# **Module 5: Modeling Data**

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Note: Lab Solution is present in Desktop\power-bi-quickstart\Labfiles\Lab05\Solution folder:

# **Lab: Modeling Data**

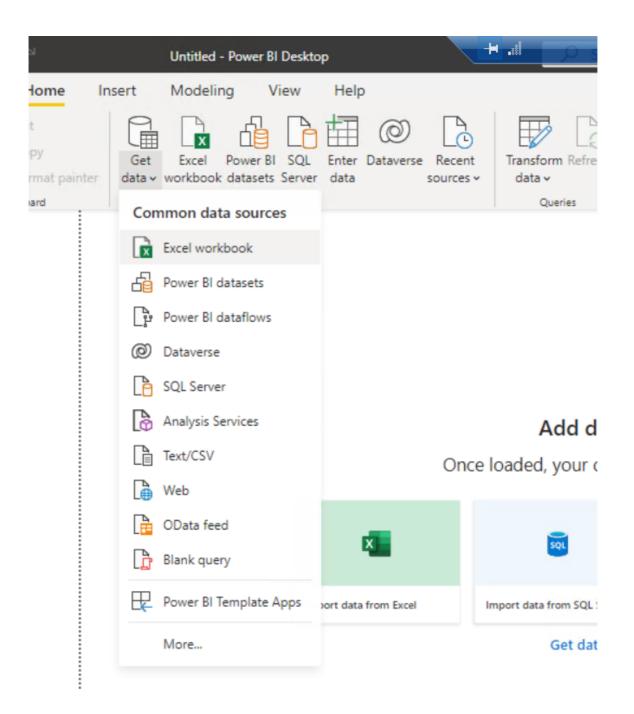
## **Exercise 1: Create Relationships**

## **Task 1: Preparing the Environment**

Lab environment is already setup.

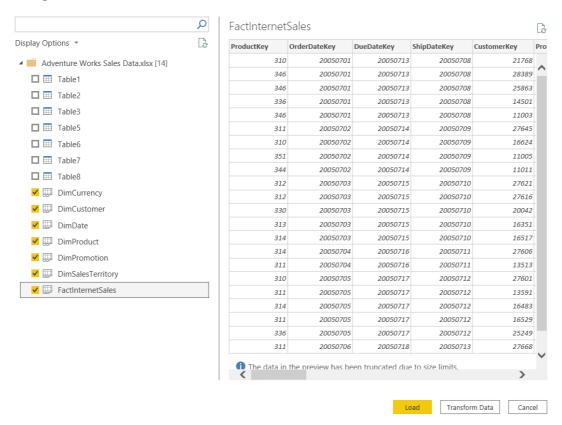
#### **Task 2: Automatic Relationships**

- 1. Make sure previous tasks was completed.
- 2. On the Taskbar, click **Power BI Desktop**.
- 3. To close the getting started window, at the top-right of the window, click  $\mathbf{X}$ .
- 4. In the **Power BI Desktop** window, click **Get data**.
- 5. In the **Get Data** dialog box, ensure **Excel WorkBook** is selected.



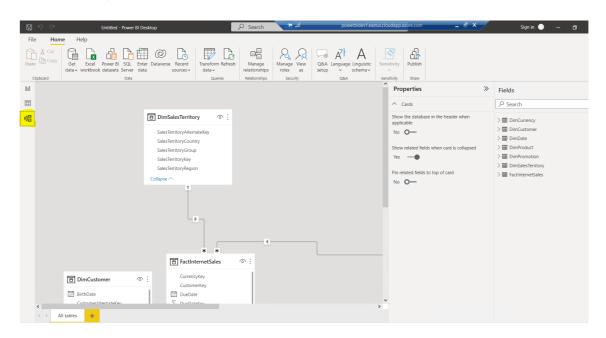
- 7. In the Open dialog box, navigate to Desktop\power-bi-quickstart\Labfiles\Lab05\Starter\Project, click Adventure Works Sales Data.xlsx, and then click Open.
- In the Navigator dialog box, select the DimCurrency, DimCustomer, DimDate, DimProduct, DimPromotion, DimSalesTerritory, and FactInternetSales check boxes, and then click Load.





