Lab 01 - Get Data in Power BI Desktop

Lab story

This lab is designed to introduce you to Power BI Desktop application and how to connect to data and how to use data preview techniques to understand the characteristics and quality of the source data. The learning objectives are:

- Open Power BI Desktop
- Connect to different data sources
- Preview source data with Power Query
- Use data profiling features in Power Query

This lab should take approximately 30 minutes.

Get started with Power BI Desktop

To complete this exercise, first open a web browser and enter the following URL to download the zip folder:

https://github.com/MicrosoftLearning/PL-300-Microsoft-Power-BI-Data-Analyst/raw/Main/Allfiles/Labs/01-prepare-data-with-power-query-in-power-bi-desktop/01-prepare-data.zip

Extract the folder to the **C:\Users\Student\Downloads\01-prepare-data** folder.

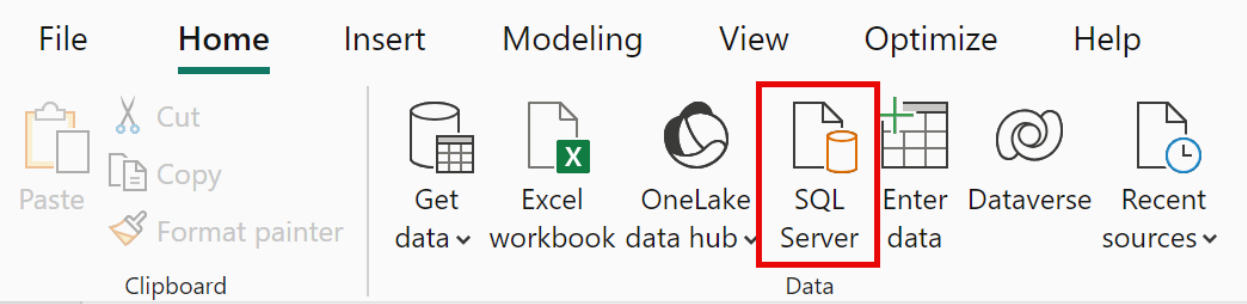
Open the **01-Starter-Sales Analysis.pbix** file.

- This starter file has been specially configured to help you complete the lab. The following report-level settings have been disabled in the starter file:
    - Data Load > Import relationships from data sources on first load
    - Data Load > Autodetect new relationships after data is loaded

Get data from SQL Server

This task teaches you how to connect to a SQL Server database and import tables, which create queries in Power Query.

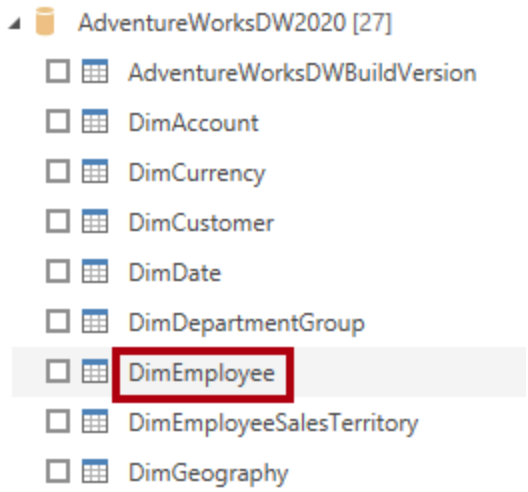
1. On the **Home** ribbon tab, from inside the **Data** group, select **SQL Server**.



2. In the **SQL Server Database** window, in the **Server** box, enter **your SQL Server name** and leave **Database** blank, then select **OK**. If you don't know your SQL Server name, open SSMS and you will see your server name such as LAPTOP-JSZ.
3. If prompted for credentials, select **Windows > Use my current credentials**, and then **Connect**.
4. Select **OK** if you receive a warning that an encrypted connection cannot be established.
5. In the **Navigator** pane, expand the **AdventureWorksDW2020** database.

