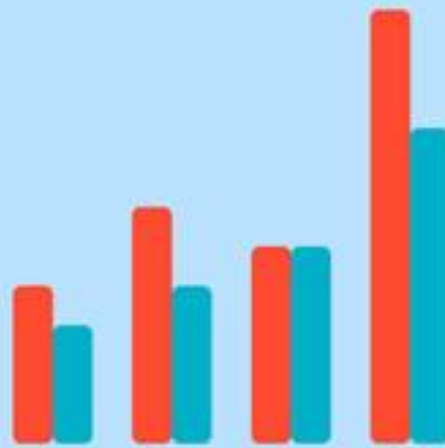




Excel Dashboard



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About the Tutorial

Dashboards are popular visual displays of data, mostly comprising of charts / graphs with striking attention seeking components. There are various tools available in the market to create dashboards. If you are a Microsoft Office user with reasonably good mastery on Excel, then creating dashboards in Excel is a wise decision. This is because Microsoft has introduced several powerful features in Excel, making your job of handling large datasets from various data sources simple and less tiresome.

In this tutorial, you will learn how to use Excel features effectively in dashboards. They include features that can make a dashboard dynamic and interactive.

Audience

This tutorial has been designed for all those readers who depend heavily on MS-Excel to prepare charts, tables, and professional reports that involve complex data. It will help all those readers who use MS-Excel regularly to analyze data.

Once you get an understanding of the several Excel features that come handy in creating Excel dashboards, creating dashboards will become a trivial task for you.

Prerequisites

Before proceeding with this tutorial, the reader should have a preliminary understanding of Excel workbooks, Excel charts, Excel PivotTables, Excel Data Model, Excel Power PivotTables and Power PivotCharts and Excel Power View reports. All these topics are available as full-fledged tutorials in our tutorials library.

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1. Excel Dashboards – Introduction

For those who are new to dashboards, it would be ideal to get an understanding of the dashboards first. In this chapter, you will get to know the definition of dashboard, how it got its name, how they became popular in IT, key metrics, benefits of dashboards, types of dashboards, dashboard data and formats and live data on dashboards.

In information technology, a dashboard is an easy to read, often single page, real-time user interface, showing a graphical presentation of the current status (snapshot) and historical trends of an organization's or department's key performance indicators to enable instantaneous and informed decisions to be made at a glance.

Dashboards take their name from **automobile dashboards**. Under the hood of your vehicle, there may be hundreds of processes that impact the performance of your vehicle. Your dashboard summarizes these events using visualizations so that you have the peace of mind to concentrate on safely operating your vehicle. In a similar way, business dashboards are used to view and/or monitor the organization's performance with ease.



The idea of **digital dashboards** emerged from the study of decision support systems in the 1970s. Business dashboards were first developed in the 1980s, but due to the problems with data refreshing and handling, they were put on the shelf. In the 1990s, the information age quickened pace and data warehousing, and online analytical processing (OLAP) allowed dashboards to function adequately. However, the use of dashboards did not become popular until the rise of key performance indicators (KPIs), and the introduction of Robert S. Kaplan and David P. Norton's Balanced Scorecard. Today, the use of dashboards forms an important part of decision making.



In today's business environment, the tendency is towards Big Data. Managing and extracting real value from all that data is the key for modern business success. A well-designed dashboard is a remarkable information management tool.

Dashboard – Definition

Stephen Few has defined a dashboard as "a visual display of the most important information needed to achieve one or more objectives which fits entirely on a single computer screen so it can be monitored at a glance".

In the present terms, a dashboard can be defined as a data visualization tool that displays the current status of metrics and key performance indicators (KPIs) simplifying complex data sets to provide users with at a glance awareness of current performance.

Dashboards consolidate and arrange numbers and metrics on a single screen. They can be tailored for a specific role and display metrics of a department or an organization on the whole.

Dashboards can be static for a one-time view, or dynamic showing the consolidated results of the data changes behind the screen. They can also be made interactive to display the various segments of large data on a single screen.

Key Metrics for Dashboard

The core of the dashboard lies in the key metrics required for monitoring. Thus, based on whether the dashboard is for an organization on the whole or for a department such as sales, finance, human resources, production, etc. the key metrics that are required for display vary.

Further, the key metrics for a dashboard also depend on the role of the recipients (audience). For example, Executive (CEO, CIO, etc.), Operations Manager, Sales Head, Sales Manager, etc. This is due to the fact that the primary goal of a dashboard is to enable data visualization for decision making.

The success of a dashboard often depends on the metrics that were chosen for monitoring. For example, Key Performance Indicators, Balanced Scorecards and Sales Performance Figures could be the content appropriate in business dashboards.

Dashboard Benefits

Dashboards allow managers to monitor the contribution of the various departments in the organization. To monitor the organization's overall performance, dashboards allow you to capture and report specific data points from each of the departments in the organization, providing a snapshot of current performance and a comparison with earlier performance.

Benefits of dashboards include the following -

- Visual presentation of performance measures.
- Ability to identify and correct negative trends.
- Measurement of efficiencies/inefficiencies.
- Ability to generate detailed reports showing new trends.
- Ability to make more informed decisions based on collected data.
- Alignment of strategies and organizational goals.
- Instant visibility of all systems in total.
- Quick identification of data outliers and correlations.
- Time saving with the comprehensive data visualization as compared to running multiple reports.

Types of Dashboards

Dashboards can be categorized based on their utility as follows –

- Strategic Dashboards
- Analytical Dashboards
- Operational Dashboards
- Informational Dashboards

Strategic Dashboards

Strategic dashboards support managers at any level in an organization for decision making. They provide the snapshot of data, displaying the health and opportunities of the business, focusing on the high level measures of performance and forecasts.

- Strategic dashboards require to have periodic and static snapshots of data (e.g. daily, weekly, monthly, quarterly and annually). They need not be constantly changing from one moment to the next and require an update at the specified intervals of time.
- They portray only the high level data not necessarily giving the details.
- They can be interactive to facilitate comparisons and different views in case of large data sets at the click of a button. But, it is not necessary to provide more interactive features in these dashboards.

The following screenshot shows an example of an executive dashboard, displaying goals and progress.



Analytical Dashboards

Analytical dashboards include more context, comparisons, and history. They focus on the various facets of data required for analysis.

Analytical dashboards typically support interactions with the data, such as drilling down into the underlying details and hence should be interactive.

