

# Statistical Methods

## 5. Charts in Excel

Based on materials provided by Coventry University and  
Loughborough University under a National HE STEM  
Programme Practice Transfer Adopters grant



# Aims

To show you how to make nice looking charts in Excel:

- Pie charts
- Single series bar charts
- Scatter plots
- Multiple series bar charts based on data from pivot tables

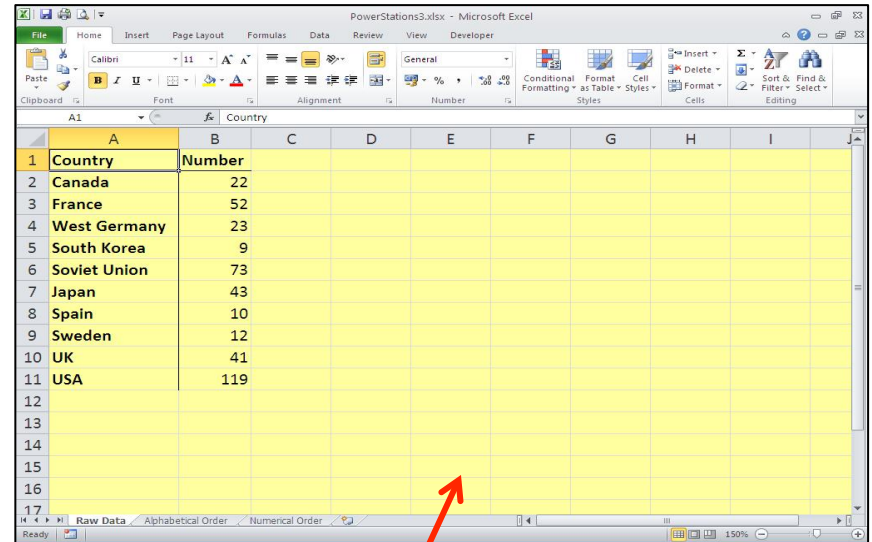
**Note:** See Workshop 3 for how to evaluate charts



# Creating Pie Charts

## 1. Set up the file

1. Select the file PowerStations.xlsx associated with this presentation
2. Save it in a folder 5ExcelCharts in your Documents area
3. Open this file
4. Save it as PowerStations2.xlsx



The screenshot shows a Microsoft Excel spreadsheet with a yellow background. The data is as follows:

Country	Number
Canada	22
France	52
West Germany	23
South Korea	9
Soviet Union	73
Japan	43
Spain	10
Sweden	12
UK	41
USA	119

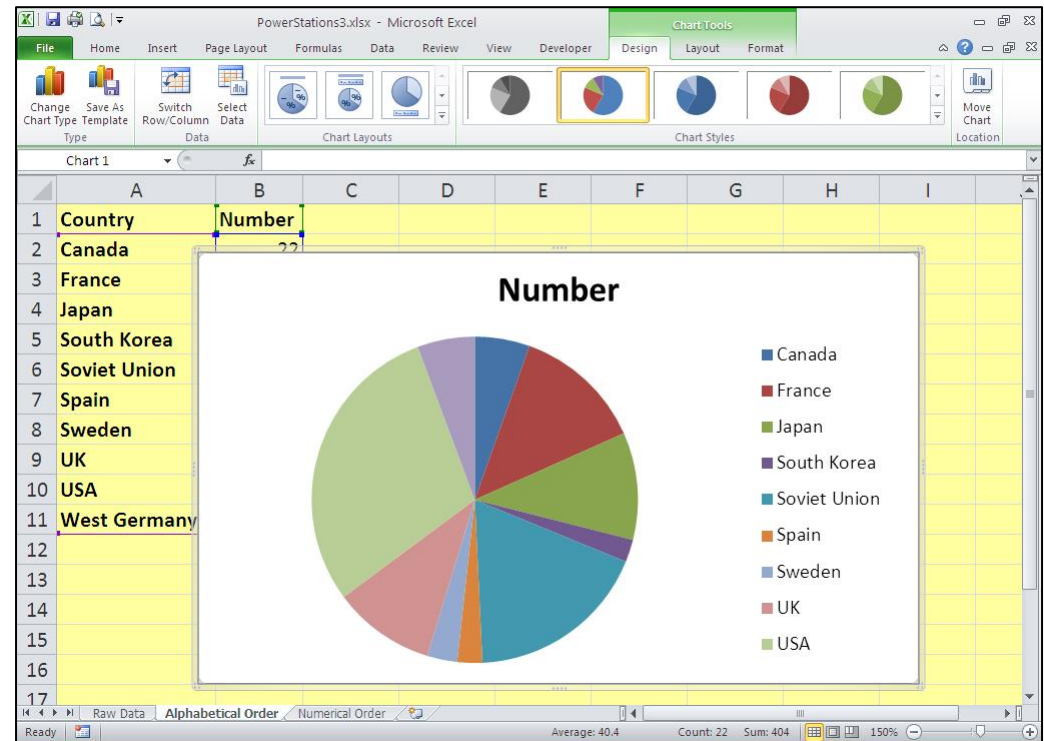
A red arrow points from the bottom right corner of the spreadsheet to a text box below.

