

# 1 BASIC CHARTING

## 1.1 Introduction

This section covers the basic principles of how to create and modify a chart in Excel. With Excel 2016, the charting process is user-friendly and offers many ways to amplify and interpret worksheet data. You can place your chart(s) in the same worksheet as the data or as a separate worksheet. In this section, you will learn about:

- Why Use a Chart?
- Selecting the Data to Chart
- Creating a Default Chart
- Steps in Creating a Chart
- The Charts Group
- Modifying Default Characteristics

## 1.2 Objectives

After completing this module you will be able to:

- Create a default chart and a chart using the Charting Tools based on specified data
- Modify a chart's principle characteristics according to a list of specifications working with the materials provided.

### 1.3 Why Use a Chart?

Charts are a useful way of presenting data because they show an overall picture of lots of data which may be in separate places on a spreadsheet. However, you need to make sure that the picture you present is accurate and honest. Anyone should be able to pick up a chart and fully understand the data being represented.

Before selecting which type of chart (or graph) to draw, it is important to think about the data that you are presenting. Data normally fits into one of the following three types:

#### **Categories**

This is probably not true numerical data but instead represents colours, classes etc. Pie Charts and Column Chart are good chart types for this type of data.

#### **Continuous**

Continuous data can take any value. Height, weight and sales volumes are examples. It is possible to use most types of graph with this data type, including line graphs.

#### **Discrete**

This type of number cannot take all values but may be limited to specific ones. For example you can't have a shoe size 6.786. It may be appropriate to use a continuous scale, but care should be taken when drawing lines.

## 1.4 Selecting the Data to Chart

Charts can be based on one or many series and each series may be in a row or a column. Each series will normally be named and so will each point within it.

In the example below (book sales by age range) the entire series is called **Liverpool** and the names of the points within it are found adjacent to the data, in column A.

e.g.

	A	B
1		Liverpool
2	Adult	100,123
3	0-6	250,332
4	7-9	198,329
5	10-12	167,324
6	13-15	188,476
7	16-18	135,735

**Figure 1-1 - A Single Series Set Of Data**

	A	B	C
1		Liverpool	Birmingham
2	Adult	100,123	187,634
3	0-6	250,332	478,659
4	7-9	198,329	356,665
5	10-12	167,324	32,345
6	13-15	188,476	338,769
7	16-18	135,735	324,768

**Figure 1-2 - Multiple Series Sets Of Data**

In Figure 1-1 and Figure 1-2 above the **row series** represent the different sorts of book sales, whilst the **column series** represent the locations. Once there is more than one series of data available you can choose which way to present the data.

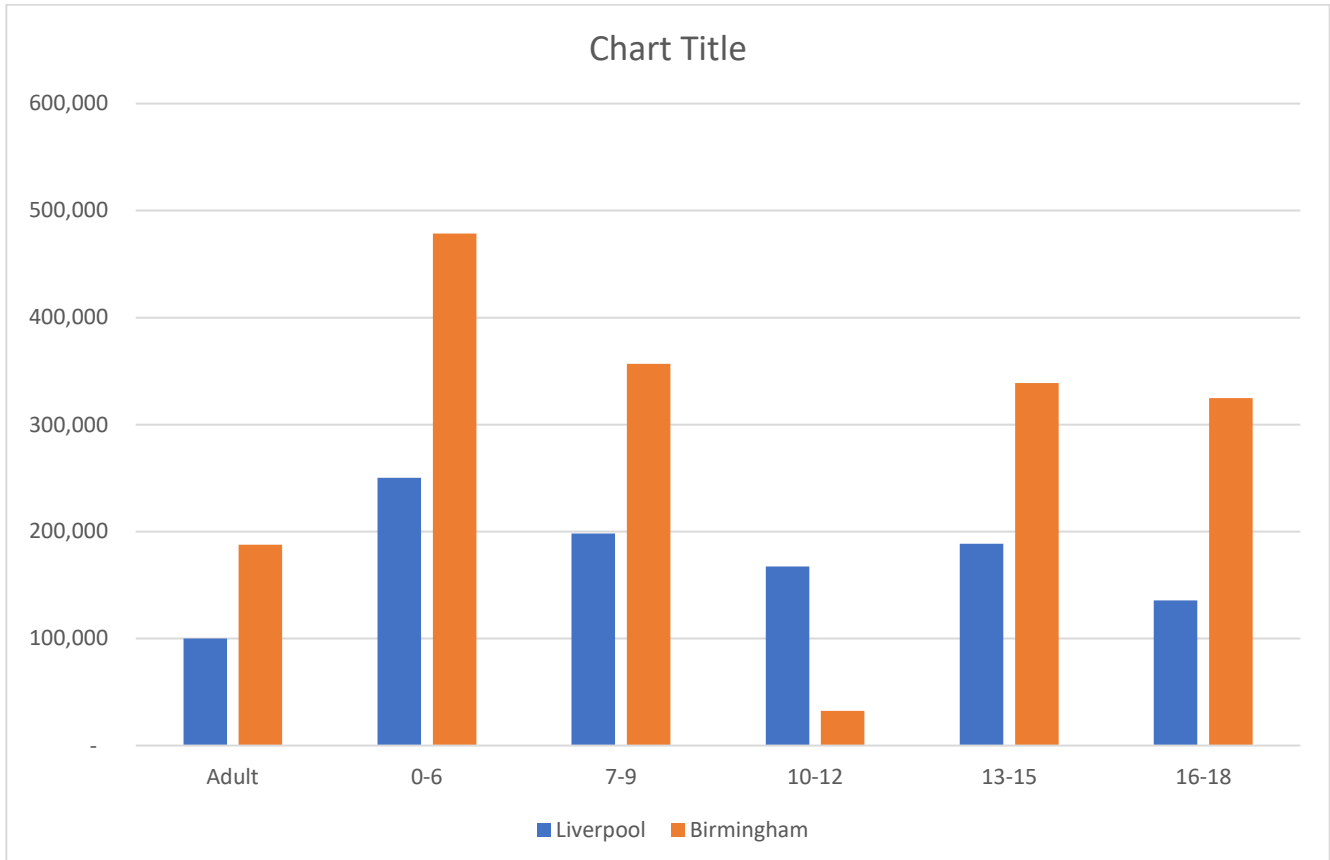
You can present a chart by rows or by columns. So, for example, if a column series were chosen for 1.1 there would be a single series with multiple points but a row series would view the data as multiple series, each with only one point.

