## Lab 3-01: Get Data in Power BI Desktop

### Pre-requisites

* Download and install Power BI from the Microsoft Store
* The lab links to a localhost SQL Server instance. Download a free Developer copy of the install media.

<https://www.microsoft.com/sql-server/sql-server-downloads?SilentAuth=1&f=255&MSPPError=-2147217396&rtc=1>

* Install SQL Server from Installation Wizard (Setup)

<https://learn.microsoft.com/sql/database-engine/install-windows/install-sql-server-from-the-installation-wizard-setup>

* Install the latest version of Microsoft Edge to access Power BI service online
* All files can be downloaded from GitHub. Extract the ‘AllFiles’ folder to F:/ and rename it to ‘F:\Allfiles'

<https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/AllfilesDownload.zip>

### Introduction

This lab introduces you to the fundamentals of working with data in Power BI Desktop. You will explore how to connect to various data sources, preview the data to understand its structure and quality, and leverage data profiling features for deeper analysis.

### Problem

Many business analysts struggle with efficiently acquiring and understanding data before diving into creating reports and visualizations. Power BI Desktop provides a robust set of tools to connect to diverse data sources, but users need to be familiar with the process of data retrieval and exploration.

### Solution

By the end of this lab, you will be comfortable retrieving and understanding data from various sources, setting the stage for data transformation and visualization in Power BI Desktop.

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| 1. To open the starter Power BI Desktop file, select Open > Browse this device.      1. In the Open window, navigate to the F:\Allfiles\Labs\03-prepare-data-with-power-query-in-power-bi-desktop\Starter folder.      1. Select the Sales Analysis file. Save a copy of the file with File > Save As into the F:\Allfiles\MySolution folder. 2. On the Home ribbon tab, from inside the Data group, select SQL Server.   SQL Server Get Data icon   1. In the SQL Server Database window, in the Server box, enter localhost and leave Database blank, then select OK.      1. If prompted for credentials, in the SQL Server Database window, select Use my current credentials, and then Connect.      1. In the Navigator pane, expand the database. Select the DimEmployee table, and notice the preview of the table data.   AdventureWorksDW2020 database with DimEmployee indicated   1. To import the table data, select the checkbox next to the following six tables:      1. Complete this task by choosing Transform Data, which will open Power Query Editor.      1. In the Power Query Editor window, at the left, notice the Queries pane.      1. To add a new query, in the Power Query Editor window, on the Home ribbon tab, from inside the New Query group, select New Source down-arrow, and then select Text/CSV.      1. In the Open window, navigate to the F:\Allfiles\Resources folder and select the ResellerSalesTargets.csv file. Select Open.      1. In the ResellerSalesTargets.csv window, review the preview data. Select OK.      1. In the Queries pane, notice the addition of the ResellerSalesTargets query.      1. Repeat the steps to make a query based on the F:\Allfiles\Resources\ColorFormats.csv file.      1. On the View ribbon tab, from inside the Data Preview group, uncheck the three data preview options that were previously enabled in this lab:   Picture 76   1. Save the Power BI Desktop file. When prompted to apply the pending changes, select Apply Later. |

## Lab 3-02: Load Transformed Data in Power BI Desktop

### Pre-requisites

* Download and install Power BI from the Microsoft Store
* The lab links to a localhost SQL Server instance. Download a free Developer copy of the install media.

<https://www.microsoft.com/sql-server/sql-server-downloads?SilentAuth=1&f=255&MSPPError=-2147217396&rtc=1>

* Install SQL Server from Installation Wizard (Setup)

<https://learn.microsoft.com/sql/database-engine/install-windows/install-sql-server-from-the-installation-wizard-setup>

* Install the latest version of Microsoft Edge to access Power BI service online
* All files can be downloaded from GitHub. Extract the ‘AllFiles’ folder to F:/ and rename it to ‘F:\Allfiles'

<https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/AllfilesDownload.zip>

### Introduction

In the previous lab, you conquered the initial hurdle of acquiring data in Power BI Desktop. Now, this lab delves into the world of data transformation, a crucial step in preparing your data for insightful analysis.