The background colour and zoom have been changed to make the sheets more accessible. This does not affect how the printout looks.

# 2. Create an Initial Chart

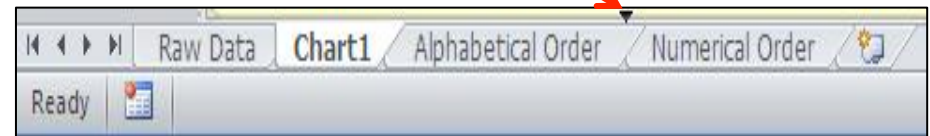
1. Select the Alphabetical Order sheet
2. Select all the data
3. Select Insert – Pie – then the first 2D pie chart

Your display should then look like this:

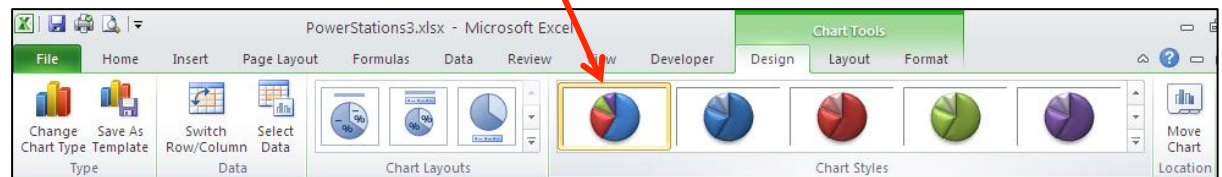


# 3. Change the Chart Design

1. On the Design ribbon, move the chart to a new sheet using the “Move Chart Location” button. This should create a sheet called Chart1.
2. Click and drag the Chart1 tab in between the Alphabetical Order and Numerical Order tabs



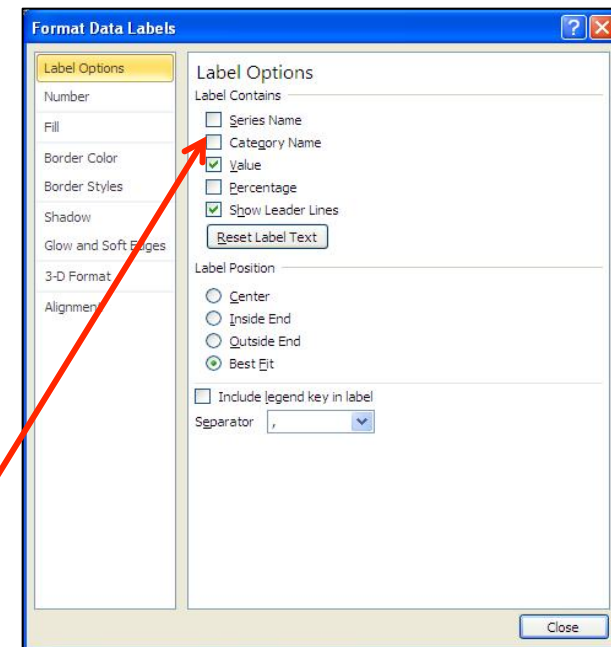
3. Change the chart style to Style 26



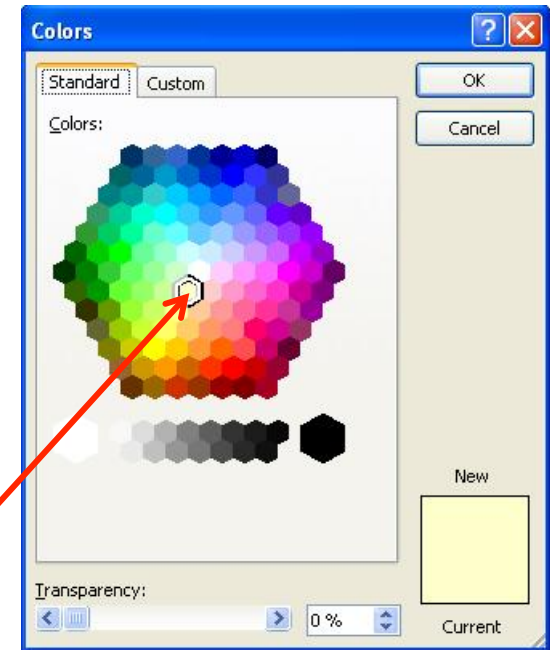
**Note:** You must change the chart style **before** you change its layout and format