***Note**: The **AdventureWorksDW2020** database is based on the **AdventureWorksDW2017** sample database. It has been modified to support the learning objectives of the course labs.*

6. Select the **DimEmployee** table, and notice the preview of the table data.



***Note**: The preview data allows you to see the columns and a sample of rows.*

7. To import the table data, **select the checkbox** next to the following tables:
    - DimEmployee
    - DimEmployeeSalesTerritory
    - DimProduct
    - DimReseller

- DimSalesTerritory
- FactResellerSales

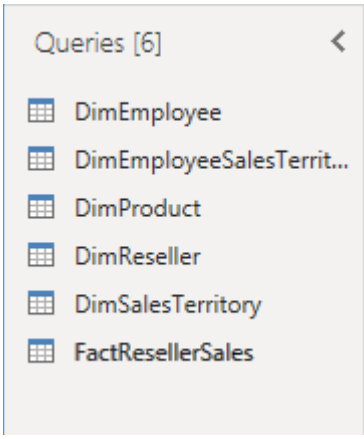
8. Complete this task by selecting **Transform Data**, which will open Power Query Editor - leave this open for the next task.

You've now connected to six tables from a SQL Server database.

Preview Data in Power Query Editor

This task introduces the Power Query Editor and allows you to review and profile the data. This helps you determine how to clean and transform the data later. You'll also review both dimension tables prefixed with "Dim" and fact tables prefixed with "Fact".

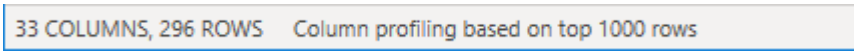
1. In the **Power Query Editor** window, at the left, notice the **Queries** pane. The **Queries** pane contains one query for each table you checked.



2. Select the first query—**DimEmployee**.

*The **DimEmployee** table in the SQL Server database stores one row for each employee. A subset of the rows from this table represents the salespeople, which will be relevant to the model you'll develop.*

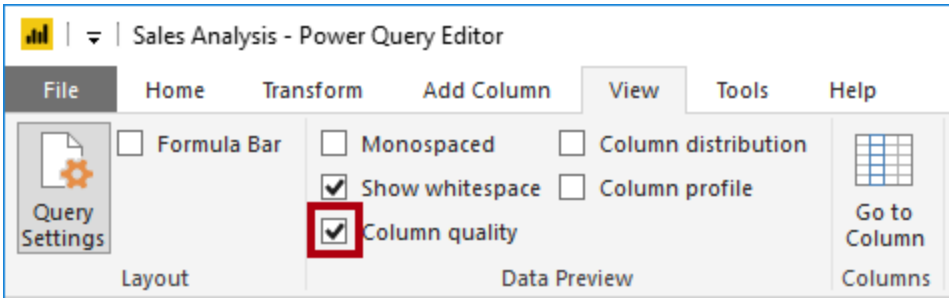
3. At the bottom left corner of the status bar, some table statistics are provided—the table has 33 columns, and 296 rows.



4. In the data preview pane, scroll horizontally to review all columns. Notice that the last five columns contain **Table** or **Value** links.

*These five columns represent relationships to other tables in the database. They can be used to join tables together. You'll join tables in the **Load Transformed Data in Power BI Desktop** lab.*

5. To assess column quality, on the **View** ribbon tab, from inside the **Data Preview** group, check **Column Quality**. The column quality feature allows you to easily determine the percentage of valid, error, or empty values found in columns.

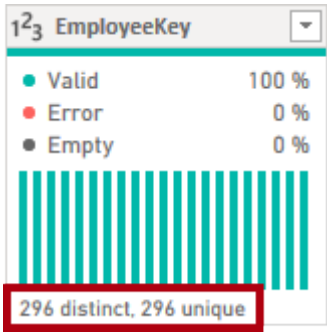


6. Notice that the **Position** column has 94% empty (null) rows.

7. To assess column distribution, on the **View** ribbon tab, from inside the **Data Preview** group, check **Column Distribution**.

8. Review the **Position** column again, and notice that there are four distinct values, and one unique value.

9. Review the column distribution for the **EmployeeKey** column—there are 296 distinct values, and 296 unique values.



***Note**: When the distinct and unique counts are the same, it means the column contains unique values. When modeling, it's important that some model tables have unique columns. These unique columns can be used to create one-to-many relationships, which you'll do in the **Model Data in Power BI Desktop** lab.*