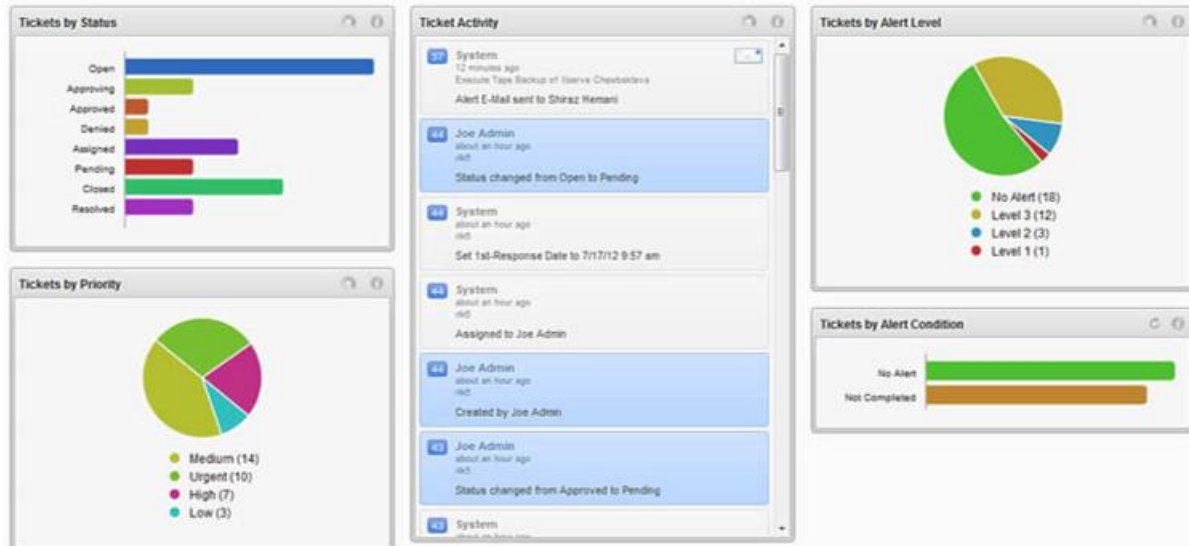
Examples of analytical dashboards include Finance Management dashboard and Sales Management dashboard.



Operational Dashboards

Operational dashboards are for constant monitoring of operations. They are often designed differently from strategic or analytical dashboards and focus on monitoring of activities and events that are constantly changing and might require attention and response at a moment's notice. Thus, operational dashboards require live and up to date data available at all times and hence should be dynamic.

An example of an operation dashboard could be a **support-system dashboard**, displaying live data on service tickets that require an immediate action from the supervisor on high-priority tickets.



Informational Dashboards

Informational dashboards are just for displaying figures, facts and/or statistics. They can be either static or dynamic with live data but not interactive. For example, flights arrival/departure information dashboard in an airport.

Arrivals - London Heathrow Airport				LHR 5:32 PM GMT+1	
FLIGHT	ORIGIN	GATE	ARRIVES ▼	STATUS	
BRITISH AIR 1335	NEWCASTLE		6:17 PM	ARRIVED	
BRITISH AIR 861	PRAGUE		6:17 PM	ARRIVED	
BRITISH AIR 323	PARIS		6:18 PM	ARRIVED	
JET AIRWAYS 118	MUMBAI		6:21 PM	ARRIVED	
AER LINGUS 176	DUBLIN		6:22 PM	ARRIVED	
BRITISH AIR 433	AMSTERDAM		6:23 PM	ARRIVED	
BRITISH AIR 10	BANGKOK		6:25 PM	ARRIVED	

Dashboard Data and Formats

The data required for a dashboard depends on its category. The premise for the data is that it should be relevant, error-free, up to date and live if required. The data can possibly be from various and different sources and formats (Spreadsheets, Text Files, Web Pages, Organizational Database, etc.).

The results displayed on a dashboard must be authentic, correct and apt. This is crucial since the information on a dashboard would lead to decisions, actions and/or inferences. Thus, along with the data being displayed, the medium chosen for the display is equally important as it should not give an erroneous impression in the data portrayal. The focus should be on the ability of the data visualization that would unambiguously project the conclusions.

Live Data on Dashboards

As discussed earlier in this chapter, data warehousing and online analytical processing (OLAP) is making it possible to refresh the dynamic dashboards instantly with live data. It is also making those who design the dashboards be independent of the organization's IT department for obtaining data.

Thus, the dashboards have become the most sought after medium from top management to a regular user.

2. Excel Dashboards – Excel Features to Create Dashboards

You can create a dashboard in Excel using various features that help you make data visualization prominent, which is the main characteristic of any dashboard. You can show data in tables with conditional formatting to highlight the good and bad results, you can summarize the data in charts and PivotTables, you can add interactive controls, and you can define and manage KPIs and so on.

In this chapter, you will get to know the most important Excel features that come handy when you are creating a dashboard. These features help you arrive at the dashboard elements that simplify complex data and provide visual impact on the current status or performance in real time.

Excel Tables

The most important component of any dashboard is its **data**. The data can be from a single source or multiple sources. The data might be limited or might span several rows.

Excel tables are well suited to get the data into the workbook, in which you want to create the dashboard. There are several ways to import data into Excel, by establishing connections to various sources. This makes it possible to refresh the data in your workbook whenever the source data gets updated.

You can name the Excel tables and use those names for referring your data in the dashboard. This would be easier than referring the range of data with cell references. These Excel tables are your working tables that contain the raw data.

You can arrive at a summary of the analysis of data and portray the same in an Excel table that can be included as a part of a dashboard.

	A	B	C	D	E
1	% Profits Region-wise and Quarter-wise				
2		Qtr1	Qtr2	Qtr3	Qtr4
3	East	87%	90%	79%	96%
4	North	92%	94%	85%	97%
5	South	88%	95%	75%	80%
6	West	85%	87%	87%	88%

Analysis Summary in an Excel table

Sparklines

You can use Sparklines in your Excel tables to show trends over a period of time. Sparklines are mini charts that you can place in single cells. You can use line charts, column charts or win-loss charts to depict the trends based on your data.

	A	B	C	D	E	F
1	% Profits Region-wise and Quarter-wise					
2		Qtr1	Qtr2	Qtr3	Qtr4	Trends
3	East	87%	90%	79%	96%	
4	North	92%	94%	85%	97%	
5	South	88%	95%	75%	80%	
6	West	85%	87%	87%	88%	

Sparklines with Column Charts

Conditional Formatting

Conditional formatting is a big asset to highlight data in the tables. You can define the rules by which you can vary color scales, data bars and/or icon sets. You can either use the Excel defined rules or create your own rules, based on the applicability to your data.

	A	B	C	D	E
1	% Profits Region-wise and Quarter-wise				
2		Qtr1	Qtr2	Qtr3	Qtr4
3	East	87%	90%	79%	96%
4	North	92%	94%	85%	97%
5	South	88%	95%	75%	80%
6	West	85%	87%	87%	88%

Conditional Formatting with Color Scales

	A	B	C	D	E
1	% Profits Region-wise and Quarter-wise				
2		Qtr1	Qtr2	Qtr3	Qtr4
3	East	67%	85%	79%	96%
4	North	92%	94%	65%	60%
5	South	71%	85%	90%	80%
6	West	55%	67%	71%	88%

Conditional Formatting with Data Bars

	A	B	C	D	E
1	% Profits Region-wise and Quarter-wise				
2		Qtr1	Qtr2	Qtr3	Qtr4
3	East	↓ 67%	↑ 85%	→ 79%	↑ 96%
4	North	↑ 92%	↑ 94%	↓ 65%	↓ 60%
5	South	→ 71%	↑ 85%	↑ 90%	→ 80%
6	West	↓ 55%	↓ 67%	→ 71%	↑ 88%