# 4. Change the Chart Layout and Format

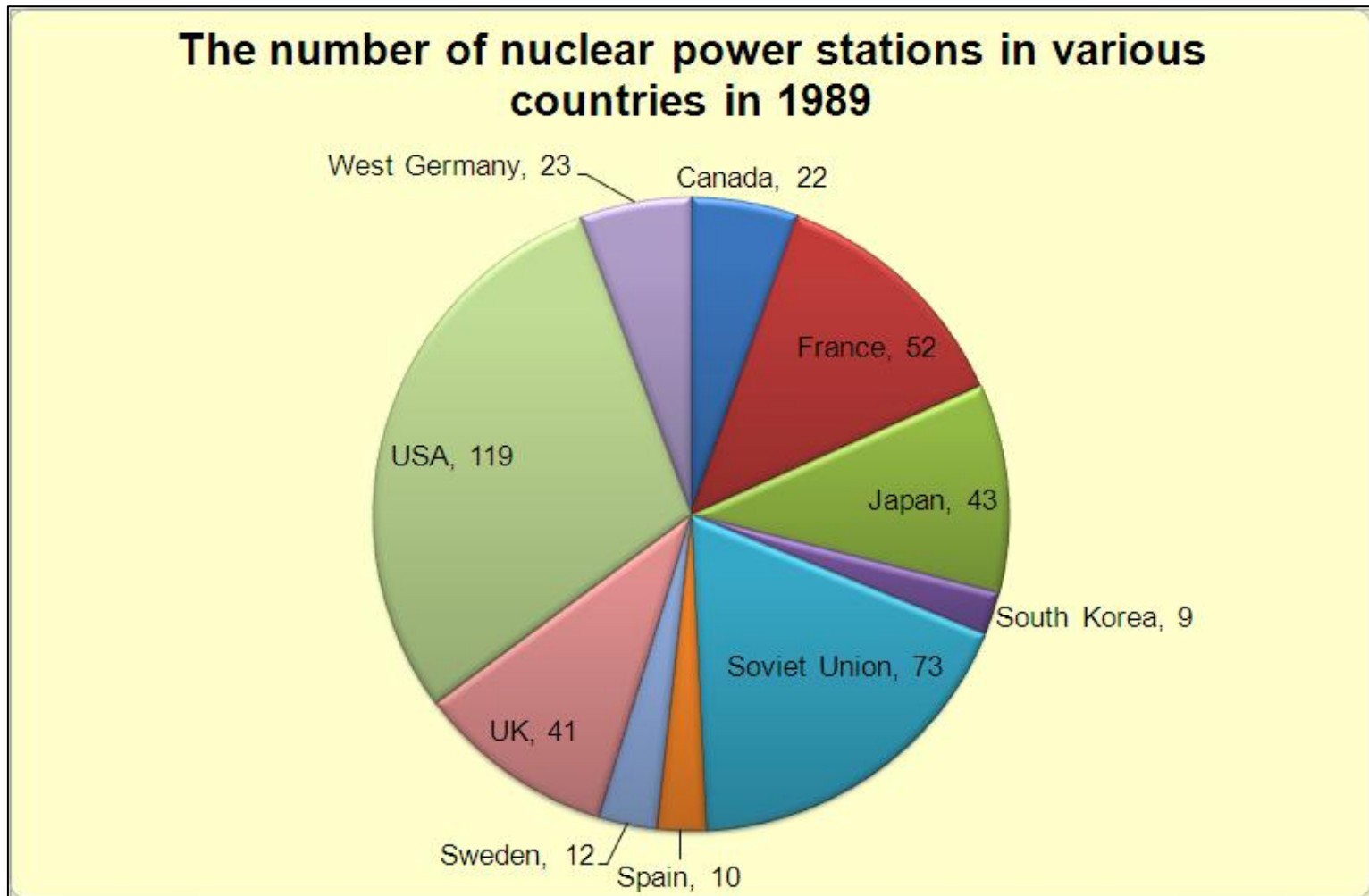
1. Select and change the chart title to “The number of nuclear power stations in various countries in 1989”
2. On the Home ribbon, change the title font size to 24 and the style to Arial
3. On the Layout ribbon, turn off the chart legend by selecting Legend – None
4. Under the Data Labels menu, choose “Best Fit”, then select “More Data Label Options” then select “Category Name” under “Label contains”



5. Whilst the data labels are selected, change their font size to 16 and their style to Arial using the Home ribbon
6. Select the chart background, then change its colour to light yellow by using Shape Fill pull down menu on the Format ribbon (light yellow is the option next to white on the Standard “more fill colours” palette).
7. Save the file



