Excel Power Pivot

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Overview

Excel Power Pivot is an efficient, powerful tool that comes with Excel as an Add-in. With Power Pivot, you can load hundreds of millions of rows of data from external sources and manage the data effectively with its powerful xVelocity engine in a highly compressed form. This makes it possible to perform the calculations, analyze the data, and arrive at a report to draw conclusions and decisions. Thus, it would be possible for a person with hands-on experience with Excel, to perform the high-end data analysis and decision making in a matter of few minutes.

This training will cover the following:

Power Pivot Features

What makes Power Pivot a strong tool is the set of its features. You will learn the various Power Pivot features in the module – Features.

Power Pivot Data from Various Sources

Power Pivot can collate data from various data sources to perform the required calculations. You will learn how to get data into Power Pivot, in the module – Loading Data into Power Pivot.

Power Pivot Data Model

The power of Power Pivot lies in its database- Data Model. The data is stored in the form of data tables in the Data Model. You can create relationships between the data tables to combine the data from different data tables for analysis and reporting. The module – Understanding Data Model (Power Pivot Database) gives you the details about the Data Model.

Managing Data Model and Relationships

You need to know how you can manage the data tables in the Data Model and the relationships between them. You will get the details of these in the module – Managing Power Pivot Data Model.

Creating Power Pivot Tables and Power Pivot Charts

Power PivotTables and Power Pivot Charts provide you a way to analyze the data for arriving at conclusions and/or decisions.

You will learn how to create Power PivotTables in the modules – Creating a Power PivotTable and Flattened PivotTables.

You will learn how to create Power PivotCharts in the module – Power PivotCharts.

DAX Basics

DAX is the language used in Power Pivot to perform calculations. The formulas in DAX are similar to Excel formulas, with one difference – while the Excel formulas are based on individual cells, DAX formulas are based on columns (fields).

You will understand the basics of DAX in the module - Basics of DAX.

Exploring and Reporting Power Pivot Data

You can explore the Power Pivot Data that is in the Data Model with Power PivotTables and Power Pivot Charts. You will get to learn how you can explore and report data throughout this training.

Hierarchies

You can define data hierarchies in a data table so that it would be easy to handle related data fields together in Power PivotTables. You will learn the details of the creation and usage of Hierarchies in the module – Hierarchies in Power Pivot.

Aesthetic Reports

You can create aesthetic reports of your data analysis with Power Pivot Charts and/or Power Pivot Charts. You have several formatting options available to highlight the significant data in the reports. The reports are interactive in nature, enabling the person looking at the compact report to view any of the required details quickly and easily.

You will learn these details in the module - Aesthetic Reports with Power Pivot Data.

Installing

Power Pivot in Excel provides a Data Model connecting various different data sources based on which the data can be analyzed, visualized, and explored. The easy-to-use interface provided by Power Pivot enables a person with hands-on experience in Excel to effortlessly load data, manage the data as data tables, create relationships among the data tables, and perform the required calculations to arrive at a report.

In this module, you will learn, what makes Power Pivot a strong and sought after tool for analysts and decision makers.

Power Pivot on the Ribbon

The first step to proceed with Power Pivot is to ensure that the POWERPIVOT tab is available on the Ribbon. If you have Excel 2013 or later versions, the POWERPIVOT tab appears on the Ribbon.

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If you have Excel 2010, **POWERPIVOT** tab might not appear on the Ribbon if you have not already enabled the Power Pivot add-in.

Power Pivot Add-in

Power Pivot Add-in is a COM Add-in that needs to be enabled to get the complete features of Power Pivot in Excel. Even when POWERPIVOT tab appears on the ribbon, you need to ensure that the add-in is enabled to access all the features of Power Pivot.

Step 1 – Click the FILE tab on the Ribbon.

Step 2 - Click Options in the dropdown list. The Excel Options dialog box appears.

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autor Heccess Toologi	Power View	C/ul Add-in/AdHocReportingExcelClient.dll	COM Add-in
kdd-im 🔺	Solver Add-in	CA., Office15\Library\SOLVER\SOLVER.XLAM	Excel Add-in
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	Document Related Add-ins No Document Related Add-ins		
	Disabled Application Add-ins		
	No Disabled Application Add-ins		
	Add-in: Analysis ToolPak		
	Publisher: Microsoft Corporation	100000000	
	Compatibility: No compatibility information	on available	2.501
	Location: Covrogram Piles (kob) (Mich	rosoft Office(Office15)Library unalysis unual_r53	LALL
	Description: Provides data analysis tools	for statistical and engineering analysis	
Manage	Manage COM Addring V Ge		

Step 3 – Follow the instructions as follows.

- Click Add-Ins.
- In the Manage box, select COM Add-ins from the dropdown list.
- Click the Go button. The COM Add-Ins dialog box appears.
- Check Power Pivot and click OK.

What is Power Pivot?

Excel Power Pivot is a tool for integrating and manipulating large volumes of data. With Power Pivot, you can easily load, sort and filter data sets that contain millions of rows and perform the required calculations. You can utilize Power Pivot as an ad hoc reporting and analytics solution.

The Power Pivot Ribbon as shown below has various commands, ranging from managing Data Model to creating reports.

FILE	HOME	INSERT	PAGE LAYOUT	FORMULAS	DATA	REVIEW	VIEW	DEVELOPER INQUIRE	POWERPIVOT
Manage Data Model	$\int \frac{f}{X}$ Calculated Fields * Calculated	KPIs v	Align Vertically	Add to Data Model Table	Update All	Detect Relationships	Settings		

The Power Pivot window will have the Ribbon as shown below:



Why is Power Pivot a Strong Tool?

When you invoke Power Pivot, Power Pivot creates data definitions and connections that get stored with your Excel file in a compressed form. When the data at the source is updated, it is refreshed automatically in your Excel file. This facilitates the usage of the data maintained elsewhere but is required for study time-to-time study and arriving at decisions. The source data can be in any form – ranging from a text file or a web page to the different relational databases.

The user-friendly interface of Power Pivot in the PowerPivot window enables you to perform data operations without the knowledge of any database query language. You can then create a report of your analysis within few seconds. The reports are versatile, dynamic and interactive and enable you to further probe into the data to get the insights and arrive at the conclusions / decisions.

The data that you work on in Excel and in the Power Pivot window is stored in an analytical database inside the Excel workbook, and a powerful local engine loads, queries, and updates the data in that database. Since the data is in Excel, it is immediately available to PivotTables, PivotCharts, Power View, and other features in Excel that you use to aggregate and interact with the data. The data presentation and interactivity is provided by Excel and the data and Excel presentation objects are contained within the same workbook file. Power Pivot supports files up to 2GB in size and enables you to work with up to 4GB of data in memory.

Power Features to Excel with Power Pivot

Power Pivot features are free with Excel. Power Pivot has enhanced the Excel performance with power features that include the following:

- Ability to handle large data volumes, compressed into small files, with amazing speed.
- Filter data and rename columns and tables while importing.
- Organize tables into individual tabbed pages in the Power Pivot window as against the Excel tables distributed all over the workbook or multiple tables in the same worksheet.
- Create relationships among the tables, so as to analyze the data in the tables collectively. Before Power Pivot, one had to rely on heavy usage of VLOOKUP function to combine the data into a single table before such analysis. This used to be laborious and error-prone.

- Add power to the simple PivotTable with many added features.
- Provide Data Analysis Expressions (DAX) language to write advanced formulas.
- Add calculated fields and calculated columns to the data tables.
- Create KPIs to use in PivotTables and Power View reports.

You will understand the Power Pivot features in detail in the next module.

Uses of Power Pivot

You can use Power Pivot for the following:

- To perform powerful data analysis and create sophisticated Data Models.
- To mash-up large volumes of data from several different sources quickly.
- To perform information analysis and share the insights interactively.
- To write advanced formulas with the Data Analysis Expressions (DAX) language.
- To create Key Performance Indicators (KPIs).

Data Modelling with Power Pivot

Power Pivot provides advanced data modeling features in Excel. The data in the Power Pivot is managed in the Data Model that is also referenced as Power Pivot database. You can use Power Pivot to help you gain new insights into your data.

You can create relationships between data tables so that you can perform data analysis on the tables collectively. With DAX, you can write advanced formulas. You can create calculated fields and calculated columns in the data tables in the Data Model.

You can define Hierarchies in the data to use everywhere in the workbook, including Power View. You can create KPIs to use in PivotTables and Power View reports to show at a glance whether performance is on or off target for one or more metrics.

Business Intelligence with Power Pivot

Business intelligence (BI) is essentially the set of tools and processes that people use to gather data, turn it into meaningful information, and then make better decisions. The BI capabilities of Power Pivot in Excel enable you to gather data, visualize data, and share information with people in your organization across multiple devices.

You can share your workbook to a SharePoint environment that has Excel Services enabled. On the SharePoint server, Excel Services processes and renders the data in a browser window where others can analyze the data.

Features

The most important and powerful feature of Power Pivot is its database – Data Model. The next significant feature is the xVelocity in-memory analytics engine that makes it possible to work on large multiple databases in a matter of few minutes. There are some more important features that come with the PowerPivot Add-in.

In this module, you will get a brief overview of the features of Power Pivot, which are illustrated in detail later.

Loading Data from External Sources

You can load data into Data Model from external sources in two ways -

- Load data into Excel and then create a Power Pivot Data Model.
- Load data directly into Power Pivot Data Model.

The second way is more efficient because of the efficient way Power Pivot handles the data in memory.

For more details, refer to module - Loading Data into Power Pivot.

Excel Window and Power Pivot Window

When you start working with Power Pivot, two windows will open simultaneously – Excel window and Power Pivot window. It is through PowerPivot window that you can load data into Data Model directly, view the data in Data View and Diagram View, Create relationships between tables, manage the relationships, and create the Power PivotTable and/or PowerPivot Chart reports.

You need not have the data in Excel tables when you are importing data from external sources. If you have data as Excel tables in the workbook, you can add them to Data Model, creating data tables in Data Model that are linked to the Excel tables.

When you create a PivotTable or PivotChart from Power Pivot window, they are created in the Excel window. However, the data is still managed from Data Model.

You can always switch between the Excel window and Power Pivot window anytime, easily.

Data Model

The Data Model is the most powerful feature of Power Pivot. The data that is obtained from various data sources is maintained in Data Model as data tables. You can create relationships between the data tables so that you can combine the data in the tables for analysis and reporting.

You will learn in detail about the Data Model in the module – Understanding Data Model (Power Pivot Database).

Memory Optimization

Power Pivot Data Model uses xVelocity storage, which is highly compressed when data is loaded into memory that makes it possible to store hundreds of millions of rows in memory.

Thus, if you load data directly into Data Model, you will be doing it in the efficient highly compressed form.

Compact File Size

If the data is loaded directly into Data Model, when you save the Excel file, it occupies very less space on the hard disk. You can compare the Excel file sizes, the first one with loading data into Excel and then creating the Data Model and the second with loading data directly into the Data Model skipping the first step. The second one will be up to 10 times smaller than the first one.

Power PivotTables

You can create the Power PivotTables from Power Pivot window. The PivotTables so created are based on the data tables in the Data Model, making it possible to combine data from the related tables for analysis and reporting.

Power PivotCharts

You can create the Power PivotCharts from Power Pivot window. The PivotCharts so created are based on the data tables in the Data Model, making it possible to combine data from the related tables for analysis and reporting. The Power PivotCharts have all the features of Excel PivotCharts and many more such as field buttons.

You can also have combinations of Power PivotTable and Power PivotChart.

DAX Language

The strength of Power Pivot comes from the DAX Language that can be used effectively on the Data Model to perform calculations on the data in the data tables. You can have Calculated Columns and Calculated Fields defined by DAX that can be used in the Power PivotTables and Power PivotCharts.

Loading Data

In this module, we will learn to load data into Power Pivot.

You can load data into Power Pivot in two ways:

- Load data into Excel and add it to the Data Model
- Load data into PowerPivot directly, populating the Data Model, which is the PowerPivot database.

If you want the data for Power Pivot, do it the second way, without Excel even knowing about it. This is because you will be loading the data only once, in highly compressed format. To understand the magnitude of difference, suppose you load data into Excel by first adding it to the Data Model, the file size is said 10 MB.

If you load data into PowerPivot, and hence into Data Model skipping the extra step of Excel, your file size could be as less as 1 MB only.

Data Sources Supported by Power Pivot

You can either import data into the Power Pivot Data Model from various data sources or establish connections and/or use the existing connections. Power Pivot supports the following data sources –

- SQL Server relational database
- Microsoft Access database
- SQL Server Analysis Services
- SQL Server Reporting Services (SQL 2008 R2)
- ATOM data feeds
- Text files
- Microsoft SQL Azure
- Oracle
- Teradata
- Sybase
- Informix
- IBM DB2
- Object Linking and Embedding Database/Open Database Connectivity
- (OLEDB/ODBC) sources
- Microsoft Excel File
- Text File

Loading Data Directly into PowerPivot

To load data directly into Power Pivot, perform the following:

- Open a new workbook.
- Click on the POWERPIVOT tab on the ribbon.
- Click on Manage in the Data Model group.

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The PowerPivot window opens. Now you have two windows – the Excel workbook window and the PowerPivot for Excel window that is connected to your workbook.

- Click the **Home** tab in the PowerPivot window.
- Click From Database in the Get External Data group.
- Select From Access.

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From Database	From Data Pro	an Other Entrop	Ratheath RivetTable	Data type : - Format : - \$ - % -> 10 45	Set A to 2 Set 2 to A Dear A3 Sort by Dear Sort Patent Calame-	AA Find	∑ AutoSum - '∰ Create RPI	Data Diagram Show Calculation View View Holden Area
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The Table Import Wizard appears.

- Browse to the Access database file.
- Provide Friendly connection name.
- If the database is password protected, fill in those details also.

Table Import Wizard			?	×
Connect to a Microsoft Acce	is Database			
Enter the information required	o connect to the Microsoft Acce	ess database.		
Friendly connection name:	Access events			-
Database name:	events.accdb		Browse	
Log on to the database				
User name:				
Password:				
Save my	password			
		Advanced	Test Connection	on
	< Back Ne	kt > Finish	Cancel	

Click the $\textbf{Next} \rightarrow$ button. The Table Import Wizard displays the options for choosing how to import data.

Table Import Wizard	1	×
Choose How to Import the Data		
You can either import all of the data from tables or views that you specify, or you can write a overy using SQL that specifies the data to import.	0	
Select from a list of tables and views to choose the data to import		
O linkie a query that will specify the data to import		
< Back Next > Front	Cance	£

Click Select from a list of tables and views to choose the data to import.

Table Import Wizard	?	×
Choose How to Import the Data		
You can either import all of the data from tables or views that you specify, or you can write query using SQL that specifies the data to import.		_
Select from a list of tables and views to choose the data to import		
Write a query that will specify the data to import		
< Back Next > Finals	Cano	6

Click the $\textbf{Next} \rightarrow$ button. The Table Import Wizard displays the tables and views in the Access database that you have selected.

Check the box Medals.

Table Imp	ort Wizard		? ×
Select Ta	bles and Views		
Select the t	tables and views that yo	u want to import data from.	
Databa	D.IRamanalRaman	a Work/Training Consultancy/7	utorialsPoint/Excel Power
Tables	and Views		
	Source Table	Friendly Name	Fiter Details
	Disciplines		
	Events		
	Medals	Medals	
	S_Teams		
	W_Teams		
		Select	Related Tables Preview & Filter
		< Back Next >	Rnish Cancel

As you can observe, you can select the tables by checking the boxes, preview and filter the tables before adding to Pivot Table and/or select the related tables.

Click the **Preview & Filter** button.

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	1/2/1900	Summer	A12253	KEMP, Peter	GBR	Men	M	A
	1/2/1900	Summer	A6812	EWRY, Ray	USA	Men	м	A
	1/1/1908	Summer	A28698	ZÜRNER	GER	Men	м	A
	1/1/1956	Summer	A18316	NONN, H	EUA	Men	м	н
	1/1/1956	Summer	A18317	NONN, W	EUA	Men	м	н
	1/1/1956	Summer	A20718	RADZIKO	EUA	Men	M	н
	1/1/1956	Summer	A21638	ROSENBA	EUA	Men	M	н
	1/1/1956	Summer	A26207	ULLERICH,	EUA	Men	M	н
	1/1/1956	Winter	A29629		USA	Men	M	Ic
	1/1/1956	Winter	A29630		URS	Men	м	Ic
	1/1/1956	Winter	A29631		CAN	Men	м	fc
1	1/1/1956	Summer	A561	ANDRE, W	USA	Men	M	N

As you can see, you can select specific columns by checking the boxes in the column labels, filter the columns by clicking the dropdown arrow in the column label to select the values to be included.

- Click OK.
- Click the Select Related Tables button.
- Power Pivot checks what other tables are related to the selected Medals table, if a relation exists.

ect Tab	ort Wizard kes and Views		?)
lect the ta	bles and views that you	want to import data from.	
Databa Tables a	er: D'IRamana/Ramana Rivot/Data Files'eve nd Views:	MorkiTraining Consultancy Ints accidb	TutorialsPoint/Excel Power
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	S_Teams		
	W_Teams		
		Cut	Debut the Device Fiber
		See	ct helated racies
1 related	table was selected.		CEREISED FADIES

You can see that Power Pivot found that the table Disciplines are related to the table Medals and selected it. Click Finish.

Table Import Wizard displays – **Importing** and shows the status of the import. This will take a few minutes and you can stop the import by clicking the **Stop Import** button.

		Total: 2	Cancelled: 0
1	Analyzing	Success: 2	Error: 0
Det	ails:		
	Work bem	Status	Message
0	Disciplines	Success. 69 rows transferred.	
0	Medals	Success. 32,591 rows transferred.	
•	Data preparation	Preparing in progress	

Once the data is imported, the Table Import Wizard displays – **Success** and shows the results of the import as shown in the screenshot below. Click Close.

		Total:	2 Cancelled: 0	
Ľ	Success	Success:	2 Error: 0	
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	Work item	Status	Message	
0	Disciplines	Success. 69 rows transferred.		
0	Medals	Success. 32,591 rows transferred.		
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BMX	D11	\$15									
Bobsleigh	D12	59									
Boxing	D13	510									
Canoe / Kay	D14	511									
Canoe / Kay	D15	511									
Cricket	D16	512									
Croquet	D17	513									
Cross Count	D18	537									
Curling	D19	\$34									
Archery	D2	52									
Cycling Road	D20	515									
Cycling Track	D21	\$15									
Diving	D22	51									
Dressage	D23	516									
Eventing	D24	516									
Fencing	D25	\$17									
Disciplines Meda	s 1469 - •										

Power Pivot displays the two imported tables in two tabs.

You can scroll through the records (rows of the table) using the **Record** arrows below the tabs.

Table Import Wizard

In the previous section, you have learnt how to import data from Access through the Table Import Wizard.

Note that the Table Import Wizard options change as per the data source that is selected to connect to. You might want to know what data sources you can choose from.

Click From Other Sources in the Power Pivot window.



The Table Import Wizard – **Connect to a Data Source** appears. You can either create a connection to a data source or you can use one that already exists.



You can scroll through the list of connections in the Import Table Wizard to know the compatible data connections to Power Pivot.

- Scroll down to the Text Files.
- Select Excel File.



- Click the $\textbf{Next} \rightarrow$ button. The Table Import Wizard displays Connect to a Microsoft Excel File.
- Browse to the Excel file in the Excel File Path box.
- Check the box Use first row as column headers.

Friendly connection name:	Excel Sales Data			-
Excel File Path:	Seles Data xisx		Brows	eii I
	Use first row as column	headers.		
		Advanc	Test Conn	oction

- Click the $\textbf{Next} \rightarrow \textbf{button}.$ The Table Import Wizard displays Select Tables and Views.
- Check the box **Product Catalog\$**. Click the **Finish** button.

File	n Nar	ne: PivotiData Files/Sales Data	Training Cons axlax	ultancy/Tub	vialsPointE	xcel Power	
	ana a	Source Table	Friendly Nam		Filter	Details	-
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		"Product Catalog\$"	Product Cata	log			
	111	Refrigirator_Price					
		Sheet15					
	m	Sheet25					
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	0	South&_stren#_FilterDataba					
	111	'South-East\$'					
	122	Television_Price					
	111	Washing_Machine_Price					
	111	West\$					
-	in the	West% vinm# FiterDatabase					

You will see the following **Success** message. Click Close.



You have imported one table, and you have also, created a connection to the Excel file that contains several other tables.

Opening Existing Connections

Once you have established a connection to a data source, you can open it later.

Click Existing Connections in the PowerPivot window.



The Existing Connections dialog box appears. Select Excel Sales Data from the list.

Paule Register Paule Database - From Database - Service - Copboard Get E	a from Other Existing Sources Connections Internal Data	Existing Connections Select an Existing Connection Select a connection to a data source that contains the data that you want to import.	?	×
[Product] Fraction Refrigirator REF21001 Television TEL21002 Washing WAS21003 Air Condit AIR22004	Add Column	Select a data source connection PowerPout Data Connections Data Source of Connections Data Source of Connections Connections events Medda ada events Medda ada Colless Plannas Varianas/Documents/My Data Sources/events Medda ada Workbook: Seles Data Excel Soles Data Vorkbook: Seles Data Power Protodas	(6()	
Product Entalog		K Browse for More Open Edit Refresh	Delete	•

Click the Open button. The Table Import Wizard appears displaying the tables and views.

Select the tables that you want to import and click Finish.

able	impo	ort Wizard				2	×
elec	tiab	ers and verws					
elect	the ta	bles and views that you want to	import dat	a from.			
Dat Tab	ta So les a	urce: D:Ramana/Ramana Wo Prot/Data Files/Sales D nd Views:	k(Training lata.xlsx	Consultancy	TutorialsPoint&	Excel Power	
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				Select R	elated Tables	Preview & P	Siltor
	-	107		1000	1000		

The selected five tables will be imported. Click **Close**.

			Total 5	Cancelled 0
Ľ	Success	4	Success: 5	Error: 0
Det	ails:			
	Work tem	Status		Message
0	East	Success, 48 rows transferred.		
0	North	Success, 48 rows transferred.		
0	South	Success . 48 rows transferred.		
0	South-East	Success. 48 rows transferred.		
0	West	Success. 48 rows transferred.		

You can see that the five tables are added to the Power Pivot, each in a new tab.

Veter De Co	tte Appresid tte Regilanie tte anti	Prom Prom Dr Database - Service Gat	ta Pros Other • Secret totemai Date	Easting Reference	an Prostable	Data Sport - Remail : - S • % • *8 43 Filmatting	2) Sant A to 2 L) Sant 2 to A 2 Orea Sant Sant and Pitter Sant and Pitte	1
[5#No#]	-	5						
Contine 1	D Marti	D Product D	#reduct ID	■ ====	ntolUnits 🗷	Total Amount 🖪	Add Column	
	1 April	Refrigirator	REF21001	16725	16	267600		
	2 April	Television	TEL23002	36416	29	1056064		
	3 April	Washing	WA521003	12337	29	357773		
	4 April	Air Condit	AIR21004	38009	25	550225		
1	5 May	Refrigirator	REF21001	16944	32	542208		
	6 May	Television	TEL21002	35437	19	673303		
1.1	7 May	Washing	WR521003	12047	16	192752		
	II May	Air Condit	AIR21004	39959	15	599385		
	9 June	Refrigirator	REF21001	18648	29	540792		
1	10 June	Television	TEL21002	33935	24	813960		
	11 June	Washing	WA\$21003	12810	15	192150		
	12 June	Alt Condit	AIR21004	41062	27	1108674		
	13 July	Refrigirator	REF21001	17138	29	497002		
	14 July	Television	TEL21002	34840	21	731640		
1	15 July	Washing	WAS21003	12876	31	399156		
1	ylut 61	Air Condit	AIR21004	38856	28	1087968		
	17 August	Refrigirator	REF21001	16290	29	472410		
3	18 August	Television	TEL21002	35694	22	785268		

Creating Linked Tables

Linked tables are a live link between the table in Excel and the table in the Data Model. Updates to the table in Excel automatically update the data in the data table in the model.

You can link the Excel table into Power Pivot in a few steps as follows:

- Create an Excel table with the data.
- Click the POWERPIVOT tab on the Ribbon.
- Click Add to Data Model in the Tables group.

F	ILE	HOME INSE	RT PA	GE LAYOUT	FORMULAS	DATA RE	EVIEW VIEW	DEVELOPER	INQUIRE	POWERPIVOT
Ma	anaş Me	Fields -	8 6 5 8 8	ign Vertically ign Horizontally cer Alignment	Add to Data Mode Tabl	Add to Da Update Det All les Relatio	ect Settings		1	Ê POWERPIVOT
82	2	* : X	~	f_X Salesp	erson					
1	A	В		c	D	E	F	G		н
1	1			-		-				
2		Salesperso	m 🖃	Region -	Month -	Order Amou *				
3		Albertson, Kathy		East	January	925.00				
4		Albertson, Kathy		East	February	875.00				
5		Albertson, Kathy		East	February	500.00				
6		Albertson, Kathy		East	March	350.00				
7		Brennan, Michael		West	January	400.00				
8		Brennan, Michael		West	January	850.00				
9		Brennan, Michael		West	January	1500.00				
10		Brennan, Michael		West	February	550.00				
11		Brennan, Michael		West	March	400.00				

The Excel table is linked to the corresponding Data Table in PowerPivot.

Inputs Update C G	ori Table: Saleid ta Escel Table miked Tables	lata, Tabie -	Co Uparts Mode *		
[Selesperson] ·					
Salesperson	Report 0	Marrit	Circlef Act	sunt 🖸	Add Column
Albertson, Kat	East.	January		925	
Albertson, Kat	East	February	67	875	
Albertson, Kat	East	February	R.	500	
Albertson, Kat	East	March		150	
Brennan, Mich	West	January		400	
Brennan, Mich	West	January		850	
Brennan, Mich	West	January		1500	
Brennan, Mich	West	February	61	550	
Brennan, Mich	West	March		400	
Divits, William	South	April		235	
Davis, William	South	April		850	
Davis, William	South	June		600	
Davis, William	South	June .		250	
Dumlao, Richard	West	August		400	
Dumlac, Richard	West	Septemb	14-	965	
Dumlao, Richard	West	October		125	
Flores, Tia	South	Novemb	er	1500	
Flores, Tia	South	May	190	305	
- C - C					-
L					

You can see that the Table Tools with the tab - Linked Table is added to the Power Pivot window. If you click **Go to Excel Table**, you will switch to the Excel worksheet. If you click **Manage**, you will switch back to the linked table in the Power Pivot window.

