%DistanceFar checkbox**, which will then be added to the **Fields section** in the Visualizations Panel
- Resize the Card
- In the **Fields section Click on the down arrow** next to "%DistanceFar" -> then select **Rename for this visual**
- And then rename it to "**Empl. Staying Far**"
- In **Format -> Visual**, click on **Callout Value**
- Change **Font** size to **24**, and Font Color to **White**
- In **Format -> General**, click on **Properties**
- In Properties section go down and **Click on Padding**
- Make the Top Padding as **0 px**
- Resize the card
- In Format -> General, click on **Effects**
- Open the Background Panel and increase **Transparency** to **100%**
- In **Format -> Visual**, click on **Category Label**
- Change Font Color to **White**

C. Generate Card Visualization & Format (% Distance Near)

- Make sure you are in **Report View** and the **HR Page**
- Click on **Empl. Staying Far Card**
- **Copy and paste** the chart in the **HR** report
- **Position the second copy pasted chart** (Refer to the course video)
-
- Go to **HR Table** in Data Section at the right
- In the HR table list open **Measure_HR** folder **Click on %DistanceNear** measure from the list
- In **Measure Tools** click on the **"%" sign** you will find in the **top panel** (Refer to the course video)
- Next to the sign in the **decimal places text box** write "**0**" (As we want to **limit the decimal places to 0**, please refer to course video for more information)
- Now in the **Measure_HR** folder, uncheck the **%DistanceFar checkbox**, which will then be removed from the **Fields section** in the Visualizations Panel
- And then Check the **%DistanceNear checkbox**, which will then be added to the **Fields section** in the Visualizations Panel
- Resize the visualization
- In the **Fields section Click on the down arrow** next to "%DistanceFar" -> then select **Rename for this visual**
- And then rename it to "**Empl. Staying Near**"

19. Table

A1. Generate Table (Includes Learning 20 –Sort By Column)

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Table icon**
- Resize the visualization
- Go to **HR Table** in Data Section at the right
- In the HR table list check **YearsInService** checkbox, which will then be added to the Columns section in the Visualizations Panel
- In the HR table list check **JobSatisfaction** checkbox, which will then be added to the Columns section in the Visualizations Panel below YearsInService
- ***Now we will cover Learning 20 – Sort By Column, to properly sort the Years In Service Column inside the table***
- Click on Table View
- Select the **HR Table** from the Data Section at tight right hand side
- Select the **YearsInService** Column from the sheet (Refer to video)
- In **Column Tools** section, Click on **Sort By Column** dropdown
- From the dropdown select **TotalYears** (This column will be used as **benchmark to sort out** YearsInService Column)
- Now will we convert this Table to Matrix in Learning Objective 21

21. Matrix

A1. Generate Matrix (We will use the Table we have created till now and refine it to Matrix)

- Make sure you are in **Report View** and the **HR Page**
- Click on the Table we have created (Consisting of YearsInService & JobSatisfaction)
- In the Visualizations Panel **click on the Matrix icon**
- This will change the Table visualization to Matrix
- In the Visualizations Panel Values Section, click on the **Sum of JobSatisfaction** which is present in that **Value** Field, **and drag** it above to the **Columns** field (Refer to the course video)
- Go to **HR Table** in Data Section at the right
- In the HR table list open **Measure_HR** folder, **drag** the **TotalEmployees** measure to **Values** field in the Visualizations Panel

A2. Format Matrix

- Make sure you are in **Report View** and the **HR Page**
- Now Click on **Male Female Pie chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on the Matrix we have just created**
- In Format -> General, Turn ON **Title**
- In the **Text** section write "**Job Satisfaction By Experience**"
- In **Format -> Visual**, Click on **Style Presets**
- In Style Presents, from the dropdown select "**None**"

- In Format -> Visual, click on **Values**
- Increase **Font Size** to "**14",** Make it **Bold, select** Color as **White**
- Inside the **Values** section, click on **Alternate Text Color, change** it to **White**
- **Then** In Format -> Visual, click on **Column Headers**
- Increase **Font Size** to "**11",** Make it **Bold, select** Color as **White** and make it **Left Align**
- **Then** In Format -> Visual, click on **Row Headers**
- Increase **Font Size** to "**11",** Make it **Bold, select** Color as **White** and make it **Left Align**