Conditional Formatting with Icon Sets

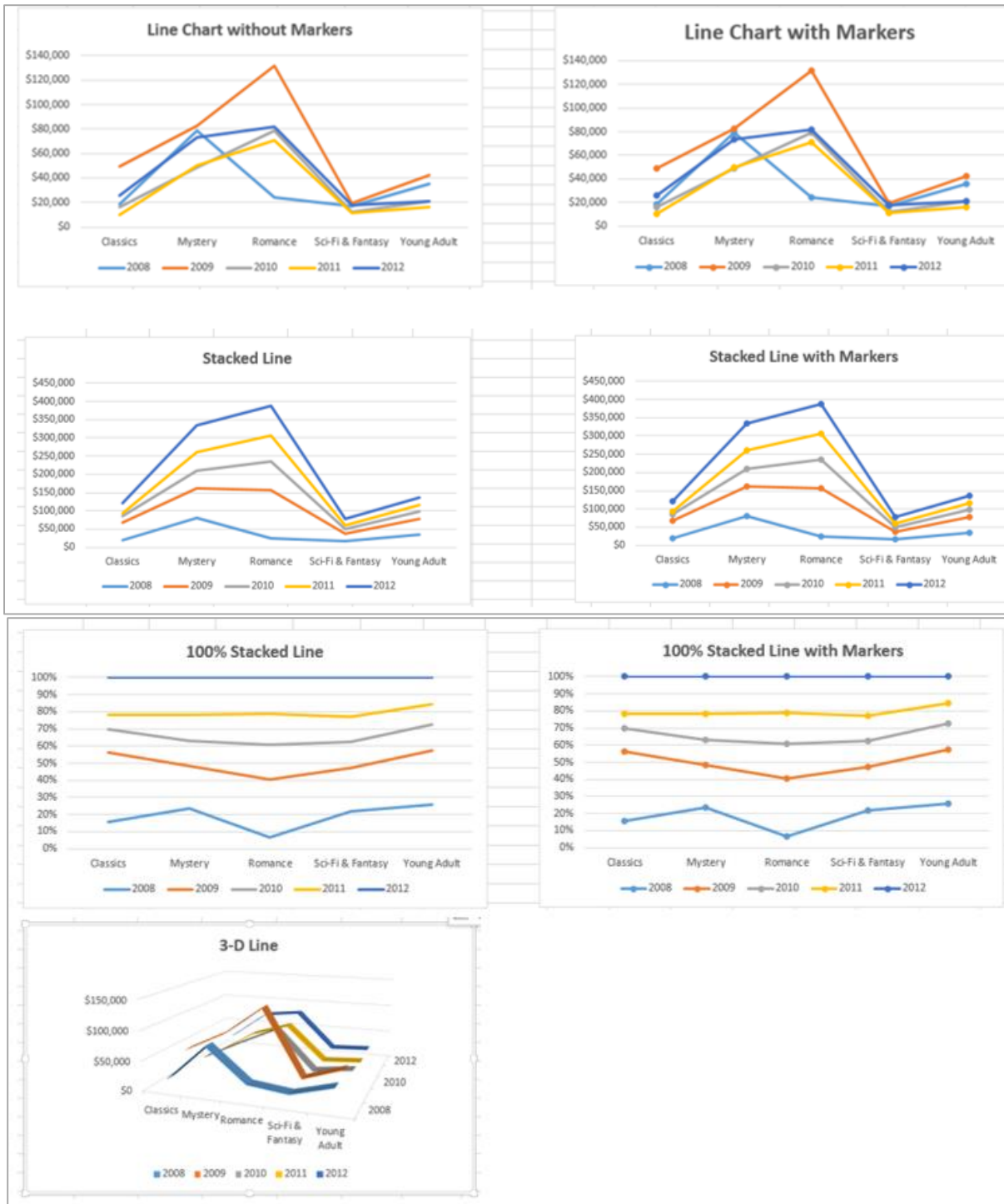
You will learn these conditional formatting techniques in the chapter – **Conditional Formatting for Data Visualization**.

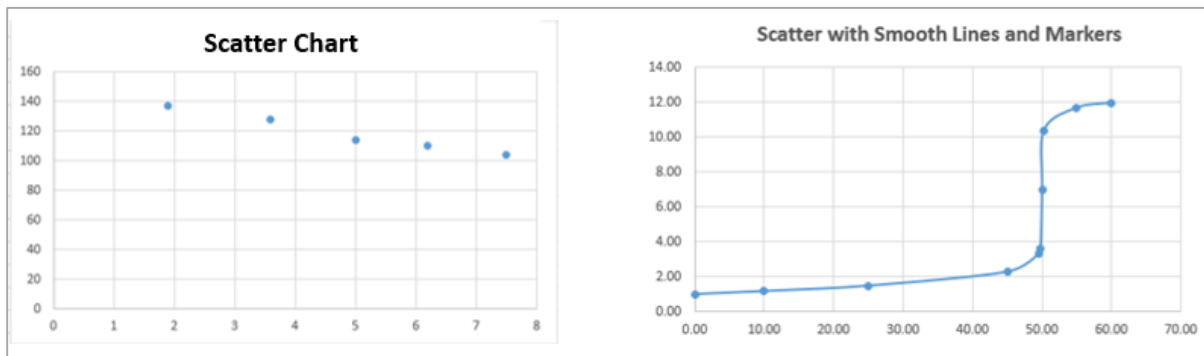
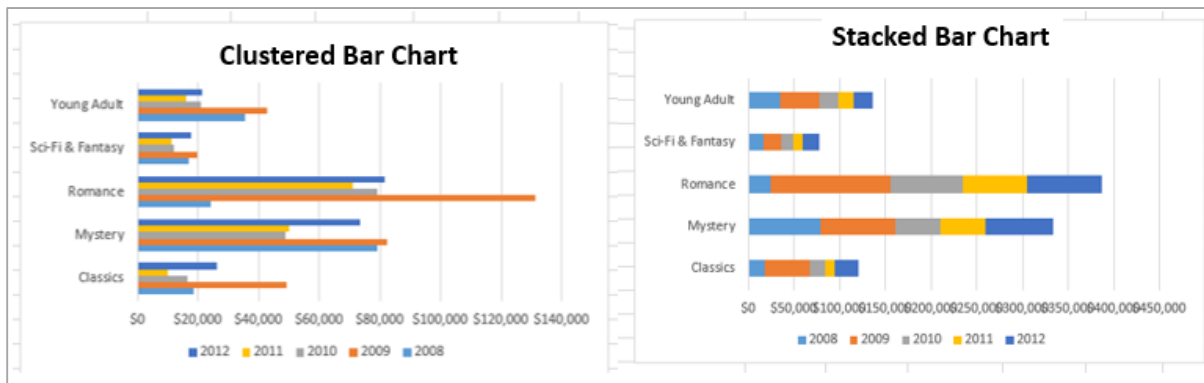
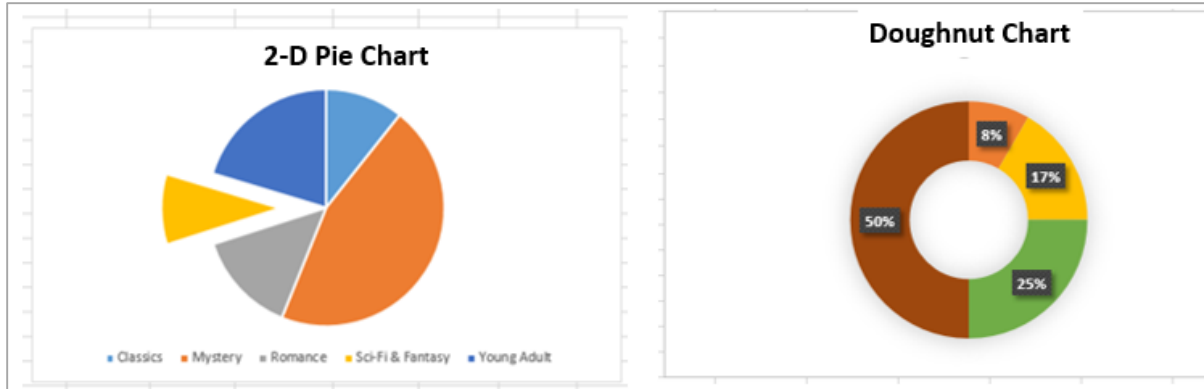
Excel Charts

Excel charts are the most widely used data visualization components for dashboards. You can get the audience view the data patterns, comparisons and trends in data sets of any size strikingly adding color and styles.