It is up to you to work out what data you want to chart and how you perceive it. Different chart types suit different situations.

## 1.5 Creating a Default Chart

The Default Chart type in Excel is a 2D column chart. You can create one at any time after you have selected a data range by pressing **[F11]**. (This doesn't work on all operating systems, sorry! If it doesn't work for you you'll have to start from **Insert, Chart** as described below.)

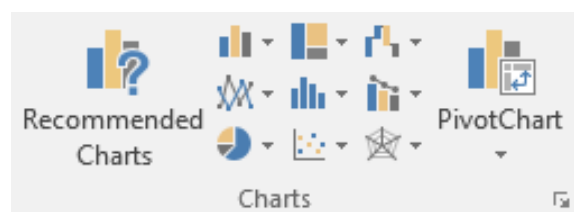
e.g. using the data from Figure 1-2 above will produce the following:



**Figure 1-3 - Default 2D chart**

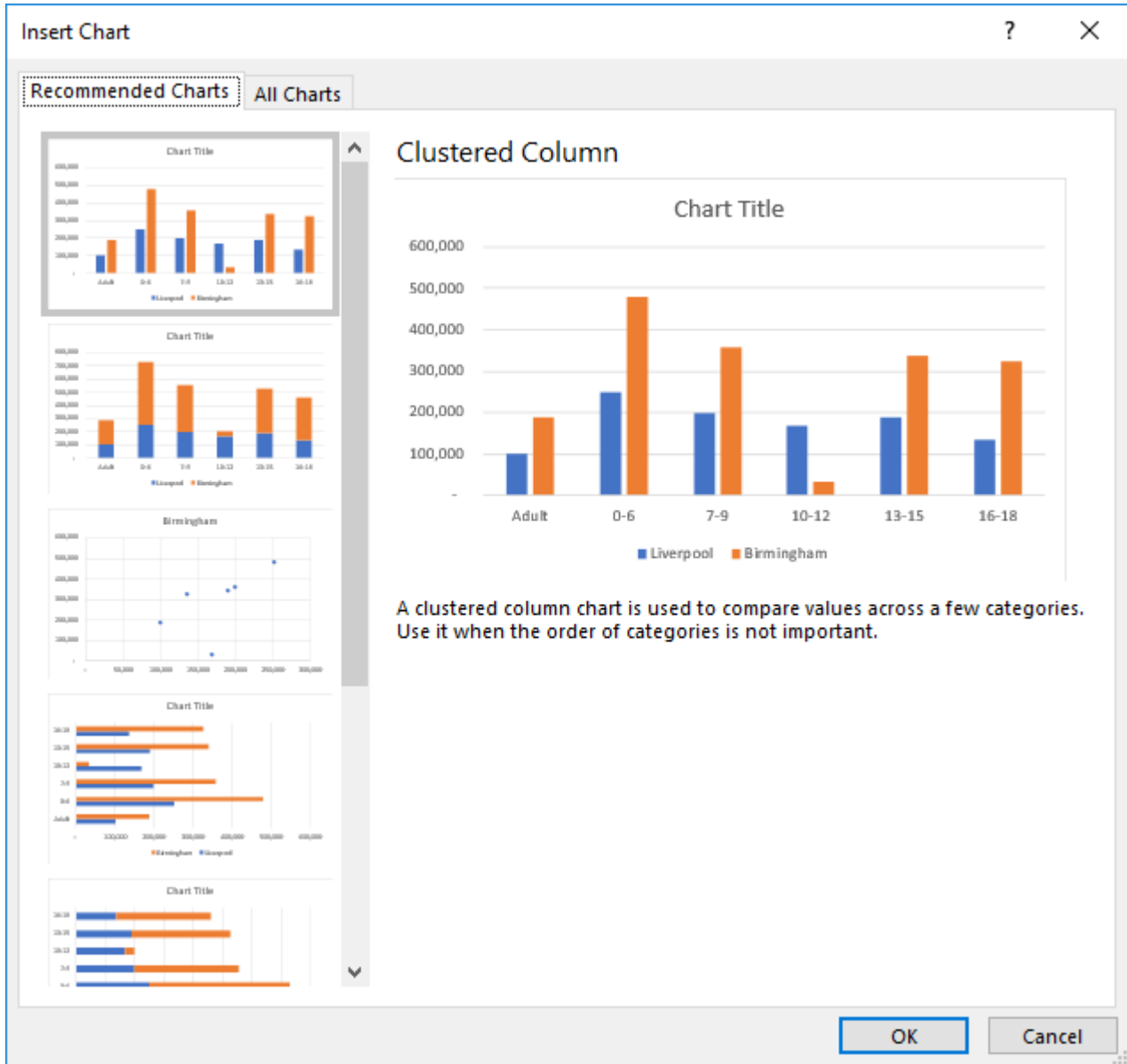
This will place the chart on a separate chart sheet.