22. Gauge Visualization

A1. Generate Gauge Visualization

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Gauge icon**
- Resize the visualization
- Go to **HR Table** in Data Section at the right
- In the HR table list open **Measure_HR** folder
- Check the **AverageJobSatisfaction checkbox**, which will then be added to the **Value section** in the Visualizations Panel
- In the HR table list, **drag** the **JobSatisfaction** column to the **Maximum Value** field in the Visualizations Panel
- In the **Maximum Value section Click on the down arrow** next to "**JobSatisfaction**" -> then select **Maximum** from the list

A2. Format Gauge Visualization

- Make sure you are in **Report View** and the **HR Page**
- Now Click on **Male Female Pie chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on the Gauge Visualization we have just created**
- In Format -> Visual, click on **Detail Labels**
- Change Color to **White**, increase **Font size** to **"12"** and make it **Bold**
- In **Format -> Visual**, click on **Callout Value**
- Change Font Color to **White**, and make it **Bold**
- In Format -> General, Turn ON **Title**
- In the **Text** section write "**Average Job Satisfaction**"
- Resize the visualization

23. Waterfall Visualization

A1. Generate Waterfall Visualization

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Waterfall Chart icon**
- Resize the visualization
- Go to **HR Table** in Data Section at the right

- In the HR table list, Check the **Education** column **checkbox**, which will then be added to the **Category section** in the Visualizations Panel
- In the HR table list open **Measure_HR** folder
- Check the **TotalEmployees checkbox**, which will then be added to the **Y-axis section** in the Visualizations Panel

A2. Format Waterfall Visualization

- Make sure you are in **Report View** and the **HR Page**
- Click on the **Waterfall Chart**
- In **Format -> General**, Click on **Properties** dropdown
- Change the **Height** to **205**
- Change the **Width** to **536**
- Now Click on **Average age By Department Area chart** inside **the report**
- In Home -> Click on **Format Painter** icon
- Now **click on the Waterfall Chart we have just created**
- In Format -> Visual, Turn OFF **Legend** field
- In Format -> General, Click on **Title**
- In the **Text** section write "**Employees by Education**"

24. Funnel Visualization

A1. Generate Funnel Visualization

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Funnel icon**
- Resize the visualization
- Go to **HR Table** in Data Section at the right
- In the HR table list, Check the **PromotionStatus** column **checkbox**, which will then be added to the **Category section** in the Visualizations Panel
- In the HR table list open **Measure_HR** folder
- Check the **TotalEmployees checkbox**, which will then be added to the **Values section** in the Visualizations Panel
- Resize the chart

A2. Format Funnel Visualization

- Make sure you are in **Report View** and the **HR Page**
- Click on the **Funnel Chart**
- In **Format -> Visual**, Turn OFF **Conversion Rate Label** section (as we want to remove the percentage bifurcation displayed in the chart)
- Now Click on **Employee By Education Waterfall Chart** inside **the HR report**
- In Home -> Click on **Format Painter** icon
- Now **click on the Funnel Visualization we have just created**
- In **Format -> Visual**, click on **Category Label**
- Change Font Color to **White** and increase **Font Size** to "**12**"
- In Format -> General, Click on **Title**
- In the **Text** section write "**Promotion Status**"

25. Q&A Visualization

A1. Generate & Format Q&A Visualization

- Make sure you are in **Report View** and the **HR Page**
- In the Visualizations Panel **click on the Q&A icon**
- Resize the visualization
- In **Format -> Visual**, click on **Effects**
- Inside **Effects** section -> Click on **Visual Border** dropdown
- In Visual Border **click the 'On' button**, In **Color - Select White** and In **Rounded Corners** select "**22 px**"

Step 6 - Publishing using Power BI Service

1. **Publishing Reports Online**
   - Open **Power BI Desktop**
   - Go to **Home**
   - Click on **Publish** icon
   - In the **Enter Your Email** popup enter your **Work / School** Email Id (Gmail/Yahoo etc. are **not accepted**) (***Incase you are able to directly login, please refer to the video***)
   - Press **Continue** Button
   - In Publish to Power BI popup, select **My Workspace** folder
   - Click **Select** button
   - Once the Publishing is over, **click** on the first link **Open 'WaveX – …'**
   - This link will take you to to "**app.powerbi.com**" inside the **published project page**
   - ***With this we have now published our reports online***

2. **Place Reports Inside PDF**
   - In Power BI Desktop click on **File** Menu at the Top
   - Click **Export**
   - Select **Export to PDF**
   - ***This will generate both our reports inside a PDF file***
   - **Save the file**