The completed chart should then look like this:

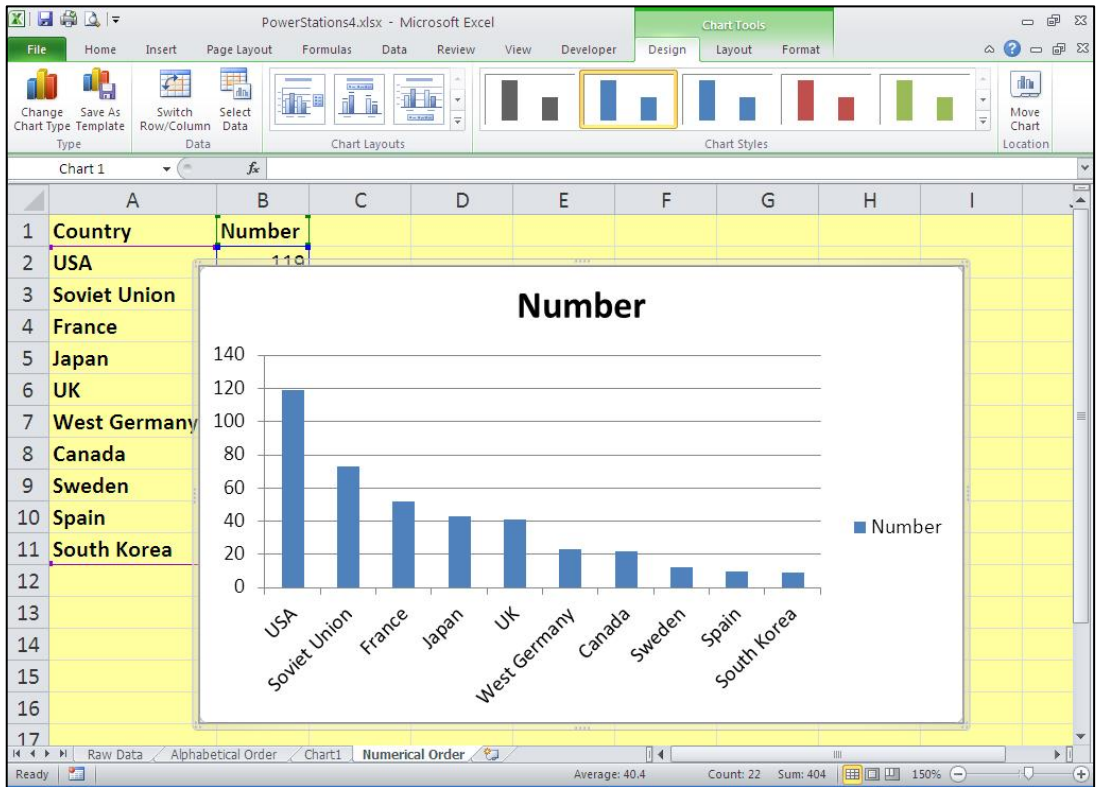




# Creating bar charts

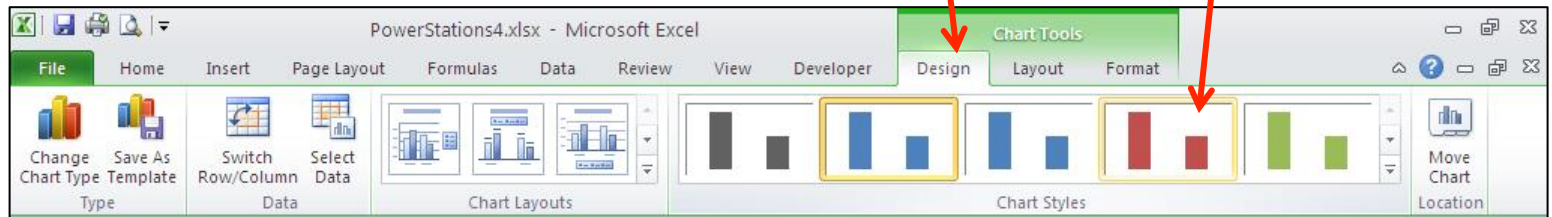
## 1. Create an chart

1. Save the file you created as PowerStations3.xlsx
2. Go to the Numerical Order sheet
3. Select the data and then select Insert – Column then the first option under 2-D Column
4. This should create a bar chart that looks like this:



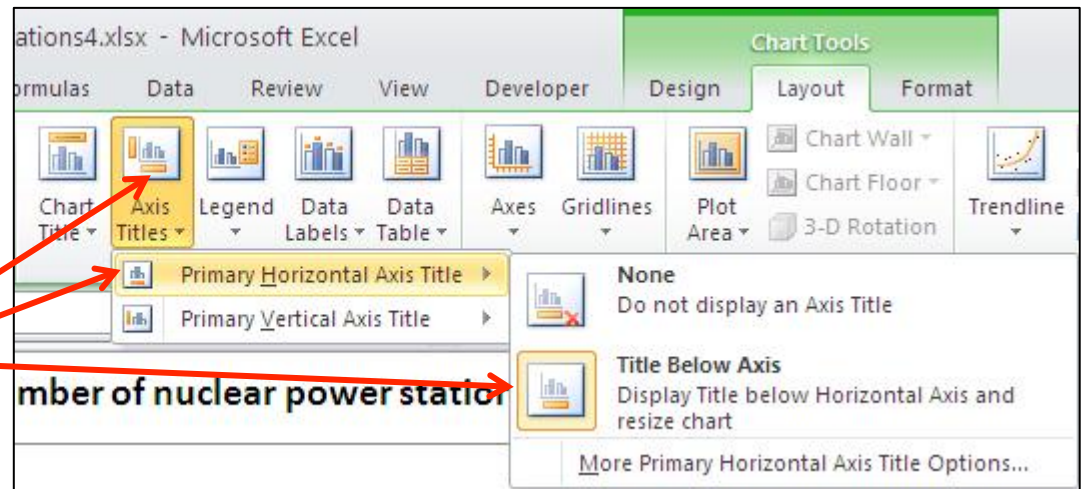
# 2. Change the chart design

1. Move the chart to a separate sheet. This should create a sheet called Chart2.
2. Move the sheet Chart2 to after the sheet Numerical Order
3. Change the style of the chart to Style 4 by using the Chart Style tool on the Design ribbon