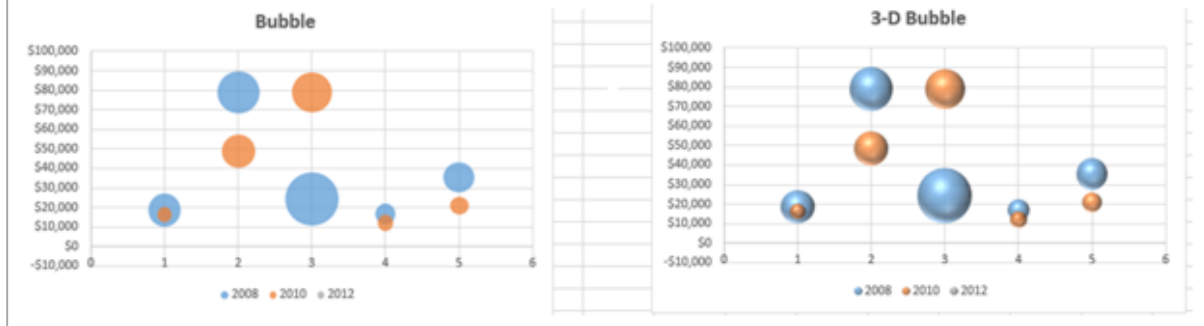
Excel has several built-in chart types such as line, bar, column, scatter, bubble, pie, doughnut, area, stock, surface and radar if you have Excel 2013.