You can update the linked table either automatically or manually.

Note that you can link an Excel table only if it is present in the workbook with the Power Pivot. If you have Excel tables in a separate workbook, then you have to load them as explained in the next section.

Loading from Excel Files

If you want to load the data from Excel workbooks, keep the following in mind -

- Power Pivot considers the other Excel workbook as a database and only worksheets are imported.
- Power Pivot loads each worksheet as a table.
- Power Pivot cannot recognize single tables. Hence, Power Pivot cannot recognize if there are multiple tables on a worksheet.
- Power Pivot cannot recognize any additional information other than the table on a worksheet.

Hence, keep each table in a separate worksheet.

Once your data in the workbook is ready, you can import the data as follows:

- Click **From Other Sources** in the Get External Data group in the Power Pivot window.
- Proceed as given in the section Table Import Wizard.

The following are the differences between linked Excel tables and imported Excel tables –

- Linked tables need to be in the same Excel workbook in which the Power Pivot database is stored. If the data already exists in other Excel workbooks, there is no point in using this feature.
- The Excel import feature allows you to load data from different Excel workbooks.
- Loading data from an Excel workbook does not create a link between the two files. Power Pivot creates only a copy of the data, while importing.
- When the original Excel file is updated, data in the Power Pivot will not be refreshed. You need to either set the update mode to automatic or update the data manually, in the Linked Table tab of the Power Pivot window.

Loading from Text Files

One of the popular data representation styles is with the format known as comma separated values (csv). Each data row /record is represented by a text line, wherein the columns /fields are separated by commas. Many databases provide the option of saving to a csv format file.

If you want to load a csv file into Power Pivot, you have to use the Text File option. Suppose you have the following text file with csv format –

S. No., Employe	e Name, Emplo	yee Designation, DO	J, Employee Salary

- 1, Albertson Kathy, Manager, 4/5/2006, 2500000
- 2, Brennan Michael, Assistant Manager, 3/15/2010, 1600000
- 3, Davis William, Supervisor, 2/25/2014, 1300000
- 4, Dumlao Richard, Engineer, 6/10/2010, 700000
- 5, Flores Tia, Senior Engineer, 8/8/2013, 900000
 - Click the PowerPivot tab.
 - Click the Home tab in the PowerPivot window.
 - Click **From Other Sources** in the Get External Data group. The Table Import Wizard appears.
 - Scroll down to Text Files.



• Click Text File.

- Click the **Next** → button. Table Import Wizard appears with the display Connect to Flat File.
- Browse to the text file in the File Path box. The csv files usually have the first line representing column headers.
- Check the box Use first row as column headers, if the first line has headers.
- In the Column Separator box, default is Comma (,), but in case your text file has any other operator such as Tab, Semicolon, Space, Colon or Vertical Bar, then choose that operator.

Friend	ly con	nection hame:	Text En	iployee Data		-	
File Pa	th:		Point L	Sicel Power Pivot Data File	e\Employee Dat	abt	Browse
Colum	n Sepi	arator.	Comma	0		~	Advanced
2 Use	feste	row as column	headers				
20	1	🖬 Employ	e 🖬	🖬 Employee 🖬	ビ DO) 🖼	V En	playne 5
	1	Albertson	Kathy	Manager	4/5/200		2500
	2	Brennan M	lichael	Assistant Manager	3/15/20		1600
	3	Davis Willi	am	Supervisor	2/25/20		1300
	4	Dumlao Ri	chard	Engineer	6/10/20		700
	5	Flores Tia		Senior Engineer	8/8/201		900

As you can observe, there is a preview of your data table. Click Finish.

Power Pivot creates the data table in the Data Model.

P)	Paste	append Replace	From Fr Database •	rom Data From Other Service * Sources Connections	Refresh	Protiable	Data Type : - Format : - \$ • % > %	1 Sort A to 2 1 Sort Z to A 1 Sort Z to A Con 1 Sort Z to A 1 Sort Z to A	ar Al
-	Clipbean		2	Get External Data	_		Formatting	Sort and	Fille
	[Server]	-		🕽 Zavelaven Deservation 📑	001		lanes talara 😨	Add Column	
ä	1	Albertso	on Kathy	Manager	4/5/200	16	2500000	and committee	
	2	Brennan	Michael	Assistant Manager	3/15/20	10	1600000		
Ē	3	Davis W	illiam	Supervisor	2/25/20	14	1300000		
	4	Dumlao	Richard	Engineer	6/10/20	10	700000		
		Flores T	13	Sonior Engineer	8/8/201	19	900000		

Loading from the Clipboard

Suppose, you have data in an application that is not recognized by Power Pivot as a data source. To load this data into Power Pivot, you have two options –

- Copy the data to an Excel file and use the Excel file as data source for Power Pivot.
- Copy the data, so that it will be on the clipboard, and paste it into Power Pivot.

You have already learnt the first option in an earlier section. And this is preferable to the second option, as you will find at the end of this section. However, you should know how to copy data from clipboard into Power Pivot.

Suppose you have data in a word document as follows:

Corpy Format Paves	B / U - a	u x, x' &- 2 - ∆ - ∭≣≡≡≡	I \$2 - <u>∆</u> - ⊡ - Thereal the	IbCOI AaBbC: AaBbC: alsac. Heating1 Heating2	Tite Solitile Solitile	b AddbCcDb -
ther.	16	Fort to 4	angraph N		phes	
		100000000				
		Emplo	yee Data of the Pr	oject XXX		
	C . No.	Frankause Manag	Fundamen	DOI	Frankayaa	-
	5. NO.	Employee Name	Designation	003	Salary	
	1	Albertson Kathy	Manager	4/5/2006	2500000	
	2	Brennan Michael	Assistant Manager	3/15/2010	1600000	
	3	Davis William	Supervisor	2/25/2014	1300000	
	4	Dumlao Richard	Engineer	6/10/2010	700000	1
	5	Flores Tia	Senior Engineer	8/8/2013	900000	1
		11				
	Data con	npiled by - Walters, 0	Chris.			
	Data con	nniled on - 4/1/2016				

Word is not a data source for Power Pivot. Therefore, perform the following:

- Select the table in the Word document.
- Copy and Paste it in the PowerPivot window.

Paste / Paste /	Append Replace From Database *	From Data From Other Service • Sources Connections Get External Data	Refresh	PivotTable	Data Type : * Format : * \$ * % > *& Formatting	출↓ Sort A to 주↓ Sort Z to 호텔 및 Clear Sor Sor
laste To New Table Paste the contents of the		Employee Designation	001	E Emo	lovee Salary	Add Column
Clipboard into a table.	new PowerPivot	Manager	4/5/200	6	2500000	
2	Brennan Michael	Assistant Manager	3/15/201	.0	1600000	
3	Davis William	Supervisor	2/25/201	4	1300000	
4	Dumlao Richard	Engineer	6/10/201	.0	700000	
E	Florer Tia	Senior Engineer	8/8/201	2	900000	

The Paste Preview dialog box appears.

- Give the name as Word-Employee table.
- Check the box Use first row as column headers and click OK.

the first row as a	out to paste. You header row in th	i can modify tr le destination	ie table name and specify table.	
table				
Employee	Employee D	DOJ	Employee Salary	^
Albertson Ka	Manager	4/5/2006	2500000	
Brennan Mic	Assistant Ma	3/15/2010	1600000	
Davis William	Supervisor	2/25/2014	1300000	
Dumlao Rich	Engineer	6/10/2010	700000	
	table ed: Employee Albertson Ka Brennan Mic Davis William Dumlao Rich	table ed: Employee Employee D Albertson Ka Manager Brennan Mic Assistant Ma Davis William Supervisor Dumlao Rich Engineer	table ed: Employee Employee D DOJ Albertson Ka Manager 4/5/2006 Brennan Mic Assistant Ma 3/15/2010 Davis William Supervisor 2/25/2014 Dumlao Rich Engineer 6/10/2010	table ed: Employee Employee D DOJ Employee Salary Albertson Ka Manager 4/5/2006 2500000 Brennan Mic Assistant Ma 3/15/2010 1600000 Davis William Supervisor 2/25/2014 1300000 Dumlao Rich Engineer 6/10/2010 700000

The data copied into the clipboard will be pasted into a new data table in Power Pivot, with the tab – Word-Employee table.

5. No.	×	Employee Name	Employee Designation 🔳	00) 🗖	Employee Salary	Add
B (1	1	Albertson Kathy	Manager	4/5/2	2500000	
	2	Brennan Michael	Assistant Manager	3/15/	1600000	
	3	Davis William	Supervisor	2/25/	1300000	
	4	Dumlao Richard	Engineer	6/10/	700000	
-	5	Flores Tia	Senior Engineer	8/8/2	900000	
						-
						-
						-
	_	-				
	_	ļ.				
se SalesDati	n_T	able Employee Data	Word-Employee table			

Suppose, you want to replace this table with new content.

- Copy the table from Word.
- Click Paste Replace.

File Paste	Hom Paste Paste Cipboar	e Des e Append e Replace / d	ign Adva From Database =	From D Service Get	ata From Other Sources External Data	Existing Connections	Refresh	PivotTable	Data Type : Format : * \$ • % ? Format	- ¢∂ →3	Sort A to Z Sort Z to A Clear Sort Sort a
[S. 	Paste R Replac selecto	eplace te the cont ed PowerPr nts of the C	tents of the wot table with the Clipboard.		oloyee Basy nager	mation 🔝	£0) ■ 4/5/2	Employee	Salary 2500000	Add Colu	imn
	2	Brennan	Michael	Ass	Assistant Manager		3/15/	160000			
	3	Davis W	illiam	Sup	ervisor		2/25/		1300000		
	4	Dumlao	Richard	Eng	ineer		6/10/				
	5	Flores T	ia	Ser	nior Engineer		8/8/2		900000		

The Paste Preview dialog box appears. Verify the contents that you are using for replace.

you will be r	eplacing. a in the table:	ig column order	and data type se	realon, matches the o	ata
S. No.	Employee	Employee D	DOJ	Employee Salary	~
1	Albertson Ka	Manager	4/5/2006 12:	2500000	
S. No.	Employee	Employee D	DOJ	Employee Salary	^
	Post Melissa	Manager	4/5/2016 12:	2800000	-
1	Brennan Mic	Assistant Ma	3/15/2010 12	1600000	~
1 2					

Click OK.

Paste Eta	Paste Append Paste Replace Copy	From Database •	From Data From Other Service • Sources	Existing Connections	Refresh	PrvotTable	Data Type : Wh Format : Gener S • % >	ole Number • al • • • • • •	호나 Sort Smallest 조나 Sort Largest 오슈 Clear Sort
IS, No.	l ·	1	Get External Data				Forma	ttang	
5. No.	Employ	ee Name	Employee Design	uation	80)	🖬 Employ	yeë Salary 🔳	Add Colum	n
1	1 Post Me	lissa	Manager		4/5/2016		2800000		
-	2 Brennan	Michael	Assistant Manage	er	3/15/201		1600000		
	3 Davis W	illiam	Supervisor		2/25/201		1300000		
	4 Dumlao	Richard	Engineer		6/10/201		700000		
	5 Flores T	ia	Senior Engineer		8/8/2013		900000		

As you can observe, the contents of the data table in Power Pivot are replaced by the contents in the clipboard.

Suppose you want to add two new rows of data to a data table. In the table in the Word document, you have the two news rows.

	NYX, W.X.V. POSS	Di- A-Els thend this	per_ Heading1 Heading2	Tes Same Sa
	Ref G Pas	apan <u>s</u>		
	Employ	ee Data of the Pro	ject XXX	
S. No.	Employee Name	Employee Designation	DOJ	Employee Salary
20	Post Melissa	Manager	4/5/2016	2800000
r	Brennan Michael	Assistant Manager	3/15/2010	1600000
3	Davis William	Supervisor	2/25/2014	1300000
1	Dumlao Richard	Engineer	6/10/2010	700000
5	Flores Tia	Senior Engineer	8/8/2013	900000
5	Thompson Shannon	Senior Engineer	7/8/2016	950000
	Walters Chris	Engineer	7/11/2016	725000

- Select the two new rows.
- Click Copy.
- Click **Paste Append** in the Power Pivot window. The Paste Preview dialog box appears.
- Verify the contents that you are using to append.

S. No.	Employee	Employee D	DOJ	Employee Salary	^
1	Post Melissa	Manager	4/5/2016 12:	2800000	711
2	Brennan Mir	Accistant Ma	3/15/2010 12	1600000	~
S. No.	Employee	Employee D	DOJ	Employee Salary	į
S. No. 6	Employee Thompson S	Employee D Senior Engin	DOJ 7/8/2016 12:	Employee Salary 950000	

Click OK to proceed.

Paste Paste	Replace From Database	From	5° 🔄 🔤	100			a a serie annance.	
Clipboard		 Servi G 	Data From Other Existing ice • Sources Connections et External Data	Refresh	PivotTable	Format : - \$ - % > 38 48 Formatting	🔬 Sort Largest	
[Employee Sal	- 7	25000						
📕 S. No. 💽 Employee Name		E	mployee Designation 💽	DOJ	Employ	Employee Salary 💽 Add Column		
1	Post Melissa	M	lanager	4/5/2016.		2800000		
2	Brennan Michael	A	ssistant Manager	3/15/201.		1600000		
3	Davis William	S	upervisor	2/25/201.		1300000		
4	Dumlao Richard	Er	ngineer	6/10/201.		700000		
5	Flores Tia	56	enior Engineer	8/8/2013.	24	900000		
6	Thompson Shanne	on Se	enior Engineer	7/8/2016.		950000		
7	Walters Chris	Er	ngineer	7/11/201.		725000		

As you can observe, the contents of the data table in Power Pivot are appended with the contents in the clipboard.

In the beginning of this section, we have said that copying data to an excel file and using linked table is better than copying from clipboard.

This is because of the following reasons -

- If you use linked table, you know the source of the data. On the other hand, you will not know the source of the data later or if it is used by a different person.
- You have tracking information in the Word file, such as when the data is replaced and when the data is appended. However, there is no way of copying that information to Power Pivot. If you copy the data first to an excel file, you can preserve that information for later use.
- While copying from clipboard, if you want to add some comments, you cannot do so. If you copy to Excel file first, you can insert comments in your Excel table that will be linked to the Power Pivot.
- There is no way to refresh the data copied from clipboard. If the data is from a linked table, you can always ensure that the data is updated.

Refreshing Data in Power Pivot

You can refresh the data imported from the external data sources at any point of time.

If you want to refresh only one data table in the Power Pivot, do the following:

- Click the tab of the data table.
- Click Refresh.
- Select Refresh from the dropdown list.

Pa	Paste	e Append e Replace	From F Database •	rom Data From Other Existing Service • Sources Connections	Refresh	PivotTable	Data Type : - Format : - \$ - % - ***	2 Sort A to Z 2 Sort Z to A 2 Sort Z to A 2 Sort Z to A 2 Clear Sort Fi
	[S# No#]	•	fx	Get External Data	_ l∂ Re	fresh fresh <u>A</u> ll	Formatting	Sort and
1	S# No#	Emplo	yee Name	🖬 Employee Designation 🖬	DO1	Empl	oyee Salary 🛛	Add Column
Þ	1	Albert	son Kathy	Manager	4/5/200)6	2500000	
	2	Brenna	an Michael	Assistant Manager	3/15/20	10	1600000	
	3	Davis \	Villiam	Supervisor	2/25/20	14	1300000	
	4	Dumla	o Richard	Engineer	6/10/20	10	700000	
	5	Flores	Tia	Senior Engineer	8/8/201		900000	
	5	Flores	Tia	Senior Engineer	8/8/201		900000	

If you want to refresh all the data tables in the Power Pivot, do the following:

- Click the Refresh button.
- Select Refresh All from the dropdown list.

Data Model

A Data Model is a new approach introduced in Excel 2013 for integrating data from multiple tables, effectively building a relational data source inside an Excel workbook. Within Excel, Data Model is used transparently, providing tabular data used in PivotTables and PivotCharts. In Excel, you can access the tables and their corresponding values through the PivotTable / PivotChart Field lists that contain the table names and corresponding fields.

The main use of Data Model in Excel is its usage by Power Pivot. Data Model can be considered as the Power Pivot database, and all the power features of Power Pivot are managed with the Data Model. All data operations with Power Pivot are explicit in nature and can be visualized in the Data Model.

In this module, you will understand the Data Model in detail.

Excel and Data Model

There will be only one Data Model in an Excel workbook. When you work with Excel, Data Model usage is implicit. You cannot directly access the Data Model. You can only see the multiple tables in the Data Model in the Fields list of PivotTable or PivotChart and use them. Creating the Data Model and adding data is also done implicitly in Excel, while you are getting external data into Excel.

If you want to look at the Data Model, you can do so as follows:

- Click the POWERPIVOT tab on the Ribbon.
- Click Manage.

Data Model, if exists in the workbook, will be displayed as tables, each one with a tab.

Note – If you add an Excel table to Data Model, you will not transform the Excel table into a data table. A copy of the Excel table is added as a data table in the Data Model and a link is created between the two. Hence, if changes are done in the Excel table, the data table also is updated. However, from the storage point of view, there are two tables.

Power Pivot and Data Model

Data Model is inherently the database for Power Pivot. Even when you create the Data Model from Excel, it builds the Power Pivot database only. Creating the Data Model and/or adding data is done explicitly in Power Pivot.

In fact, you can manage the Data Model from Power Pivot window. You can add data to Data Model, import data from different data sources, view the Data Model, create relationships between the tables, create calculated fields and calculated columns, etc.

Creating a Data Model

You can either add tables to the Data Model from Excel or you can directly import data into Power Pivot, thus creating the Power Pivot Data Model tables. You can view the Data Model by clicking Manage in the Power Pivot window.

You will understand how to add tables from Excel to the Data Model in the module – Loading Data through Excel. You will understand how to load data into Data Model in the module – Loading Data into Power Pivot.

Tables in Data Model

Tables in Data Model can be defined as a set of tables holding relationships across them. The relationships enable combining related data from different tables for analysis and reporting purposes.

The tables in the Data Model are called Data Tables.

A table in the Data Model is considered as a set of records (a record is a row) made up of fields (a field is a column). You cannot edit individual items in a data table. However, you can append rows or add calculated columns to the data table.

Excel Tables and Data Tables

Excel tables are just a collection of separate tables. There can be multiple tables on a worksheet. Each table can be accessed separately, but it is not possible to access data from more than one Excel table at the same time. This is the reason that when you create a PivotTable, it is based on only one table. If you need to use the data from two Excel tables collectively, you need to first merge them into a single Excel table.

A data table on the other hand coexists with other data tables with relationships, facilitating the combination of data from multiple tables. Data tables get created when you import data into Power Pivot. You can also add Excel tables to the Data Model while you are creating a Pivot Table getting external data or from multiple tables.

The data tables in the Data Model can be viewed in two ways -

- Data View.
- Diagram View.

Data View of Data Model

In the data view of the Data Model, each data table exists on a separate tab. The data table rows are the records and columns represent the fields. The tabs contain the table names and the column headers are the fields in that table. You can do calculations in the data view using the Data Analysis Expressions (DAX) language.

Carlos Carpy	Agamil Keplara	From /	tom Data f	rave Other Sources	Exiting Connections	Lo Autorit	PwetTable	Cuta Si Fernal S • j	- খন	filmanz filmanz fe Charlot n	a Air Lad b	- Tenz	X Autotaw	Data View	Diagram Di View H	how Catolatio
(Edition)		fe.	ON LINE	Can Lossa		-		1	Data	able	1449	1.018	Cartoorban			
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1/1/1988	Winter.	A3101	2		SUI			Men	M	Skiing	D1	al	pine comb	Bronze	M21197	Die
1/1/1988	Winter.	A3101	8		SUI		1	Women	W	Skiing	D1	al	pine comb	Silver	M21198	Dla
1/1/1968	Winter.	A3101	9		SUI			Women	w	Skiing	D1.	al	pine comb	Bronze	M21199	D14
1/1/1988	Winter	A3102	0		AUT			Men	м	Skling	D1	14	pine comb	Gold	M21200	014
1/1/1988	Winter	A3102	1		AUT		4	Men	м	Skiing	DL	al	pine comb	Silver	M21201	Dia
1/1/1988	Winter	A3102	2		AUT		1	Nomen	W	Skiing	DI	af	pine comb	Gold	M21202	014
1/1/1988	Winter	A3105	3		SINE		1	Men	M	Skiing	D1	24	per-G	Bronze	M21233	Dis
1/1/1988	Winter	A3105	4		SUL		3	Women	w	Sking	D1	34	per-G	Sover	M21234	019
1/1/1988	Winter	A3105	5.		FRA			Men	M	Skiing	-01	34	per-G	Gold	M21235	Dis
1/1/1908	Winter	A3105	8		CAN			Nomen	w	Sking	DI	14	per-G	Bronze	M21236	D19
1/1/1988	Winter	A3105	7		AUT		3	Men	M	Skiling	DS	- 54	per-G	Silver	M21237	Dis
1/1/1968	Winter	A3105	8		AUT			Women	w	Skiing	DI	14	per-G	Gold	MILIZIE	D19
1/1/1992	Winter	A3123	9		SUI		1	Men	M	Skiing	DI	al	pine comb	Bronze	M23120	Dia
1/1/1992	Winter	A3124	0		ITA			Men	M	Sking	D1	al	pine comb	Gold	M23121	Dia
1/1/1992	Winter	A3124	1		ITA.		- 1	Men	м	Skiing	01		pine comb	Silver	M23122	01a
1/1/1992	Winter	A3124	2		FRA			Women	W	Skiing	D1		pine comb	Bronze	M23123	D14
1/1/1992	Winter	A3124	3		AUT		1	Women	w	Skiing	D1	al	pine comb	Gold	M23124	D14
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Cal	cula	tion /	Area													

Diagram View of Data Model

In the diagram view of the Data Model, all the data tables are represented by boxes with the table names and contain the fields in the table. You can arrange the tables in the diagram view by just dragging them. You can adjust the size of a data table so that all the fields in the table are displayed.


Relationships in Data Model

You can view the relationships in the diagram view. If two tables have a relationship defined between them, an arrow connecting the source table to the target table appears. If you want to know which fields are used in the relationship, just double click the arrow. The arrow and the two fields in the two tables are highlighted.

Table relationships will be created automatically if you import related tables that have primary and foreign key relationships. Excel can use the imported relationship information as the basis for table relationships in the Data Model.

You can also explicitly create relationships in either of the two views -

- Data View Using Create Relationship dialog box.
- **Diagram View** By clicking and dragging to connect the two tables.

Create Relationship Dialog Box

In a relationship, four entities are involved -

- **Table** The data table from which the relationship starts.
- Column The field in the Table that is also present in the related table.
- **Related Table** The data table where the relationship ends.
- **Related Column** The field in the related table that is same as the field represented by Column in Table. Note that the values of Related Column should be unique.

In the diagram view, you can create the relationship by clicking on the field in the table and dragging to the related table.

You will learn more about relationships in the module - Managing Data Tables and Relationships with Power Pivot.

Managing Data Model

The major use of Power Pivot is its ability to manage the data tables and the relationships among them, to facilitate analysis of the data from several tables. You can add an excel table to the Data Model while you are creating a PivotTable or directly from the PowerPivot Ribbon.

You can analyze data from across multiple tables only when relationships exist among them. With Power Pivot, you can create relationships from the Data View or Diagram View. Moreover, if you had chosen to add a table to the Power Pivot, you need to add a relationship as well.

Adding Excel Tables to Data Model with PivotTable

When you create a PivotTable in Excel, it is based only on a single table / range. In case you want to add more tables to the PivotTable, you can do so with the Data Model.

Suppose you have two worksheets in your workbook -

• One containing the data of salespersons and the regions they represent, in a table-Salesperson.

A	B	C		A	8	C	D
			1				
	Salesperson 💌	Region	2		Region	Month -	Order Amount
	Albertson, Kathy	East	3		East	January	\$925.00
	Brennan, Michael	West	4		East	February	\$875.00
	Davis, William	South	5		East	February	\$500.00
	Thompson, Shannon	North	6		East	March	\$350.00
			7		West	January	\$400.00
			8		West	January	\$850.00
			9		West	January	\$1,500.00
			10		West	February	\$550.00
			11		West	March	\$400.00
			12		South	February	\$235.00
			13		South	January	\$850.00
			14		South	March	\$600.00
			15		South	January	\$250.00
			16		North	January	\$875.00
			17		North	January	\$265.00
			18		North	February	\$375.00
			19		North	February	\$1,345.00

• Another containing the data of sales, region and month wise, in a table – Sales.

You can summarize the sales - salesperson-wise as given below.

- Click the table Sales.
- Click the INSERT tab on the Ribbon.
- Select PivotTable in the Tables group.

An empty PivotTable with the fields from the Sales table – Region, Month and Order Amount will be created. As you can observe, there is a **MORE TABLES** command below the PivotTable Fields list.

• Click on MORE TABLES.

The **Create a New PivotTable** message box appears. The message displayed is- To use multiple tables in your analysis, a new PivotTable needs to be created using the Data Model. Click Yes

G	н	1	1	к	t	Piv	N otTable	e Fields	 PivotTable	e Fields	٠
Create	New Prvot	Table C	– Crea	te a Ne	w Pivo	otTable			Choose fields to a Region Month Order Amoun	edd to report:	Ø
Do you To use a	want to crea nultiple table	ite a new Pive es in your an	stTable? alysis, a new	Pwotfable n	eeds to be c	reated				E TABLE	S
	e cono mero	777.13		× 1	es	No	-				
				<u>x</u>	8	Bio.			Drag fields betwe	en areas below	t.
				2	<u>в</u>	No.			Drag fields betwe T FILTERS	en areas below	MNS

A New PivotTable will be created as shown below:

Q1 Q2 Q2 X Same YES Bank2-foot YES YES<	T (0) = (0) × Renerations
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$ a \rightarrow \times \sqrt{ f_t }$,
PivotŤable Fie	PivotTable Fields **
Table - Sa To build a report, choose To build a report, choose Theids from the Prooffable Field tot	Iles
Table - Salespers	son + Categories Streperion Chapter
	Drag fields between anali betwee T FacTUPS IN COLUMING
	E ROWS I VALUES
23 23	

Under PivotTable Fields, you can observe that there are two tabs – **ACTIVE** and **ALL**.