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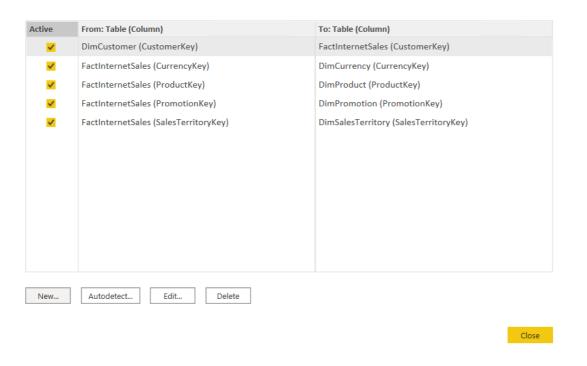
14. In the views pane on the left-hand side, click Model.



- 15. On the Home tab, click Manage Relationships.
- 16. In the Manage relationships dialog box, click New.



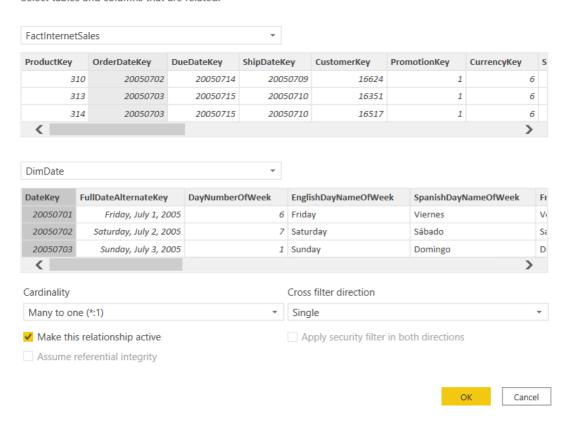
# Manage relationships



- 17. In the **Create relationship** dialog box, in the top table list, click **FactInternetSales**. When the table preview appears below, click the **OrderDateKey** column.
- 18. In the bottom table list, click **DimDate**. When the table preview appears below, click the **DateKey** column.
- 19. Check that the Cardinality is selected to Many to one (\*:1), the Cross filter direction is Single, and Make this relationship active is selected, and then click OK.

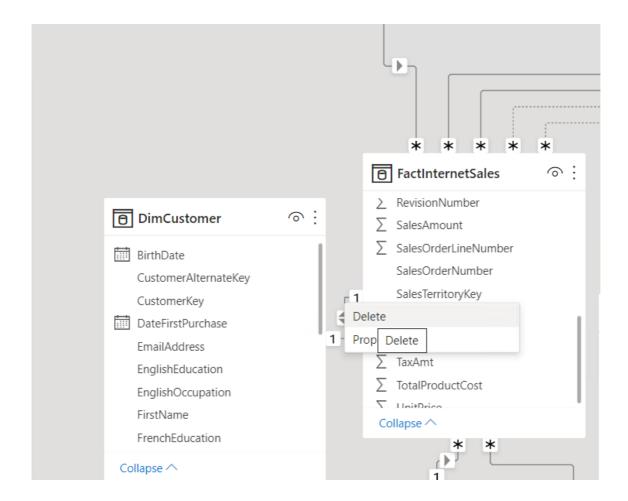
# Create relationship

Select tables and columns that are related.