### Problem

Raw data rarely aligns perfectly with your analytical needs. It might contain inconsistencies, irrelevant columns, or require restructuring. Manually manipulating data outside of Power BI can be cumbersome and error-prone.

### Solution

Through this lab, you will master the art of data transformation in Power BI Desktop, preparing your data to become the foundation for compelling and informative visualizations.

Open the 03-Starter-Sales Analysis.pbix file.

#### Task 1: Configure the Salesperson Query

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| 1. To open the Power Query Editor window, on the Home ribbon tab, from inside the Queries group, select the Transform Data icon.      1. In the Power Query Editor window, in the Queries pane, select the DimEmployee query.      1. To rename the query, in the Query Settings pane (located at the right), in the Name box, replace the text with Salesperson, and then press Enter. Then verify the name has been updated in the Queries pane.      1. To find a specific column, on the Home ribbon tab, select the Manage Columns down-arrow, select Choose Columns down-arrow, and then click Go to Column.      1. In the Go to Column window, to order the list by column name, select the AZ sort button, and then select Name and SalesPersonFlag. Click OK.      1. Locate the SalesPersonFlag column, then filter the column to select only Salespeople (that is, TRUE), and click OK.      1. In the Query Settings pane, in the Applied Steps list, notice the addition of the Filtered Rows step.      1. To remove columns, on the Home ribbon tab, select the Manage Columns group and select the Choose Columns icon.      1. To include columns, check the following six columns:      1. In the Applied Steps list, notice the addition of another query step.      1. To create a single name column, first select the FirstName column header. While pressing the Ctrl key, select the LastName column.      1. Right-click either of the selected column headers, and then, in the context menu, select Merge Columns.      1. In the Merge Columns window, in the Separator dropdown list, select Space. In the New Column Name box, replace text with Salesperson.      1. To rename the EmployeeNationalIDAlternateKey column, double-click the EmployeeNationalIDAlternateKey column header, replace text with EmployeeID, and then press Enter.      1. Use previous steps to rename the EmailAddress column to UPN.      1. At the bottom-left, in the status bar, verify that the query has 5 columns and 18 rows. |

#### Task 2: Configure the SalespersonRegion Query

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| 1. In the **Queries** pane, select the **DimEmployeeSalesTerritory** query. In the **Query Settings** pane, rename the query to **SalespersonRegion**.      1. To remove the last two columns, first select the **DimEmployee** column header. While pressing the **Ctrl** key, select the **DimSalesTerritory** column header.      1. Right-click either of the selected column headers and then in the context menu, select **Remove Columns**. |

#### Task 3: Configure the Product Query

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| 1. Select the **DimProduct** query and rename the query to **Product**.      1. Locate the **FinishedGoodsFlag** column, and then filter the column to retrieve products that are finished goods (that is, TRUE).      1. Remove all columns **except** the following:        1. In the **DimProductSubcategory** column header, at the right of the column name, select expand button.   Column expand icon   1. See the full list of columns, then select the **Select All Columns** box to unselect all columns.      1. Select **EnglishProductSubcategoryName** and **DimProductCategory**, and uncheck the **Use Original Column Name as Prefix** checkbox before selecting **OK**.      1. Notice that the transformation resulted in the addition of two columns and that the **DimProductSubcategory** column has been removed.      1. Expand the **DimProductCategory** column, and then introduce only the **EnglishProductCategoryName** column.      1. Rename the following four columns: |

#### Task 4: Configure the Reseller Query

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| 1. Select the **DimReseller** query and rename it to **Reseller**.      1. Remove all columns **except** the following:      1. Expand the **DimGeography** column to include **only** the following three columns:      1. On the **Business Type** column header, select the down-arrow, and then review separate column values, and notice both values **Warehouse** and **Ware House**.      1. Right-click the **Business Type** column header, and then select **Replace Values**.      1. In the **Replace Values** window, configure the following values:      1. Rename the following columns: |

#### Task 5: Configure the Region Query

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| 1. Select the **DimSalesTerritory** query and rename the query to **Region**.      1. Apply a filter to the **SalesTerritoryAlternateKey** column to remove the value 0 (zero).      1. Remove all columns **except** the following:      1. Rename the following three columns: |