• Click the ALL tab.

Г

- Two tables- Sales and Salesperson, with the corresponding fields appear in the PivotTable Fields list.
- Click the field Salesperson in the Salesperson table and drag it to ROWS area.
- Click the field Month in the Sales table and drag it to ROWS area.
- Click the field Order Amount in the Sales table and drag it to \sum VALUES area.

A	8 C	D	4		6	н	1	PivotTable Fields	PivotTable	Fields • >
Row Labels 7 Sum of	Order Amount									1.00
Albertson, Kathy	13445								Choose Fields to add	to report Q *
February	3880									
January	5915								Falaborships	CHATL N
March	2650								be needed.	- Longitur I is
HBrennan, Michael	11445								e El Sales	1
February	3680								C Repiers	i i i
3anuary	5915	Div	votTa	hla					2 Month	
March	3650		VOLIA	Die					C Order An	CREATE
Clavis, William	11445									CHERIC
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March	3650								Y DOTES	IL COURSE
Thompson, Shannon	11445								1 1041000	10 COLUMNS
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March	3650								T ROLLS	T MALLER
Grand Total	13445									A 101.05
									Jakesperson .	Sheer for Deges
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The PivotTable is created. A message appears in the PivotTable Fields – **Relationships between tables may be needed**.

Click the CREATE button next to the message. The **Create Relationship** dialog box appears.

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20 21 22	Grand Total			11445													III ROWS Selegarion March	•	3: WKUES Sum of Only	r_•]
25	1															-				

- Under Table, select Sales.
- Under Column (Foreign) box, select Region.

- Under Related Table, select Salesperson.
- Under Related Column (Primary) box, select Region.
- Click OK.

ick the tables and columns you want t	o use for this relationship		
Table:		Column (Foreign):	
Sales	~	Region	~
Related Table:		Related Column (Primary):	
Salesperson	×	Region	

Your PivotTable from the two tables on two worksheets is ready.

A .		с	D	1	ŧ	G	н	F	U.	к	а.	м	N	 PivotTa 	ble Fields	* X
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5 February	1375													> ET Sales		
6 January	925													1		
7 March	350													P 🔲 Salesp	enson	
8 Brennan, Michael	3700															
9 February	550															
10 January	2750															
11 March	400															
12 Davis, William	1935															
13 February	235															
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15 March	600														l militari	
16 Thompson, Shannon	3160													T PLIERS	11 C	CUMPIS
17 February	1720															
18 January	1140															
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20 Grand Total	11445													= ROWS	2C 10	LUES
21														Salesperson	 Sum 	of Ordet *
22														Month		
23																
2.6														*		

Further, as Excel stated while adding the second table to the PivotTable, the PivotTable got created with Data Model. To verify, do the following:

- Click the POWERPIVOT tab on the Ribbon.
- Click **Manage** in the Data Model group. The Data View of the Power Pivot appears.

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Reach in 164 s.s.	-	-2

You can observe that the two Excel tables that you used in creating the PivotTable are converted to data tables in the Data Model.

Adding Excel Tables from a Different Workbook to Data Model

Suppose the two tables – Salesperson and Sales are in two different workbooks.

Page Bask Control Prove 24 Provinge Bask Views	rkbook	- Sal	esperi esperi	son.	Settisk Mendeent - xlsx	Genes Genes	4 4	Pade	18 1 2 2 3 10 1 11 1 11 1 1	$\frac{q}{2} \cdot \frac{r}{\Delta}$	Vorkbool	(- Sa	les.xl	SX Cells	Editing
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Albertson, Kathy	East			-			- 1	2	Last	Jacobary	\$925.00	-			
Brennan, Michael	West	-	-lable	a - Sa	alespe	erson	41	4	East	February	\$875.00	-			
Dayis, William	South	-			0.0000		- 1	8	Cast	February	\$506.00				
Thompson, Shannon	North						-11	6	East	March	\$350.00	-			
							- 11	7.	West	January.	\$400.00	-	Tab	la . C	alas
							- 1	P	West	January	\$850.00			16 . 2	ales
							-11	9	West.	January	\$1,500.00				
							- 1	10	West	February	\$550.00				
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								14	South	March	\$600.00				
								15	South	January	\$250.90				
								10	North	January	\$875.00				
								17	North	January	\$263.00				
								18	North	February	\$375.00				
								19	North	February	\$3,345.00	100			
								20	North	March	\$300.00				
								21							
							3U	22							

You can add the Excel table from a different workbook to the Data Model as follows:

- Click the Sales table.
- Click the INSERT tab.
- Click PivotTable in the Tables group. The **Create PivotTable** dialog box appears.

.4 A	8	c	D	E	F	G H I J K L M
1						Create PivotTable - Create PivotTable Dialog Bo
2	Region *	Month 💌	Order Amount 💌			
3	East	January	\$925.00			Choose the data that you want to analyze
4	East	February	\$875.00			Select a table or range Table Name
5	East	February	\$500.00			Jable/Range: Sales 🖤 🔝
6	East	March	\$350.00			O ⊈se an external data source
7	West	January	\$400.00			Copyed Report to re-
8	West	January	\$850.00			Connection name
9	West	January	\$1,500.00			Choose where you want the PivotTable report to be placed
10	West	February	\$550.00			
11	West	March	\$400.00			O Existing Worksheet
12	South	February	\$235.00			Location
13	South	January	\$850.00			
14	South	March	\$600.00			Choose whether you want to analyze multiple tables
15	South	January	\$250.00			Midd this data to the Data Modes
16	North	January	\$875.00			OK Cancel
17	North	January	\$265.00			
18	North	February	\$375.00	Add	this	data to the Data Model
19	North	February	\$1,345.00			
20	North	March	\$300.00			

- In the Table/Range box, type Sales.
- Click on New Worksheet.
- Check the box Add this data to the Data Model.
- Click OK.

You will get an empty PivotTable on a new worksheet with only the fields corresponding to the Sales table.

You have added the Sales table data to the Data Model. Next, you have to get the Salesperson table data also into Data Model as follows:

- Click on the worksheet containing Sales table.
- Click the DATA tab on the Ribbon.
- Click Existing Connections in the Get External Data group. The Existing Connections dialog box appears.
- Click on the Tables tab.

Under **This Workbook Data Model**, **1 table** is displayed (This is the Sales table that you added earlier). You also find the two workbooks displaying the tables in them.

- Click Salesperson under Salesperson.xlsx.
- Click Open. The Import Data dialog box appears.
- Click on PivotTable Report.
- Click on New worksheet.

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G	et çxte	rnai Data	D	E	Connections Jables - Tables
1	-				Show all factors
2	Region -	Month -	Order Amount		
3	East	January	\$925.00		This Workbook Data Model
4	East	February	\$875.00		Tables in Workbook Data Model
5	East	February	\$500.00	_	See Lisoisti
6	East	March	\$350.00		Salesxisx (This Workbook)
7	West	January	\$400.00		Sales
8	West	January	\$850.00		100 3893303230320
9	West	January	\$1,500.00		Salespersonxisx
10	West	February	\$550.00		Salesperson
11	West	March	\$400.00		59850971032323C36
12	South	February	\$235.00		
13	South	January	\$850.00		
14	South	March	\$600.00		
15	South	January	\$250.00		
16	North	January	\$875.00		
17	North	January	\$265.00		
18	North	February	\$375.00		
19	North	February	\$1,345.00		One Court
20	North	March	\$300.00		Zhan Chuck

You can see that the box – Add this data to the Data Model is checked and inactive. Click OK.

-	Import Data - Import Data Dialog Box ? X
-	Select how you want to view this data in your workbook.
	 PivotTable Report ← PivotTable Report PivotChart Only Create Connection
	O Existing worksheet:
Add this data to	New worksheet
the Data Model	Add this data to the Data Model Properties OK Cancel

The PivotTable will be created.

	P 6 H 1 3	PivotTable Fields —	PivotTable Fields ** ACTIVE ALL Choose failth to add to report
To build a report, choose fields from the PivotTable		Table - Sales —	→ *□ leis □ Repon □ Month
ned Lus ned		Table - Salesperson —	Chiefe Annualt Chiefe Annual
22			· Pl Palachana (Sanch)

As you can observe the two tables are in the Data Model. You might have to create a relationship between the two tables as in the previous section.

Adding Excel Tables to Data Model from the PowerPivot Ribbon

Another way of adding Excel tables to Data Model is doing **so from the PowerPivot Ribbon**.

Suppose you have two worksheets in your workbook -

• One containing the data of salespersons and the regions they represent, in a table – Salesperson.

A	B	c	. A. A	8	C	D
			1			
	Salesperson	Region	2	Region	Month 💌	Order Amou
	Albertson, Kathy	East	3	East	January	\$925.00
	Brennan, Michael	West	4	East	February	\$875.00
	Davis, William	South	5	East	February	\$500.00
	Thompson, Shannon	North	6	East	March	\$350.00
			7	West	January	\$400.00
			8	West	January	\$850.00
			9	West	January	\$1,500.00
			10	West	February	\$550.00
			11	West	March	\$400.00
			12	South	February	\$235.00
			13	South	January	\$850.00
			14	South	March	\$600.00
			14 15	South	March January	\$600.00 \$250.00
			14 15 16	South South North	March January January	\$600.00 \$250.00 \$875.00
			14 15 16 17	South South North North	March January January January	\$600.00 \$250.00 \$875.00 \$265.00
			14 15 16 17 18	South South North North	March January January January February	\$600.00 \$250.00 \$875.00 \$265.00 \$375.00
			14 15 16 17 18 19	South South North North North	March January January January February February	\$600.00 \$250.00 \$875.00 \$265.00 \$375.00 \$1,345.00

You can add these Excel tables to the Data Model first, before doing any analysis.

- Click on the Excel table Sales.
- Click the POWERPIVOT tab on the Ribbon.
- Click Add to Data Model in the Tables group.

	8	5 . c [.]	×	Calibri	• %	Add to Data Mo	del		Data Ta	bles.xlsx - Excel			TABLE TOO	15
FIL	E	HOME	INSERT	PAGE L	AYOUT	FORMULAS	DATA	REVIEW	VIEW	DEVELOPER	INQUIRE	POWERPIVOT		-
Mar Data I	Model	Calculated Fields - Calculation	KPIs ons	Align V Align F Slicer A	lertically lorizontally lignment	Add to Data Mode Tabl	Update I All es	Detect Relationships	Settings				POWER	PIVOT
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1		Salesp	erson		Region	~								
3	All	bertson, Kat	hy	1	East									
4	Br	ennan, Mich	ael		West									
5	Da	ivis, William			South									
6	Th	ompson, Sh	annon		North									
7														
8														
9														
10														

Power Pivot window appears, with the data table Salesperson added to it. Further a tab – Linked Table appears on the Ribbon in the Power Pivot window.

- Click on the Linked Table tab on the Ribbon.
- Click on Excel Table: Salesperson.

🌐 🛯 🖬 🕤 - 👌	I	Table Tools	PowerPivot for Excel - Data Tables.xlsx
File Home I	Design Advand	Linked Table	
Update Update All Selected	cel Table: Salespers Salesperson Sales	on • Contraction Update Mode •	
[Salesperson] +	Bren	nan, Michael	
Albertson, Kat	East		
Brennan, Mich	West		
Davis, William	South		
Thompson, Sh	North		

You can find that the names of the two tables present in your workbook are displayed and the name Salesperson is ticked. This means the data table Salesperson is linked to the Excel table Salesperson.

Click Go to Excel Table.

🍺 🖬 🖬 S- C-	↓	Table Tools	PowerPivot for Excel - Data Tables.xlsx
Update Update III Go t All Selected Link	ed Tables	rson + Chiked Hable	o to Excel Table
[Salesperson] 👻	Bre	nnan, Michael	
Salesperson 💽	Region 💌	Add Column	
Albertson, Kat	East		
Brennan, Mich	West		
Davis, William	South		
Thompson, Sh	North		

Excel window with worksheet containing Salesperson table appears.

- Click the Sales worksheet tab.
- Click the Sales table.
- Click Add to Data Model in the Tables group on the Ribbon.

	12.5	× Calibr	· · · · · · · · · · · · · · · · · · ·	*		Data Ti	ables.sisr	- Excel			7	ABLE TOOLS
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	Region -	Month	Order Amou	int 🖃								
5	East	January	\$925.00									
6	East	February	\$875.00									
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5	East	March	\$350.00									
7	West	January	\$400.00									
8	West	January	\$850.00									
9	West	January	\$1,500.00									
0	West	February	\$550.00									
1	West	March	\$400.00									
2	South	February	\$235.00									
3	South	January	\$850.00									
4	South	March	\$600.00									
5	South	January	\$250.00									
6	North	January	\$875.00									
7	North	January	\$265.00									
5	North	February	\$375.00	2								
9	North	February	\$1,345.00	(
10	North	March	\$300.00									

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West	March		400	
South	February		235	
South	January		850	
South	March		600	
South	January		250	
North	January		875	
North	January		265	
North	February		375	
North	February		1345	
North	March		300	
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The Excel table Sales is also added to the Data Model.

If you want to do analysis based on these two tables, as you are aware, you need to create a relationship between the two data tables. In Power Pivot, you can do this in two ways –

- From Data View
- From Diagram View

Creating Relationships from Data View

As you know that in Data View, you can view the data tables with records as rows and fields as columns.

- Click on the Design tab in the Power Pivot window.
- Click on Create Relationship in the Relationships group. The **Create Relationship** dialog box appears.

Hune Design Adv	The state of the s	- 0
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alesperson] • fe	Relationships	=
Albertson, Kat East	Add Column 1	
Brennan, Mich West	Cruste Relationship Dialog Box	
Davis, William South	Create a lookup relationship between two takes	
Thompson, Sh North	Select the tables and columne you want to use to smalle the relationship.	
	Table Column	
	Related Lookup Table Related Lookup Column:	
	District Canon	

- Click on Sales in the Table box. This is the table from where the relationship starts. As you are aware, Column should be the field that is present in the related table Salesperson that contains unique values.
- Click on Region in the Column box.

Г

• Click on Salesperson in the Related Linked Table box.

The Related Linked Column gets automatically populated with Region.

Create Relationship	?	×
Create a look up relationship between two tables Select the tables and columns you want to use to create th	e relationship.	
Table:	Column:	
	portation in a second se	
Sales ~	Region	
Sales ~	Region Related Lookup Column:	

Click the Create button. The relationship is created.

Creating Relationships from Diagram View

Creating Relationships from Diagram View is relatively easier. Follow the given steps.

- Click the Home tab in the Power Pivot window.
- Click Diagram View in the View group.

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Albertson, Kat. East Brennen, Mich Vest Dave, William South Thompson, Sh North	Add Column							 View	

The Diagram View of the Data Model appears in the Power Pivot window.

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		_			
	m Salet		III Salesperson		
	Region Month Order Amount		Salesperson		
				_	

• Click on Region in Sales table. Region in Sales table is highlighted.

- Drag to Region in Salesperson table. Region in Salesperson table is also highlighted. A line appears in the direction you dragged.
- A line appears from the table Sales to the table Salesperson indicating the relationship.

ic Home	P = ♥ Design Advanced	Table Tool	r Power	Pivot for Exce	i - Data Tables	sila	
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As you can see, a line appears from the Sales table to the Salesperson table, indicating the relationship and the direction.

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	III Sales		III Salesper			
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	Month Order Amount		🔶 🕅 Regio	'n		

If you want to know the field that is a part of a relationship, click on the relationship line. The line and the field in both the tables are highlighted.

Managing Relationships

You can edit or delete an existing relationship in Data Model.

- Click the Design tab in the Power Pivot window.
- Click Manage Relationships in the Relationships group. The Manage Relationships dialog box appears.

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1	7 August	Refrigirator	REF21001	16290	21	342090		
	I COLUMN	Television	TEL 11007	10476	24	373328		

All the relationships that exist in the Data Model are displayed.

To edit a relationship

- Click on a Relationship.
- Click the Edit button. The Edit Relationship dialog box appears.

Edit Relationship	? ×
Edit a lookup relationship between two tables	
Change the attributes of the existing relationship.	
Table	Column:
× .	Fiduce ID
Related Lookup Table:	Related Lookup Column:
Product Catalog 🗸	Product ID
Active	
	OK Cancel

- Make the required changes in the relationship.
- Click OK. The changes get reflected in the relationship.

To delete a relationship

- Click on a Relationship.
- Click on the Delete button. A warning message appears showing how the tables that are affected by deleting the relationship would affect the reports.
- Click OK if you are sure you want to delete. The selected relationship is deleted.

Refreshing Power Pivot Data

Suppose you modify the data in the Excel table. You can add / change / delete the data in the Excel table.

To refresh the PowerPivot data, do the following:

- Click the Linked Table tab in the Power Pivot window.
- Click Update All.

The data table is updated with the modifications made in the Excel table.

As you can observe, you cannot modify data in the data tables directly. Hence, it is better to maintain your data in Excel tables that are linked to the data tables when you add them to the Data Model. This facilitates updating the data in data tables as and when you update the data in Excel tables.

PowerPivot Table Creation

Power PivotTable is based on the Power Pivot database, which is called the Data Model. You have already learnt the powerful features of the Data Model. The power of Power Pivot is in its ability to summarize data from the Data Model in the Power PivotTable. As you are aware, the Data Model can handle huge data spanning millions of rows and coming from diverse inputs. This enables Power PivotTable to summarize the data from anywhere in a matter of few minutes.

Power PivotTable resembles PivotTable in its layout, with the following differences -

- PivotTable is based on Excel tables, whereas Power PivotTable is based on data tables that are part of Data Model.
- PivotTable is based on a single Excel table or data range, whereas Power PivotTable can be based on multiple data tables, provided they are added to Data Model.
- PivotTable is created from Excel window, whereas Power PivotTable is created from PowerPivot window.

Creating a Power PivotTable

Suppose you have two data tables – Salesperson and Sales in the Data Model. To create a PowerPivot Table from these two data tables, proceed as follows:

- Click the Home tab on the Ribbon in PowerPivot window.
- Click PivotTable on the Ribbon.
- Select PivotTable from the dropdown list.

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North	January	265	
North	February	175	
North	February	1345	
North	March	300	
		2002	

Create PivotTable dialog box appears. As you can observe, this is a simple dialog box, without any queries on data. This is because, Power PivotTable is always based on Data Model, i.e. the data tables with the relationships defined among them.

Select New Worksheet and clic	ck OK.
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Create PivotTal	ole		? ×
New Work	sheet		
O Existing W	orksheet		
Location:	'Sales'ISC\$7		-
		OK	Connel

A new worksheet is created in Excel window and an empty PivotTable appears.

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As you can observe, the layout of the Power PivotTable is similar to that of PivotTable. The **PIVOTTABLE TOOLS** appear on the Ribbon, with **ANALYZE** and **DESIGN** tabs, identical to PivotTable.

The PivotTable Fields List appears on the right side of the worksheet. Here, you will find some differences from PivotTable.

Power PivotTable Fields

The PivotTable Fields list has two tabs – ACTIVE and ALL that appear below the title and above the fields list. The **ALL** tab is highlighted.

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Note that the **ALL** tab displays all the data tables in the Data Model and ACTIVE tab displays all the data tables that are chosen for the Power PivotTable at hand. As the Power PivotTable is empty, it means that no data table is selected yet; hence by default, ALL tab is selected and the two tables that are currently in the Data Model are displayed. At this point, if you click the **ACTIVE** tab, the Fields list would be empty.

- Click on the table names in the PivotTable Fields list under ALL. The corresponding fields with check boxes will appear.
- Each table name will have the symbol and the left side.
- If you place the cursor on this symbol, the Data Source and the Model Table Name of that data table will be displayed.

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- Drag Salesperson from Salesperson table to the ROWS area.
- Click the **ACTIVE** tab.

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As you can observe, the field Salesperson appears in the PivotTable and the table Salesperson appears under the **ACTIVE** tab as expected.

- Click the ALL tab.
- Click on Month and Order Amount in the Sales table.

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Again, click the ACTIVE tab. Both the tables – Sales and Salesperson appear under the **ACTIVE** tab.

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- Drag Month to COLUMNS area.
- Drag Region to FILTERS area.

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- Click the arrow next to ALL in the Region filter box.
- Click Select Multiple Items.
- Select North and South and click OK.

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Sort the column labels in the ascending order.

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Power PivotTable can be modified dynamically explore and report data.

Basics of DAX

DAX (Data Analysis eXpression) language is the language of Power Pivot. DAX is used by Power Pivot for data modeling and it is convenient for you to use for self-service BI. DAX is based on data tables and columns in data tables. Note that it is not based on individual cells in the table as is the case with the formulas and functions in Excel.

You will learn the two simple calculations that exist in Data Model – Calculated Column and Calculated Field in this module.

Calculated Column

Calculated column is a column in the Data Model that is defined by a calculation and that extends the content of a data table. It can be visualized as a new column in an Excel table defined by a formula.

Extending the Data Model using Calculated Columns

Suppose you have sales data of products region-wise in data tables and also a Product Catalog in the Data Model.



Create a Power PivotTable with this data.

			1.4	A	8	с	D	ε	F
PivotTable	Fields	* X	1						
ACTIVE ALL			2		2				
		L H	3		Product	East Sales Total	North Sales Total	South Sales Total	West Sales Total
Choose fields to a	dd to report:	8.	4		Air Conditioner	11627832	5895973	12778410	16131646
East Sales		1.	5		Refrigirator	5981782	4677805	6619077	8067362
		H	6		Television	13499729	5696386	12597089	15969405
North_Sale	5		7		Washing Machine	4369906	4746834	5018342	6270267
> Product Ca	polati		8		Grand Total	35479249	21016998	37012918	46438680
			9						
South_Sale	5		10						
> - West Sales	F		11						
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			23						

As you can observe, the Power PivotTable has summarized the sales data from all the regions. Suppose you want to know the gross profit made on each of the products. You know the price of each product, the cost at which it is sold and the number of units sold.

14	Product 🐘 🖬	Product Price 🖸	Month	🖾 Pro 🧐 🖬 Pro	iduct Price 💽 Prod	luct Cost 🖬 No. of	Units 🖬 TotalS	alesAmount 🖬
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Ⅲ	Television	38000	April	Television	38000	42268	29	1225772
腦	Washing Machine	13500	April	Washing	13500	14425	29	418325
12	Air Conditioner	38250	April	Air Condit	38250	39584	25	989600
			May	Refrigirator	17500	18053	32	577696
		1	May	Television	38000	42785	19	812915
		1	May	Washing	13500	14018	16	224268
		1	May	Air Condit	38250	40230	15	603450
		1	June	Refrigirator	17500	21624	29	627096
		1	June	Television	38000	41301	24	991224
		1	June	Washing	13500	14156	15	212340
		1	June	Air Condit	38250	39534	27	1067418
			July	Refrigirator	17500	19779	29	573591
		1	July	Television	38000	40078	21	841638
		1	July	Washing	13500	13795	31	427645
		1	ylut	Air Condit	38250	40735	28	1140580
		1	August	Refrigirator	17500	18178	29	527162
		1	August	Television	38000	41617	22	915574

However, if you need to calculate the gross profit, you need to have two more columns in each of the data tables of the regions – Total Product Price and Gross Profit. This is because, PivotTable requires columns in data tables to summarize the results.

As you know, Total Product Price is Product Price * No. of Units and Gross Profit is Total Amount – Total Product Price.

You need to use DAX Expressions to add the Calculated Columns as follows:

- Click the East_Sales tab in Data View of the Power Pivot window to view the East_Sales Data Table.
- Click the Design tab on the Ribbon.
- Click Add.

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	April	Refrigirator	17500	20646	16	330336	
	April	Television	38000	42268	29	1225772	
	April	Washing	13500	14425	29	418325	
10	April	Air Condit	38250	39584	25	989600	
100	May	Refrigirator	17500	18053	32	577696	
	May	Television	38000	42785	19	812915	
	May.	Washing	13500	14018	16	224288	
	Мау	Air Condit	38250	40230	15	603450	
	June	Refrigirator	17500	21624	29	627096	
1	June	Television	38000	41301	24	991224	
	June	Washing	13500	14156	15	212340	
	June	Air Condit	38250	39534	27	1067418	
	ylut	Refrigirator	17500	19779	29	573591	
	July	Television	38000	40078	21	841638	
	July	Washing	13500	13795	31	427645	
	July	Air Condit	38250	40735	28	1140580	
	August	Refrigirator	17500	18178	29	527162	
			29000	41617	22	915574	

The column on the right side with the header – Add Column is highlighted.

) + (* + +	Advanted 1	able Tools	PowerPin	ot for Excel	- Sales Data -	DAX.xisx	
dd Ho	tete f_{x} eze - f_{unsert} dth Function	Advanced Lin Calculation Cre Options - Relation	rate Man anship Relatio	age nships	Table Properties	Mark as Date Table -	Dundo -	
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April	Refrigirator	1750	00	20646		16	33033	16
April	Television	380	00	42268		29	122577	72
April	Washing	1350	00	14425		29	41832	25
April	Air Condit	382	50	39584		25	98960	00
May	Refrigirator	1750	30	18053		32	57765	96
May	Television	380	00	42785		19	81293	15
May	Washing	1350	00	14018		16	22425	38
May	Air Condit	382	50	40230		15	60345	50
June	Refrigirator	1750	30	21624		29	62705	96
June	Television	380	00	41301		24	99122	24
June	Washing	1350	00	14156		15	21234	40
June	Air Condit	382	50	39534		27	106741	18
July	Refrigirator	1750	00	19779		29	57359	91
July	Television	3800	00	40078		21	84163	38
July	Washing	1350	00	13795		31	42764	45
July	Air Condit	382	50	40735		28	114058	30
August	Refrigirator	1750	00	18178		29	52716	52
August	Television	3800	00	41617		22	91557	74

He Ho	me	Design	Advanced	Linke	d Table				
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	0	× v	fe =[Produc	t Price]	[No. of Units]				
Month	2 Pro		Product Pr	ice 🖤	Product Cost	No. of L	Units 🗊 To	otalSalesAmount	Add Column
April	Ref	rigirator		17500	2064	6	16	330	336
April	Tel	evision		38000	4226	8	29	1225	772
April	Wa	shing		13500	1442	5	29	418	325
April	Air	Condit		38250	3958	4	25	989	600
May	Ref	rigirator		17500	1805	3	32	577	696
May	Tel	evision		38000	4278	5	19	812	915
May	Wa	shing		13500	1401	8	16	224	288
May	Air	Condit		38250	4023	0	15	603	450
June	Ref	frigirator		17500	2162	4	29	627	096
June	Tel	evision		38000	4130	1	24	991	224
June	Wa	shing		13500	1415	6	15	212	340
June	Air	Condit		38250	3953	4	27	1067	418
July	Ref	frigirator		17500	1977	9	29	573	591
July	Tel	evision		38000	4007	8	21	841	638
July	Wa	shing		13500	1379	5	31	427	645
July	Air	Condit		38250	4073	5	28	1140	580
August	Ref	frigirator		17500	1817	8	29	527	162
August	Tel	evision		38000	4161	7	22	915	574

Type = [Product Price] * [No. of Units] in the formula bar and press Enter.