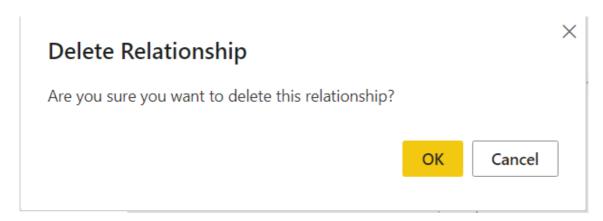


- 20. In the Manage relationships dialog box, click Close.
- 21. In the diagram, in the **FactInternetSales** table, click the **DueDateKey** column. Drag the **DueDateKey** column to the **DateKey** column of the **DimDate** table.
- 22. In the diagram, in the **FactInternetSales** table, click the **ShipDateKey** column. Drag the **ShipDateKey** column to the **DateKey** column of the **DimDate** table.
- 23. On the Home tab, click Manage Relationships.
- 24. In the Manage relationships dialog box, double-click the FactInternetSales (CurrencyKey) relationship.
- 25. In the **Edit relationships** dialog box, in the **Cross filter direction** list, ensure **Single** is selected, and then click **OK**.
- 26. In the Manage relationships dialog box, double-click the FactInternetSales (ProductKey) relationship.
- 27. In the **Edit relationships** dialog box, in the **Cross filter direction** list, ensure **Single** is selected, and then click **OK**.
- 28. In the Manage relationships dialog box, double-click the FactInternetSales (PromotionKey) relationship.
- 29. In the **Edit relationships** dialog box, in the **Cross filter direction** list, ensure **Single** is selected, and then click **OK**.

- 30. In the **Manage relationships** dialog box, double-click the **FactInternetSales (SalesTerritoryKey)** relationship.
- 31. In the **Edit relationships** dialog box, in the **Cross filter direction** list, ensure **Single** is selected, and then click **OK**.
- 32. In the Manage relationships dialog box, click Close.
- 33. Right-click the relationship line between FactInternetSales and DimCustomer, and then click Delete.



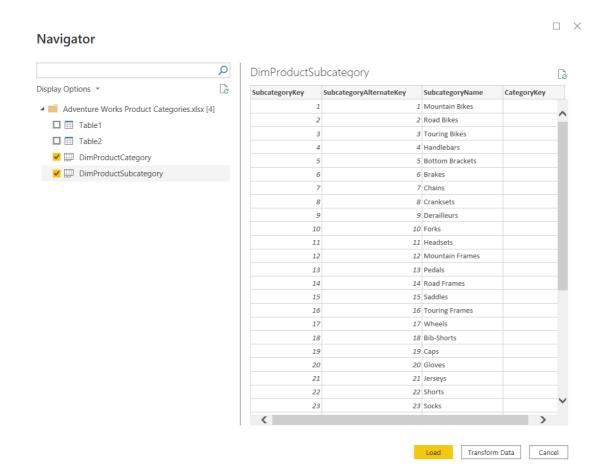
34. In the **Delete Relationship** dialog box, click **Delete**.



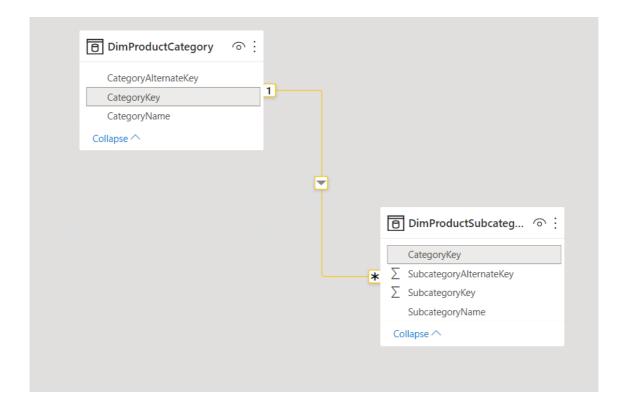
- 35. On the Home tab, click Manage Relationships.
- 36. In the Manage relationships dialog box, click New.
- 37. In the **Create relationship** dialog box, in the top table list, click **FactInternetSales**, and in the data preview, click **CustomerKey**.
- 38. In the bottom table list, click **DimCustomer**, and in the data preview, click **CustomerKey**.
- 39. In the Cardinality list, click Many to one (\*:1), and then click OK.
- 40. In the Manage relationships dialog box, click Close.
- 41. On the File menu, click Save.
- 42. In the Save As dialog box, navigate to the Desktop\power-bi-quickstart\Labfiles\Lab05\Starter folder, and in the File name box, type Adventure Works Sales 5.pbix, and then click Save.