To create an **embedded** default chart, that is, one on the same sheet as the data, use one of the Create Chart buttons found on the **Charts group** of the **Insert ribbon**.



**Figure 1-4 - Charts Group of the Insert Ribbon**

- Click on **Recommended Charts** to open the **Insert Chart Dialog** at the **Recommended** tab. Its contents will alter depending on the type of data previously selected.



**Figure 1-5 - Insert Chart Dialog, Recommended Tab**

- Alternatively, choose the appropriate button for the type of chart you want or select it from the **All Charts** tab of the Insert Chart dialog.

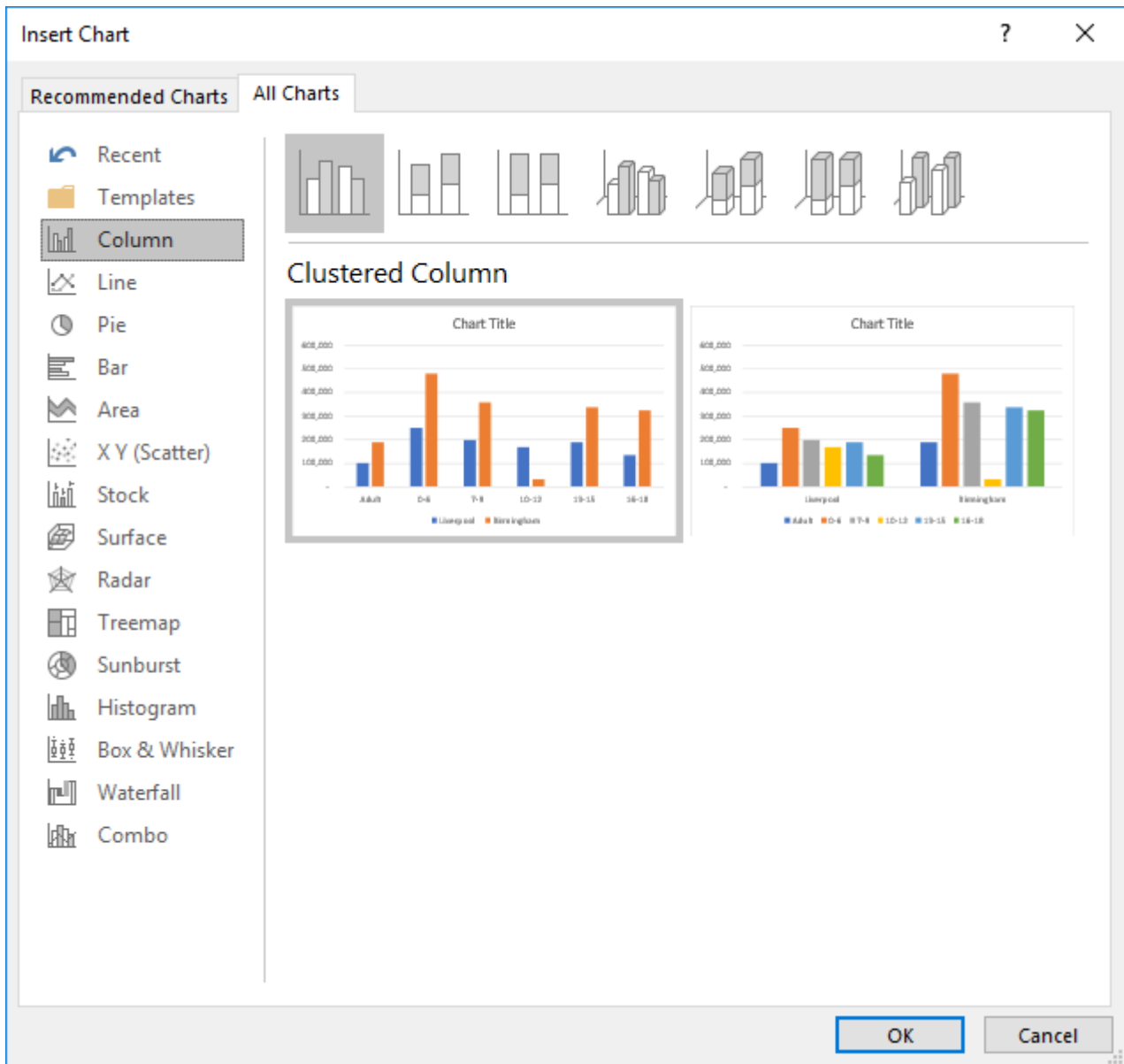


Figure 1-6 - Insert Chart Dialog, All Charts Tab

## 1.6 Steps in Creating a Chart

- Select the data to be charted.
- Create a Default Chart or insert a chart from the **Insert Ribbon**.