A new column with header **CalculatedColumn1** is inserted with the values calculated by the formula you entered.

	D-C ⁹ -vi me Deslan A	Table Tool dvanced Linked Teb	PowerPivot for Exc	el - Sales Data -	DAXxisx		
Add	tete f_x eze - f_x insert Calk	ulation Freate Relationship F	Manage Table	Mark as Date Table -	♥ Unde • C® Redo •		
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CalculatedC	0 • fe	=[Product Price]*[No	. of Units]	And a second			
Month	- 100-m 10 - 10	equid ence 💌 Pro	aunteest 💌 No. eff	Juits 🖬 10	tabalesAmount	CalculatedColumn1	Add Column
April	Retrigirator	17500	20646	16	330336	280000	
April	Television	38000	42268	29	1225772	1102000	
April	Washing	13500	14425	29	418325	391500	
April	Air Condit	38250	39584	25	989600	956250	-
May	Refrigirator	17500	18053	32	577696	560000	
May	Television	38000	42785	19	812915	722000	
May	Washing	13500	14018	16	224288	216000	
May	Air Condit	38250	40230	15	603450	573750	
June	Refrigirator	17500	21624	29	627096	507500	
June	Television	38000	41301	24	991224	912000	-
June	Washing	13500	14156	15	212340	202500	-
June	Air Condit	38250	39534	27	1067418	1032750	
July	Refrigirator	17500	19779	29	573591	507500	
July	Television	38000	40078	21	841638	798000	
July	Washing	13500	13795	31	427645	418500	
July	Air Condit	38250	40735	28	1140580	1071000	
August	Refrigirator	17500	18178	29	527162	507500	
August	Television	38000	41617	22	915574	836000	

• Double click the header of the new calculated column.

Hom	e Design	Advanced	Linked	Table	Proof for the	1 - sales pata	* DHOLDISK			
dd High	f_x f_x f_x f_x f_x f_x f_x f_x	Calculation Options •	Create	Manage Relationships	Table Properties	Mark as Date Table	◆ Undo • C* Redo -			
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taProductP.		fx =[Produ	ct Price]*	[No. of Units]						
Month 토	Pro 15 🖬	Product 9	nke 🖬	Product Cost	🖬 No. at i	mits 🕱 T	otalSalesAmour	nt 🕅	TotaProductPrice	Add Column
April	Refrigirator		17500	2064	16	16	3	30336	280000	
April	Television		38000	4226	8	29	12	25772	1102000	
April	Washing		13500	1442	15	29	4	18325	391500	
April	Air Condit		38250	3958	4	25	9	89600	956250	
May	Refrigirator		17500	1805	13	32	5	77696	560000	
May	Television		38000	4278	5	19	8	12915	722000	
May	Washing		13500	1401	18	16	2	24288	216000	
May	Air Condit		38250	4023	10	15	6	03450	573750	
June	Refrigirator		17500	2167	14	29	6	27096	507500	
June	Television		38000	4130	11	24	9	91224	912000	
June	Washing		13500	1415	6	15	2	12340	202500	
June	Air Condit		38250	3953	14	27	10	67418	1032750	-
July	Refrigirator		17500	1977	79	29	5	73591	507500	
July	Television		38000	4007	18	21	8	41638	798000	
July	Washing		13500	1379	15	31	4	27645	418500	
July	Air Condit		38250	4073	5	28	11	40580	1071000	
August	Refrigirator		17500	1817	18	29	5	27162	507500	
August	Television		38000	4161	7	22	9	15574	836000	

• Rename the header as TotalProductPrice.

Add one more calculated column for Gross Profit as follows:

- Click the Design tab on the Ribbon.
- Click Add.
- The column on the right side with the header Add Column is highlighted.
- Type = [TotalSalesAmount] [TotaProductPrice] in the formula bar.
- Press Enter.

A new column with header **CalculatedColumn1** is inserted with the values calculated by the formula you entered.

Hor	D C ⁰ - ∓ me Design Advanced	Table Tools Linked Table	PowerPivot for Exc	el - Sales Data -	DAXalox			
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alculatedCo	o ♥ f≠ ⊨[Total	SalesAmount]-[Tot	aProductPrice)					
Month	Pro 4 🖬 Product.	Price 🖬 Product (Cost 💌 No. af	Units 🖬 Tol	alSalesAmount 👪	TotaProductPrice	CalculatedColumn1	Add Column
April	Refrigirator	17500	20646	16	330336	280000	50336	
April	Television	38000	42268	29	1225772	1102000	123772	
April	Washing	13500	14425	29	418325	391500	26825	
April	Air Condit	38250	39584	25	989600	956250	33350	
May	Refrigirator	17500	18053	32	577696	560000	17696	
May	Television	38000	42785	19	812915	722000	90915	
May	Washing	13500	14018	16	224288	216000	8258	
May	Air Condit	38250	40230	15	603450	\$73750	29700	-
June	Refrigirator	17500	21624	29	627096	507500	119596	
June	Television	38000	41301	24	991224	912000	79224	
June	Washing	13500	14156	15	212340	202500	9840	
June	Air Condit	38250	39534	27	1057418	1032750	34668	
July	Refrigirator	17500	19779	29	573591	507500	66091	
July	Television	38000	40078	21	841638	796000	43638	
July	Washing	13500	13795	31	427645	418500	9145	
July	Air Condit	38250	40735	28	1140580	1071000	69580	
August	Refrigirator	17500	18178	29	527162	507500	19662	
August	Television	38000	41617	22	915574	836000	79574	

- Double click the header of the new calculated column.
- Rename the header as Gross Profit.

File Ho	me Design Advance	d Linked Table	PowerPrivat for	acel - Sales Data	- DAALina			
add Column	tete fx Insett Calculation	Create N Relationship Rel	Aanage Table Rionships Propets	Mark as Date Table -	• Undo • C [®] Redo -			
Gross Profi	t] • fr =[Tota	SalesAmount]-[1	otaProductPrice]	1				
Month	E Prou. 🖷 🔛 Product	Price 💽 Produ	et Cest 💽 No. 4	al Units 🖸 To	talSalesAmount 🔳	TotaProductPrice	Gross Profit	Add Column
April	Refrigirator	17500	20646	16	330336	280000	50336	
April	Television	38000	42268	29	1225772	1102000	123772	
April	Washing	13500	14425	29	418325	391500	26825	
April	Air Condit	38250	39584	25	989600	956250	33350	
May	Refrigirator	17500	18053	32	577696	560000	17696	
May	Television	38000	42785	19	812915	722000	90915	
Μαγ	Washing	13500	14018	16	224288	216000	\$288	
May	Air Condit	38250	40230	15	603450	573750	29700	
June	Refrigirator	17500	21624	29	627096	507500	119596	
June	Television	38000	41301	24	991224	912000	79224	2
June	Washing	13500	14156	15	212340	202500	9840	
June	Air Condit	38250	39534	27	1067418	1032750	34668	
July	Refrigirator	17500	19779	29	573591	507500	66091	
July	Television	38000	40078	21	841638	798000	43638	
July	Washing	13500	13795	31	427645	418500	9145	
July	Air Condit	38250	40735	28	1140580	1071000	69580	
August	Refrigirator	17500	18178	29	527162	507500	19662	
August	Television	38000	41617	22	915574	836000	79574	

Add the Calculated Columns in the **North_Sales** data table in a similar way. Consolidating all the steps, proceed as follows:

- Click the Design tab on the Ribbon.
- Click Add. The column on the right side with the header Add Column is highlighted.

- Type = [Product Price] * [No. of Units] in the formula bar and press Enter.
- A new column with header CalculatedColumn1 gets inserted with the values calculated by the formula you entered.
- Double click the header of the new calculated column.
- Rename the header as TotalProductPrice.
- Click the Design tab on the Ribbon.
- Click Add. The column on the right side with the header Add Column is highlighted.
- Type = [TotalSalesAmount] [TotaProductPrice] in the formula bar and press Enter. A new column with header CalculatedColumn1 gets inserted with the values calculated by the formula you entered.
- Double click the header of the new calculated column.
- Rename the header as Gross Profit.

Repeat the above given steps for the South Sales data table and West Sales data table.



You have the necessary columns to summarize the Gross Profit. Now, create the Power PivotTable.

			1.2	A	8	c	D	ε	F
PivotTable	Fields	* X	1						
ACTIVE ALL			2			-			
	1.700000000	H	3		Product ·	East-Gross Profit	North-Gross Profit	South-Gross Profit	West-Gross Profit
Choose fields to a	ad to report:	8.4	4		Air Conditioner	726582	731862	1188660	1634896
E III East Sales			5		Refrigirator	731782	688469	1141577	1277362
- m and and		Ē.	6		Television	1377729	1402176	1311089	1605405
North_Sale	s		7		Washing Machine	198406	548334	738842	910767
Product Ca	talog		8		Grand Total	3034499	3370841	4380168	5428430
			9						
South_Sale	5		10						
> III West Sales		U.	11						
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Drag fields betwee	en areas below:		14						
T FILTERS	II COLUN	1015	15						
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Decision of the second	- I Contraction		20						
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	North-Gro		22						
			23						

You are able to summarize the **Gross Profit** that became possible with the calculated columns in the Power Pivot and it all can be done just in a few steps that are error-free.

You can summarize it region wise for the products as given below also -

Pivot Table Fields * × 1 ACTIVE ALL 2 3 Product * 4 Region Air Conditioner Refigirator Television Washing Machine Grand Total Month 5 East 725582 731782 1377729 198406 3034499 Month 6 North 731862 688469 1402176 548334 3370841 9 7 South 1188660 1141577 1311089 738842 4380168 9 9 10 10 10 10 10		G	F	E	D	C	В	A	1.1	energiation of the second	The second s
ACTIVE ALL 2 Choose fields to add to report Image: Choose fields to add to a									× 1	ields * ×	PivotTable Fi
3 Product * Month 5 East 726582 731782 1377729 198406 3034499 Product 6 North 731862 688469 1402176 548334 3370841 Product Price 7 South 1188660 1141577 1311089 738842 4380168 No. of Units 10 10 10 10 10 10									2		ACTIVE ALL
Month 5 East 726582 731782 1377729 198406 3034495 Product 6 North 731862 688469 1402176 548334 3370841 Product Price 7 South 1188660 1141577 1311089 738842 4380168 Product Cest 9 10 <td></td> <td></td> <td></td> <td></td> <td></td> <td>Product .</td> <td></td> <td></td> <td>- 3</td> <td>A 45</td> <td>Change Enderto addit</td>						Product .			- 3	A 45	Change Enderto addit
Month 5 East 726582 731782 1377729 198406 3034495 Product 6 North 731862 688469 1402176 548334 3370841 Product Price 7 South 1188660 1141577 1311089 738842 4380168 Product Cest 9 9 10 10 10 10	i.	Grand Total	Washing Machine	Television	Refrigirator	Air Conditioner	Region		4	a sebore	Choose news to app t
Product 6 North 731862 688469 1402176 548334 3370841 Product Price 7 South 1188660 1141577 1311089 738842 4380168 Product Cest 8 West 1634896 1277362 1605405 910767 5428430 No. ef Units 10		3034499	198406	1377729	731782	726582	East		. 5		Month
Product Price 7 South 1188660 1141577 1311089 738842 4380168 Product Cest 8 West 1634896 1277362 1605405 910767 5428430 No. ef Units 10 11 10<		3370841	548334	1402176	688469	731862	North		6	H	Product
No. of Units 8 West 1634896 1277362 1605405 910767 5428430		4380168	738842	1311089	1141577	1188660	South		7	(#	Prediant Prio
No. of Units 10	ŝ.	5428430	910767	1605405	1277362	1634896	West		8		D Rendwart Car
No. of Units 10									9	*	T No dite
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North 22									- 22	North •	
23									23	er al a line	

Calculated Field

Suppose you want to calculate the percentage of profit made by each region productwise. You can do so by adding a calculated field to the Data Table.

- Click below the column Gross Profit in the **East_Sales** table in Power Pivot window.
- Type EastProfit: = SUM ([Gross Profit]) / sum ([TotalSalesAmount]) in the formula bar.
- Press Enter.

Ho	me Design	Advanced	Linked Tab	ie	TACK I'DI EDE	o · Janes Data ·				
dd Million	ete fx ete fx dth function	Calculation Options • Re	Create Lationship	Manage telationships	Table Properties	Mark as Date Table -	🕤 Undo - C Redo -			
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Gross Profi	t] - ,	f4 EastProfit:	sum([Gro	ss Profit]}/si	um[[Totals	alesAmount	1)			
Month	• Pro 15 🖬	Product Price	e 🖬 Pro	duct Cost	No. of t	Jinits 🖬 To	tatSalesAmou	unt 🖬 To	ataProductPrice 🖬	Gross Profit
April	Refrigirator	1	7500	2064	6	16		330336	280000	5033
April	Television	3	8000	4226	8	29	1	225772	1102000	12377
April	Washing	1	3500	1442	5	29	-	418325	391500	2682
April	Air Condit	3	8250	3958	4	25		989600	956250	3335
May	Refrigirator	1	7500	1805	3	32		577696	560000	1769
May	Television	3	8000	4278	5	19		812915	722000	9091
May	Washing	1	3500	1401	8	16		224288	216000	828
May	Air Condit	3	8250	4023	0	15		603450	573750	2970
June	Refrigirator	1	7500	2162	4	29		627096	507500	11959
June	Television	3	8000	4130	1	24		991224	912000	7922
June	Washing	1	3500	1415	6	15		212340	202500	984
June	Air Condit	3	8250	3953	4	27	1	067418	1032750	3466
July	Refrigirator	1	7500	1977	9	29		573591	507500	6609
July	Television	3	8000	4007	8	21		841638	798000	4363
July	Washing	1	3500	1379	5	31		427645	418500	914
July	Air Condit	3	8250	4073	5	28	1	140580	1071000	6958
August	Refrigirator	1	7500	1817	8	29		527162	507500	1966
August	Television	3	8000	4161	7	22	04	915574	836000	7957
40.665	13	1								EastProfit: 0.08552883

The calculated field EastProfit is inserted below the Gross Profit column.

- Right click the calculated field EastProfit.
- Select Format from the dropdown list.

dd Pre Calumns	nte . fx	n Create • Relationship Re Relations	Manage Table Sationships Properties	Mark as Date Table -	40 Undo - C [®] Redo - Edit			
Fross Profil	t] + Je East?	Profit:=sum((Gros	s Profit]]/sum([Total:	SalesAmount])			20000000000	
Acril	Bafrieirator	17500	20646	16	120225	20000000000000000	50736	Add Column
April	Television	38000	47265	29	1225772	1102000	123772	
April	Washing	13500	14425	29	418325	391500	26825	
April	Air Condit	38250	19584	25	989500	956250	11150	
May	Refrigirator	17500	18053	32	577696	560000	17696	
May	Television	38000	42785	19	812915	722000	90915	
May	Washing	13500	14018	15	224268	216000	8288	
May	Air Condit	38250	40230	15	603450	573750	29700	
June	Refrigitator	17500	21624	29	627096	507500	119596	
June	Television	38000	41301	24	991224	912000	79224	
June	Washing	13500	14156	15	212340	202500	9640	
June	Air Condit	38250	39534	27	1067418	1032750	34668	
yeut	Refrigirator	17500	19779	29	573591	507500	66091	
July	Television	38000	40078	21	841638	798000	43638	
July	Washing	13500	13795	31	427645	418500	9145	
July	Air Condit	38250	40735	28	1140580	1071000	Cvt	Col+X
August	Refrigirator	17500	18178	29	527162	507500	Copy	Ctrit+C
August	Television	38000	41617	22	915574	835000	Paste	Cbl+V
							EastProfit Delete	De
							Create KPL	4
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	and the second second second			22.0			Econat	

The Formatting dialog box appears.

- Select Number under Category.
- In the Format box, select Percentage and click OK.

ormatting		?	×
Category:			
General	Format:	Percentage	
Currency Date TRUE/FALSE	Decimal places:	2 🗘	
		OK	Cancel

The calculated field EastProfit is formatted to percentage.

	r (? - ∓) w Design Ad	Table To	Die PowerPh	vot for Excel	Sales Data -	DAXsfst		
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Month C	1 200	oduct Price 🖸 Pri	oduct Cost	No. of the	its 🖬 To	talSalecAmbunt	TotaProductPrice	Gross Profit
April	Refrigirator	17500	20646	a babaya fa a fina a	16	330336	280000	50336
April	Television	38000	42268		29	1225772	1102000	123772
April	Washing	13500	14425		29	418325	391500	26825
April	Air Condit,	38250	39584		25	989600	956250	33350
May	Refrigirator	17500	18053		32	577696	560000	17696
May	Television	38000	42785		19	812915	722000	90915
May	Washing	13500	14018		16	224268	216000	8288
May	Air Condit	38250	40230		15	603450	573750	29700
June	Refrigirator	17500	21624		29	627096	507500	119596
June	Television	38000	41301		24	991224	912000	79224
June	Washing	13500	14156		15	212340	202500	9840
June	Air Condit	38250	39534		27	1067418	1032750	34668
ylut	Refrigirator	17500	19779		29	573591	507500	66091
ylut	Television	38000	40078		21	841638	798000	43638
July	Washing	13500	13795		31	427645	418500	9145
July	Air Condit	38250	40735		28	1140580	1071000	69580
August	Refrigirator	17500	18178		29	527162	507500	19662
August	Television	38000	41617		22	915574	836000	79574
		1						EastProfit: 8.55 %

Repeat the steps to insert the following calculated fields -

- NorthProfit in North_Sales data table.
- SouthProfit in South_Sales data table.
- WestProfit in West_Sales data table.

Note – You cannot define more than one calculated field with a given name.

Click on the Power PivotTable. You can see that the calculated fields appear in the tables.

PivotTable	e Fields	* ×
ACTIVE ALL		
Choose fields to a	add to report:	4 -
C TotalSa	alesAmount	
🗌 TotaPri	oductPrice	
Gross I	Profit	The second
✓ EastPro	ofit	
A III North_Sale	es	*
Morth_Sale Drag fields between	es een areas below;	
Imag fields betwee FILTERS	es een areas below: III COLUI	
Drag fields between TFILTERS	es een areas below: III COLUI Product	MNS •
Morth_Sale Drag fields betwee FILTERS ROWS	een areas below: III COLUI Product Σ VALUE	MNS T
 ▲ Morth_Sale Drag fields betwee ▼ FILTERS ■ ROWS ∑ Values 	es een areas below: III COLUI Product Σ VALUE ▼ East	MNS *
 ▲ Morth_Sale Drag fields betwee ▼ FILTERS ■ ROWS ∑ Values 	es een areas below: III COLUI Product ▼ East North	MINS V S V V

- Select the fields EastProfit, NorthProfit, SouthProfit and WestProfit from the tables in the PivotTable Fields list.
- Arrange the fields such that the Gross Profit and Percentage Profit appear together. The Power PivotTable looks as follows:

1	A	В	c	D	E	F	G
1							
2							
3			Product 💌				
4		Region	Air Conditioner	Refrigirator	Television	Washing Machine	Grand Total
5		East	726582	731782	1377729	198406	3034499
6		Profit %	6.25 %	12.23 %	10.21 %	4.54 %	8.55 %
7		North	731862	688469	1402176	548334	3370841
8		Profit %	6.13 %	12.20 %	11.08 %	11.55 %	9.64 %
9		South	1188660	1141577	1311089	738842	4380168
10		Profit %	10.26 %	20.84 %	11.62 %	17.26 %	13.42 %
11		West	1634896	1277362	1605405	910767	5428430
12		Profit %	10.13 %	15.83 %	10.05 %	14.53 %	11.69 %
17							

Note - The Calculate Fields were called Measures in earlier versions of Excel.

Exploring Data

In the previous module, you have learnt how to create a Power PivotTable from a normal set of data tables. In this module, you will learn how you can explore data with Power PivotTable, when the data tables contain thousands of rows.

For a better understanding, we will import the data from an access database, which you know is a relational database.

Loading Data from Access Database

To load data from the Access database, follow the given steps -

- Open a new blank workbook in Excel.
- Click Manage in the Data Model group.
- Click the POWERPIVOT tab on the Ribbon.

	3.7
7 8 9 10 11 12 13 14 14 15 16 18	
11 12	
18	
17	
18	
23	

The Power Pivot window appears.

- Click the Home tab in the Power Pivot window.
- Click From Database in the Get External Data group.
- Select From Access from the dropdown list.

The Transfer Append I I I I I I I I I I I I I I I I I I I	ATT
Place Part of the row of a row	Data Diagram Show Calculation View View Hidden Area
From Access From Sol Server Formationg Sol and Filer Fine Calculations From Access Tops Academic Services or Bower/Swot	View
The Table Import Wizard appears.

- Provide Friendly connection name.
- Browse to the Access database file, Events.accdb, the Events database file.
- Click on the Next > button.

Erizadi, consisting same	Cuerte Jacques DR		
Database name:	events accdb	_	Browse
I co on to the database	the second se		T. T. CONTRACT
User name:		 	
Password			
Save m	y password		
		Advanced	Test Connection

The **Table Import** wizard displays options for choosing how to import data.

Click Select from a list of tables and views to choose the data to import and click Next.



The **Table Import** Wizard displays all the tables in the Access database that you have selected. Check all the boxes to select all the tables and click Finish.

- eee	he ta	bles and views that you	want to import data from.	
Dat Tab	abas les a	 D'Ramana'Ramana PivofData Files'eve nd Views: 	Work/Training Consultancy/Tut nts.accdb	orialsPoint/Excel Power
Ø		Source Table	Friendly Name	Filter Details
Ø		Decipines	Decipines	
	m	Events	Events	
		Medala	Hedde	
Ø	00	S_Teams	S_Teams	
g		W_Teans	W_Teans	

The **Table Import** Wizard displays – **Importing** and shows the status of the import. This may take a few minutes and you can stop the import by clicking the **Stop Import** button.

Once the data import is complete, Table Import Wizard displays – **Success** and shows the results of the import. Click **Close**.

(~	Success	Total:	5 Cancelled
		buccess :	5. Error.
Jeta	Work tem	Satus	Message
0	Medals	Success: 32,591 rows transferred.	
0	S_Teams	Success. 217 rows transferred.	
9	Events	Success. 716 rows transferred.	
0	W_Teams	Success 58 rows transferred.	
9	Decipines	Success. 69 rows transferred.	
5	Data preparation	Completed	Datais

Power Pivot displays all the imported tables in different tabs in Data View.

E.	Cipbuard	alace From Database	From Data From to - Service - Sour Get External D	Dther Existing Connections	Refresh	PivotTabl
1	[Discipline]	f _x				
à	Discipline C	Disciple	🛛 Sportib 🗳	Add Column		
6	Alpine Skiing	D1	537			
	Biathlon	D10	58			
	BMX	D11	515			
	Bobsleigh	D12	59			
	Boxing	D13	510			
	Canoe / Kay	D14	511			
	Canoe / Kay	D15	\$11			
	Cricket	016	512			
	Croquet	017	513			
	Cross Count	D18	\$37			
	Curling	D19	\$14			
	Archery	D2	S2			
	Cycling Road	D20	515			
	Cycling Track	D21	\$15			
	Diving	D22	51			
	Dressage	D23	S16			
	Eventing	D24	516			
	Fencing	D25	517			
]				
					1	

Click on the Diagram View.



You can observe that a relationship exists between the tables – **Disciplines and Medals**. This is because, when you import data from a relational database such as Access, the relationships that exist in the database also are imported to the Data Model in Power Pivot.

Creating a PivotTable from the Data Model

Create a PivotTable with the tables that you have imported in the previous section as follows:

- Click PivotTable on the Ribbon.
- Select PivotTable from the drop down list.
- Select New Worksheet in the Create PivotTable dialog box that appears and click OK.

Terrer Design Advined	PivotTable	Detartion: 11 See Tennet - 12 See Perfulses Perfulses Perfulses Perfulses Chart and Deter (Securital	A In 2 2 Ha A C Han APP. Toor Hy The Column Processor Methods Filter The Column Processor Column Processor Methods Procesor Methods Processor Methods Processor Methods Proces	ta Bagan Shee Caluati New Water Hadden
Delgine Decision Decision Decision Decision	e e tt I	Chart and Table Qerical) Byo Charty (Honcartal) Biog Charty (Hinfash Geor Charts Fightmed Riverthale	Latense	
	Addom Edition Edition Edition Ameento Ameento Ameento Edition Gender Description Media Media	Const Dentio Next DisplaceD DisplaceD DisplaceD DisplaceD DisplaceD DisplaceD	Constant Con	

An empty PivotTable is created in a new worksheet in the Excel window.

	C+ → Call	bri 🤤	54 2	÷:			8	ook1+Escel				PIVIOTRABL	E TOKINS
FLE. HOM	E INSERT	PAGE LAW	OUT	FORMULAS	DAT	A REVIE	W VIEW	DEVELOPE	ER INQUE	RE POWER	PIVOT	ANALVZE	DESIGN
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вз -	1 × V	f_x											
PivotTable Active All Choose fields to a P C Disciplines P C Medals	e Fields edd to report:	• x	1 2 3 4 5 6 7	A	B P To build ields fro	C volTable1 a report, d m the Pivo	D hoose tTable		F G	H H		3	K
 Events Exerns 			9		3	ield List	-						
h 📑 W_Teams			11 12	Doma									
Orag Gelds between T PILTERS	een arees below:	NS	14 15 16 17 18	5			H						
≡ ROWS	∑ VALUES		19 29 21 22										

All the imported tables that are a part of Power Pivot Data Model appear in the PivotTable Fields list.