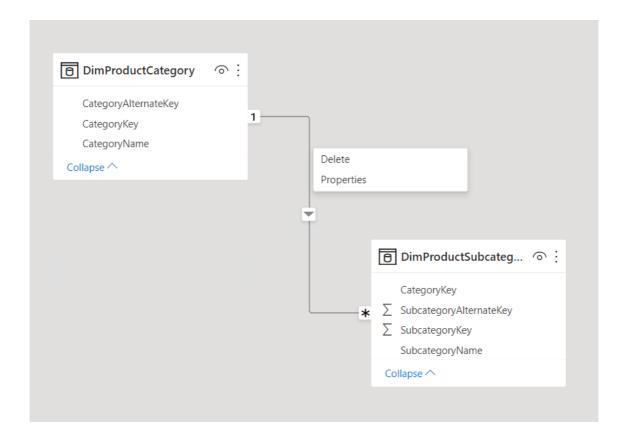
#### **Task 3: Manual Relationships**

- 1. In Power BI Desktop, on the Home tab, click the Get Data arrow, and then click Excel.
- 2. In the Open dialog box, navigate to Desktop\power-bi-quickstart\Labfiles\Lab05\Starter\Project, click Adventure Works Product Categories.xlsx, and then click Open.
- 3. In the **Navigator** dialog box, select the **DimProductCategory**, and **DimProductSubcategory** check boxes, and then click **Load**.



- 4. In the Model pane, look at the relationship that Power BI has created between the two tables.
- 5. Right-click the relationship line between **DimProductCategory**, and **DimProductSubcategory**, and then click **Delete**.



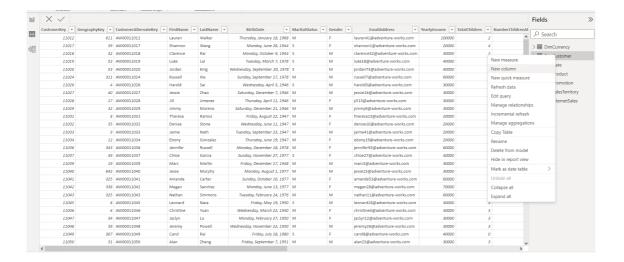


- 6. In the **Delete Relationship** dialog box, click **Delete**.
- In the DimProductSubcategory table, drag the CategoryKey column to the CategoryKey column in the DimProductCategory table.
- 8. Double-click the relationship line between **DimProductCategory**, and **DimProductSubcategory**.
- 9. In the Edit relationship dialog box, ensure the Cardinality is set to a Many to one (\*:1) relationship.
- 10. In the Cross filter direction list, click Both, and then click OK.
- 11. In the **DimProduct** table, drag the **ProductSubcategoryKey** column to the **SubcategoryKey** column in the **DimProductSubcategory** table, to create a **Many to one (\*:1)** relationship.
- Right-click the relationship line between **DimProductSubcategory**, and **DimProduct**, and then click Properties.
- 13. In the Edit relationship dialog box, in the Cross filter direction list, click Both, and then click OK.
- 14. On the File menu, click Save.
- 15. Leave Power BI Desktop open for the next exercise.

#### **Exercise 2: Calculations**

### **Task 1: Adding Calculated Columns**

- 1. In Power BI Desktop, in the views pane on the left-hand side, click Data.
- 2. In the FIELDS pane, right-click DimCustomer, and then click New column.