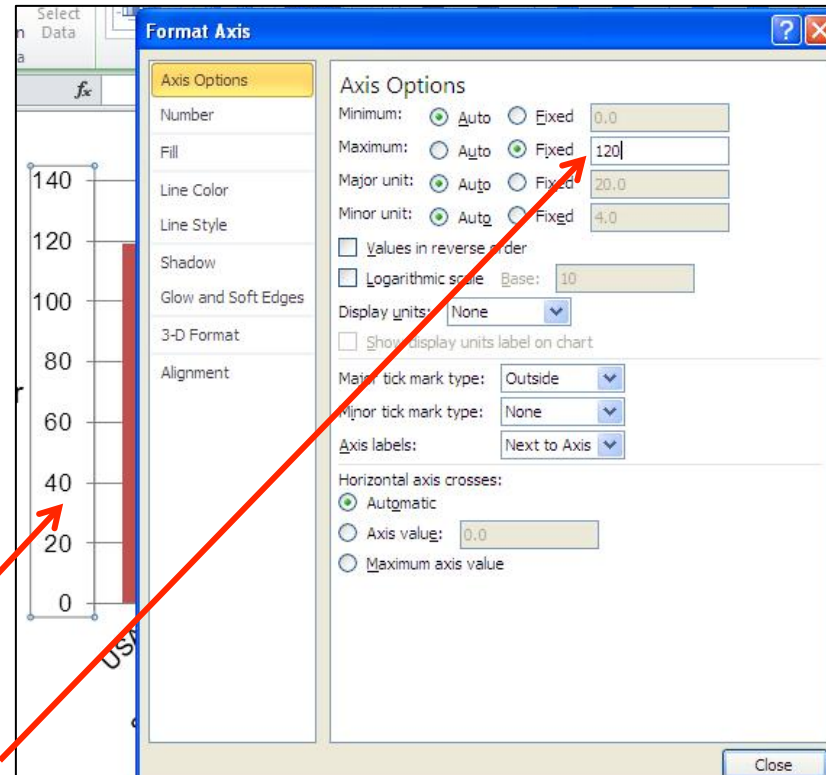


# 3. Change the chart layout and format

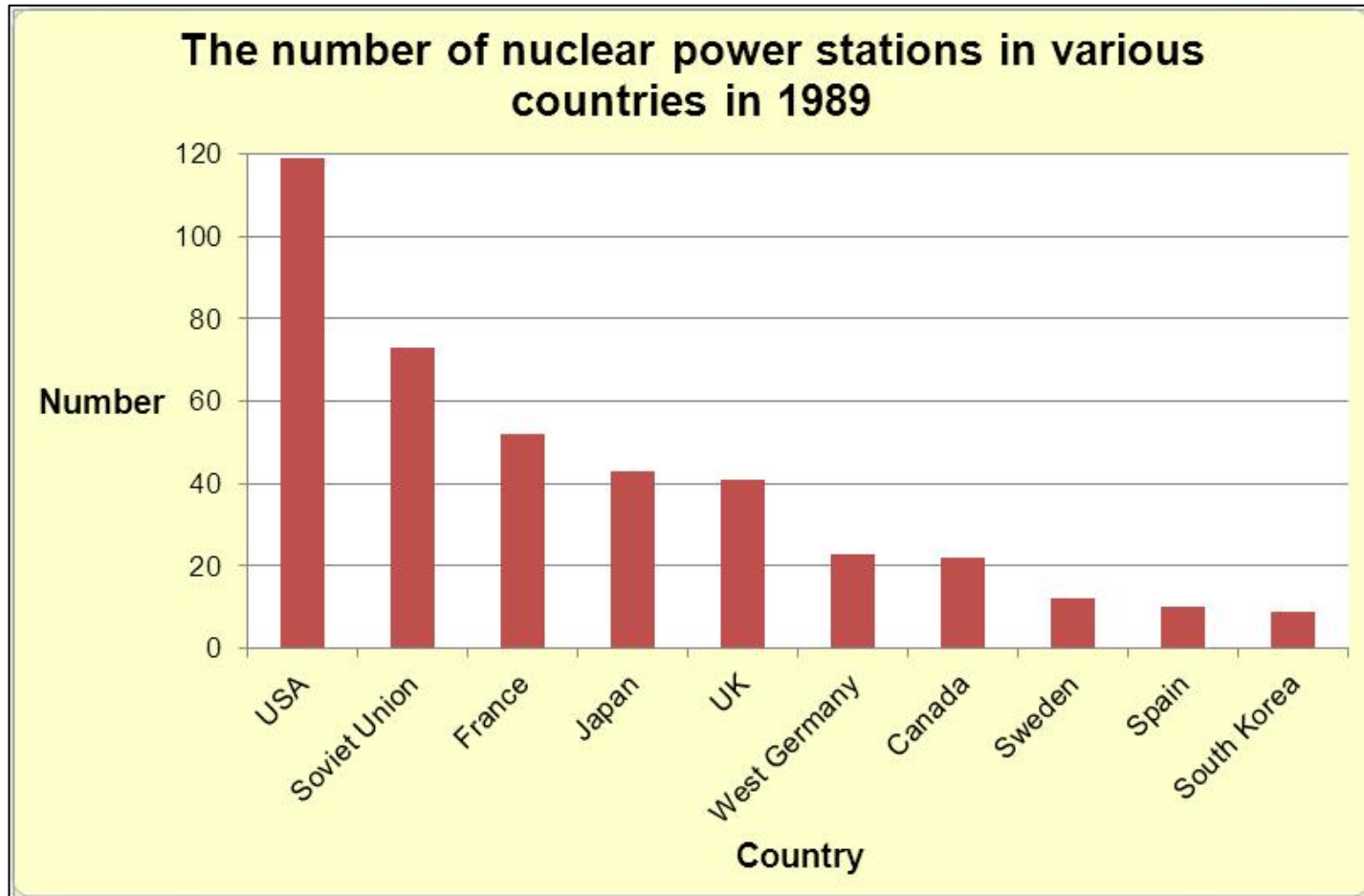
1. Select the chart title and change it to “The number of nuclear power stations in various countries in 1989”
2. Use the Home ribbon to change the title to 24 point Arial font
3. Remove the legend using the Layout ribbon
4. Also using the Layout ribbon, add a horizontal axis title of “Country” by making the selections shown here



5. Add a vertical axis title of “Number”, also written horizontally in a similar way.
6. Use the Home ribbon to change the font of these titles to 18 point Arial
7. Also using the Home ribbon, select the axis labels and change their font to 16 point Arial
8. Double click on the vertical axis labels and change their maximum value to Fixed and 120
9. Select the chart background then change its colour to light yellow using the Format tab and the shape fill option



This should create a chart that looks like this:

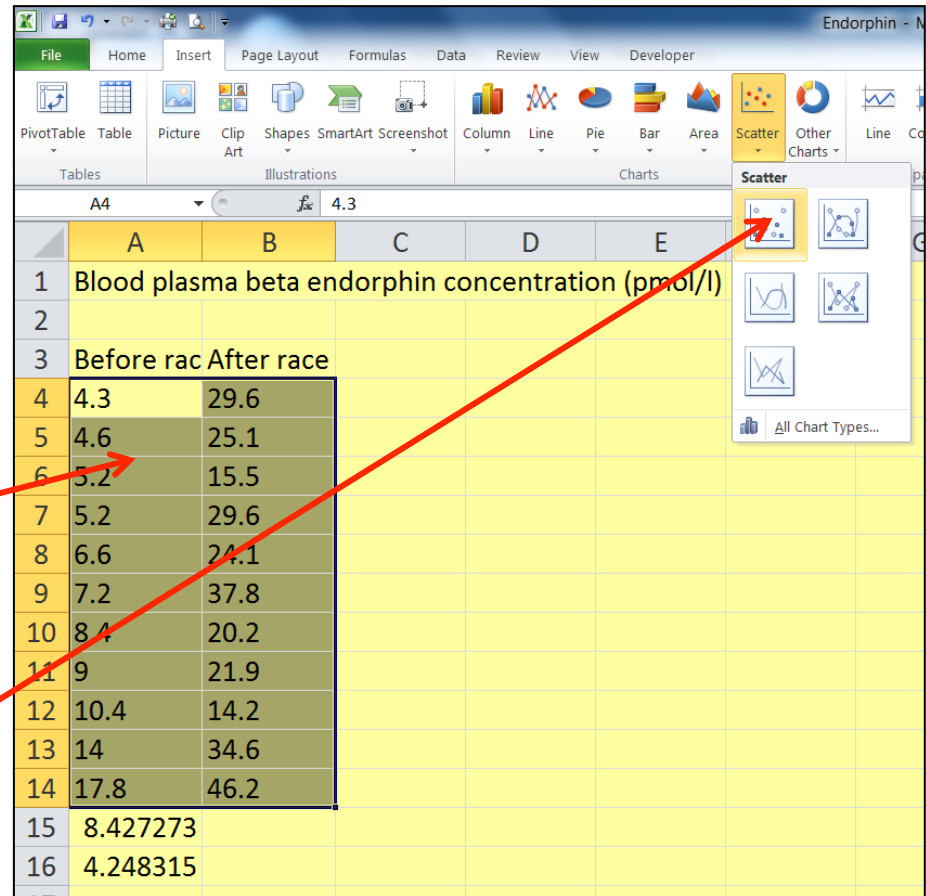


10. Save the file and close it

# Creating a scatter plot

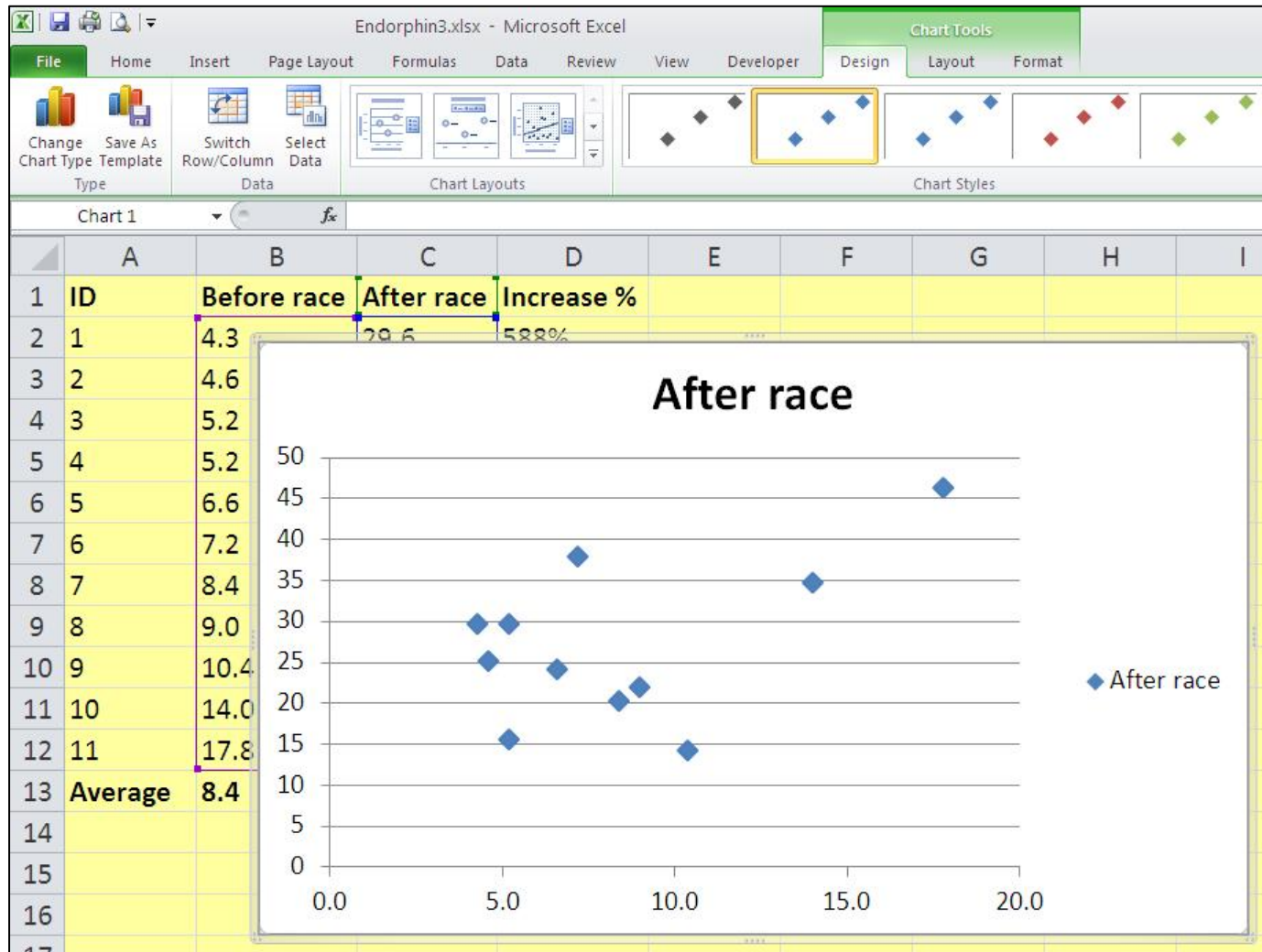
## 1. Create an initial plot

1. Copy the file Endorphin.xlsx associated with this presentation.
2. Save this file as Endorphin2.xlsx in the folder 5ExcelCharts on your computer
3. Select the Before Race and After Race column data up to row 14
4. Select Insert – Scatter and the first scatter plot option





# The screen should then look like this:



# 2. Changing the Scatter Plot Design

1. Move the chart to a separate sheet (as described above)