- Drag the **NOC_CountryRegion** field in the Medals table to the COLUMNS area.
- Drag Discipline from the Disciplines table to the ROWS area.
- Filter Discipline to display only five sports: Archery, Diving, Fencing, Figure Skating, and Speed Skating. This can be done either in PivotTable Fields area, or from the Row Labels filter in the PivotTable itself.
- Drag Medal from the Medals table to the VALUES area.
- Select Medal from the Medals table again and drag it into the FILTERS area.

The PivotTable is populated with the added fields and in the chosen layout from the areas.

E S S C	# Calibe INSERT PAI	IE LAY	9 E	e FORM	QLAS SATA	REV	ew vie	Boei N	DEN	ntel /ELOPI	R	1940	URE		OWER	-wot	1	PIVOT NALV2	NALL I	0013 9434									7	00 Mana X	-	"	×
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83 *	XVI	fe	Count o	the	tel -																												¥
PivotTable Fi	ields	×	1	A	II Medal	All	c	•	0	1	1	6	н	1	ì	x	L	м	N	0		٩		1	t	υ	v	w	×	.4	I	44	-
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Distylent	•	P	5		Archery Diving				2 17		51				11	15	-	2	2	3	4	4 3	6	46		13	7	6 24	2		3	12	
2 Medal			8		Ferring Figure skating Speed skating			3		25	3	1	3	3	28 43	19	24	3			5 2	9	4	18	3	19	11 28	51 11 34		12		2	T
C Disciplinety	ent		10 11		Grand Total			5	20	45	99	1	5	3	82	1.20	24	7	2	4	23	30	м	348	53	64	50	126	2	238	3	558	
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▼ FILTERS	III COLUMNS		15 16																														
Mdd •	NOC Courby-	•	17 18																														
E #045 Docples	37 VALUES Count of Medal	•	10 20 21																														
			22 23																														

Exploring Data with PivotTable

You might want to display only those values with Medal Count > 80. To perform this, follow the given steps –

- Click the arrow to the right of Column Labels.
- Select Value Filters from the dropdown list.
- Select Greater Than.... from the second dropdown list.
- Click OK.

			14	A	8		C		D	E	F	G	н	1	1	K	L
PivotTable Fi	elds	* X	1		Medal	All									_		
CTIVE ALL			2														
		A	3		Count of M	edal Col	umn Labels	s v	1								
hoose helds to add t	o report:	80 4	4	21	Sort A to Z				AUS	AUT	BEL	BLR	BOH	BUL	CAN	CHN	CUB
******		143	5	š1	Son Z to A				2		51					15	
DisciplinelD			6		More Sort Option	1.21			17						11	60	
Event			7		and the state of the state		and Barrison			13	44		5			19	24
Medal			8	18	Ziem Litter Litter	COL COL	maynegion			25	3				28	7	
MedalKey			9	_	Label Filters	Valu	e Filte	rs	1	6	1	1		3	43	19	
DisciplineEv	ent		10		Xalue Filters	*			π.	Clear	Filter.				82	120	24
Elente		-	11		Search NOC_Cou	IntryRegio	م n	4		Equals	Lie -				-		
V 14-2 EVENILS			12	1	Select All			•		Does	Jot Ec	ual_		Gr		r T	
Drag fields between a	reas below:		14		AFG AFG			11		Greate	r Tha	n	*	GI	eau	-	Idii
T FILTERS	III COLUN	1N5	15		III SALG					Greate	r Tha	n Qr I	Equal 1	To:	-		
Medal •	NOC Cou	· vite	16	1	ANZ ANZ					Less 7	han_				-		
			17	-	H C ARM					Less T	han O	e Egu	al To.		-		
			18		AUS										-		
E ROWS	E VALUES		19	1	AUT CAUT					nerWe	al free				-		
Discipline •	Count of I	fedal -	20	1	- FR BALL			¥		Not B	elwee	B			-		
	ALCONTRACTOR ALCO	a de la constante de la consta	22	1	E.	or	Cancel			Iop 1	0				-		
				-		UN	cancer										

The Value Filter dialog box appears. Type 80 in the right-most box and click OK.

Valu	e Filter (NOC_C	ount	ryRegion)				?	×
Sh	ow items for whi	ch						
	Count of Medal	~	is greater than	~	80			
						ОК	Ca	ncel

The PivotTable displays only those regions with total number of medals more than 80.

A	В	C		D	E	F	G	н	1	1	К	L	Μ	Ν	0	P
1	Medal	All	٠													
2																
3	Count of Medal	Column Labels	Т,													
4	Row Labels -T	BEL	(CAN	CHN	FRA	GER	HUN	ITA	NED	NOR	POL	RUS	URS	USA	Grand Total
5	Archery	5	51		15	46	6		12	9		4	1	7	52	203
6	Diving			11	60	1	24		9				24	14	131	274
7	Fencing		44		19	283	51	226	328	24		81	41	145	48	1290
8	Figure skating		3	28	7	18	11	12	2	3	7		29	42	51	213
9	Speed skating		1	43	19		34		7	75	79	2	8	60	73	401
10	Grand Total	-	99	82	120	348	126	238	358	111	86	87	103	268	355	2381
11																

You could arrive at the specific report that you wanted from the different tables in just few steps. This became possible because of the pre-existing relationships among the tables in the Access database. As you imported all the tables from the database together at the same time, Power Pivot recreated the relationships in its Data Model.

Summarizing Data from Different Sources in Power Pivot

If you get the data tables from different sources or if you do not import the tables from a database at the same time, or if you create new Excel tables in your workbook and add them to the Data Model, you have to create the relationships among the tables that you want to use for your analysis and summarization in the PivotTable.

- Create a new worksheet in the workbook.
- Create an Excel table Sports.

A A	Б	C
1	Sport	 SportID
2	Aquatics	S1
3	Archery	\$2
4	Athletics	\$3
5	Badminton	S4
6	Baseball	\$5
7	Basketball	S6
8	Basque Pelota	\$7
9	Biathlon	58
10	Bobsleigh	S9
11	Boxing	S10
12	Canoe / Kayak	S11
13	Cricket	S12
14	Croquet	\$13
15	Curling	S14
16	Cycling	S15
17	Equestrian	S16
18	Fencing	S17
19	Football	S18
20	Golf	S19
21	Gymnastics	\$20
22	Handball	\$21
4.9	Sheet2 Spo	orts 🕒

Add Sports table to Data Model.



Create a relationship between the tables **Disciplines and Sports** with the field **SportID**.



Add the field **Sport** to the PivotTable.

0 B 5-	et -	* (Calibri -	5	1.50			8	ook	1 - Ex	el :							-	Privity	HARLE !	10015	1
ALE HON	r£	INSERT	PAGE LAN	TUON	FORM	ULAS DATA	REVIEW	VIEW		DEVE	LOPE	R	INQU	RE	PO	WERP	TOV	AF	EALYZ	E	DESIG	14
Manage Calcu Field Data Model Ca	X lated ds =	KP114	Align Ven	scaðy ricontað	/ Al Data	ad to Update Model All Tables	Detect Relationships	¢ Settings														
83 -	11	Х	V fx	Coun	t of Med	dal																
				1.40	A	B		c		D	Ε	F	G	н	1	1	К	L.	-54	N	0	p
PivotTabl	e Fie	elds	= X	1		Medal	All		•													
ACTIVE ALL		1972	0.1	2 3		Count of Med	fal Colum	n Labels	T.													
Uncose helds to	80010	report	· · ·	4		Row Labels	J BEL		(AN I	CHN	FRA	GER	HUN.	ITA	NED	NOR	POL	RUS	URS	USA	Grand Total
> E Discipline	\$			5		Archery			51		15	46	6		12	9		4	1	7	52	203
· ·				6		Archery		1	51		15	46	6		12	2		. 4	1	7	52	203
# ILD Medata				7		Diving				11	60	1	24		9	<u>.</u>			24	14	151	2/4
✓ □ Sports				8		Aquatics				11	60	1	24	-	9				24	14	131	274
Sport Sport				2		stencing			14		19	283	51	226	\$28	24	_	81	41	145	- 48	1290
Sports	D			10		Fencing		1	-	-	19	283	51	220	328	24		81	- 41	245	45	1290
> E Durate			- 2	2		= Figure skat	ing			20		- 18	11	12					29	42	- 51	213
a weg events				18		Skating Econodickat			-	43		10	24	14	2	- 25	70		- 29	94	23	213
Drag fields betw	een are	as below	÷.	14		Skating	ung		-	43	10		34		-	75	20	2		60	23	403
				15		Grand Total			-	82	120	2.08	126	228	358	111	85	87	103	268	355	2381
T FLTERS		III COL	UMN5	16		Carano rotan		- 1	-	-			100	2.30	330				103	200		
Medal	•	NOC_C	ountry_*	17																		
				10																		
	-			19																		
T ROWS		I VAL	UES	20																		
Discipline	•	Count o	of Medal 💌	21																		
Sport	٠			22																		
				44																		

Shuffle the fields - **Discipline and Sport** in the ROWS area.

A	B	_	с		D	E	F	G	н	1	J	K	L	Μ	Ν	0	P
1	Medal		All	*													
3	Count of M	edal	Column Labels	Ţ,													
4	Row Labels		TBEL		CAN	CHN	FRA	GER	HUN	ITA	NED	NOR	POL	RUS	URS	USA	Grand Total
5	Aquatics				11	60	1	24		9				24	14	131	274
6	Diving				11	60	1	24		9				24	14	131	274
7	Archery			51		15	46	6		12	9		4	1	7	52	203
8	Archery	÷.		51		15	46	6		12	9		4	1	7	52	203
9	⊖Fencing			44		19	283	51	226	328	24		81	41	145	48	1290
10	Fencing	1		44		19	283	51	226	328	24		81	41	145	48	1290
11	Skating			4	71	26	18	45	12	9	78	86	2	37	102	124	614
12	Figure	kating	5	3	28	7	18	11	12	2	3	7		29	42	51	213
13	Speed	katin	B	1	43	19		34		7	75	79	2	8	60	73	401
14	Grand Total			99	82	120	348	126	238	358	111	86	87	103	268	355	2381
15																	

Extending Data Exploration

You can get the table **Events** also into further data exploration.

Create a relationship between the tables- **Events** and **Medals** with the field **DisciplineEvent**.

Discipline DisciplineD SportiD		Event Discipline Sport Participation
keent keentiiD	Edition Edition Session AchieteriD AchieteriD Achieteri NOC_CountryRegion Gender Event_gender Soort DisciptineiD Event Medal Medalkey DisciptineEvent	Event Event Discipline Sport Participation

Add a table Hosts to the workbook and Data Model.



Extending the Data Model using Calculated Columns

To connect Hosts table to any of the other tables, it should have a field with values that uniquely identify each row in the Hosts table. As no such field exists in the Host table, you can create a calculated column in the Hosts table so that it contains unique values.

- Go to the Hosts table in Data View of the PowerPivot window.
- Click the Design tab on the Ribbon.
- Click Add.

The right-most column with the header Add Column is highlighted.

A01	Delete Freese * Width	fx Calculate Function Options	n Create Estationchip	Marage Relationships	Table	Mark a	€) Und C [®] Rizdi	a = a =
Co	tunne -	Calculations	Relation	onchips			101	5
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Syde	ey AUS		AS		2000 5	summer	-	
inco	DL AUT		AT		1076 1	Minger		
anno Rete	AUT AUT		AI DC		1930 1	wanter.		
Anto	BCL BCL		0C		1020 3	Mintar		
Mon	tr CAN		CA		1976 4	automer.		
Lake	P. CAN		CA.		1980 1	Ninter		
Cale	ary CAN		CA		1988	Ninter		
St.A	No SUI		\$2		1928	Ninter		
St. N	No SUI		52		1948	Ninter		
Beiji	ng CHN		CH		2008 5	ummer		
Berl	in GER		GM		1936 5	ummer		
Garr	ni GER		GM		1936	Minter		
Barc	el ESP		SP		1992 3	lummer		
Heis	inki FIN		FI		1957 3	ummer		
Paris	FRA FRA		FR		1900 3	lummer		
Paris	E FRA		FR		1924 3	ummer		

- Type the following DAX formula in the formula bar = CONCATENATE ([Edition], [Season])
- Press Enter.

A new column is created with the header **CalculatedColumn1** and the column is filled by the values resulting from the above DAX formula.

Melb AUS Sydney AUS innsbr AUT innsbr AUT Antw BEL Antw BEL Montr CAN Lake P CAN Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	AS AS AT AT BE BE CA CA CA CA SZ SZ	1956 2000 1964 1976 1920 1920 1976 1988 1988	Summer Summer Winter Summer Winter Winter Winter	1956Summer 2000Summer 1964Winter 1976Winter 1920Summer 1920Winter 1976Summer 1980Winter 1988Winter	
Sydney AUS innsbr AUT innsbr AUT Antw BEL Antw BEL Montr CAN Lake P CAN Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	AS AT BE BE CA CA CA CA SZ SZ	2000 1964 1976 1920 1920 1976 1980 1988 1928	Summer Winter Winter Summer Winter Winter Winter	2000Summer 1964Winter 1976Winter 1920Summer 1920Winter 1980Winter 1988Winter	
Innsbr., AUT Innsbr., AUT Antw., BEL Montr., CAN Lake P., CAN Calgary CAN St. Mo., SUI St. Mo., SUI Beljing CHN Berlin GER	AT AT BE CA CA CA CA SZ SZ	1964 1976 1920 1920 1976 1988 1988 1928	Winter Winter Summer Winter Winter Winter	1964Winter 1976Winter 1920Summer 1920Winter 1976Summer 1980Winter 1988Winter	
Innsbr., AUT Antw., BEL Antw., BEL Montr., CAN Lake P., CAN Calgary CAN St. Mo., SUI St. Mo., SUI Beljing CHN Berlin GER	AT BE CA CA CA CA SZ SZ	1976 1920 1920 1976 1980 1988 1988	Winter Summer Summer Winter Winter	1976Winter 1920Summer 1920Winter 1976Summer 1980Winter 1988Winter	
Antw BEL Antw BEL Montr CAN Lake P CAN Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	BE BE CA CA CA SZ SZ	1920 1920 1976 1980 1988 1988	Summer Winter Summer Winter Winter	1920Summer 1920Winter 1976Summer 1980Winter 1988Winter	
Antw 8EL Montr CAN Lake P CAN Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	BE CA CA CA SZ SZ	1920 1976 1980 1983 1983 1928	Winter Summer Winter Winter	1920Winter 1976Summer 1980Winter 1988Winter	-
Montr CAN Lake P CAN Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	CA CA CA SZ SZ	1976 1980 1988 1988	Summer Winter Winter	1976Summer 1980Winter 1988Winter	
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Calgary CAN St. Mo SUI St. Mo SUI Beijing CHN Berlin GER	CA SZ SZ	1988 1928	Winter	1988Winter	
St. Mo SUI St. Mo SUI Beljing CHN Berlin GER	SZ SZ	1928	2 전 41 1 1 2 1 2 2 2		
St. Mo SUI Beijing CHN Berlin GER	SZ		Winter	1928Winter	
Beijing CHN Berlin GER		1948	Winter	1948Winter	
Berlin GER	СН	2008	Summer	2008Summer	
Carrol CCC	GM	1936	Summer	1936Summer	
Garmin GER	GM	1936	Winter	1936Winter	
Barcel ESP	SP	1992	Summer	1992Summer	
Helsinki FIN	FI	1952	Summer	1952Summer	
Paris FRA	FR	1900	Summer	1900Summer	
Paris FRA	FR	1924	Summer	1924Summer	

Right-click on the new column and select Rename Column from the dropdown list.

City 🖬	NOC_CountryRegion	Alpha-2 Code	Edition 🖬	Season R	CalculatedColu	mn1 💌	Add Column	
Melb	AUS	AS	1956	Summer	1956Summer			
Sydney	AUS	AS	2000	Summer	2000Summer	1		
Innsbr	AUT	AT	1964	Winter	1964Winter			
Innsbr	AUT	AT	1976	Winter	1976Winter			
Antw	BEL	BE	1920	Summer	1920Summer	1	L	
Antw	BEL	BE	1920	Winter	1920Winter	Create F	Relationship	
Montr	CAN	CA	1976	Summer	1976Summer	Navigat	e to Related Table	
Lake P	CAN	CA	1980	Winter	1980Winter	Copy		
Calgary	CAN	CA	1988	Winter	1988Winter	inset Co	olumn	
St. Mo	SUI	SZ.	1928	Winter	1928Winter	3 Delete 0	Columna	
St. Mo	SUI	5Z	1948	Winter	1945Winter	Rename	Column	
Beijing	CHN	CH	2008	Summer	2006Summer	Freeze (Columns	
Berlin	GER	GM	1936	Summer	1936Summer	 Unlinea 	e Al Columna	
Garmi	GER	GM	1936	Winter	1936Winter	Hide from	m Client Tools	
Barcel	ESP	SP	1992	Summer	1992Summer	Column	Wdth	
Helsinki	FIN	FI	1952	Summer	1952Summer	Fiter		
Paris	FRA	FR	1900	Summer	1900Summer	Descript	ion	
Paris	FRA	FR	1924	Summer	1924Summer		8	

Eitig 💌	NDC_CountryRegion	Alpha-2 Code 🔛	Edition 💽	Season 💌	EditionID	12	Add Column
Melb	AUS	AS	1956	Summer	1956Summer		
Sydney	AUS	AS	2000	Summer	2000Summer		
nnsbr	AUT	AT	1964	Winter	1964Winter		
nnsbr	AUT	AT	1976	Winter	1976Winter		
Antw	BEL	BE	1920	Summer	1920Summer		
Antw	BEL.	BE	1920	Winter	1920Winter		
Montr	CAN	CA	1976	Summer	1976Summer		
ake P	CAN	CA	1980	Winter	1980Winter	-	
Calgary	CAN	CA	1988	Winter	1988Winter		
it. Mo	SUI	52	1928	Winter	1928Winter		
t. Mo	SUI	SZ	1948	Winter	1948Winter		
Beljing	CHN	СН	2008	Summer	2008Summer		
Berlin	GER	GM	1936	Summer	1936Summer		
Sarmi	GER	GM	1936	Winter	1936Winter		
Barcel	ESP	SP	1992	Summer	1992Summer		
lelsinki	FIN	FI	1952	Summer	1952Summer		
Paris	FRA	FR	1900	Summer	1900Summer		
Paris	FRA	FR	1924	Summer	1924Summer		

Type **EditionID** in the header of the new column.

As you can see, the column EditionID has unique values in the Hosts table.

Creating a Relationship Using Calculated Columns

If you have to create a relationship between the **Hosts** table and the **Medals** table, the column **EditionID** should exist in the Medals table also. Create a calculated column in Medals table as follows:

- Click on the Medals table in the Data View of Power Pivot.
- Click the Design tab on the Ribbon.
- Click Add.

Type the DAX formula in the formula bar = **YEAR ([EDITION])** and press Enter.

Rename the new column that is created as Year and click Add.

A29666 A29667 A29668 A29729 A29730 A29731 A29731 A29732 A29734 A29734	URS SWE FIN URS NOR FIN URS	Men Men Men Men Men	M M M M M	Sking Sking Sking Sking Sking	D18 D18 D18 D18	4x10km) 4x10km) 4x10km) 4x10km)	Gold Bronze Silver Bronze	M10187 M10188 M10189 M10329	D154x10km relay D154x10km relay D154x10km relay	1994 1994 1994
A29667 A29668 A29729 A29730 A29730 A29731 A29733 A29733 A29733 A29734	SWE FIN URS NOR FIN URS	Men Men Men Men	M M M	Skiing Skiing Skiing Skiing	018 018 018	4x30km 4x30km 4x20km	Bronze Silver Bronze	M10188 M10189 M10329	D154x10km relay D154x10km relay D155x10km relay	1956
A29665 A29725 A29730 A29731 A29732 A29732 A29733 A29733	FIN URS NOR FIN URS	Men Men Men	M M M	Skiing Skiing Skiing	D18	4x10km	Silver Bronze	M10189	D164x10km relay	1956
A29729 A29730 A29731 A29732 A29732 A29733 A39734	URS NOR FIN URS	Man Mon Mon	M M M	Skiing Skiing	DIS	-\$x10km	Bronze	M10329	Pater token spins	2447
A29730 A29731 A29732 A29732 A29783 A29783	NOR FIN URS	Men Men	M	Skiing	0.44				Preservences	130
A29731 A29732 A29733 A29733 A29733	FIN URS	Men	M		DTR	4x10km	Silver	M10320	D154x10km relay	1960
A29732 A29733 A29733	URS	Max		Skiing	D18	4x20km	Gold	M10321	D184x10km relay	1996
A29783		and the second s	м	Skling	018	4x10km	Bronze	M10322	0184x10km relay	1964
6 79714	NOR	Men	M	Skiing	D18	4x30km	Silver	M10323	D164x50km relay	1966
****	FIN	Men	м	Skiing	D18	4x50km	Gold	M10924	D184x10km relay	196
A29736	URS	Men	M	Skling	028	4x10km	Bronze	M10326	D184x10km relay	196
A29737	NOR	Men	м	Skiing	018	4x10km	Silver	M30327	D184x10km relay	196
A29738	FIN	Men	M	Skiing	D18	4x10km	Gold	M10328	D16Rx10km relay	196
A29790	URS	Men	M	Skiing	D18	4x10km	Bronze	M11192	D184x30km relay	196/
A29791	NOR	Men	м	Skiing	D18	4x30km	Silver	M11193	0184x10km relay	1966
A29792	FIN	Men	M	Skling	018	4x10km	Gold	M11194	D184x30km relay	196
A29855	URS	Meti	M	Skiing	018	4x10km	Bronze	M11326	D134x10km relay	196
A29856	SWE	Men	M	Skiing	018	4x30km	Gold	M11327	0184x30km relay	199
A29657	FIN.	Men	M	Skling	D18	4x50km	Silver	M11328	D164x10km relay	196

- Type the following DAX formula in the formula bar = CONCATENATE ([Year], [Season])
- Rename the new column that is created as **EditionID**.

	Men	M	Skiing	D18	4x10km	Gold	M10187	D164x10km relay	1956	1956Winter
	Men	M	Sking	D18	4x10km	Bronze	M10188	D154x10km relay	1956	1956Winter
	Men	M	Skiing	D18	4x30km	Silver	M10189	D184x10km relay	1956	1956Winter
	Men	M	Skiing	D18	4x10km	Bronze	M30319	D184x10km relay	1960	1960Winter
	Men	M	Skiing	D18	4x10km	Silver	M30320	D164x10km relay	1900	1960Winter
	Men	M	Skiing	D18	4x30km	Gold	M30323	D194x10km relay	1960	1960Winter
	Men	M	Skiing	D18	4x10km	Bronze	M30322	D154x10km relay	1960	1960Winter
Ú.	Men	M	Skiing	D18	4x10km	Silver	M10323	D154x10km relay	1960	1967Winter
	Men	M	Skiing	D18	4x30km	Gold	M10324	D184x30km relay	1960	1960Winter
	Men	M	Skiing	D18	4x10km	Bronze	M30326	D164x10km relay	1960	1960Winter
13	Meth	M	Skiing	D18	4x10km	Silver	M10327	D184x10km relay	1960	1960Winter
	Men	M	Skieg	D18	4x10km	Gold	M10328	D154x20km relay	1960	1960Winter
	Men	M	Skiing	D18	4x10km	Bronze	M11192	D184x30km relay	1960	1960Winter
1 ²	Men	м	Skiing	D18	4x10km	Silver	M11193	D154x10km relay	1960	1960Winter
	Men	м	Skiing	D18	4x10km	Gold	M11154	O184x10km relay	1960	1960Winter
	Men	M	Skiing	D16	4x10km	Bronze	M11326	D184x10km relay	1964	1964Winter
1	Men	M	Skiing	D18	4x30km	Gold	M11327	D184x10km relay	1964	1964Winter
	Men	M	Skiing	D18	4x10km	Silver	M11328	D154x30km relay	1964	1964Winter

As you can observe, the EditionID column in the Medals table has identical values as the EditionID column in the Hosts table. Therefore, you can create a relationship between the tables – Medals and Sports with the EditionID field.

- Switch to the diagram view in PowerPivot window.
- Create a relationship between the tables- Medals and Hosts with the field that is obtained from the calculated column i.e. **EditionID**.



Now you can add fields from Hosts table to Power PivotTable.

Flattened

When the data has many levels, sometimes it becomes cumbersome to read the PivotTable report.

For example, consider the following Data Model.

Parte Acquerá A Parte Acquerá Parte Parpiere	La from Other Existing	Data Type : Test • Facesat : Test • Sort 2 to 2	Churchell Section	Defa Dagram Show California
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et Layout Display: 10 Columns	Z Calculated Fields 🔀 Meranthies 🖇	/ KPb		(C)
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E Destud				
Product Price				
	1			
	The Lot Sees	w north Sales	T Solt Seles	D Wet Me
	Region	TT Beeine	E Region	E Region
	I Month	I Month	III Month	I Month
	E Product	D Product	Product	E Product
	Product Price	Product Price	Product Price	Product Price
	C Product Cost	Product Cost	E Product Cost	D Product Cost
	T No. of Units	III No. of Units	I No. of Units	III No. of Units
a Salasperson 👔 🖬	III TotalSalesAmount	Tota/SalesAmount	TotalSalesAmount	Tota/SalesAmount
Salesperson			·	·
III Region				

We will create a Power PivotTable and a Power Flattened PivotTable to get an understanding of the layouts.

Creating a PivotTable

You can create a Power PivotTable as follows:

- Click the Home tab on the Ribbon in the PowerPivot window.
- Click PivotTable.
- Select PivotTable from the dropdown list.



An empty PivotTable will be created.

- Drag the fields Salesperson, Region and Product from the PivotTable Fields list to the ROWS area.
- Drag the field TotalSalesAmount from the Tables East, North, South and West to the ∑ VALUES area.