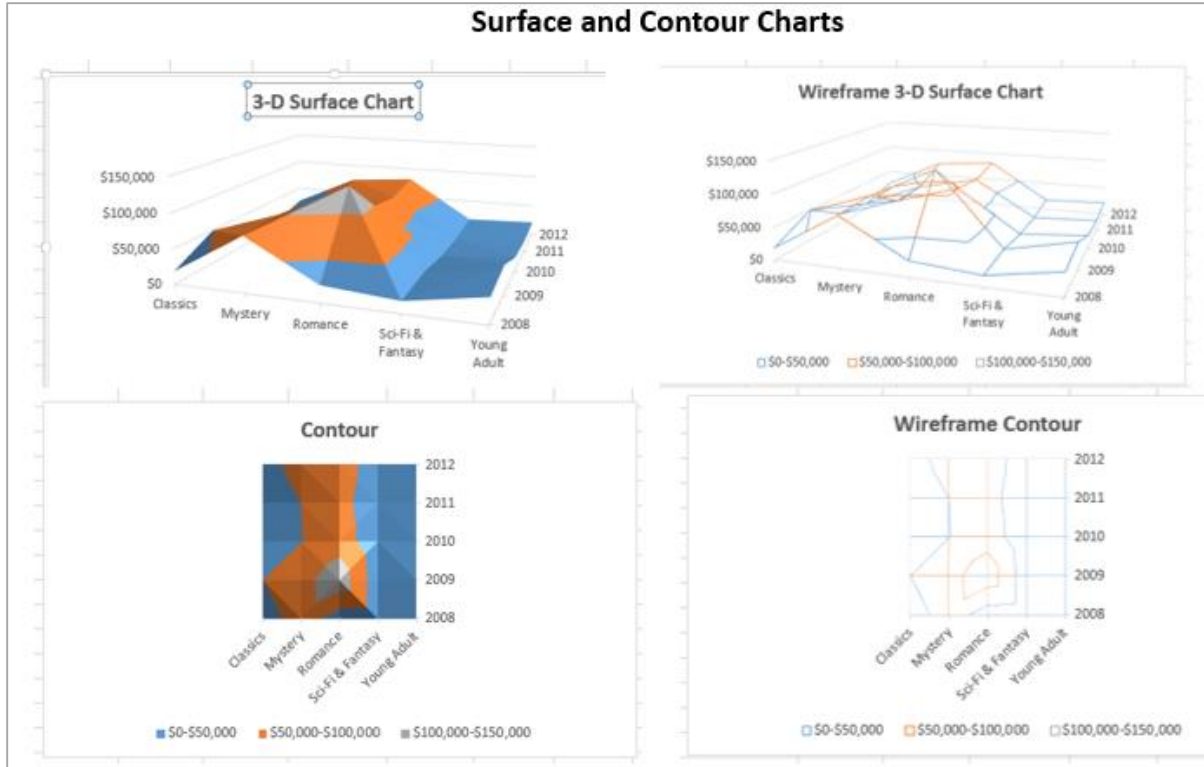
Bubble Charts



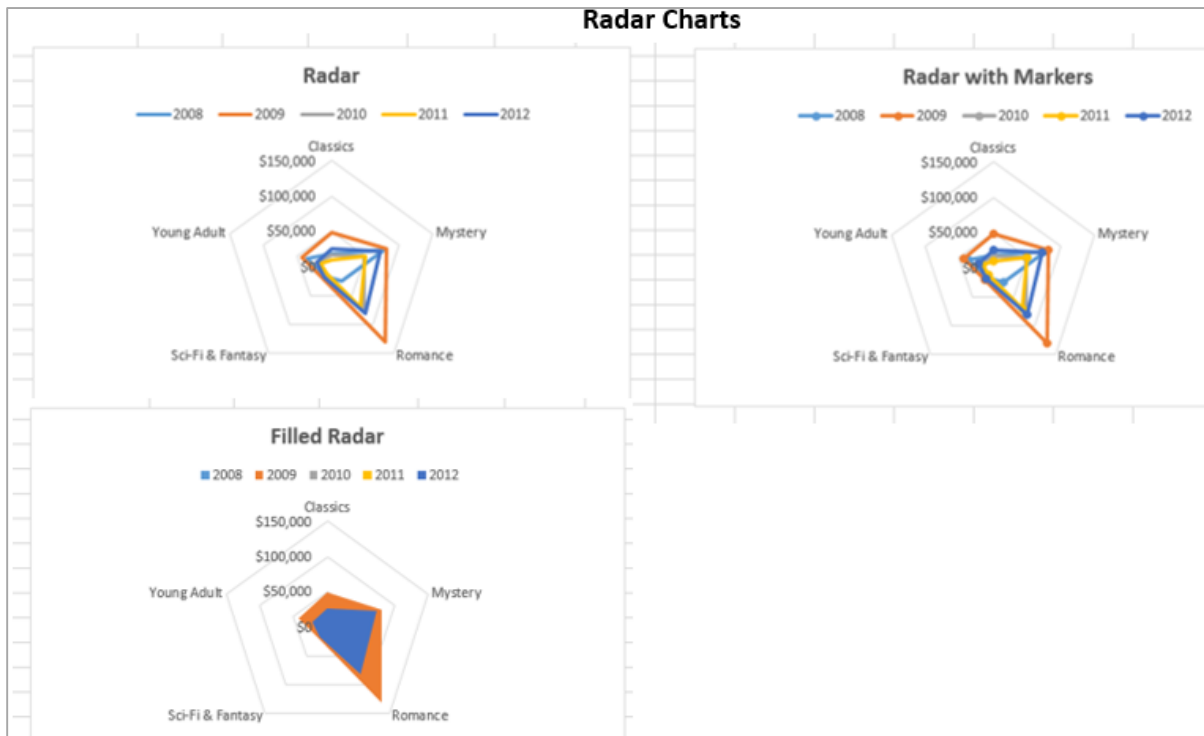
Stock Charts



Surface and Contour Charts

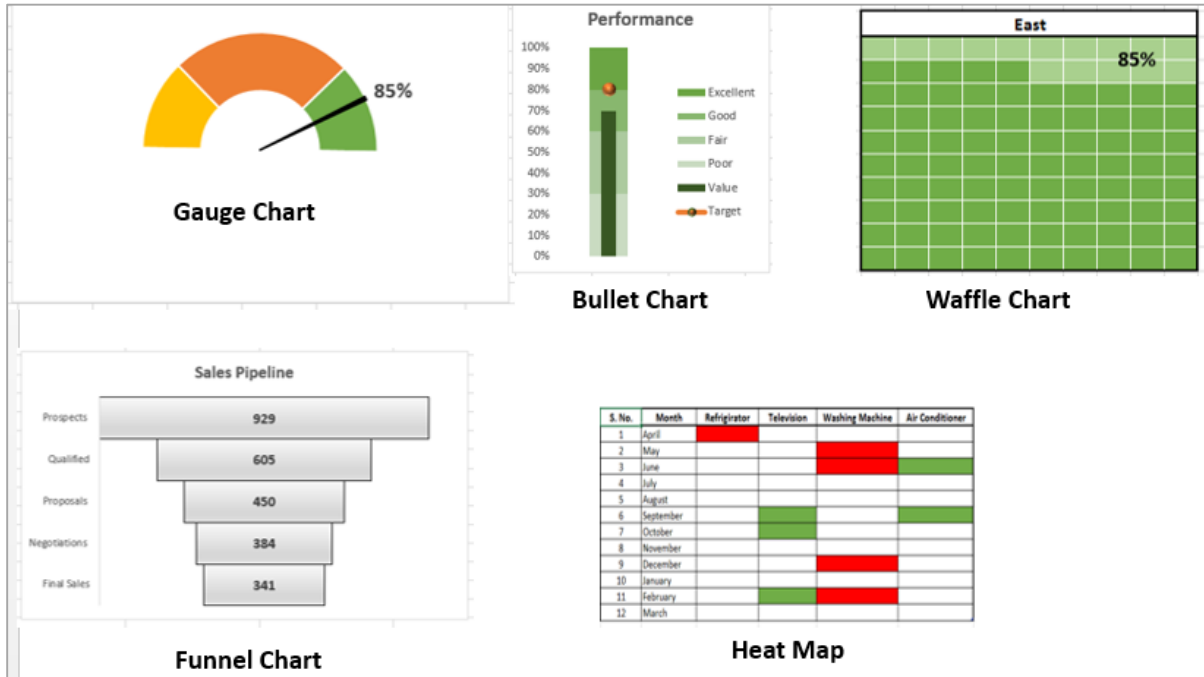


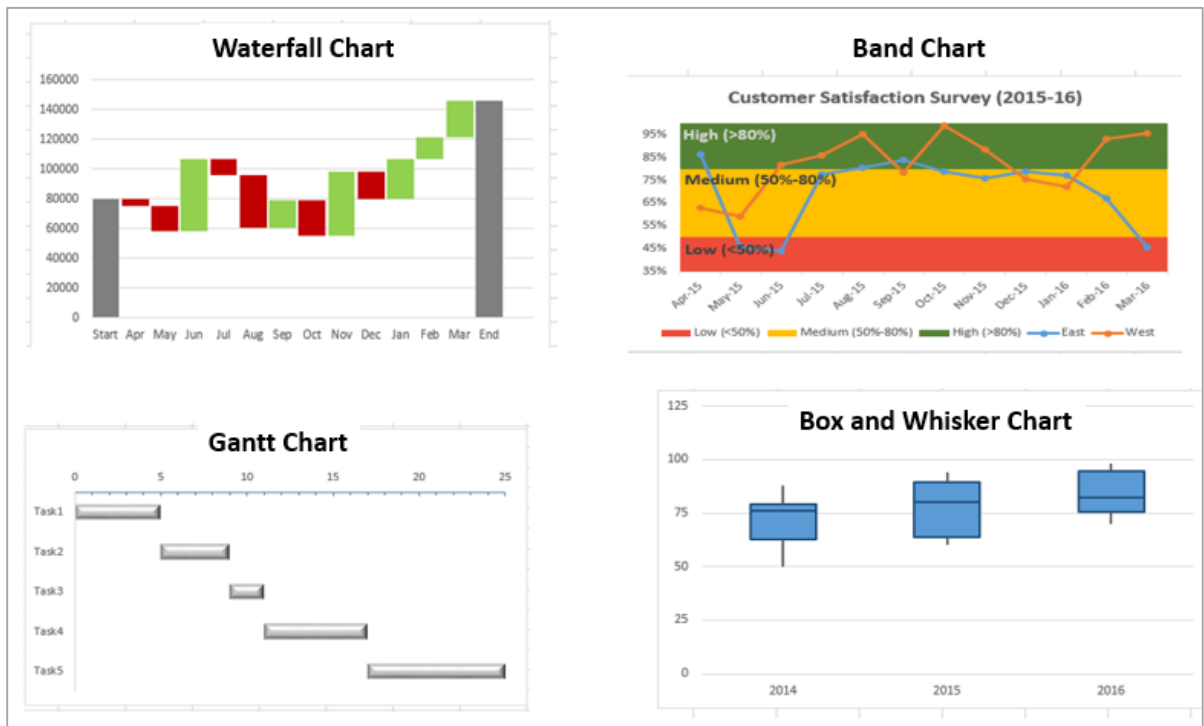
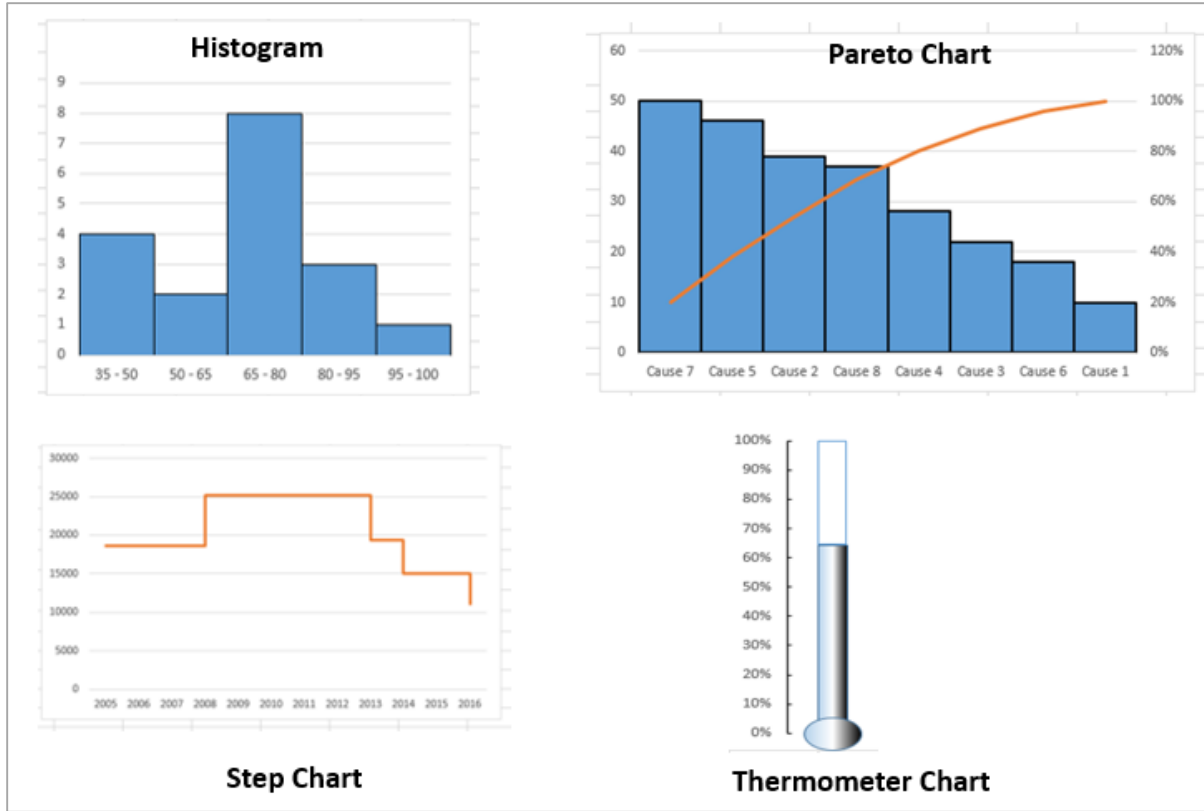
Radar Charts