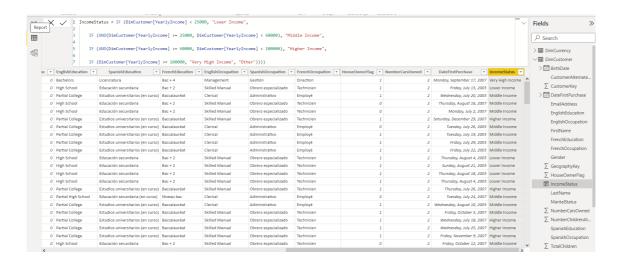
3. In the formula bar, highlight **Column =**, type the following script, and then press Enter:

```
IncomeStatus = IF (DimCustomer[YearlyIncome] < 25000, "Lower Income",

IF (AND(DimCustomer[YearlyIncome] >= 25000, DimCustomer[YearlyIncome] < 60000),
"Middle Income",

IF (AND(DimCustomer[YearlyIncome] >= 60000, DimCustomer[YearlyIncome] < 100000), "Higher Income",

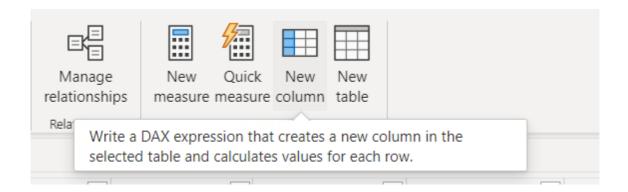
IF (DimCustomer[YearlyIncome] >= 100000, "Very High Income", "Other"))))
```



- 4. On the Modeling tab, in the Calculations group, click New Column.
- 5. In the formula bar, highlight **Column =**, type the following script, and then press Enter:

```
DaysSinceFirstPurchase = DATEDIFF(DimCustomer[DateFirstPurchase], TODAY(), DAY)
```

6. On the **Modeling** tab, in the **Calculations** group, click **New Column**.



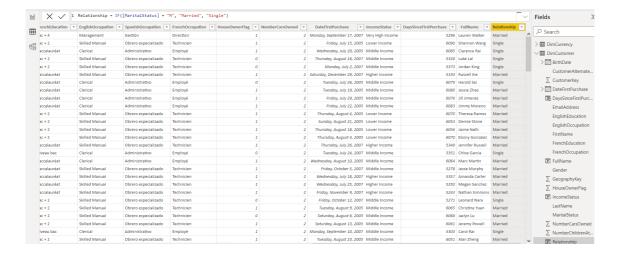
7. In the formula bar, highlight **Column =**, type the following script, and then press Enter:

```
FullName = [FirstName] & " " & [LastName]
```

- 8. On the **Modeling** tab, in the **Calculations** group, click **New Column**.
- 9. In the formula bar, highlight **Column =**, type the following script, and then press Enter:

```
MaleFemale = IF([Gender] = "M", "Male", "Female")
```

- 10. On the **Modeling** tab, in the **Calculations** group, click **New Column**.
- 11. In the formula bar, highlight **Column** =, type the following script, and then press Enter:



- 12. In the FIELDS pane, right-click DimProductSubcategory, and then click New column.
- 13. In the formula bar, highlight **Column** =, type the following script, and then press Enter:

```
MainCategory = RELATED(DimProductCategory[CategoryName])
```

- 14. In the **FIELDS** pane, right-click **DimPromotion**, and then click **New column**.
- 15. In the formula bar, highlight **Column** =, type the following script, and then press Enter:

```
PromotionLengthDays = DATEDIFF(DimPromotion[StartDate], DimPromotion[EndDate],
DAY)
```

- 16. In the **FIELDS** pane, right-click **FactInternetSales**, and then click **New column**.
- 17. In the formula bar, highlight **Column =**, type the following script, and then press Enter:

```
Profit = CURRENCY(FactInternetSales[UnitPrice] -
FactInternetSales[ProductStandardCost])
```

18. Close Power BI Desktop, saving any changes.