If using **Insert**,

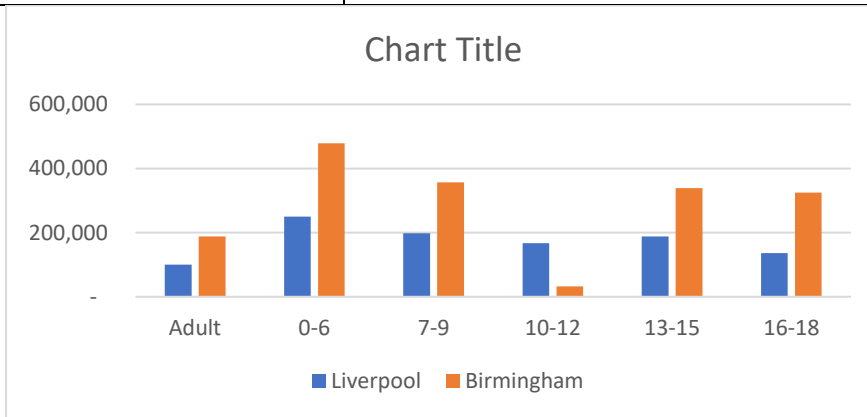
- Select the chart type and subtype.
- Modify any default characteristics to suit.
- Add titles where relevant.
- Decide where to place the chart.
- Edit the chart's formatting.

We will examine each of these stages in turn.

## 1.7 The Charts Group

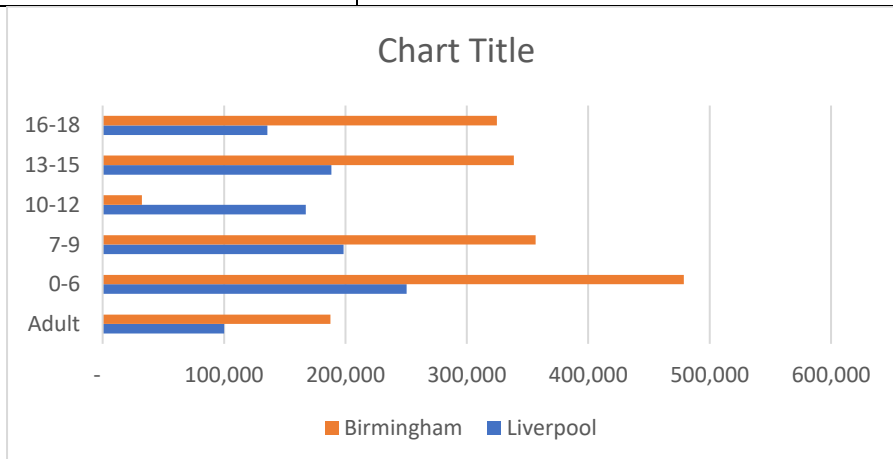
### 1.7.1 Main Chart Types

Chart Type	Usage
Column	These show precise comparisons of values. They may be used to compare different items or the same item over time periods.



**Figure 1-7 - A 2-D Column Chart**

Bar	A bar chart is essentially the same as a column chart but values are shown horizontally instead of vertically.
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**Figure 1-8 - A 2-D Bar Chart**

Column and Bar charts are the most common type of charts as they can be used for almost all types of data. In Excel there are 3 main types of column and bar chart.






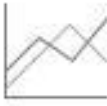
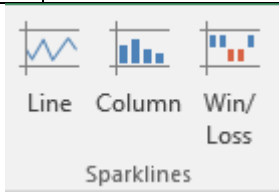
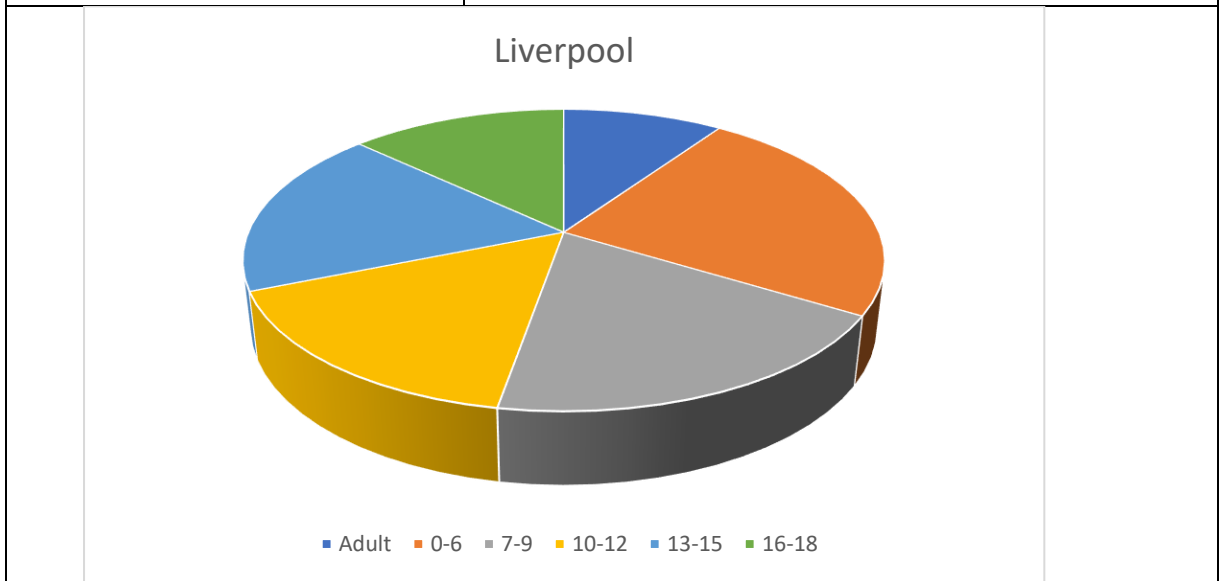
Chart Type	Usage
 <p data-bbox="300 501 647 568"><b>Figure 1-9 A Clustered Column</b></p>	<p data-bbox="746 344 1086 378"><b>Clustered Column/Bar</b></p> <p data-bbox="746 398 1434 432">Used to compare data values across categories.</p>
 <p data-bbox="300 763 647 831"><b>Figure 1-10 - A Stacked Column</b></p>	<p data-bbox="746 607 1062 640"><b>Stacked Column/Bar</b></p> <p data-bbox="746 660 1422 763">Used to show totals by time period or category. The individual contribution made by each group is shown.</p>
 <p data-bbox="316 1010 632 1077"><b>Figure 1-11 - A 100% Stacked Column</b></p>	<p data-bbox="746 869 1150 902"><b>100% stacked Column/Bar</b></p> <p data-bbox="746 922 1445 1025">Used to show what contribution, shown as a percentage of the total, each of the elements has made to the overall figure.</p>
<p data-bbox="284 1120 352 1153"><b>Line</b></p>	<p data-bbox="746 1120 1382 1187">A line chart is used to show trends in data at equal intervals.</p>
 <p data-bbox="655 1391 1050 1424"><b>Figure 1-12 - A Line Chart</b></p>	
<p data-bbox="284 1458 432 1491"><b>Sparkline</b></p>	<p data-bbox="746 1458 1441 1603">New since 2010, a Sparkline chart is very simple – no data or axis labels – and only available in 3 types: line, column and win/loss. The generated chart fits into a single cell.</p> <p data-bbox="746 1624 1414 1657">Select the data then choose <b>Insert, Sparkline</b>.</p> <p data-bbox="746 1677 1393 1744">The <b>Sparkline Tools Design Ribbon</b> opens, allowing you to modify the presentation.</p>