You will understand how to use these charts and the chart elements effectively in your dashboard in the chapter – **Excel Charts for Dashboards**.

In addition to the above-mentioned chart types, there are other widely used chart types that come handy in representing certain data types. These are Waterfall Chart, Band Chart, Gantt chart, Thermometer Chart, Histogram, Pareto Chart, Funnel Chart, Box and Whisker Chart and Waffle Chart.





You will learn about these charts in the chapter - Advanced Excel Charts for Dashboards.

Excel Camera

Once you create charts, you need to place them in your dashboard. If you want to make your dashboard dynamic, with the data getting refreshed each time the source data changes, which is the case with most of the dashboards, you would like to provide an interface between the charts in your dashboard and the data at the backend. You can achieve this with the Camera feature of Excel.

Excel PivotTables

When you have large data sets and you would like to summarize the results dynamically showing various facets of the analysis results, Excel PivotTables come handy to include in your dashboard. You can use either the Excel tables or the more powerful data tables in the data model to create PivotTables.

The main differences between the two approaches are –

Excel Tables	Data Tables
Data from only one table can be used to create PivotTable.	Data from more than one table can be used to create PivotTable, defining relationships between the tables.
When the tables increase in the no. of rows, the memory handling and storage will not be optimistic.	Can handle huge data sets with thousands of rows of data with memory optimization and decreased file size.

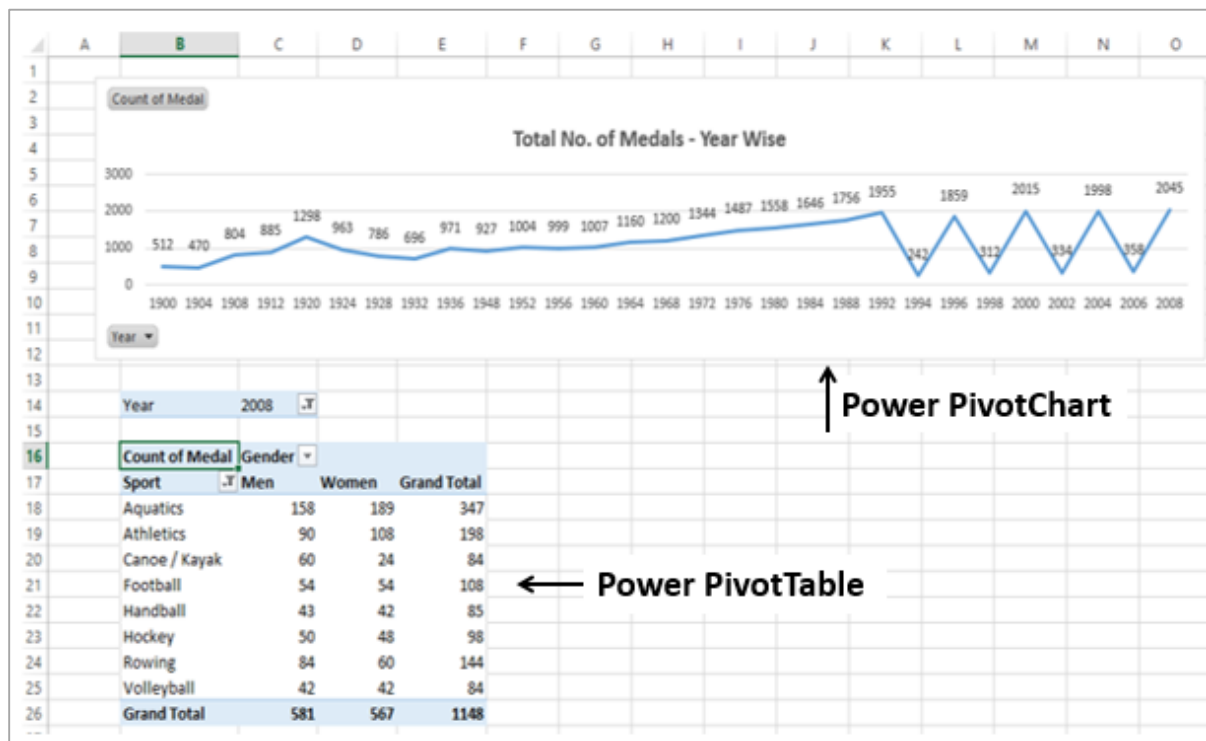
If you try to create a PivotTable with more than one Excel table, you will be prompted to create relationship and the tables with the relationship get added to the data model.

Region	(All)	Columns	Grand Total		
Sum of Order Amount	Column Labels	January	February	March	Grand Total
Albertson, Kathy		925	1375	350	2650
Brennan, Michael		2750	550	400	3700
Davis, William		1100	235	600	1935
Dumlao, Richard		400	965	125	1490
Flores, Tia		1655	985	1925	4565
Post, Melissa		765	575	350	1690
Thompson, Shannon		1140	1720	300	3160
Walters, Chris		355	2755	1265	4375
Grand Total		9090	9160	5315	23565

Excel PivotTable

You will learn about PivotTables in the chapter – **Excel PivotTables for Dashboards**.