3. **Place Reports Inside PPT (PowerPoint)**
   - Make sure you are logged in to "**app.powerbi.com**"
   - Go to the **published WaveX project** page (You can find the project inside My Workspace folder, with similar filename as you published and type as "Report")
   - Make sure you are in **Sales Report** page
   - Click **Export**
   - From the dropdown select **PowerPoint**
   - Then select **Embed Live Data** (as we want to embed interactive reports)
   - In **Embed live data** in PowerPoint popup press **Open in PowerPoint** button
   - This will open the PowerPoint with an **interactive Sales Report**
   - **Save the file**

4. **Create Online Dashboard**
   - Make sure you are logged in to "**app.powerbi.com**"
   - Go to the **published WaveX project** page (You can find the project inside My Workspace folder, with similar filename as you published and type as "Report")
   - Make sure you are in **Sales Report** page
   - Click **Edit Icon**

- Select **Sales & Forecast Line chart** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup click on **New Dashboard** radio button
- In **Dashboard Name** field write "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- **Ignore the Pinned to Dashboard** Popup (we will use it later)
- Then Select **Sales By Category chart** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup make sure **Existing Dashboard** radio button is selected
- In **Select Existing Dashboard** dropdown select "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- Then Select **Sales By Country Map** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup make sure **Existing Dashboard** radio button is selected
- In **Select Existing Dashboard** dropdown select "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- Click on **Navigation Icon** to open HR Report page (Use Ctrl + Click)
- Make sure you are in **HR Report** page
- Select **Total Employees Card** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup make sure **Existing Dashboard** radio button is selected
- In **Select Existing Dashboard** dropdown select "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- Then Select **Average Job Satisfaction Gauge Visualization** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup make sure **Existing Dashboard** radio button is selected
- In **Select Existing Dashboard** dropdown select "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- Then Select **Male Female Employees Pie Chart** and click on "**Pin Visual**" icon
- In **Pin to Dashboard** popup make sure **Existing Dashboard** radio button is selected
- In **Select Existing Dashboard** dropdown select "**ProjectWaveX-Dashboard**"
- Click on **Pin** button
- Now, from the **Pinned to Dashboard** Popup, click on **Go to Dashboard** button
- **This will take you to the created Dashboard page**

5. Customize Dashboard (Web & Mobile)

A1. Format Online Dashboard (Web / Desktop)

- Make sure you are in the newly created Dashboard page
- ***As the text of our visualization is not clearly visible, we will change the theme***
- In the Page, Click on **Edit**
- From the dropdown select **Dashboard Theme**
- In **Dashboard Theme Panel** from the dropdown select **Dark**
- Click on **Save** Button

A2. Customize Dashboard For Mobile

- Make sure you are in the newly created Dashboard page
- In the Page, Click on **Edit**
- From the dropdown select **Mobile Layout**

- ***This will take us to the Mobile layout page of our dashboard***
- Here, one has the option to drag and increase the height of each Pinned Visualization, and also drag the visualization up or down by left clicking on the visual
- Also, one can move the cursor over the visual and click the unpin icon, which will remove that visual only from the mobile view

6. **Share Dashboard**
   - Make sure you are logged in to "**app.powerbi.com**"
   - Go to the **published ProjectWaveX-Dashboard** (find it inside My Workspace folder)
   - Click on **Share** (Refer to the course video for more details)
   - In the Share Dashboard popup enter the Email ID of the recipients
   - Make sure Send an Email notification checkbox is ticked
   - Click on Grant Access button
   - This will send the recipients an online link of the project dashboard

7. **Update Dashboard**
   - Supposed if data used in the project has been updated, with new data entries or data deletion
   - In Power BI Desktop
   - Go to **Home** menu
   - Click **Refresh**
   - After data refresh our local Power BI Desktop report will be updated
   - Go to **Home**
   - Click on **Publish** icon
   - In Publish to Power BI popup, select **My Workspace** folder
   - Click on **Select** button
   - In Replace This Dataset popup, click on **Replace** button
   - Once the Publishing is over
   - Then go online, and make sure you are logged in to "**app.powerbi.com**"
   - Go to the **published ProjectWaveX-Dashboard** (find it inside My Workspace folder)
   - If data is not updated Refresh the page

Congratulations! With this final step, we have successfully concluded all six steps of our Power BI process and also the entire WaveX project!

I trust this journey has been fruitful for you. Wishing you continued success and fulfillment in your future Power BI endeavors.

Best Wishes from Navin B