Chart Type	Usage
	

**Figure 1-13 – The Sparklines Group**

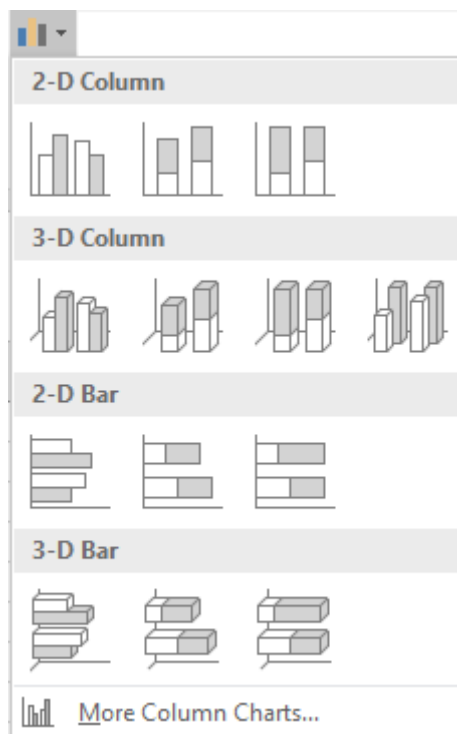
<p><b>Pie</b></p>	<p>A pie chart shows the proportional size of items that make up a data series to the sum of the items. Imagine the total value is the whole pie, and each element a slice. In essence it is similar to a 100% stacked column.</p> <p>It always shows only one data series and is useful when you want to emphasize a significant element.</p>
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**Figure 1-14 - A 3-D Pie Chart**

## 1.7.2 Selecting the Sub-Type

Click on any main chart type to see a list of available sub-types.



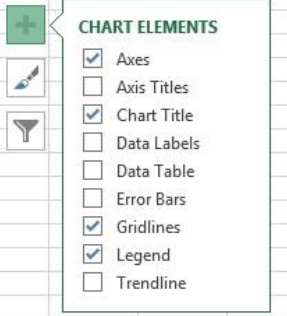
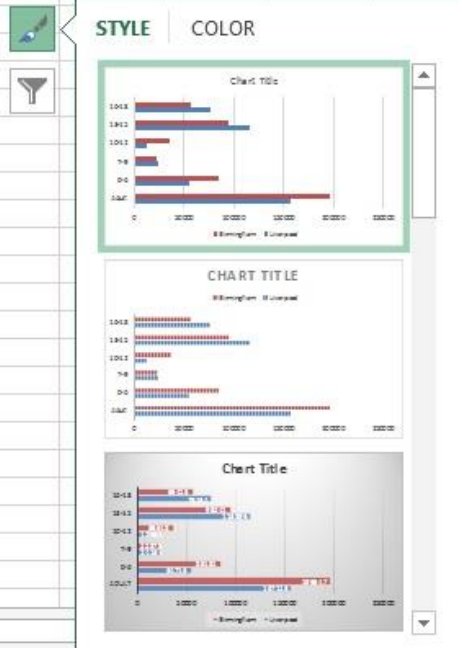
**Figure 1-15 - Column Chart Options**

Some chart types have 2-D and 3-D variants, as shown above. The Excel Help topic **Available Chart Types** has detailed descriptions and examples of every chart type.

## **1.8 Modifying Default Characteristics**

Once you have created a chart you can modify it using the chart tools or the charting ribbons which open whenever a chart is selected.