HLE HOME	INSET	PAGE LAN	TUO	FORMULAS DATA	REVEW	VEW	DEVELOPER	NOURE	POWERPINOT	ANALYZE	DESIGN	
Manage (JX) Calculated Fields - da Hodet Calcula	EPIs *	Align Vert Align Hor Storr Alig	ically isoritally isorit	Add to Update Data Model Att Tabler	Detect	o Settings						
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vivot i able Fi	ields.	* ×	1									
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Aprese Fields to add 3	o report.	0.	21	RowLabels	-	(Sum of To	dalSalesAmount	Sum of To	talSalesAmount	Sum of Tot	aSalesAmount	Sum of TotalSalesAmount
				Albertson	activy		19479249					
Month			3	etast	220335		5547924					
C Product			0	Air con	ditioner		1162/832					
CT Read and Real			1	Retrigu	acor		3981781					
+10000CL F10				Televis	ion.		13409723					
Product Car	2		9	Washin	g Machine		4169906		100000000			
No. of Units	(20	= Brennan M	chael				34977093	<u></u>		
C TotalSales	snoont.	14	11	= North					34977091			
		12	12	Air Con	ditioner				11939112	8		
			13	Refrigi	1005				5640969	<u>8</u>		
rag fields between a	INFO DECIMI		54	Televis	ion				12650170			
F FETERS	E COUNT	2.0	15	Washin	g Machine				4746834	5 C		
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			18	Air Con	ditioner						12778410	5
1 access	we can be		19	Refrigir	ator						6629077	1
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Salespersen •	Sum of Ta	• •	21	Washin	g Machine						5018342	1
Region .	Sum of To	•	22	= Dumlao Ric	hard							46418680
			23	#West								46438680
				Aletter	******				-			

As you can see, it is a bit cumbersome read such a report. If the number of entries becomes more, the more difficult it will be.

Power Pivot provides a solution for a better representation of data with Flattened PivotTable.

Creating a Flattened PivotTable

You can create a Power Flattened PivotTable as follows:

- Click the Home tab on the Ribbon in the PowerPivot window.
- Click PivotTable.
- Select Flattened PivotTable from the dropdown list.

A Parts Append A Parts Append A Parts Pestors Prom Database - Service Cophosed Cophosed	a Free Other Exiting Source Connections	Forma PivotTable 10	Countil Sectory Countil Sectory Fitter Column Constitution Constitution	Data Dagran Drow Calculation View View Winy
esettayout Ungloy 🗹 Colonna 5	N Control and Friedda. (N International States) 3 Control and Friedda. (N Internation	teritighant hard and Table (gencental) hard and Table (gencental) ge Charts (Herspertal) leg Charts (Herspertal) our Charts		84 8
Product Price		igneres Protitase File	attened PivotTable	
	Repon Month Product Product Price Product Cost No. of Units	Region Region Region Product Product Product Cost No. of Units	Pegion Pediut Product Product Price Product Cost No. of Units	Region Month Product Product Product Price Product Cost No. of Units
Salesperson	TotalsalesAmount	Tota/SalesAmount	TotalSalesAmount	TotalSalesAmount

Create Flattened PivotTable dialog box appears. Select New Worksheet and click OK.

Create Flattene	d PivotTable			?	×
New Work Existing W	sheet orksheet				
Location:	'Sheet8'!\$B\$3				N
		O	<	Cance	I.

As you can observe the data is flattened out in this PivotTable.

	-	1.4	A	6	D	1	1	ů.	H
PivotTable	Fields * *	3.	24						
ACTIVE ALL		2							
	196 A		Salesperson	- Region -	Product +	Sum of TotalSalesAmount	Sum of TotalSalesAmount	Sum of TotalSalesAmount	Sum of TotalSalesAmount
Change Netter to add	to shore	4	Albertson Kathy	East	Air Conditioner	11627832			
> 27 East Sales	141	1.	Albertson Kathy	East	Refrigirator	5981782			
1.1.1.1.1.1.1.1.1	11	-6-	Albertson Kathy	East	Television	13499729			
> I Morth, Sales		7	Albertson Kathy	fast	Washing Machine	4369906			
> T Product Cate	log	8	Brennan Michael	North	Air Conditioner		12539112		
	(27.0)	1.8	Brennan Michael	North.	Refrigirator		5640965		
> 🖾 Salesperson		10	Brennan Michael	North	Television		12650176		
1 III South Sales		11	Brennan Michael	North	Washing Machine		4746834		
		12	Davis William	South	Air Conditioner			32778430	
1 🖾 West_Sales	1	11	Davis William	South	Refrigirator			6619077	
A		14	Davis William	South	Television			12597085	
trad pedi petwee	areas devolve	13	Davis William	South	Washing Machine			5018342	
T FAIDS	B. COLUMNS	10	Dumlao Richard	West	Air Conditioner				16131646
	T Values ·	17	Dumlao Richard	West	Refrigirator				4067362
		10	Dumlao Richard	West	Television				15969405
		19	Dumlao Richard	West	Washing Machine				6270267
		20							
		21							
IT ROWS	T VALUES	22							
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Region	Som of TotalL	-24							
Product .	Sum of Tetall	25							
	Sum of Lotals	26							
		- 27							
ini a la l		128.1							

Note – In this case Salesperson, Region and Product are in ROWS area only as in the previous case. However, in the PivotTable layout, these three fields are appearing as three columns.

Exploring Data in Flattened PivotTable

Suppose you want to summarize the sales data for the product – Air Conditioner. You can do it in a simple way with the Flattened PivotTable as follows:

- Click the arrow next to the column header Product.
- Check the box Air Conditioner and uncheck the other boxes. Click OK.

PivotTable F	ields • ×	14	A 8 C D	1	1	0	н	1
TWOEL ADIE F CTWE ALL record fields to add East, Sales North, Sales Product, Catal Salesperson	tringent R+	1 2 3 4 5 6 7 8 9 10	Salesperion · Product Albert: [1] San Ana Z Albert: [1] San Ana Z Albert: [1] San Zin A Albert: [1] San Zin A Albert: [1] San Zin A Albert: [1] San Zin A Directory [1] San Zin A Brenni, [1] San Zin A	* Sum of TotalSalesAmount, 11627632 3981783 13499729 4369906	Sum of TotalSalesAmount 11599112 544069 124627	Sum of TotalSalesAmount	Sum of TotalSalesAmount	
reg fields between F FIGTURS	ereal below.	11 12 13 14 15 16 17	Brenn Davis S Jonann Product JO Davis S Image and the conditioner Davis S Image and the conditioner Image and the conditioner JO Davis S Image and the conditioner Image and the conditioner JO Davis S Image and the conditioner Image and the conditioner JO Dumita Image and the conditioner Image and the conditioner JO	8	4746834	12778410 8619077 12597089 5018342	16131646 8067342	
t Rows Geogenian • Region • Product •	E visuts Sum of Ta	18 19 20 21 23 23	Dumla Dumla OK Canor				13999405 6270267	

The Flattened PivotTable is filtered to the Air Conditioner sales data.

You can make it look more flattened by dragging \sum **VALUES** to ROWS area from the COLUMNS area.

Rename the custom names of the summation values in the \sum VALUES area to make them more meaningful as follows:

- Click on a summation value, say, Sum of TotalSalesAmount for East.
- Select Value Field Settings from the dropdown list.
- Change the Custom Name to East TotalSalesAmount.
- Repeat the steps for the other three summation values.

PivotTable F	ields - x	A	8	c	D	E	F	
ACTIVE ALL	icius.	2			Charles I			
Choose fields to add t	o report: 🔅 +	3	Salesperson	Region	Product Air Conditioner	A Values	11637933	
		5	Albertson kauly	Case	Air conditioner	North TotalSalesAmount	1102/052	
Region	-	6				South TotalSalesAmount		
Month		7				West TotalSalesAmount		
Product		8	Brennan Michael	BNorth	Air Conditioner	East TotalSalesAmount		
Denduct Priv		9				North TotalSalesAmount	11939112	
C Product Fix	de la	10				South TotalSalesAmount		
D Product Co	a	11				West TotalSalesAmount		
No. of Units		12	E Davis William	i≅South	Air Conditioner	East TotalSalesAmount		
✓ TotalSales/	umount	13				North TotalSalesAmount		
		14				South TotalSalesAmount	12778410	
Dran fields between a	rear helmar	15				West TotalSalesAmount		
energinesis ecineeria	near person	16	Comlao Richard	⊎West	Air Conditioner	East TotalSalesAmount		
T FLTERS	III COLUMNS	17				North TotalSalesAmount		
		18				South TotalSalesAmount		
		19				West TotalSalesAmount	16131646	
III RÓWS	E VALUES	20						
C.L.	South Tota	21						
salesperson •	West Total. *	22						
Reason •	Record States of States and States	23						
The Production and I look	the Instants							

You can also summarize the number of units sold.

- Drag No. of Units to the ∑ VALUES area from each of the tables East_Sales, North_Sales, South_Sales and West_Sales.
- Rename the values to East Total No. of Units, North Total No. of Units, South Total No. of Units and West Total No. of Units respectively.

an one office		1.11	8	c	D	E	F.
PivotTable F	ields * *	1					
ACTIVE ALL		2			and the second second second		
	1 at 1	3	Salesperson	 Region 	Product	Yalues	
Choose helds to add	to report: 52 *	4	Albertson Kathy	⊜East	Air Conditioner	East TotalSalesAmount	11627832
→ I West_Sales	1	5				North TotalSalesAmount	
Region	1.1	6				South TotalSalesAmount	
Month		7				West TotalSalesAmount	
Product		8				East Total No. of Units	285
Product Pr	ice	9				North Total No. of Units	
Product C	not in	10				South Total No. of Units	
		11				West Total No. of Units	
1 No. of Uni	8	12	Brennan Michael	© North	Air Conditioner	East TotalSalesAmount	
1 TotalSales	Amount	13				North TotalSalesAmount	11939112
	100	14				South TotalSalesAmount	
Drag fields between	areas below:	15				West TotalSalesAmount	
		16				East Total No. of Units	
T FILTERS	IE COLUMNS	17				North Total No. of Units	293
		18				South Total No. of Units	
		19				West Total No. of Units	
= eows	S. VALUES	20		Bouth	Air Conditioner	East TotalSalesAmount	
(South Tota +	21				North TotalSalesAmount	
Salesperton •	West Total	22				South TotalSalesAmount	12778410
r synam . • Ital	It treat relation ? (but	23				West TotalSalesAmount	
11 Defections floor	Pide () Innate					Fact Tatal Sta additates	

As you can observe, in both of the above tables, there are rows with empty values, as each salesperson represents a single region and each region is represented only by a single salesperson.

- Select the rows with empty values.
- Right click and click on Hide in the dropdown list.

All the rows with empty values will be hidden.

3	_						_		
	А	В		С		D		E	F
1									
2			_						
3		Salesperson	*	Region	7	Product	Τ.	Values	
4				BEast		Air Conditioner		East TotalSalesAmount	11627832
8								East Total No. of Units	285
13								North TotalSalesAmount	11939112
17								North Total No. of Units	293
22								South TotalSalesAmount	12778410
26								South Total No. of Units	303
31								West TotalSalesAmount	16131646
35								West Total No. of Units	379
36									

As you can observe, though the rows with empty values are not displayed, the information on the Salesperson also got hidden.

- Click on the column header Salesperson.
- Click the ANALYZE tab on the Ribbon.
- Click Field Settings. The Field Settings dialog box appears.
- Click the Layout & Print tab.
- Check the box Repeat Item Labels.
- Click OK.

1 Field Settings ? × 2 3 Salesperson Region Product 4 # Albertson Kathy # East Air Conditioner Custom Name: Salesperson 13 Subtotals & Filters Layout & Print 14 Subtotals & Filters Layout & Print 13 Subtotals & Filters Layout & Print 14 Subtotals & Filters Layout & Print 15 Subtotals at the top of each group 16 17 18 19 11 13 14 15	A	В	c	D	E F G
43	A 1 2 3 4 8 13 17 22 26 31 35 36 37 38 39 40 41 42 43 39 40 41 42 44 44 44 44 44 44 44 44 44	B Salesperson Albertson Kathy	⊂	D Product .T Air Conditioner	E F G Field Settings ? X Source Name: Salesperson Custom Name: Salesperson Subtotals & Filters Layout & Phint Layout O isplay labels from the next field in the same column (compact form) O isplay labels from the next field in the same column (compact form) O isplay labels in tabular form © Show item labels Insert glank line after each item label Show items with no data

As you can observe, the Salesperson information is displayed and the rows with empty values are hidden. Further, the column Region in the report is redundant, as the values in the Values column are self-explanatory.

1	A	В	c	D		E	F
1							
2							
3		Salesperson	Region	Product	,T	Values	
4		BAlbertson Kathy	⊜East	Air Conditioner		East TotalSalesAmount	11627832
8		Albertson Kathy				East Total No. of Units	285
13		Brennan Michael				North TotalSalesAmount	11939112
17		Brennan Michael				North Total No. of Units	293
22		Davis William				South TotalSalesAmount	12778410
26		Davis William				South Total No. of Units	303
31		Dumlao Richard				West TotalSalesAmount	16131646
35		Dumlao Richard				West Total No. of Units	379
36							
37							

Drag the field Regions out of Area.

-24	А	8		С		D	E
1							
2							
3		Salesperson	*	Product	" T	Values	
4		Albertson Kathy		Air Conditioner		East TotalSalesAmount	11627832
8		Albertson Kathy				East Total No. of Units	285
13		Brennan Michael				North TotalSalesAmount	11939112
17		Brennan Michael				North Total No. of Units	293
22		Davis William				South TotalSalesAmount	12778410
26		Davis William				South Total No. of Units	303
31		Dumlao Richard				West TotalSalesAmount	16131646
35		Dumlao Richard				West Total No. of Units	379
36							
27							

Reverse the order of the fields - Salesperson and Product in the ROWS area.

14	А	В	C		D	E
1						
2						
3		Product	Salesperson	-	Values	
4		■Air Conditioner	Albertson Kathy		East TotalSalesAmount	11627832
8			Albertson Kathy		East Total No. of Units	285
13			Brennan Michael		North TotalSalesAmount	11939112
17			Brennan Michael		North Total No. of Units	293
22			Davis William		South TotalSalesAmount	12778410
26			Davis William		South Total No. of Units	303
31			Dumlao Richard		West TotalSalesAmount	16131646
35			Dumlao Richard		West Total No. of Units	379
36						

You have arrived at a concise report combining data from six tables in the Power Pivot.

PivotChart Creation

A PivotChart based on Data Model and created from the Power Pivot window is a Power PivotChart. Though it has some features similar to Excel PivotChart, there are other features that make it more powerful.

In this module, you will learn about Power PivotCharts. Henceforth we refer to them as PivotCharts, for simplicity.

Creating a PivotChart

Suppose you want to create a PivotChart based on the following Data Model.

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Salesperson Region				

- Click the Home tab on the Ribbon in Power Pivot window.
- Click PivotTable.
- Select PivotChart from the dropdown list.



The Create PivotChart dialog box appears. Select New Worksheet and click OK.

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An empty PivotChart is created on a new worksheet in the Excel window.

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As you can observe, all the tables in the data model are displayed in the PivotChart Fields list.

- Click on the Salesperson table in the PivotChart Fields list.
- Drag the fields Salesperson and Region to AXIS area.

Two field buttons for the two selected fields appear on the PivotChart. These are the Axis field buttons. The use of field buttons is to filter data that is displayed on the PivotChart.

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Drag **TotalSalesAmount** from each of the four tables– East_Sales, North_Sales, South_Sales and West_Sales to \sum VALUES area.

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The following appear on the worksheet -

- In the PivotChart, column chart is displayed by default.
- In the LEGEND area, \sum VALUES are added.

- The Values appear in the Legend in the PivotChart, with title Values.
- The Value Field Buttons appear on the PivotChart. You can remove the legend and the value field buttons for a tidier look of the PivotChart.
- Click on the 🗄 button at the top right corner of the PivotChart. The **Chart Elements** dropdown list appears.



Uncheck the box Legend in the Chart Elements list. The Legend is removed from the PivotChart.



- Right click on the value field buttons.
- Select Hide Value Field Buttons on Chart from the dropdown list.

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The value field buttons on the chart are removed.

Note – The display of field buttons and/or legend depends on the context of the PivotChart. You need to decide what is required to be displayed.

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PivotChart Fields List

As in the case of Power PivotTable, Power PivotChart Fields list also contains two tabs – ACTIVE and ALL. Under the ALL tab, all the data tables in the Power Pivot Data Model are displayed. Under the ACTIVE tab, the tables from which the fields are added to PivotChart are displayed.

ACTIVE		— ALL
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Likewise, the areas are as in the case of Excel PivotChart. There four areas are -

- AXIS (Categories)
- LEGEND (Series)
- $\sum VALUES$
- FILTERS

As you have seen in the previous section, Legend is populated with \sum Values. Further, field buttons are added to the PivotChart for the ease of filtering the data that is being displayed.

Filters in PivotChart

You can use the Axis field buttons on the chart to filter the data being displayed. Click on the arrow on the Axis field button – Region.



The dropdown list that appears looks as follows:



You can select the values that you want to display. Alternatively, you can place the field in FILTERS area for filtering the values.

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Drag the field Region to FILTERS area. The Report Filter button - Region appears on the PivotChart.

Click on the arrow on the Report Filter button – Region. The dropdown list that appears looks as follows:

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You can select the values that you want to display.

Slicers in PivotChart

Using Slicers is another option to filter data in the Power PivotChart.

- Click the ANALYZE tab under PIVOTCHART tools on the Ribbon.
- Click Insert Slicer in the Filter group. The Insert Slicer dialog box appears.

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All the tables and the corresponding fields appear in the Insert Slicer dialog box. Click the field Region in Salesperson table in the Insert Slicer dialog box.

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Slicer for the field Region appears on the worksheet.



As you can observe, the Region field still exists as an Axis field. You can select the values that you want to display by clicking on the Slicer buttons.

Remember that you are able to do all these in a few minutes and also dynamically because of the Power Pivot Data Model and defined relationships.

PivotChart Tools

In Power PivotChart, the PIVOTCHART TOOLS has three tabs on the Ribbon as against two tabs in Excel PivotChart –

- ANALYZE
- DESIGN
- FORMAT

The third tab - FORMAT is the additional tab in Power PivotChart.

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Click the FORMAT tab on the Ribbon.

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The options on the Ribbon under FORMAT tab are all for adding splendor to your PivotChart. You can use these options judiciously, without getting over bored.

Table and Chart Combinations

Power Pivot provides you with different combinations of Power PivotTable and Power PivotChart for data exploration, visualization, and reporting. You have learnt the PivotTables and PivotCharts in the previous modules.

In this module, you will learn how to create the Table and Chart combinations from within the Power Pivot window.



Consider the following Data Model in Power Pivot that we will use for illustrations -

Chart and Table (Horizontal)

With this option, you can create a Power PivotChart and a Power PivotTable, one next another horizontally in the same worksheet.

- Click the Home tab in Power Pivot window.
- Click PivotTable.
- Select Chart and Table (Horizontal) from the dropdown list.

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Create PivotChart and PivotTable (Horizontal) dialog box appears. Select New Worksheet and click OK.

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		OK	Cancel						

An empty PivotChart and an empty PivotTable appear on a new worksheet.

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- Click on the PivotChart.
- Drag **NOC_CountryRegion** from Medals table to the AXIS area.
- Drag Medal from Medals table to the \sum VALUES area.
- Right click on the Chart and select Change Chart Type from the dropdown list.
- Select Area Chart.
- Change the Chart Title to Total No. of Medals Country Wise.

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As you can see, USA has the highest number of Medals (> 4500).

- Click on the PivotTable.
- Drag Sport from the Sports table to the ROWS area.
- Drag Medal from the Medals table to the \sum VALUES area.
- Drag **NOC_CountryRegion** from Medals table to FILTERS area.
- Filter the **NOC_CountryRegion** field to the value USA.
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Change the **PivotTable Report** Layout to **Outline** Form.

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		9		3500							-	Bobsleigh	64
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- Deselect Sport from the Sports table.
- Drag Gender from the Medals table to the ROWS area.

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Chart and Table (Vertical)

With this option, you can create a Power PivotChart and a Power PivotTable, one below another vertically in the same worksheet.

- Click the Home tab in Power Pivot window.
- Click PivotTable.
- Select Chart and Table (Vertical) from the dropdown list.

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1/1/1960 Winter	A29722	URS	M	en M	Skiing	018	dx10	km Bronze	M10322	D154x10km relay	
1/1/1960 Winter	A29733	NOR	M	en M	Skiing	D38	4:30	km Sover	M10323	D184x10km relay	
1/1/1960 Winter	A29734	FIN	M	en M	Skiing	018	dx10	km Gold	M10924	D156x10km relay	
1/1/1960 Winter	A29736	URS	M	en M	Skiing.	DIE	4x10	km Bronze	M30326	D184x10km relay	
1/1/1960 Winter	A29737	NOR	M	en M	Skiing	018	-4x10	km Silver	M10327	D184x10km relay	
1/1/1960 Winter	A29738	FIN	M	en M	Skiing	810	4x10	km Gold	M10328	D184x10km relay	
1/1/1960 Winter	A29790	URS	M	en M	Skiing	018	4x10	km Bronze	M11192	D154x10km relay	
1/1/1960 Writer	A29791	NOR	M	en M	Skiing	038	4x10	km Silver	M11193	D184x10km relay	
1/1/1960 Winter	A29792	EIN	M	en M	Skiing	018	4x10	km Gold	M11194	D194x10km relay	
1/1/1964 Winter	A29855	UKS	M	en M	Sking	018	400	km Bronze	M11326	0154x10km relay	
1/1/1964 Winter	A25856	SWE	M	en M	Skiing	D15	4x10	km Gold	M11327	D184x10km relay	
1/1/1964 Winter	A29857	FIN	M	en M	Skilling	038	400	Rm Silver	M11325	D184x30km relay	

The **Create PivotChart and PivotTable (Vertical)** dialog box appears. Select New Worksheet and click OK.

Create PivotCh	art and PivotTable	e (Vertical)	?	×
New Works	heet			
O Existing We	orksheet			
Location:	'Sheet3' <mark>!\$J\$</mark> 3			
		ОК	Can	icel
				1 212

An empty PivotChart and an empty PivotTable appear vertically on a new worksheet.

- Click on the PivotChart.
- Drag Year from the Medals table to AXIS area.

- Drag Medal from the Medals table to \sum VALUES area.
- Right click on the Chart and select Change Chart Type from the dropdown list.
- Select Line Chart.
- Check the box Data Labels in the Chart Elements.
- Change the Chart Title to Total No. of Medals Year Wise.

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As you can observe, year 2008 has the highest number of Medals (2450).

- Click on the PivotTable.
- Drag Sport from the Sports table to the ROWS area.
- Drag Gender from the Medals table to the ROWS area.
- Drag Medal from the Medals table to the \sum VALUES area.
- Drag Year from the Medals table to the FILTERS area.
- Filter the Year field to the value 2008.
- Change the Report Layout of PivotTable to Outline Form.
- Filter the field Sport with Value Filters to Greater than or equal to 80.

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Hierarchies

A hierarchy in Data Model is a list of nested columns in a data table that are considered as a single item when used in a Power PivotTable. For example, if you have the columns – Country, State, City in a data table, a hierarchy can be defined to combine the three columns into one field.

In the Power PivotTable Fields list, the hierarchy appears as one field. So, you can add just one field to the PivotTable, instead of the three fields in the hierarchy. Further, it enables you to move up or down the nested levels in a meaningful way.



Consider the following Data Model for illustrations in this module.

Creating a Hierarchy

You can create Hierarchies in the diagram view of the Data Model. Note that you can create a hierarchy based on a single data table only.

- Click on the columns Sport, DisciplineID and Event in the data table Medal in that order. Remember that the order is important to create a meaningful hierarchy.
- Right-click on the selection.
- Select Create Hierarchy from the dropdown list.



The hierarchy field with the three selected fields as the child levels gets created.



Renaming a Hierarchy

To rename the hierarchy field, do the following:

- Right click on Hierarchy1.
- Select Rename from the dropdown list.



Type EventHierarchy.



Creating a PivotTable with a Hierarchy in Data Model

You can create a Power PivotTable using the hierarchy that you created in the Data Model.

- Click the PivotTable tab on the Ribbon in the Power Pivot window.
- Click PivotTable on the Ribbon.

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Reset Layout Display: Colours	a ♥ Coloulated Hedds ♥ Hereards € Preds Coloulated Hedds ♥ Hereards € Preds Chart Preds	Chart and Table (Sorizontal) cand Table (Sorizontal) Charts Chart	n Discipline Sport Participation
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The Create PivotTable dialog box appears. Select New Worksheet and click OK.

Create PivotTak	ble		?	×
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An empty PivotTable is created in a new worksheet.

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In the PivotTable Fields list, **EventHierarchy** appears as a field in Medals table. The other fields in the Medals table are collapsed and shown as More Fields.

- Click on the arrow in front of EventHierarchy.
- Click on the arrow in front of More Fields.

The fields under EventHierarchy will be displayed. All the fields in the Medals table will be displayed under More Fields.

PivotTable Fields	* X
Choose fields to add to report:	¢۰
 Medals EventHierarchy Sport DisciplinelD Event More Fields Edition Season AthletelD Athlete NOC_CountryRegion Gender Event_gender 	*
Event_gender Sport DisciplinelD	
 Event Medal MedalKey 	

As you can observe, the three fields that you added to the hierarchy also appear under **More Fields** with check boxes. If you do not want them to appear in the PivotTable Fields list under **More Fields**, you have to hide the columns in the data table – Medals in data view in Power Pivot Window. You can always unhide them whenever you want.

Add fields to the PivotTable as follows:

- Drag EventHierarchy to ROWS area.
- Drag Medal to \sum VALUES area.

04 – XM –	523.55 TT	1.1	А	8	C
PivotTable F	ields * ×	1		-	
ACTIVE ALL		2			
		3		Row Labels	Count of Medal
Choose fields to add	to report: 🛛 🖓 🔻	4		B Aquatics	3817
A Medals		5		B Archery	305
▲ 🗹 EventHier	archy	ő		B Athletics	3411
Sport		7		Badminton	120
DisciplinelD		8		■ Baseball	335
Event		9		■Basketball	940
🔺 🛗 More Field	s	10		Basque Pelota	4
Edition		11		Biathlon	291
Season	(w)	12		■ Bobsleigh	362
		13		⊞Boxing	842
Drag fields between a	areas below:	14		■ Canoe / Kayak	1002
TH TERE	III. COLUMNIC	15		III Cricket	24
I FILTERS	III COLOMINS	16		⊞ Croquet	8
		17		H Curling	21
		18		⊞ Cycling	1009
- 1277 (2010) 2010		19		⊞Equestrian	875
≡ ROWS	∑ VALUES	20		# Fencing	1539
EventHierarc •	Count of Medal -	21		⊞ Football	1387
		22		⊞Golf	30
		23			2169
				mete-sh-10	000

The values of Sport field appear in the PivotTable with a + sign in front of them. The medal count for each sport is displayed.