If you have data in the Data Model of your workbook, you can create Power PivotTables and Power PivotCharts that span data across multiple data tables.



↑ Power PivotChart

← Power PivotTable

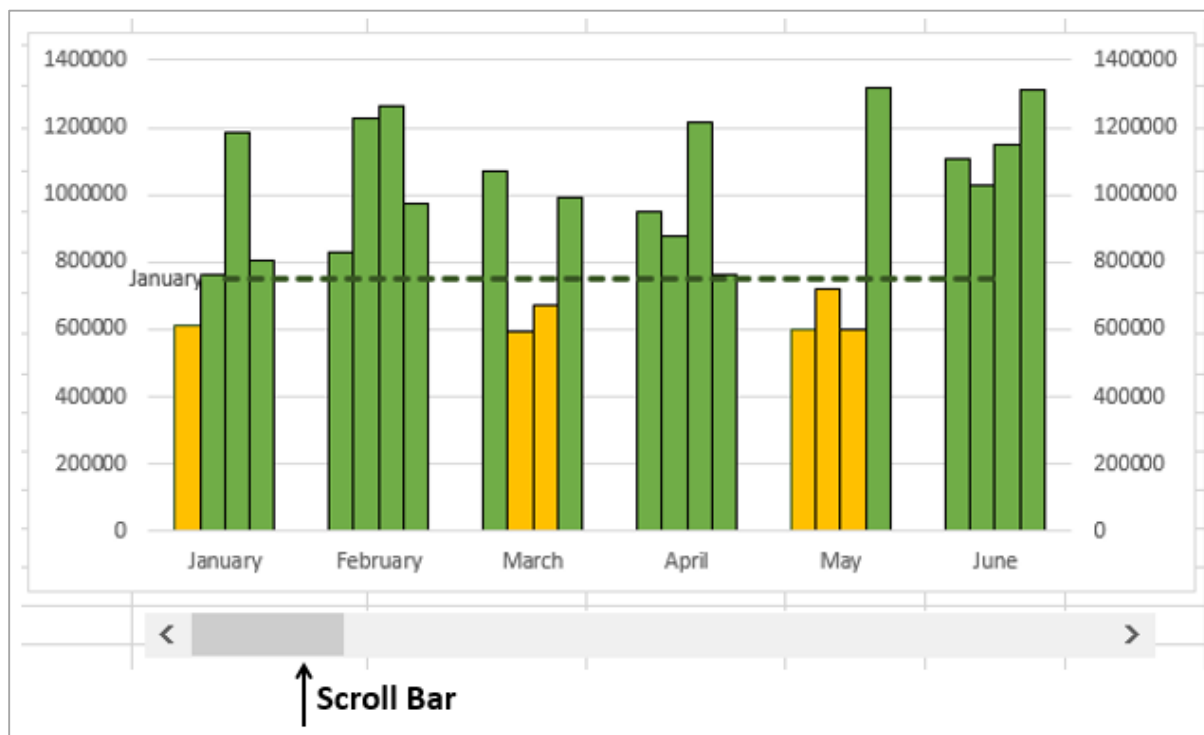
Power PivotTable and Power PivotChart

You will learn about these in the chapter – **Excel Power PivotTables and Power PivotCharts for Dashboards**.

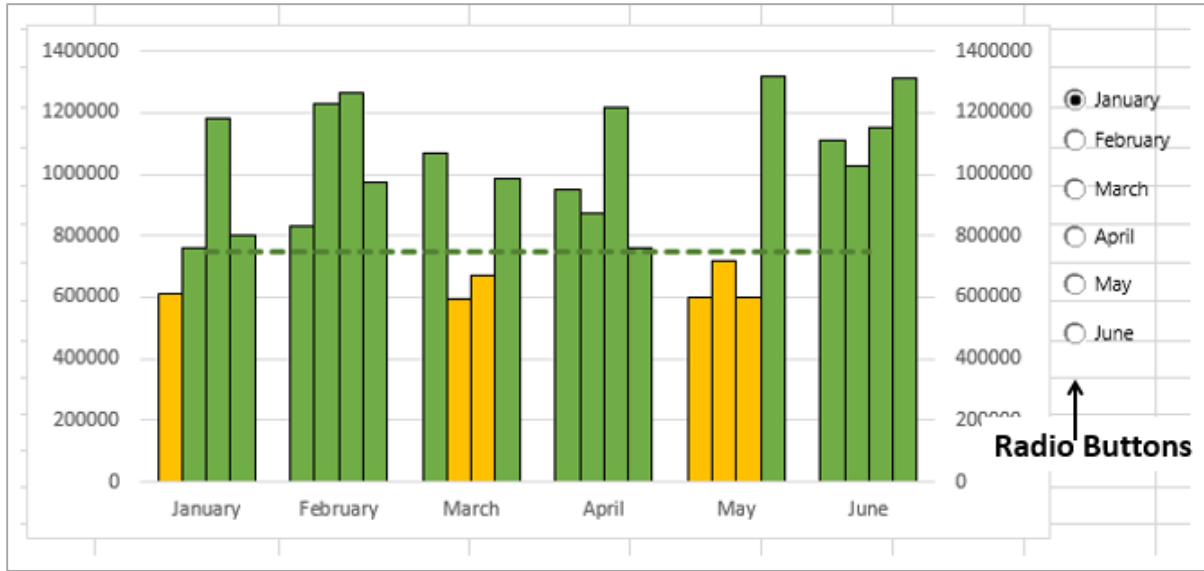
Dynamic Dashboard Elements with Interactive Controls

You can make your dashboard elements interactive with easy to use controls such as scrollbars, radio buttons, checkboxes and dynamic labels. You will learn more about these in the chapter – **Interactive Controls in Excel Dashboards**.