### **1.8.1 The Chart Editing Tools**

Tool	Purpose
 <p><b>Figure 1-16 - The Chart Elements Tool</b></p>	<p>Chart elements tool.</p> <p>Use this to decide which possible elements to include.</p>
 <p><b>Figure 1-17 - The Chart Styles Tool</b></p>	<p>Chart Styles tool.</p> <p>Use this to fine-tune the style and colour scheme elements of the chart.</p>

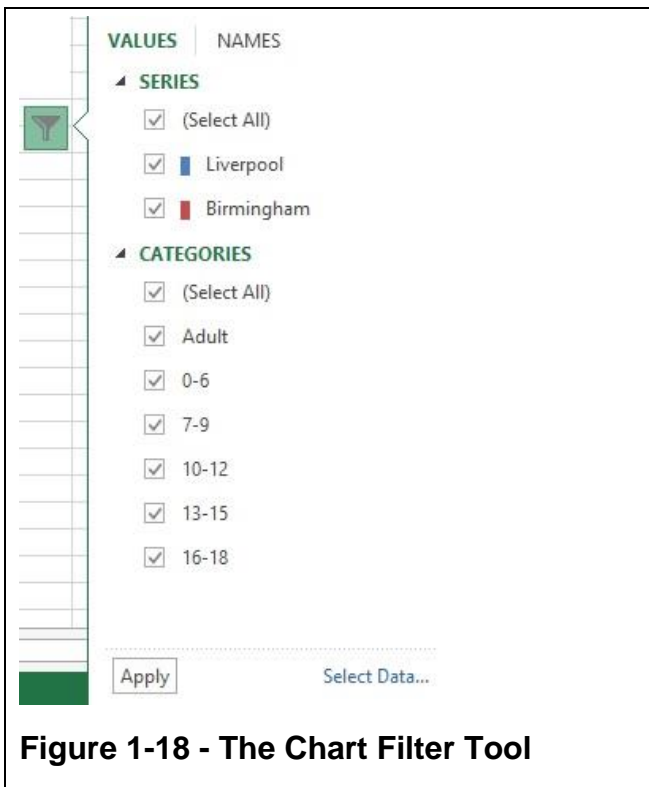
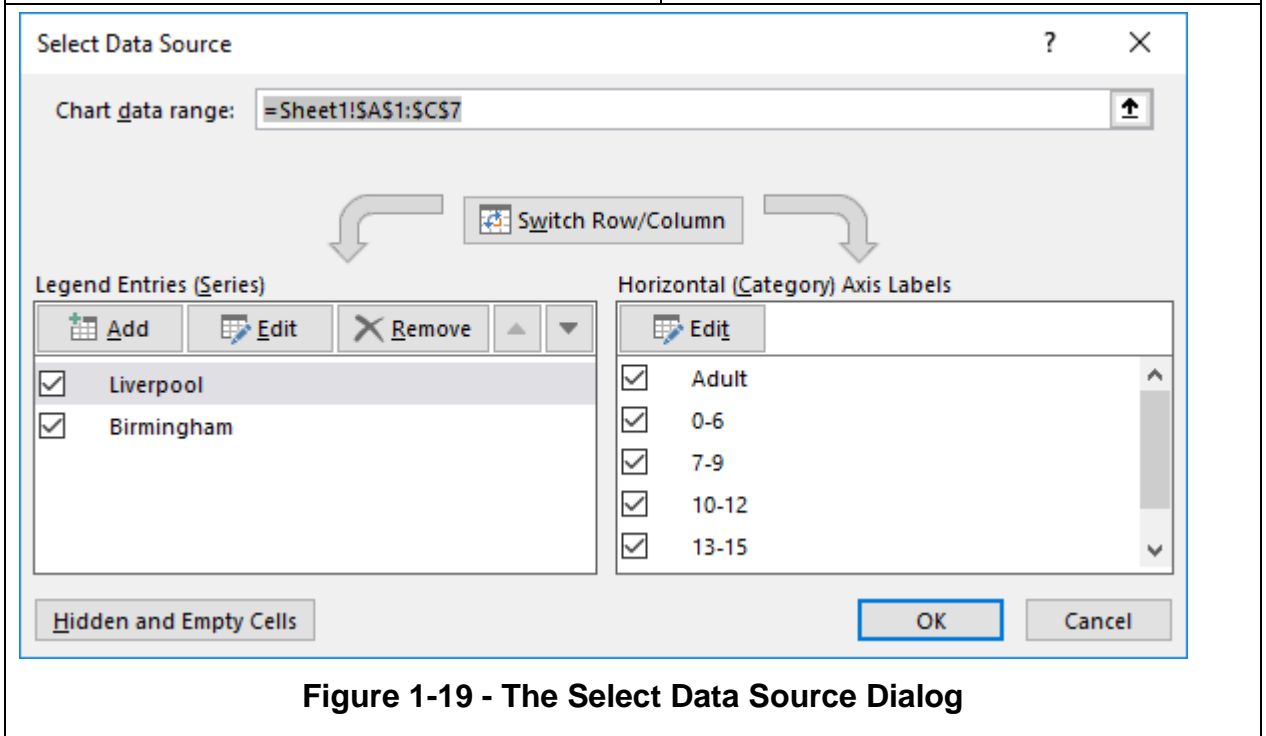


Chart Filter tool.