- Click on the + sign before Aquatics. The DisciplineID field values under Aquatics will be displayed.
- Click on the child D22 that appears. The Event field values under D22 will be displayed.

	- H - H	0	6
PivotTable Fields **	1		
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Choose fields to add to report:	4	■Aquatics	3817
AthletelD [7]	5	BD22	356
	6	10m platform	139
	7	3m springboard	133
NOC_CountryRegion	8	plain high diving	9
Gender	9	plunge for distance	3
Event_gender	10	synchronized diving 10m platform	36
Sport Sport	11	synchronized diving 3m springboard	36
DisciplinelD	12	⊕ D56	2428
	13		153
Drag fields between areas below:	14	⊕ D67	880
	15	■Archery	305
T PILTERS III COLUMINS	16	Athletics	3411
	17	Badminton ■ ■ Badminton ■	120
	18	⊕ Baseball	335
	19	🗉 Basketball	940
\equiv ROWS Σ VALUES	20	🗄 Basque Pelota	4
EventHierarc Count of Medal	21	Biathlon	291
	22	Bobsleigh	362
	23	Boxing	842

As you can observe, medal count is given for the Events, that get summed up at the parent level – **DisciplineID**, that get further summed up at the parent level – Sport.

Creating a Hierarchy based on Multiple Tables

Suppose you want to display the Disciplines in the PivotTable rather than DisciplineIDs to make it a more readable and understandable summarization. In order to do this, you need to have the field Discipline in Medals table that as you know is not. Discipline field is in Disciplines data table, but you cannot create a hierarchy with fields from more than one table. But, there is a way to obtain the required field from the other table.

As you are aware, the tables – Medals and Disciplines are related. You can add the field Discipline from Disciplines table to the Medals table, by creating a column using the relationship with DAX.

- Click data view in Power Pivot window.
- Click the Design tab on the Ribbon.
- Click Add.

The column – Add Column on the right side of the table is highlighted.

Type = **RELATED** (Disciplines [Discipline]) in the formula bar. A new column – **CalculatedColumn1** is created with the values as Discipline field values in the Disciplines table.

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Men	M	Guing	DIE	da10km relay	Silver	M10320	D184x10km relay	1940	1967Winter	Cross Country 5	-	
Men	M	Dire	015	dalling relay	Gold	M10171	D154x10km relay	1960	Thicknoter	Central Collectory 5	-	
Men	M	Shing	018	dx10km relay	Bronze	M10322	D184x50km relay	1960	1960Winter	Cross Country S	-	
Men	M	Suing	018	4x10km relay	Silver	M10323	D164x10km relay	1960	1960Winter	Cross Country S		
Men	M	Sking	DIS	4x10km relay	Gold	M30324	D164x10km relay	1960	1967Winter	Cross Country 5		
Men	M	Skiing	018	4x10km relay	Bronze	M10326	D154x30km relay	1960	1960Winter	Cross Country 5		
Men	M	Skiing	D18	4x10km relay	Silver	M10327	D164x10km relay	1960	1967Winter	Cross Country 5		
Men	M	Skiing	DIS	4x10km relay	Gold	M10328	D154x30km relay	1960	1967Winter	Crots Country S		
Men	M	Sking	015	4x10km relay	Bronze	M11192	D184x30km relay	1960	1960Winter	Cross Country S		
Men	M	Sking	018	4x10km relay	Silver	M11153	D184x10km relay	1960	1960Winter	Cross Country 5		
Men	м	Sking	018	4x10km relay	Gold	M11194	D184x10km relay	1960	1960Winter	Cross Country 5		
Men	M	Skiing	018	4x10km relay	Bronze	M11326	D154x30km relay	1994	1964Winter	Cross Country S		
Men	м.	Sking	018	4x10km relay	Gold	M11327	D184x30km relay	1964	1964Winter	Cross Country S		
Men	м	Sking	018	4x10km relay	Silver	M11328	D154x30km relay	1964	1964Winter	Cross Country S		

Rename the new column thus obtained in the Medals table as Discipline. Next, you have to remove DisciplineID from the Hierarchy and add Discipline, which you will learn in the following sections.

Removing a Child Level from a Hierarchy

As you can observe, the hierarchy is visible in the diagram view only, and not in the data view. Hence, you can edit a hierarchy in the diagram view only.

- Click on the diagram view in the Power Pivot window.
- Right click DisciplineID in EventHierarchy.
- Select Remove from Hierarchy from the dropdown list.



The Confirm dialog box appears. Click Remove from Hierarchy.

Cor	nfirm	×
Do yo	u want to remove this level f	from the hierarchy?
Г		
	Remove from Hierarchy	Cancel

The field DisciplineID gets deleted from the hierarchy. Remember that you have removed the field from hierarchy, but the source field still exists in the data table.

Next, you need to add Discipline field to EventHierarchy.

Adding a Child Level to a Hierarchy

You can add the field Discipline to the existing hierarchy - EventHierarchy as follows:

- Click on the field in Medals table.
- Drag it to the Events field below in the EventHierarchy.

	= Hosts	(The second
oorts Sport Sport SportD Mestals Athlete NOC_CountryRegion Gender Event_gender Sport DisciplineID Event Event	City City OC_CountryRegion Alpha-2 Code Edition Season EditioniD	Event Discipline Sport Participation
Medal Madal	= Leerts	w W Teams
Discipline DisciplineID SportID SportID DisciplineEvent Vear EditionID Sport (Sport) Event (Event) Event (Event)	EventD Event DisciplineID Discipline SportID DisciplineEvent	Event Discipline Sport Participation

The Discipline field gets added to EventHierarchy.

		= Hosts	-
Sports	Media Moc_CountryRegion Gender Event_gender Sport DisciplineID Event	City City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Citorine Discipline DisciplineD	Medal MedalKey DisciplineEvent Year EditionID	EventD	W_Teams Event Discipline
SportID	Sport (Sport) Event (Event) Discipline (Discipline)	DisciplineID Discipline Discipline SportID DisciplineEvent	Sport Participation

As you can observe, the order of the fields in EventHierarchy is Sport–Event–Discipline. But, as you are aware it has to be Sport–Discipline-Event. Hence, you need to change the order of the fields.

Changing the Order of a Child Level in a Hierarchy

To move the field Discipline to the position after the field Sport, do the following:

- Right click on the field Discipline in EventHierarchy.
- Select Move Up from the dropdown list.



The order of the fields changes to Sport-Discipline-Event.

		THE HOLES	-
Sport	Averit NOC_CountryRegion Gender Event_gender Sport DisciplineID Event	City City NOC_CountryRegion Alpha-2 Code Edition Edition EditionID	Event Discipline Sport Participation
Decipilites	Medal MedalKey DisciplineEvent Vear GitonID Sport (Sport) Discipline (Discipline) Event (Event) Discipline		W. Teams Event Discipline Sport Participation

PivotTable with Changes in Hierarchy

To view the changes that you made in EventHierarchy in the PivotTable, you need not create a new PivotTable. You can view them in the existing PivotTable itself.

Click on the worksheet with the PivotTable in Excel window.

and the second sec	and the second s	- M - 4	A B	C
PivotTable F	ields * ×	1		
ACTIVE ALL		2		
	Translation of the second	3	Row Labels	Count of Medal
Choose fields to add t	to report: 🛛 🍄 👻	4	BAquatics	3817
A To Madala		5	BArchery	305
A V EventHiera	archy	6	Athletics	3411
Sport	1203976	7	Badminton	120
Discipline		8	Baseball	335
Event		9	Basketball	940
More Field	\$	10	Basque Pelota	4
		11	Biathlon	291
		12	∎Bobsleigh	362
		13	Boxing	842
Drag fields between a	areas below:	14	⊞Canoe / Kayak	1002
W au trace	NI COLUMNIC	15	III Cricket	24
T FILTERS	III COLUMNS	16	⊞Croquet	8
		17	■Curling	21
		18	Cycling	1009
		19	Equestrian	875
≡ ROWS	2: VALUES	20	IT Fencing	1539
EventHierarc *	Count of Medal 💌	21	1 Football	1387
		22	€Golf	30
£2		23	# Gymnastics	2169
	Contraction of the local division of the loc	34	12) 2 4 m m all m a 14	000

As you can observe, in the PivotTable Fields list, the child levels in the EventHierarchy reflect the changes you made in the Hierarchy in Data Model. The same changes also get reflected in the PivotTable accordingly.

Click the + sign in front of Aquatics in the PivotTable. The child levels appear as values of the field Discipline.

	di	A	В	C	
PivotTable Fields **	1				
ACTIVE ALL	2				
8	3		Row Labels	Count of Medal	
Choose fields to add to report:	4		Aquatics	3817	
Medals	5		⊜Diving	356	
EventHierarchy	6		10m platform	139	
Sport	7		3m springboard	133	
Discipline	8		plain high diving	9	
Event	9		plunge for distance	3	
More Fields	10		synchronized diving 10m platform	36	
	11		synchronized diving 3m springboard	36	
	12			2428	
12 MALES	13		Synchronized S.	153	
Drag fields between areas below:	14		■ Water polo	880	
T FILTERS	15		■Archery	305	
	16			3411	
	17		Badminton	120	
	18		III Baseball	335	
	19		Basketball	940	
E KOWS 2. VALUES	20		Basque Pelota	4	
EventHierarc Count of Medal	21		# Biathlon	291	
	22		Bobsleigh	362	
	23			842	

Hiding and Showing Hierarchies

You can choose to hide the Hierarchies and show them whenever you want.

- Uncheck the box Hierarchies in the top menu of diagram view to hide the hierarchies.
- Check the box Hierarchies to show the hierarchies.

		THE REAL	
Sports Sport SportID	MACES NOC_CountryRegion Gender Event_gender Sport DisciplineID Event	City City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Discipline Discipline Discipline SportID	Medal MedalKey DisciplineEvent Year EditionID EditionID File EventHerarchy Sport (Sport) Discipline (Discipline) Event (Event)	Contact Conta	Event Discipline Sport Participation

Creating a Hierarchy in Other Ways

In addition to the way you created hierarchy in the previous sections, you can create a hierarchy in another two ways.

1. Click the Create Hierarchy button on the top right corner of the Medals data table in diagram view.

Sports Sport Sport Sport Sport SportID Sport Spo	Create Hierarchy Alpha-2 Code	Subsers Event Discipline Sport Participation
Deciplines	EditionID	m.W_lisams
Discipline DisciplineiD SportiD SportiD U Sport (Sport) Discipline (Discipline Event (Event)	ne)	Event Discipline Sport Participation

A new hierarchy gets created in the table without any fields in it.



Drag the fields Year and Season, in that order to the new hierarchy. The hierarchy shows the child levels.

	•	m Hosts	III 5_Teams
goorts 3 Sport 3 SportiD	Sport Sport Event Medal Medalkey DisciplineEvent	City City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Dodplines	Year EditionID The EventHierarchy	E Lorenta	W_Inarra
Discipline DisciplineID SportID	Sport (Sport) Discipline (Discipline) Event (Event)	Event	Discipline Sport Participation
	Year (Year)	Discipline SportiD DisciplineEvent	

2. Another way of creating the same hierarchy is as follows:

- Right click on the field Year in the Medals data table in diagram view.
- Select Create Hierarchy from the dropdown list.

	•	m Hends	m S Tearrs
Sports	Edition Season AthleteD Athlete NOC_CountryRegion Gepdar	City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Discipline Discipline Discipline SportiD	Eve all Create Relationship Sop 2: Create Relationship Dis > Delete Eve Hide from Client Tools Me → Go To Dis w) Rename Eve EditionID	Cvents Cvents Cvents Sport Discipline Sports Discipline Discipline Discipline Discipline Discipline Discipline Discipline Discipline Cvents Cv	Welcons Event Discipline Sport Participation

A new hierarchy is created in table with Year as a child field.

	•	m Hosts	m 5 Teams
Sport Sport	Event_gender Sport DisciplineID Event Medal MedalKey DisciplineEvent	City City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Disciplines	Vear EditioniD	Events	W_Ram
Discipline	▲ 18 EventHierarchy	EventID	Event
🗇 DisciplineiD	Sport (Sport)	Event .	III Discipline
SportID	Discipline (Discipline)	Sport	C Sport
	Event (Event)	DisciplineID	Participation
	Discipline	Discipline	
	- Herarcovi	SportiD	

Drag the field season to the hierarchy. The hierarchy shows the child levels.

and the second	· · · · · ·	III Hosts	m 5 keems
Sports	Medals Medal Medal Medal Medal Medalkey DisciplineEvent	City City NOC_CountryRegion Alpha-2 Code Edition Edition Edition EditionID	Event Discipline Sport Participation
Discipilmes	EditionID	E Durits	W_liters
Discipline DisciplineID SportID	Sport (Sport) Discipline (Discipline) Event (Event) Discipline Signature Signature Discipline New (New)	EventD	Event Discipline Sport Participation
	Vear (Year) Season (Season)	DisciplineEvent	

Deleting a Hierarchy

You can delete a hierarchy from the Data Model as follows:

- Right click on the hierarchy.
- Select Delete from the dropdown list.

		I Hosts	THE STREET
Sports Sport SportID	Medals Sport DisciplineID Event Medal MedalKey DisciplineEvent	City City NOC_CountryRegion Alpha-2 Code Edition Season EditionID	Event Discipline Sport Participation
Disciplines Discipline DisciplinetD SporttD	Vear EditionID Control Sport (Sport) Discipline (Discipline) Event (Event) Discipline Discipl	EventD Event Sport DisciplineID Discipline SportID DisciplineEvent	W_Beams Event Discipline Sport Participation

The **Confirm** dialog box appears. Click **Delete from Model**.



The hierarchy gets deleted.

	•	The Hosts	III S_Rums
Sport SportD	Motifi Gender Event_gender Sport DisciplineID Event Medal	City CountryRegion Alpha-2 Code Edition Season EditioniD	Event Discipline Sport Participation
trastres	DisciplineEvent	III Events	m w linams
Discipline DisciplineID SportID	Year EditionID EventHierarchy Sport (Sport) Discipline (Discipline) Event (Event) Discipline	EventiD Event Sport DisciplineiD Discipline SportID DisciplineEvent	Event Discipline Sport Participation

Calculations Using Hierarchy

You can create calculations using a hierarchy. In the EventsHierarchy, you can display the number of medals at a child level as a percentage of the number of medals at its parent level as follows:

- Right click on a Count of Medal value of an Event.
- Select Value Field Settings from the dropdown list.

	1.1.	4 A.	A B	C		D	E	F	G	
ACTIVE ALL	elds	2								
	Prese	3	Row Labels -	Count of Med	Cali	hri - 11		¢ . 0	. 173	
Choose fields to add to	o report 🛛 🗇 🤊	4	Aquatics	38					10 40	
The second		5	Diving	3	в	1 = 2	· Δ · ·	1.191.9	4 4	
 EventHierar 	rchw	6	10m platform	1	20		_	-		
b 100 More Fields		7	3m springboard	1	64	Copy		1		
a stand instance of the stand		8	plain high diving		=	Eormat C	ells	- 1		
		9	plunge for distance			Numberi	Format	- 1		
		10	synchronized diving 10m platform		12	Refearb				
		11	synchronized diving 3m springboard		112	Danesa				
		12	Swimming	24		Sort				
		13	Synchronized S.	1	5	Quick Esp	lore			
Drag fields between an	nees below:	3.4	Water polo	8	×	Remove *	Count of Me	rdal*		
W DATER	D. COULARS	15	# Archery	3	~					
1 PLIDS	III COLUMNS	16	Athletics	34		Summary	te Values By.	· •		
		17	# Badminton	1		Show Vgh	ses As	- *:		
		18	* Baseball	3	+3	Show Dgt	ails			
I and	The busie server	19	8 Basketball	9		Additions	Actions	V-1	Ti-ld.	
= ROWS	J. VALUES	20	# Basque Pelota		-	Aguiteria	n saciliaria	value	Field	Settings
EventHierarc •	Count of Medal •	21	# Biathlon	2	0	Value Fiel	d Settings.			
		22	# Bobsleigh	3		PivotTabl	e Options			
		23	# Boxing	8		Hide Field	List	1		
			Trease durant							

Value Field Settings dialog box appears.

- Click the Show Values As tab.
- Select % of Parent Row Total from the list and click OK.

Value Field Sett	tings			?	×
Source Name:	Medal				
ustom Name:	Count	of Medal		100 100 April 1	72525
Summarize Va Show values a	lues By Sho	Show Values	s as	w Value	s As
No Calculatio	n				~
No Calculatio % of Grand To % of Column	n otal Total				^
% of Row Tot % Of % of Parent R	al low Total	% of	Parent Ro	w Total	~
		~			\sim
Number From					

The child levels are displayed as the percentage of the Parent Totals. You can verify this by summing up the percentage values of the child level of a parent. The sum would be 100%.

and the second second		A	5	C
PivotTable F	ields	× 1		
ACTIVE ALL		2		
	1.4	3	Row Labels	Count of Medal
Choose fields to add	to report:	4		11.71%
A Medals		5	Diving	9.33%
1 V EventHier	archy	6	10m platform	39.04%
0 = More Field	is	7	3m springboard	37.36%
		8	plain high diving	2.53%
		9	plunge for distance	0.84%
		10	synchronized diving 10m platform	10.11%
		11	synchronized diving 3m springboard	10.11%
		12	Swimming	63.61%
		13	Synchronized S.	4.01%
Drag fields between	areas below:	14	Water polo	23.05%
T CH TEPS	11. COLUMNS	15	Archery	0.94%
I PILIERS	E COLOMINS	16	Athletics	10.47%
		17	🗷 Badminton	0.37%
		18	🗉 Baseball	1.03%
-	57 1111110F	19	Basketball	2.88%
E ROWS	2. VALUES	20	🗉 Basque Pelota	0.01%
EventHierarc *	Count of Medal •	21	Biathlon	0.89%
		22	® Bobsleigh	1.11%
		23		2.58%
100 and 100 and 100		34	10 Para - I Warrah	view e

Drilling Up and Drilling Down a Hierarchy

You can quickly drill up and drill down across the levels in a hierarchy using Quick Explore tool.

- Click on a value of Event field in the PivotTable.
- Click the Quick Explore tool E that appears at the bottom right corner of the cell containing the selected value.



The **Explore box with Drill Up** option appears. This is because from Event you can only drill up as there are no child levels under it.

Click Drill Up.

14	В	c	D	E	F	G	н	1	
1 2 3	Row Labels -	Count of Medal		EXPLORE 10m platform					×
4 5 6	Aquatics Diving 10m platform	11.71% 9.33% 39.04%	_	Disciplines Events		Drill U Discip	p line		
7	3m springboard plain high diving	37.36% 2.53%	P	Hosts Medals					
9	plunge for distance synchronized diving 10m platform synchronized diving 3m springboard	0.84% 10.11%		Sports					
12	Swimming Synchronized S.	63.61% 4.01%							
14	Water polo Archery	23.05% 0.94%							

PivotTable data is drilled up to Discipline.

	1.41	A	8		C	
PivotTable Fields **	1					
ACTIVE ALL	2					
	3		Row Labels	Τ.	Count of Medal	
Choose fields to add to report:	4		[™] Diving		9.33%	
4 Thedals	5		Swimming		63.61%	
▶ 🗹 EventHierarchy 🍸	6		# Synchronized	IS.	4.01%	
More Fields	7		■Water polo		23.05%	50
	8		Grand Total		100.00%	-
	9					
	10					
	11					
	12					
	13					
Drag fields between areas below:	14					
	15					
T PIETERS III COLUMINS	16					
	17					
	18					
and the second sec	19					
E ROWS 2 VALUES	20					
EventHierarc Count of Medal	21					
	22					

Click on the Quick Explore tool - P that appears at the bottom right corner of the cell containing a value.

Explore box appears with Drill Up and Drill Down options displayed. This is because from Discipline you can drill up to Sport or drill down to Event.

100 - 100 - 100 TO		1.49	A	В	c	D		Ε	F	G	н	1	
PivotTable Fields	* X	1		1		T		0.000					
ACTIVE ALL		2					EXI	PLORE					×
	10000	3		Row Labels	Count of Medal		Syr	nchronized !	s.				
Choose fields to add to report:	Q *	4		BDiving	9.33%			Disciplines		Dall D			
- The Martials		5		Swimming	63.61%		12	e		Event	LWD .		
▶ ✓ EventHierarchy	T	6		Synchronized S.	4.01%		8	Events			12		-8
More Fields		7		B Water polo	23.05%	2	4	Hosts		Drill U	P		
These sectors and the sectors		8		Grand Total	100.00%		P	Medals		Sport			
		9						Sports					
		10						(19.20 R					
		11											
		12											
		13											
Drag fields between areas below:		14					-						
	1422	15											
T FILTERS III COLUMI	NS	16											
		17											
		18											
		19											
I ROWS E VALUES		20											
EventHierarc Count of M	ledal 💌	21											
		22											

This way you can quickly move up and down the hierarchy.

Aesthetic Reports

You can create aesthetic reports of your data analysis with Power Pivot Data that is in Data Model.

The important features are -

- You can use PivotCharts to produce visual reports of your data. You can use Report Layouts to structure your PivotTables to make them easily readable.
- You can insert Slicers for filtering data in the report.
- You can use a common Slicer for both the PivotChart and the PivotTable that are in the same report.
- Once your final report is ready, you can choose to hide the Slicers form the display.

You will learn how to get reports with the options that are available in Power Pivot in this module.

Consider the following Data Model for illustrations in this module.



Reports based on Power PivotChart

Create a Power PivotChart as follows:

- Click the Home tab on the Ribbon in PowerPivot window.
- Click PivotTable.
- Select PivotChart from the dropdown list.
- Click New Worksheet in the Create PivotChart dialog box.

An empty PivotChart is created in a new worksheet in Excel window.

• Drag Sport from Medals table to Axis area.

-15 million 12	2011 10	1.40	A	B	C	D	E	F	G	н	1)		
PivotChart F	ields * ×	1												
ACTIVE ALL		2												
		3		Count of	Medal							+		
Choose fields to add	to report: 🛛 🕈 *	4		(entering of	Total									
-		5												
Event_gend	ler	6		4500	8500									
Sport		7		4000										
Disciplinel)	8		3000										
Event		9		2500				1						
Medal		10												
MedalKey		11												
Discipline	w the	12												
		13		1	verbi verbi	Vicie Vicie Vicie	Prod of the	Tops 1	Skie enn fenn	N/ac	Wrestin			
Drag fields between a	reas below:	14		4	Bob Bob	2002	E F		15 P	Wre				
T fatfor		15			0,850	ā	-		2	-				
T FILTERS	THE LEGEND (SERIES)	16		Sand w		70) 								
		17		(agreed to										
		18												
-		19												
AXIS (CATEG	2: VALUES	20												
Sport •	Count of Medal *	21												
		22												
		23												

• Drag Medal from Medals Table to \sum VALUES area.

- Click the ANALYZE tab in PIVOTTABLE TOOLS on the Ribbon.
- Click Insert Slicer in the Filter Group. The Inset Slicers dialog box appears.
- Click the field **NOC_CountryRegion** in the Medals table.
- Click OK.

PivotChart F	ields •×	1	A	5	C	D.	E	+	0	н		1	Inset Slicers ? X
ACTIVE ALL		2										100	ACTIVE ALL
Choose Fields to add	to report: 0 +	4		Count of	Medal							+	E T Medah
Event one	der 🔹	3					Tot	al				1	Athiete
Sport	7		4500									Athiete®DocplineEvent	
Disciplinet	8		3000 2500				1					DocplineD	
Medal		10		1500 1000	11-11	11	1			25 8	-		Estion EstionD
MedalKey				500	1.1.11		Illia			L	# 10tal		tvent
T Derivine	iand 💌	12		5	1 1 1 1 1	N IS N IN		49.54	2222	Vur			fvent_gender
Dreg fields between	ereas below:	13		Aqua 1	Pane Pane	Cred Parts	and a second	2. 81	Shoot	Without			Gender
T DO TERS	E LECEND CERES	15			100	3			2	-			
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		17						-		-	-		Citeston
		18											Disast
IT ANS (CATEG	IE VALUES	19											
Sport •	Court of Medal •	21											OK Cancel
		22											
		23											
the second second second second		1. C.A.L.											

The Slicer NOC_CountryRegion appears.

- Select USA.
- Drag Gender from Medals table to GENDER area.

-	10000	1	A	B	C	D	E	F	G	н	1	1		К.	L.	M
PivotChart F	-ields • ×	1														
ACTIVE ALL		2														
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Choose rields to Aug	to report	4		900								5	UC	ia.		•
T housen		5		800								1	1000			5111
Athlete		0		200	-								UK	ĸ		211
NOC_Cou	ntryRegion T	4		500									UR	s		
C Gender		8		400						16	ender *		UR	tu		101
🛄 Event, gen	der	10		300	1.1			1			Men		1000	-		1
Sport		11		200				11			Women		US	А		
Disciplinel	•	12		0 4	III.	these	Acres	in hi hi	1.L.e.	RL			UZ	8		
		13		2	Date of the second	1919	A 10 44	0.2 1	A la la la	and a			VE	N		5.1
Drag fields between	areas below:	14		100	1 2 2 2	f oot	1	- 2 2 3	1 1 1 1 1	2						5.Q. (
*		15		1 .	- 42	8 8	2		2	New			1.99	-		
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-	T united	19														
= AND (CATED_	Z VALUES	20														
Sport .	Count of Medal *	21														
		22														
		166				1.							1.1			1

- Right click on the PivotChart.
- Select Change Chart Type from the dropdown list.

and the second second			A		c	D		-E	F	G	H	1	1	×	- L	M.
PivotChart I	rields *	× 1														
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Choose fields to add	to report: 0	국 음		Court e	f Medal								+	NOC_COUR	tryRegion	5× -
				900 0			8	- 7	-	-	0		1	UGA		^
I Athlete		•		200 0	1		1 10	Outir	Vertical (V	(alue) -	0		-	UKR		
NOC Cou	T anica Resta	7		600 g			i				0			upc		-
Gender	in fragin i	8		500 c	-			Delete		-	-0			URS		-
Event oen	der	9		400 0			-	Recetto	Marin Chile		0	Gender *		URU		
Soort		10		200 0	1		-	102011/	ingitin sejite		-0.	# Men		USA		
Discipline	D	11		200 0	ulul.	the fe	11	Change	Chart Type		210	* Wonen		U28		
		14	-		0 8 2 3	2 S T	193	Select Di	rta	8.8	2			VEN		-
Drag fields between	areas below:	14		100	then here	tin the	0	1-0 E(p	601	5 f	-					- 61
		15		1.1	< 8	8	14	Eormat	Sodines	10	1			VIE		*
T FLIERS	III - LEGEND (SERI	16		10000				Format 2	kajs		>				-	1
	Gender	17		(appent)*	9											
		18														
AXIS ICATEG_	E VALUES	19				-										
Soort *	Court of Medal	. 20														
	Contra de longuas	21														

The Change Chart Type dialog box appears.