#### Task 6: Configure the Sales Query

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| 1. Select the **FactResellerSales** query and rename it to **Sales**.      1. Remove all columns **except** the following:      1. Expand the **DimProduct** column, uncheck all columns, and then include only the **StandardCost** column.      1. To create a custom column, on the **Add Column** ribbon tab from inside the **General** group, select **Custom Column**.   Picture 5664   1. In the **Custom Column** window, in the **New Column Name** box, replace the text with **Cost**. In the **Custom Column Formula** box, enter the following expression (after the equals symbol), then save the new column:      1. Remove the following two columns:      1. Rename the following three columns:  * OrderQuantity to Quantity * UnitPrice to Unit Price (include a space) * SalesAmount to Sales  1. To modify column data type, in the **Quantity** column header, at the left of the column name, select the **1.2** icon and then choose **Whole Number**.   Picture 5667   1. Modify the following three column data types to **Fixed Decimal Number**. |

#### Task 7: Configure the Targets Query

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| 1. Select the **ResellerSalesTargets** query and rename it to **Targets**.      1. To unpivot the 13-month columns (**M03-M12**), first, multi-select the **Year** and **EmployeeID** column headers.      1. Right-click either of the selected column headers and then in the context menu, select **Unpivot Other Columns**.      1. Notice that the column names now appear in the **Attribute** column, and the values appear in the **Value** column.      1. Apply a filter to the **Value** column to remove hyphen (-) values.      1. Rename the following two columns:      1. To prepare **MonthNumber** column values, right-click the **MonthNumber** column header and then select **Replace Values**.      1. In the **Replace Values** window, in the **Value To Find** box, enter **M** and leave **Replace with** empty.      1. Modify the **MonthNumber** column data type to **Whole Number**.      1. On the **Add Column** ribbon tab, from inside the **General** group, select The **Column From Examples** icon.   Picture 5675   1. Notice that the first row is for the year **2017** and month number **7**.      1. In the **Column1** column, in the first grid cell, commence entering **7/1/2017**, and then press **Enter**. Notice that the grid cells update with predicted values.      1. Notice the formula presented above the query grid.   Picture 5679   1. To rename a new column, double-click the **Merged** column header and rename the column as **TargetMonth**.      1. Remove the following columns:      1. Modify the following column data types:  * Target as a fixed decimal number * TargetMonth as date      1. To multiply the **Target** values by 1000, select the **Target** column header, and then on the **Transform** ribbon tab, from inside the **Number Column** group, select **Standard**, and then select **Multiply**.   Picture 5682   1. In the **Multiply** window, in the **Value** box, enter **1000**, and select **OK**. |

#### Task 8: Configure the ColorFormats Query

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| 1. Select the **ColorFormats** query and notice that the first row contains column names.      1. On the **Home** ribbon tab, from inside the **Transform** group, select **Use First Row as Headers**.   Picture 5688 |

#### Task 9: Update the Product Query

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| 1. Select **Product** query.      1. To merge the **ColorFormats** query, on the **Home** ribbon tab, select the **Combine** down arrow, then select **Merge Queries**.   Picture 5654   1. In the **Merge** window, in the **Product** query grid, select the **Color** column header.   Picture 5655   1. Beneath the **Product** query grid, in the dropdown list, select **ColorFormats** query.   Picture 21   1. In the **ColorFormats** query grid, select the **Color** column header.      1. When the **Privacy Levels** window opens, for each of the two data sources, in the corresponding dropdown list, select **Organizational**, then **Save**.   Picture 5691   1. In the **Merge** window, use default **Join Kind** - maintaining a selection of Left Outer and select **OK**.      1. Expand the **ColorFormats** column to include the following two columns: |

#### Task 10: Update the ColorFormats Query

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| 1. Select **ColorFormats** query.      1. In the **Query Settings** pane, select the **All Properties** link.   Picture 322   1. In the **Query Properties** window, uncheck the **Enable Load To Report** checkbox.   Picture 323   1. In Power Query Editor, confirm that you have **8 queries**:      1. Select **Close & Apply** to load data.   Picture 326   1. You can now see the canvas in Power BI Desktop, with Filters, Visualizations, and Data panes on the right. In the Data pane, notice the **7 tables** loaded to the data model.   Picture 3 |