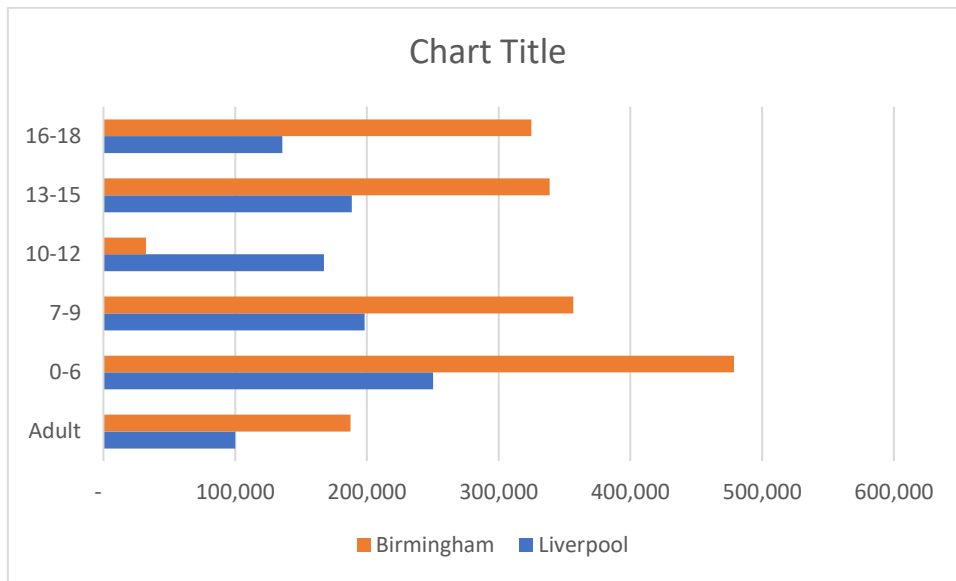
Use this to determine which points from the series to display.

Click on **Select Data** to open the **Select Data Source dialog**. This can be used to carry out a variety of functions but may be most useful just altering the Row/Column plotting of the chart.

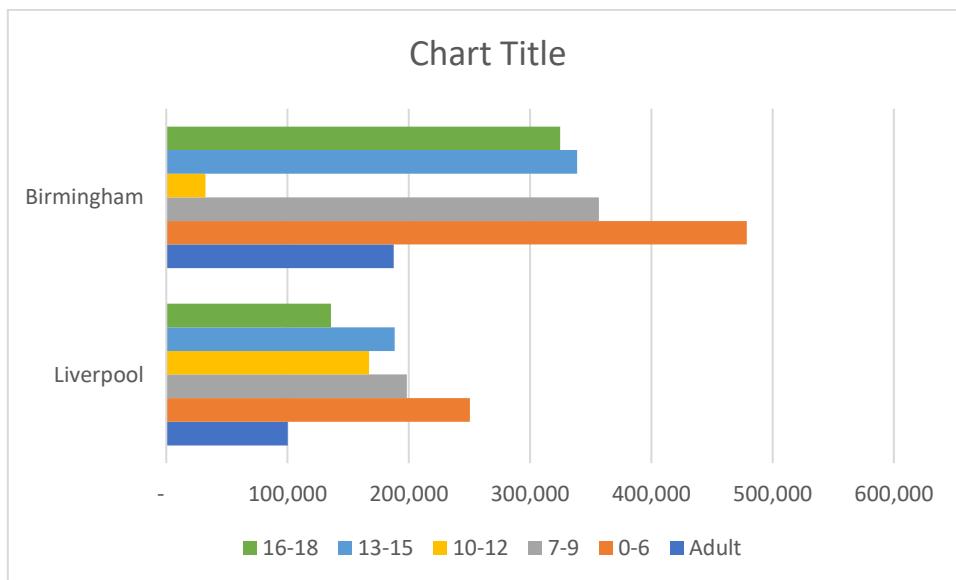
**Figure 1-18 - The Chart Filter Tool**



**Figure 1-19 - The Select Data Source Dialog**



**Figure 1-20 - A Bar Chart plotted by Column**


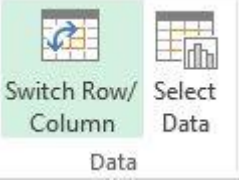
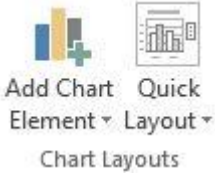



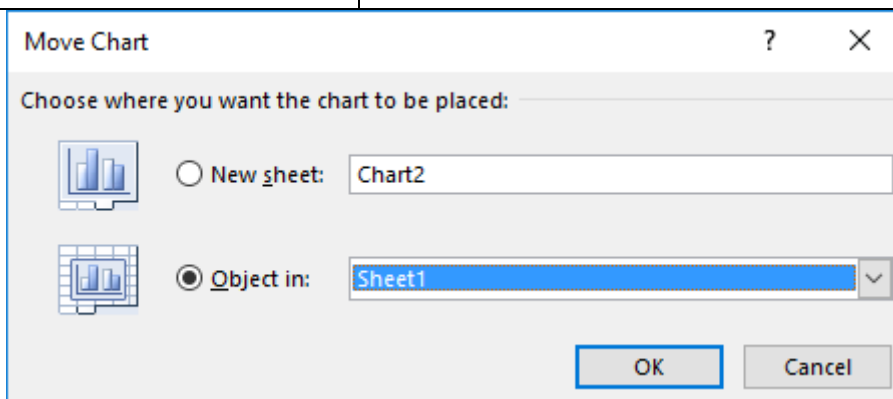
**Figure 1-21 - The Same Data Plotted By Row**