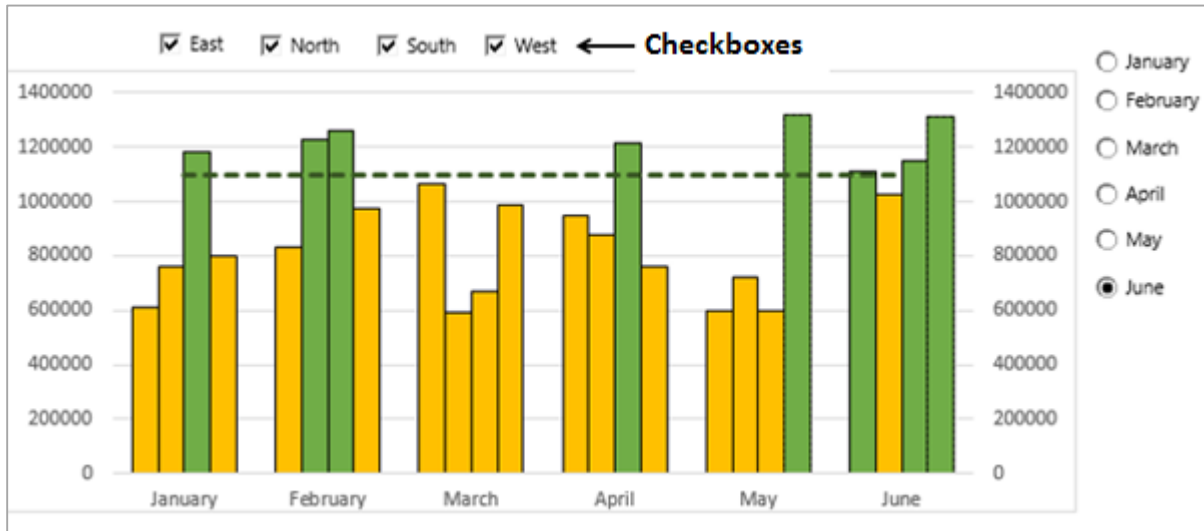
Scrollbars



Radio Buttons



Checkboxes

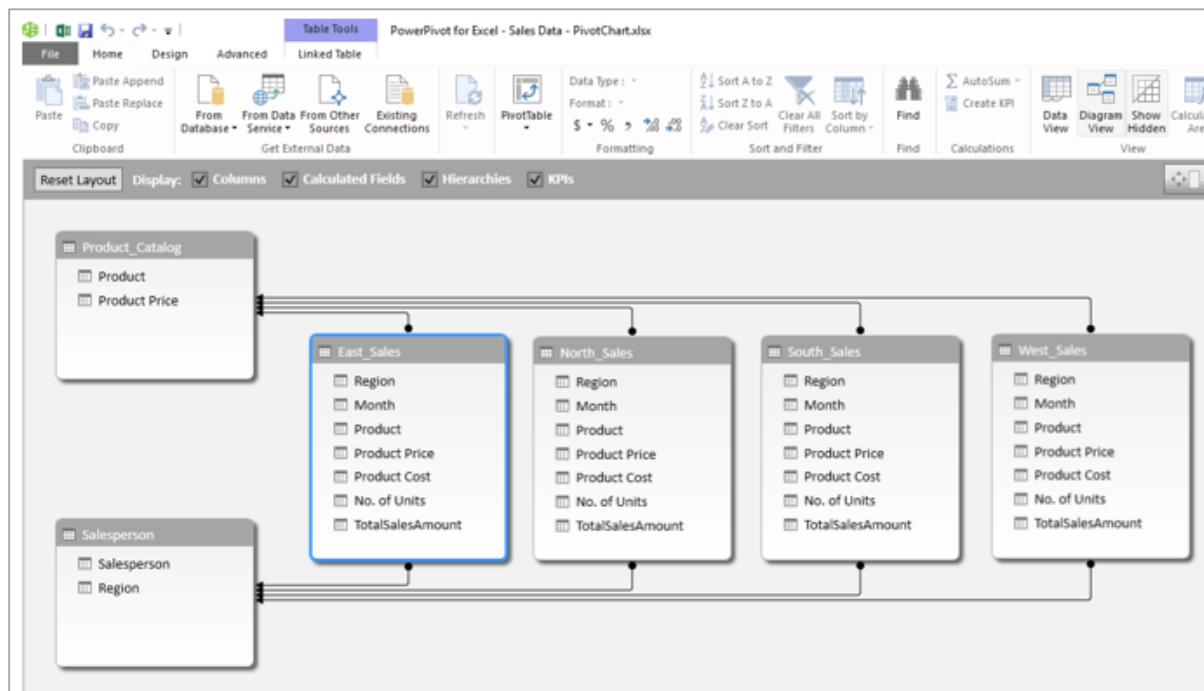


Excel Power PivotTables and Power PivotCharts

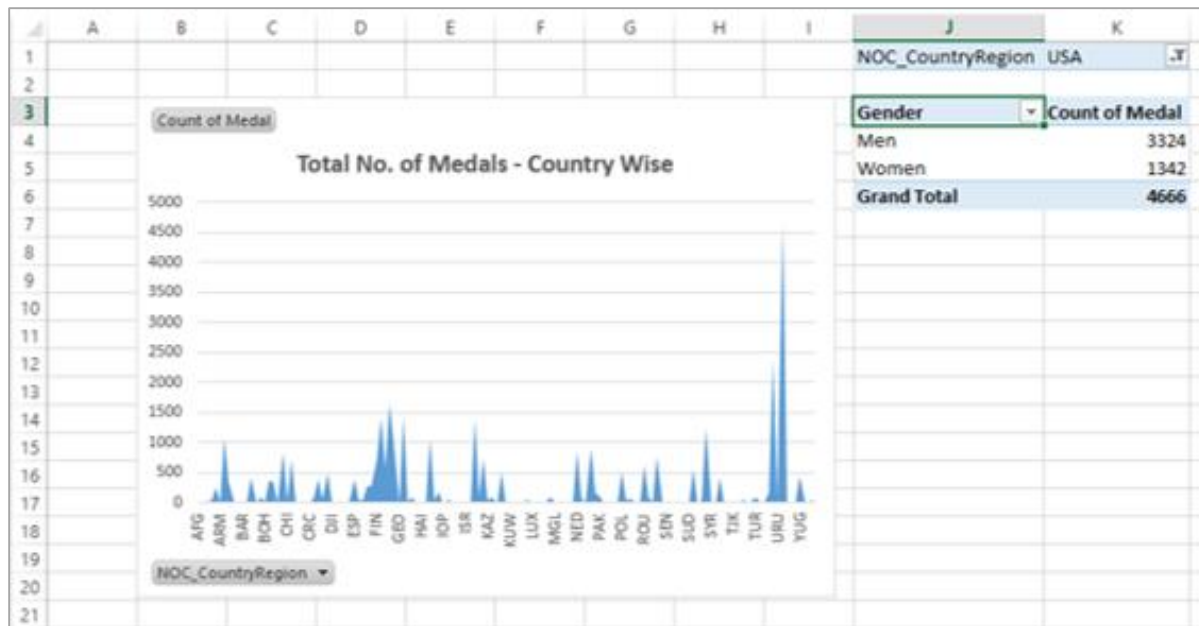
Excel Power PivotTables and Power PivotCharts are helpful to summarize data from multiple resources, by building a memory optimized Data Model in the workbook. The Data Tables in the Data Model can run through several thousands of dynamic data enabling summarization with less effort and time.

You will learn about the usage of Power PivotTables and Power PivotCharts in dashboards in the chapter - Excel Power PivotTables and Power PivotCharts for Dashboards.

Excel Data Model



Excel Power PivotTable and Power PivotChart



Excel Power View Reports

Excel Power View Reports provide interactive data visualization of large data sets bringing out the power of Data Model and interactive nature of dynamic Power View visualizations.

You will learn about how to use Power View as dashboard canvas in the chapter - Excel Power View Reports for Dashboards.

Power View Report



Key Performance Indicators (KPIs)

Key Performance Indicators (KPIs) are integral part of many dashboards. You can create and manage KPIs in Excel. You will learn about KPIs in the chapter – **Key Performance Indicators in Excel Dashboards**.

Key Performance Indicators

Salesperson	Total Sales	Total Sales Goal	Total Sales Status
Albertson, Kathy	2650	3500	●
Brennan, Michael	3700	3500	●
Davis, William	1935	3500	●
Dumlao, Richard	1490	3500	●
Flores, Tia	4555	3500	●
Post, Melissa	1690	3500	●
Thompson, Shannon	3150	3500	●
Walters, Chris	4375	3500	●

End of ebook preview

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