10. In the **Queries** pane, select the **DimProduct** query.

*The **DimProduct** table contains one row per product sold by the company.*

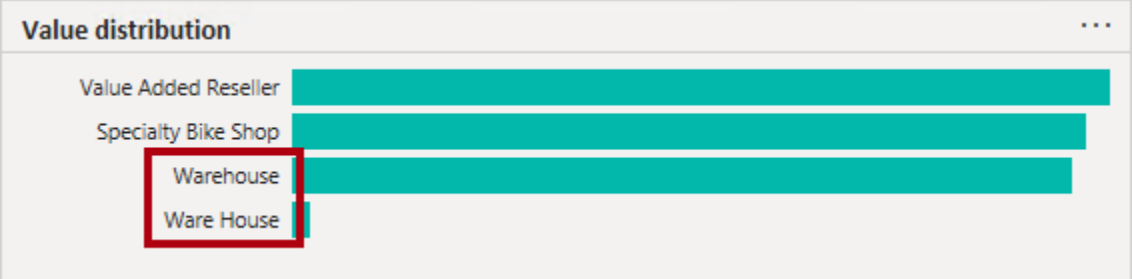
11. In the **Queries** pane, select the **DimReseller** query.

*The **DimReseller** table contains one row per reseller. Resellers sell, distribute, or value add to the Adventure Works products.*

12. To view column values, on the **View** ribbon tab, from inside the **Data Preview** group, check **Column Profile**.

13. Select the **BusinessType** column header, and notice the new pane beneath the data preview pane. Review the column statistics and value distribution in the data preview pane.

*Notice the data quality issue: there are two labels for warehouse (**Warehouse**, and the misspelled **Ware House**).*



14. Hover the cursor over the **Ware House** bar, and notice that there are five rows with this value.

15. In the **Queries** pane, select the **DimSalesTerritory** query.

*The **DimSalesTerritory** table contains one row per sales region, including **Corporate HQ** (headquarters). Regions are assigned to a country, and countries are assigned to groups. In the **Model Data in Power BI Desktop** lab, you'll create a hierarchy to support analysis at region, country, or group level.*

16. In the **Queries** pane, select the **FactResellerSales** query.

*The **FactResellerSales** table contains one row per sales order line—a sales order contains one or more line items.*

17. Review the column quality for the **TotalProductCost** column, and notice that 8% of the rows are empty.

*Missing **TotalProductCost** column values is a data quality issue.*

Get data from a CSV file

In this task, you'll create a new query based on CSV files.

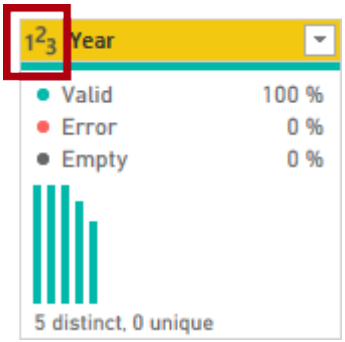
1. To add a new query, in the **Power Query Editor** window, on the **Home** ribbon tab, from inside the **New Query** group, select the **New Source** down-arrow, and then select **Text/CSV**.

2. Navigate to the **01-prepare-data > ResellerSalesTargets.csv** file. Select **Open**.

3. In the **ResellerSalesTargets.csv** window, review the preview data. Select **OK**.
4. In the **Queries** pane, notice the addition of the **ResellerSalesTargets** query.

*The **ResellerSalesTargets** CSV file contains one row per salesperson, per year. Each row records 12 monthly sales targets (expressed in thousands). The business year for the Adventure Works company commences on July 1.*

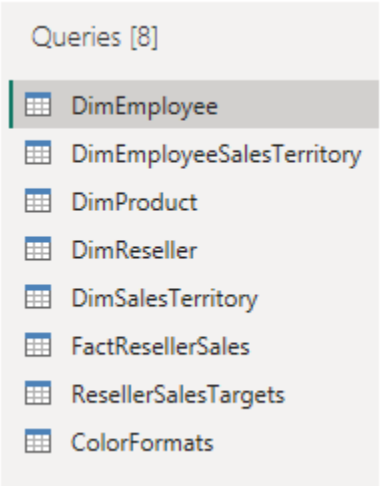
5. Notice that no column contains empty values. When there isn't a monthly sales target, a hyphen character is stored instead.
6. Review the icons in each column header, to the left of the column name. The icons represent the column data type. **123** is whole number, and **ABC** is text.



7. Repeat the steps to create a query based on the **ColorFormats.csv** file.

*The **ColorFormats** CSV file contains one row per product color. Each row records the HEX codes to format background and font colors.*

You should now have two new queries, **ResellerSalesTargets** and **ColorFormats**.



Lab complete