### 1.8.2 The Chart Design Ribbon



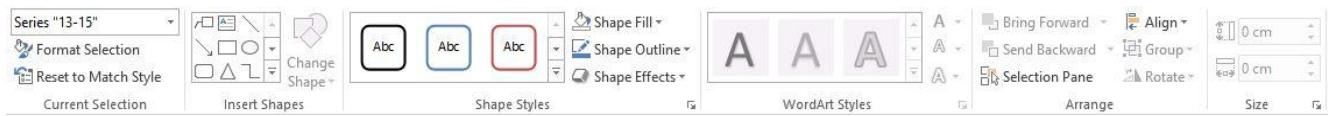
**Figure 1-22 - The Chart Design Ribbon**

Tool	Purpose
 <p>Change Chart Type</p>	<p>Use the <b>Change Chart Type</b> tool to re-open the list of available charts shown in Figure 1-6.</p>
 <p>Switch Row/Column Select Data</p>	<p><b>Switch Row/Column.</b> Data can be charted by row or by column, creating different impressions of the same information. See Figure 1-20 and Figure 1-21.</p> <p><b>Select Data</b> Use this tool to modify the data range selected.</p>
 <p>Add Chart Element Quick Layout</p>	<p>Select from the range of preset chart layouts to alter the position and style of the various chart elements.</p>
<p>Chart Styles</p>	<p>Select from the range of colour options.</p>
 <p>Move Chart Location</p>	<p>Use this tool if you want to move the chart within the worksheet or to a separate sheet.</p> <p>It opens the <b>Move Chart</b> dialog seen below.</p>



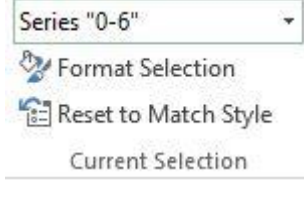
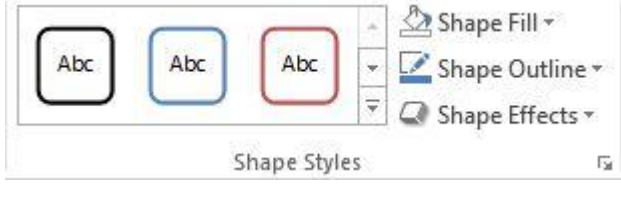


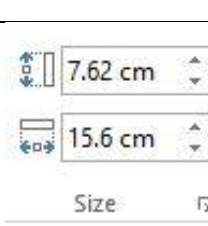


### 1.8.3 The Format Ribbon



**Figure 1-23 - The Chart Format Ribbon**

This ribbon has a few additional tools for formatting the appearance of the chart.

Tool	Purpose
	<p>The <b>Current Selection</b> group responds to whatever part of the chart has been selected and allows you to edit its appearance.</p>
	<p>The <b>Shape Styles</b> group allows you to quickly reformat the selected elements by selecting from a graphical menu. Additional tools allow you to change <b>Fill, Outline</b> and <b>Effects</b>.</p>
	<p><b>WordArt Styles</b> become enabled whenever a text element of the chart is selected. They allow you to transform the text from “normal” to “fancy”, changing various elements.</p>
	<p>Use the <b>Arrange Group</b> when there are multiple elements selected. Arrange them relative to each other.</p>
	<p>Chart objects existing on datasheets can be resized manually using click-and-drag over the sizing handles or by using the <b>Size Group</b> tools.</p>



## 1.9 Summary

In this section, you have learned about:

Why Use a Chart?	Charts can add greatly to the understanding of numeric data. However, care must be taken to select the right data and an appropriate chart type in which to display it.
Selecting the Data to Chart	Make sure you don't double select e.g. select details and totals. Decide whether you want to view the data by rows or by columns.
Creating a Default Chart	Use <b>[F11]</b> to create a default (column) chart sheet. Use the <b>Insert Chart</b> icons to create embedded chart objects on the same sheet as the data.
Steps in Creating a Chart	Select the data. Decide on a method. Create a default separate or embedded chart or use the Charts Group described below.
The Charts Group	Select one of the chart tools from the <b>Charts Group</b> of the <b>Insert Ribbon</b> . Choose a subtype if wanted. Add other details.
Modifying Default Characteristics	Use the chart-specific tools and ribbons ( <b>Design</b> , and <b>Format</b> ) to complete and edit the definition.

### 1.10 Your Summary

Use this page to make your own notes of any memory aids or special things you will use from this module.

## 1.11 Module Review

### Module Objective

After completing this module you will be able to:

- Create a default chart and a chart using the Charting Tools based on specified data
- Modify a chart's principle characteristics according to a list of specifications working with the materials provided.

### Files Needed

### Review Charts

#### Steps

- Open the file **Review Charts**.
- Click on the Multiple Series tab.
- Select the data in A1:C7 and create two charts, one on a separate sheet, the other on the Multiple Series sheet.
- Position the second one to the right of the data.
- Use the Chart Design Ribbon to change the data to display in rows.
- Add the title: Book Sales by City and Age.
- Modify the fonts used for Title, Legend and Scale to Century Gothic 10 point Green.
- Change the scale to display with comma separators.
- Make any other formatting changes you think will improve the appearance of your chart.
- Save and close the file.
- Compare your results with the file **Review Exercise Completed – Basic Charts**.