Click on Stacked Column.

hange Chart Type		?	×
All Charts			
Recent で Recent で Templates Column 位 Line の Pie 配 Bar 始 Ares 位 X Y (Scatter) 値 Stock 部 Surface 余 Radar 論 Combo			
	OK	Ga	ncel

- Insert Slicer for Sport field.
- Drag Discipline from Disciplines table to AXIS area.
- Remove the field Sport from AXIS area.
- Select Aquatics in the Slicer Sport.

A	8	c	D	E F	G	н	1	1	к	L.	м	N (D P
	Count o	Medai						N	DC_Countr	yRegion	2	Sport	7
	900							- 6	сн		^	Aquatics	1
1	800							1	RI			Archery	
-	500							- 6	UN:			Athletics	
-	500		_			Ge	nder 💌	- 14	JKR			Baseball	
	400		_			a y	Nomen	1	JRS			Basketball	
-	300					#5	/en	1	JSA			Bobsleigh	
	100	-			-			1	/EN			Boxing	
1	0 -			-				- 13	rug .			Canoe / Kayak	
	Disciplin	Ching .	Swimming	Synchronized	5. Water polo	E.		4		e	-		
							-		-				

Report Layout

Create PivotTable as follows:

- Click on Home tab on the Ribbon in PowerPivot window.
- Click on PivotTable.
- Click on PivotTable in the dropdown list. The Create PivotTable dialog box appears.
- Click on New Worksheet and click Ok. An empty PivotTable gets created in a new worksheet.
- Drag NOC_CountryRegion from Medals table to AXIS area.
- Drag Sport from Medals table to COLUMNS area.
- Drag Discipline from Disciplines table to COLUMNS area.
- Drag Medal to \sum VALUES area.

Thurst Table 7	intele .	1 1.	- 6	- B.	C	0	E.	1	6	H	1	1		1	1
Prvoti able F	ielas	1													
ACTIVE ALL		1			The second second										
Choose Falls to add	to report 🛛 🖗 •			Count of Med	Aguatics				Aquatics Total	Archery	Archery Total	Athletics	Athletics Total	Badminton	
Di Biscislere		5		Row Laberts	- Diving	Swimming	Synchronized S.	Water polo		Anthery	Sector States	Athletics		Badminton	
[] facilitad		6		AFG											
Chinese	·	7		AHO											
CT Shown		1.0		ALG									6		
1 To Events		9		ANZ		11			. 11			1	1		
		10		ARG		1			3			3	5		
P E Platte		11		ARM											
a The Mertale		12		AUS	2	7 113	10 - C	-20	354	2	2	75	79		
		11		AUT		-13	100		- 13						
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	sport	1 17		108								1	्य		
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The second	T WALLER	19		BER											
and do in the	in second	- 20		BLR.								33	- 13		
NOC COUNTLY *	Court of Medal .	1 21		BOH								1	- 1		
		22		BRA		13	것		17	8		21	21		
		23		BUL		1	E.C.		3			30	30		

Click on the arrow button next to Column Labels and select Aquatics.

and the second	as the o		1.4	A	В	c	D	E	F	6	H	Ē
PivotTable	Fields	* X	1		1							
ACTIVE ALL			2									
		14	3		Count of Medal	Column Labels	л					
Choose fields to add	d to report:	Q	4			Aquatics				Aquatics Total	Grand Total	
2 Discipline		141	5		Row Labels -	Diving	Swimming	Synchronized S.	Water polo			
Discipline	-0	E.	6		ANZ		11			11	11	
C Courtin		- LJ	7		ARG		3	L.		3	3	Ł
TT shears			8		AUS	1	7 311		26	354	354	
P II Events			9		AUT		13	6		13	13	
			10		BEL		-4	ų.	49	53	53	
P III Mosts			11		BRA		17	6		17	17	£
a The Medak			12		BUL		3	6		3	3	
200020000000000			13		CAN	1	1 74	27		112	112	
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			22		EUN		3 30	1	12	45	45	
			23		FIN		4	k.		4	4	
			1.44									

- Click on the arrow button next to Row Labels.
- Select Value Filters from the dropdown list.
- Select Greater Than Or Equal To from the second dropdown list.

vivotTable Fields				1.41	A	8	c		D	Ε	F	G	н
PivotTable F	ields		* X	1		-							
ACTIVE ALL				2		C	lest webste	-					
Choose fields to add	to report:		φ	4		Count of Meda	Aquatics					Aquatics Total	Grand Total
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Disciplical		21	SoitAt	οZ					11			11	11
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TT shourds			More S	ort Optic	nc			17	311		26	354	354
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h TT Marte		12				Contractive Bank			4		49	53	53
a. IIII Liener			Label 7	illers			-		17			17	17
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Dans Kelds hatsame	avera halow		Search	NOC, Ca	iunity?	egion DV	Equals_			20		112	112
bing news between	areas areas		2	Select Al	8		Does Not Er	ist.				118	118
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E ROWS	Σ VALU		88	ARM			Less Than C	r Egusi	Ta	11	26		41
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		2	-	AZE			Not Return				12	45	45
			0.121				The gettine					4	4
	1257			100	OK	Cancel	Tob 10***						

Type 80 in the box next to Count of Medal is greater than or equal to in the Value Filter dialog box.

A	В	C	D	Ε	F	G	н
	Count of Med	al Column Labels J					
		Aquatics				Aquatics Total	Grand Total
	Row Labels	.T Diving	Swimming	Synchronized S.	Water polo		
	AUS	17	311		26	354	354
	CAN	11	74	27		112	112
	CHN	60	49	9		118	118
	FRA	1	52	2	34	89	89
	GBR	7	103		28	138	138
	GDR	7	137	6		144	144
	GER	24	124		27	175	175
	HUN		76		169	245	245
	ITA	9	22		82	113	113
	JPN		92	42		134	134
	NED		101		33	134	134
	RUS	24	30	32	39	125	125
	SWE	21	64		16	101	101
	URS	14	98		78	190	190
	USA	131	828	30	107	1096	1096
	YUG		2		89	91	91
	Grand Total	326	2163	142	728	3359	3359
		A B Count of Med Row Labels AUS CAN CHN FRA GBR GDR GBR GDR GER HUN ITA JPN NED RUS SWE URS SWE URS SWE URS SWE URS SWE	A B C Count of Medal Column Labels T Aquatics Aquatics Row Labels T Diving AUS 17 CAN 11 CHN 60 FRA 1 GBR 7 GDR 7 GER 24 HUN 9 JPN 14 URS 14 USA 131 YUG 326	A B C D Count of Medal Column Labels T Aquatics Swimming AUS 17 311 CAN 11 74 CHN 60 49 FRA 1 52 GBR 7 103 GDR 7 137 GER 24 124 HUN 76 JPN 9 JPN 92 NED 101 RUS 24 30 SWE 21 64 URS 131 828 YUG 2 2 Grand Total 326 2163	A B C D E Count of Medal Column Labels T Swimming Synchronized S. Aus 17 311 CAN 11 74 27 CHN 60 49 9 FRA 1 52 2 GBR 7 103 GDR 7 137 GER 24 124 HUN 76 ITA 9 22 JPN 92 42 NED 101 RUS 24 30 SWE 21 64 URS 131 828 SWE 21 64 USA 131 828 Grand Total 326 2163	A B C D E F Count of Medal Column Labels T Count of Medal Column Labels T Cana Column Lab	A B C D E F G Count of Medal Column Labels Image: Column Labels </td

- Click the DESIGN tab in PIVOTTABLE TOOLS on the Ribbon.
- Click on Subtotals.
- Select **Do Not Show Subtotals** from the dropdown list.

FILE HOME	INSERT PV	AGE LA	TUON	FORM	AULAS DATA	REVIEW VIEW	DEVELOPE	R INQURE	POWERPIVOT	ANALVZE	DESIGN
Subtotals Grand R Totals La	eport Blank	Row	Heade	ns [Inders [Banded Rows Banded Colume						88 · 55 ·
De Not Show	Substant also			Table Shi	e Options			PivotTable Style	ei		
			- 3	t of Me	dal						
Show all Subt	totals at <u>B</u> ottom	of Grou	ψp		B	c	D	٤	F	G	н
Show all Subt	iotals at <u>T</u> op of G	iroup									
Include Filter	ed Items in Total	k			Count of Me	dal Column Labels 🗗				Aquatics Total	Grand Total
(V) Unconne		[4]			Row Labels	.T Diving	Swimming	Synchronized 5.	Water polo		
Disciplined	DecembralD		6		AUS	17	311		26	354	354
C South			7		CAN	11	74	27	r.	112	112
L. spores			8		CHN	60	49	9	6	118	11
Eventa			9		FRA	1	52	2	34	89	8
			10		GBR	7	103		2.8	138	13
e mi Hosta			11		GDR	7	137			144	14
a The Medals		+	12		GER	24	124		27	175	17
	Concernance I		13		HUN		76		169	245	24
Drag fields between	areas beique		14		ITA	9	22		82	113	11
T FILTERS	II COLUMNS		15		JPN		92	43	£0.	134	13
	Treed		16		NED		101		33	134	134
	open.	-	17		RUS	24	30	32	39	125	12
	Uscipine	-	18		SWE	21	64		16	101	101
= point	T WAILTER	-	19		URS	14	98		78	190	190
	- THEORY	-	20		USA	131	828	30	107	1096	1096
NGC_Countr *	Count of Med	al •	21		YUG		2		89	91	91
			22		Grand Total	326	2163	142	728	3359	3359

The Subtotals column – Aquatics Total gets removed.

1	A	В	с		D	E	F	G
1								
2								
3		Count of Me	dal Column Lat	els .T				
4			Aquatics					Grand Total
5		Row Labels	-T Diving		Swimming	Synchronized S.	Water polo	
5		AUS		17	311		26	354
7		CAN		11	74	27		112
8		CHN		60	49	9		118
9		FRA		1	52	2	34	89
0		GBR		7	103		28	138
1		GDR		7	137			144
2		GER		24	124		27	175
3		HUN			76		169	245
4		ITA		9	22		82	113
5		JPN			92	42		134
6		NED			101		33	134
7		RUS		24	30	32	39	125
8		SWE		21	64		16	101
9		URS		14	98		78	190
0		USA		131	828	30	107	1096
21		YUG			2		89	91
22		Grand Total		326	2163	142	728	3359

Click Report Layout and select **Show in Outline Form** from the dropdown list.

RLE HOM	E INS	ERT	PAGE LA	NOUT P	ORMULAS DATA	REVIEW	VIEW	DEVELOPER	INQUIRE	POWERPIVOT	ANALVZE
Subtotals Grand	Heport	Blank Rows *	⊠ Ro ⊡ Co	w Headers Iumn Headen	Banded Rows						
1.890	61	Channel Inc.	Comerco	t From	Ar Options				PivotTable Styl	es.	
83 *	12	200W III	Fourber	A Parts	rdal						
	21	Showin	Outline	Form	8			D	ŧ	1	G
PivotTable	闻	Show in	[abular	Form							
Change fields to a					Count of Me	dal Column L	abels .T				
Choose neids to a		Repeat /	\$1 item	Labels	-	Aquatic	5				Grand Total
🗹 Discipli	1000				Row Labels	J Diving		Swimming Sy	nchronited 5.	Water polo	
Disciple		Do Not I	lepeat I	tem Labels	AUS		1/	311		2 24	354
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. The second				12	GER		24	124		27	175
A THE MOVEMENTS				13	HUN			76		165	245
Drag fields between	en aieas b	below:		54	ITA		9	22		82	113
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	59	ort.	*	17	RUS		24	30	3.	2 35	125
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-				19	URS		14	98		78	190
= RDWS	2	VALUES		20	USA		131	828	30	0 107	1096
NOC_Countr_	• Co	unt of Me	edal 🔻	21	YUG			2		85	91
				22	Grand Total		326	2163	14,	2 728	3359
				34.5							

Check the box Banded Rows.

			A	8	c	D		E	F		G
PivotTable F	ields	* X	3	Count of Medal	Sport	T Discipline					
ACTIVE ALL			4		Aquatics					Gr	and Total
		L March	5	NOC_CountryRegion	-T Diving	Swimming		Synchronized 5.	Water polo		
Choose fields to add	to report:	8.4	6	AUS		17	311			26	354
Discipline		1.	7	CAN		11	74	27			112
Discloting	n :	8	8	CHN		60	49	9			118
Consciptioned	Š.		9	FRA		1	52	2		34	89
TT shout			10	GBR		7	103			28	138
1 Events			11	GDR		7	137				144
			12	GER		24	124			27	175
P III Hosts			13	HUN			76			169	245
a The Medals		*	14	ITA		9	22			82	113
			15	JPN			92	42			134
Drag fields between	areas below:		16	NED			101			33	134
T BUTERS	ti cour	445	17	RUS		24	30	32		39	125
- Hartana	Fred	-	18	SWE		21	64			16	101
	sport		19	URS		14	98			78	190
	Discipline		20	USA		131	828	30	e	107	1096
T DOUND	S. WALLE		21	YUG			2			89	91
= 10/105	- VALUE	2	22	Grand Total		326	2163	142	6 3	128	3359
NOC_Countr., •	Count of	Medal •	23								

The field names appear in place of Row Labels and Column Labels and the report looks self-explanatory.

Fair Hore Design Advanced Partie Partie Append Partie Reprint Prom Prom Partie Coor Database - Servic Database - Servic Coor Opbrand Cert Cert Cert Cert Cert Cert	Lenize Table Leniz	ta type: - mat: - * % 5 * 21 20 t t t t t t t t t t t t t	h Pine Fine Calculations View View View
Sport Sport SportD	Country Region Count	bleble (certical) ts (viertcal) ts (viertcal) ts (viertcal) ts Alpha-2 Code Edition EditionitD	Seent Docpline Sport Participation
	Event_gender Sport Sport DisciplinetD Event Medal Nedalkey DisciplineEvent Year EdmoniD		Event Discipline Sport Participation

Using a Common Slicer

Create a PivotChart and PivotTable next to each other.

- Click the Home tab on the Ribbon in PowerPivot tab.
- Click PivotTable.
- Select Chart and Table (Horizontal) from the dropdown list.



The Create PivotChart and PivotTable (Horizontal) dialog box appears.

Select New Worksheet and click OK. An Empty PivotChart and an empty PivotTable appear next to each other in a new worksheet.

	AND	1.41	A	8	С	D	E	F	6	н	1	3	ĸ	t.
PivotTable	Fields * ×	1												
ACTIVE ALL		2											_	
	A A	3		Count of	Medal							Row Labels	 Count of Medal 	
Choose Neids to ad	d to report	4			0.000.000			22				Alpine Skiing	373	
C Disciplin		5					Tot	al				Archery	305	
Disciplin	-	6		4000								Artistic G.	2060	
C Courter	~ U	7		3500								Athletics	3502	
TT shown		8		3000								Badminton	120	
P ET Events		9		2500								Baseball	335	
		10		2000								Basketball	940	
> 🖽 Hosta		11		1500		-			_			Basque Pelota	4	
4 The Medals	(*)	12		5000				- 10	_		· Torral	Biathlon	291	
		13		500		1.1				1.00		BMX	6	
Drag fields betwee	n areas below:	14		0 11		Libili	1111	in hill	Julliot	. 1.111		Bobsleigh	362	
W DUTTER	The community	15		a c	1 1 1 1	5855	百百首	1 2 2 2	1288	122		Boxing	842	
T FLIDG	III CULUMAG	16		4	a line of	2112	o ou	- 20	1 1 1 1	81		Canoe / Kayak F	912	
		17							10.00		Canoe / Kayak S	90		
		18		~	5	· 2	8	5				Cricket	24	
22/10/10/20	1 100 10 mm 100 mm 1	19		100000			1.0	2				Croquet	8	
III ROWS	E VALUES	20		Discipline	1. T.							Cross Country S	660	
Discipline •	Count of Medal ·	21										Curling	21	
		22										Cycling Road	300	
		23										Cycling Track	679	

- Click PivotChart.
- Drag Discipline from Disciplines table to AXIS area.
- Drag Medal from Medals table to \sum VALUES area.
- Click PivotTable.
- Drag Discipline from Disciplines table to ROWS area.
- Drag Medal from Medals table to \sum VALUES area.

and the second at the second second		1.4.	 1	U	D		1	-6	H	1.1	1		1.	<u>M</u>	N	0
PivotTable Helds	- *	1														
ACTIVE ALL		191									Real shells	Transfer and Barriel	There a	things.		× 1
Choose fields to add to import:	0.	125	Statts	e Medet							Albina Galina	171	-			
		1				Tot	al				Archery	305	ACTN	ALL		
C Discipline	510	141									Artistic G.	2060				
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Sport0		1.1	0.000								Badminton	139		[]ADM		
1 Th Leven		141	2500								Baseball	335		Dates	HQ.	
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a Tr.). Mardala		122	8000				- 10	_	-	+ Total	Biathlon	291		Ctable	-	
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		14		ð	10.0	• · · · ·	1				Cricket	24		Chiefe	Rej .	
E ADMS IF YAR	ties.	128	Dunne								Croquet		1	ENOC.	CountryRept	
December + Count	of Madel #	20	100400	all							Cross Country 5	660		[]Search	e)	
- condense	or in water	121									Curting	21		Elpert		
		1									Cycing Road	300	-	-		_
		15									Cycling 1000	679	1	- 0	×	Canial

- Click the ANALYZE tab in PIVOTTABLE TOOLS on the Ribbon.
- Click Insert Slicer. The Insert Slicers dialog box appears.
- Click on NOC_CountryRegion and Sport in Medals table.
- Click OK.

the sort 1	HOME opy + sent Pant ont +	8 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R - H Fort	1 - A - 2 - A			in a second seco	View D Vraje Tent Aurgei die Canti	Ganard Ganard In - 5 - % - Aundo	e si anathra	optic al Frenda y Table Byles	an Ca • Spin •	inset (Delete Fe
	6	c	D	ε	F	G	н	1.3	1	ĸ	1	м	N	0
	4000 3500 3500 2500 1500	of Medal		Tot	tal				Row Labels Alpine Skiing Archery Artistic G. Athletics Badminton Baseball Basketball Basketball Basketball	 Count of Medal 373 305 2060 1502 120 335 540 4 		NOC_CountryReg UKR URS URU USA UZB		۲. ۲.
	3000 500 0 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	America - Americ	Dapart Design	100 January	and	- nboreauti	Pagmaban pagangan	m Total	Biathlon BMX Bobsleigh Boxing Canoe / Kayak F Canoe / Kayak S Cricket Croquet Cross Country S Curling Cycling Road Cycling Track	291 6 362 912 90 24 8 660 21 300 679	Spi A A B B	ort quatics rchery thietics adminton asetsall	R	

Two Slicers – NOC_CountryRegion and Sport appear. Arrange and size them to align properly next to the PivotTable.

A	8	C	D	£	F	6	н	1	1	ĸ	L	M N	-
	(Count o	t Medal							Row Labels	Count of Medal 131	NOC_CO	7 .	
				Tot	al				Swimming	828	URS		•
	4000								Synchronized	5. 30	USA		
	3500								Grand Total	1096	VEN		31
	2500	-			-						YUG		
	2000										ZiM		
	1000	1		1				m Total					
	500	1.11	latan	The.		tull.							
	° 7	2 2 2 2 2	5342	225	6822	2 2 2 1	5 5 2				Sport		
	8	Para and	A Post	0 ou	a a a a	etter Inno	121				Aquat	KC5	
	1	10 10	Cycle and	1		823.	· / B				Archer	n	
		3			e e						Athlet	tics	
	Disciple	H *									Baseb	ali	
											Basket	thall	
													- 24

- Select USA in the NOC_CountryRegion Slicer.
- Select Aquatics in the Sport Slicer. The PivotTable is filtered to the selected values.
| FLL HC
Sheer Captions
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|---|--|---------|--|------|--|--|---|--|--------|------|
| 4 A | | c | D | £ | 1 | G | н | Repart Connections (NOC_CountryRegion)
Select Proof table and Proof Shart reports to connect to this Filter | 2 × | 1 |
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futerante | | Name Sheet II Deet1 II ProtTable1 Sheet1 Sheet2 II ProtTable2 Sheet3 Sheet4 | | |
| 20 21 | Chalipitre | | | | | | | OK | Cancel | Į. |

As you can observe, the PivotChart is not filtered. To filter PivotChart with the same filters, you need not insert Slicers again for PivotChart. You can use the same Slicers that you have used for the PivotTable.

- Click on NOC_CountryRegion Slicer.
- Click the **OPTIONS** tab in **SLICER TOOLS** on the Ribbon.
- Click **Report Connections** in the Slicer group. The **Report Connections** dialog box appears for the NOC_CountryRegion Slicer.

Report C	connections (Sport)		?	×
Select Pi	votTable and PivotChart reports	to connect to this filter		
	Name	Sheet		10
	Chart 1	Sheet1		
	PivotTable1	Sheet2		
🗹 👼	Chart 1	Sheet4		
	PivotTable2	Sheet4		
			OK	Cancel

You can see that all the PivotTables and PivotCharts in the workbook are listed in the dialog box.

• Click on the PivotChart that is in the same worksheet as the selected PivotTable and click OK.

A		8	c	D	E	F	G	н	1	J	к	L	м	N	+
	(50	unit of	Medal							Row Labels	Count of Medal	NO	C_Country	Region	T,
					Tot	al				Swimming	828	U	RS		*
	900									Synchronized S	30	US	SA.		
	800									Water polo	107	Vi	EN .		12
	700									Grand Total	1050	YL	JG		
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	400							= To	cai						
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	100												rchery		71
	0		Dvine	Salmmin	e 50	nchronized 5	Water polic					- 11	thistics		
	De	scipline											unieuus		
	- 45.0	oodfarfalle											asepan		
												8	asketball		
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• Repeat for Sport Slicer.

The PivotChart is also filtered to the values selected in the two Slicers.

Α.	8	c	D	E	F.	6 1	4	1).	ĸ	£
Cout	t of Medal							Discipline Diving	- Event	• C NOC_Country	tegion '
344									10m platform	URS	
800									3m springboard	USA	
700								Studmening	plunge for distance	VEN	-
600		_						~ January Contraction	100m backstroke	100	
500		- 14				Gender. *	ŧĨ.		100m breaststroke	100	
400						# Women			100m butterfly	ZIM	
800						# Men			100m freestyle		1
-									1500m treestyle	Sport	1
-	_								200m breaststroke	Aquatics	
100	-		2.						200m butterfly	Archery	
0	Chuine	Salmenie	w Sinch	concred 5	Water policy				200m freestyle	Athletics	
Divis	nine								200m individual medie 400m breaststroke	y Rateball	
(4000	enteres								400m freestyle	Backathall	
									400m individual medle	Y	
									4x100m freestyle relay	147	
									4x100m mediey relay	138	
									4x200m freestyle relay	127	
 _	1-1-1-1-1-1-1				ACCESSION 1		-		a round an and the sector		

Next, you can add details to the PivotChart and PivotTable.

• Click the PivotChart.

- Drag Gender to LEGEND area.
- Right click on the PivotChart.

-

- Select Change Chart Type.
- Select Stacked Column in the Change Chart Type dialog box.
- Click on the PivotTable.
- Drag Event to ROWS area.
- Click the DESIGN tab in PIVOTTABLE TOOLS on the Ribbon.
- Click Report Layout.
- Select Outline Form from the dropdown list.



Selecting Objects for Display in the Report

You can choose not to display the Slicers on the final Report.

- Click the **OPTIONS** tab in **SLICER TOOLS** on the Ribbon.
- Click Selection Pane in Arrange group. The Selection Pane appears on the right side of the window.

4	A	8	c	D	E	F	6	н	1	1	•	Selection	* X
3	Cou	nt of Medai							Discipline H Diving	- Event	1	Show All Hide All	
5 6 7	900 800 700		1						© Swimming	10m platform 3m springboard plunge for distan		Sport 1 NOC_CountryRegion 1 Chart 1	- 6
9 10 11 12 13 14 15 16 17	500 500 400 300 200 100 0					Water toda	Genda Won Mon	e.e		100m backstroke 100m breaststrok 100m butterfly 100m freestyle 200m backstroke 200m backstrok 200m butterfly 200m butterfly			
18 19 20 21 22 23 24	Disc	ipline 💌								400m individual r 400m freestyle 400m individual r 4x100m freestyle 4x100m medley r 4x200m freestyle			

As you can observe, the symbol appears next to the objects in the Selection Pane. This means those objects are visible.

- Click on symbol next to NOC_CountryRegion.
- Click on symbol next to Sport. The symbol is changed to for both. This means the visibility for the two Slicers is off.



Close the Selection Pane.

-	A	B	C	D	E	F	G	1	 1	ĸ
	600							Discipline	Event	- Count of Med
	3.099	nt de médac						■ Diving		1
	900								10m platform	
	800								3m springboard	3
	200								plunge for distance	
			_					Swimming		8.
	600								100m backstroke	3
	500		_				Gender *		100m breaststroke	
	400						Women		100m butterfly	
	1.22.5		_				= Men		100m freestyle	
	300								1500m freestyle	3
	200		_						200m backstroke	1
	100	100				1000			200m breaststroke	
	2000				-				200m butterfly	
	0		32.5	1.1.1.1		The second			200m freestyle	
		Drving	Swin	anice 24	schronized 5	Water polo			200m individual medle	Y
	Dec	pline +							400m breaststroke	
									400m freestyle	
	-								400m individual medie	Y
									4x100m freestyle relay	1
		1							4x100m medley relay	1

You can see that the two Slicers are not visible in the Report.