2. Move the sheet Chart1 to after the sheet Blood plasma
3. Change the chart style to Style 4





# 3. Change the Scatter Plot Layout and Format

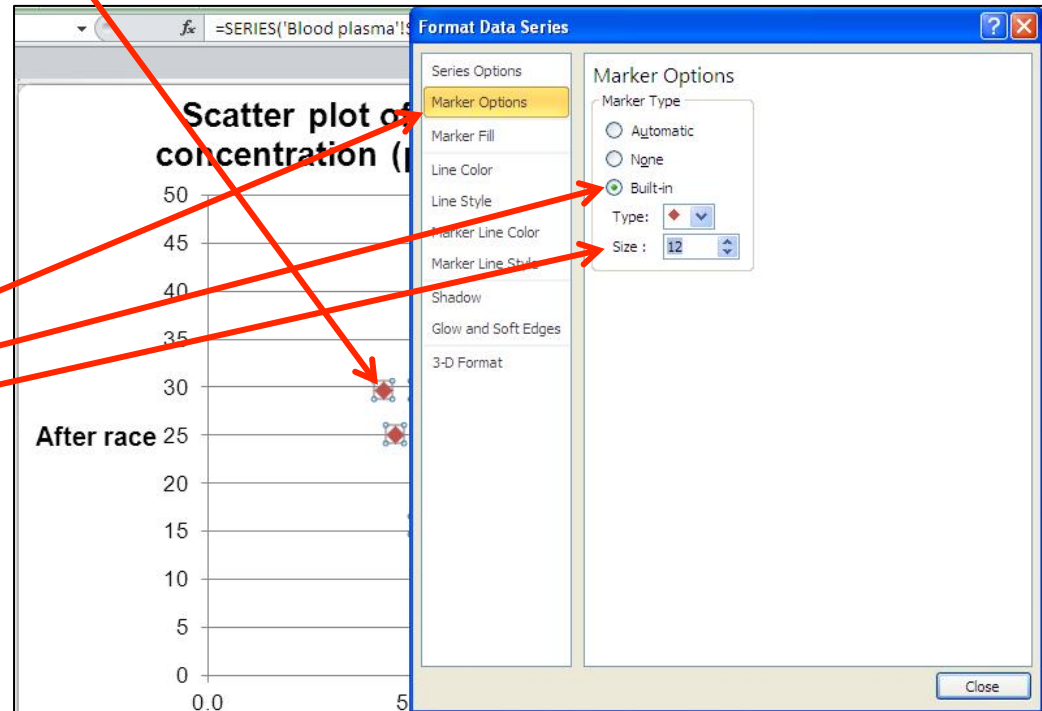
1. Change the chart title to “Scatter plot of blood plasma beta endorphin concentration (pmol/l) before and after the race”
2. Change the chart title font to 24 point Arial
3. Remove the legend
4. Add a horizontal axis title of “Before race”
5. Add a vertical axis title of “After race” written horizontally
6. Change their font to 18 point Arial
7. Change the axis labels font to 16 point Arial



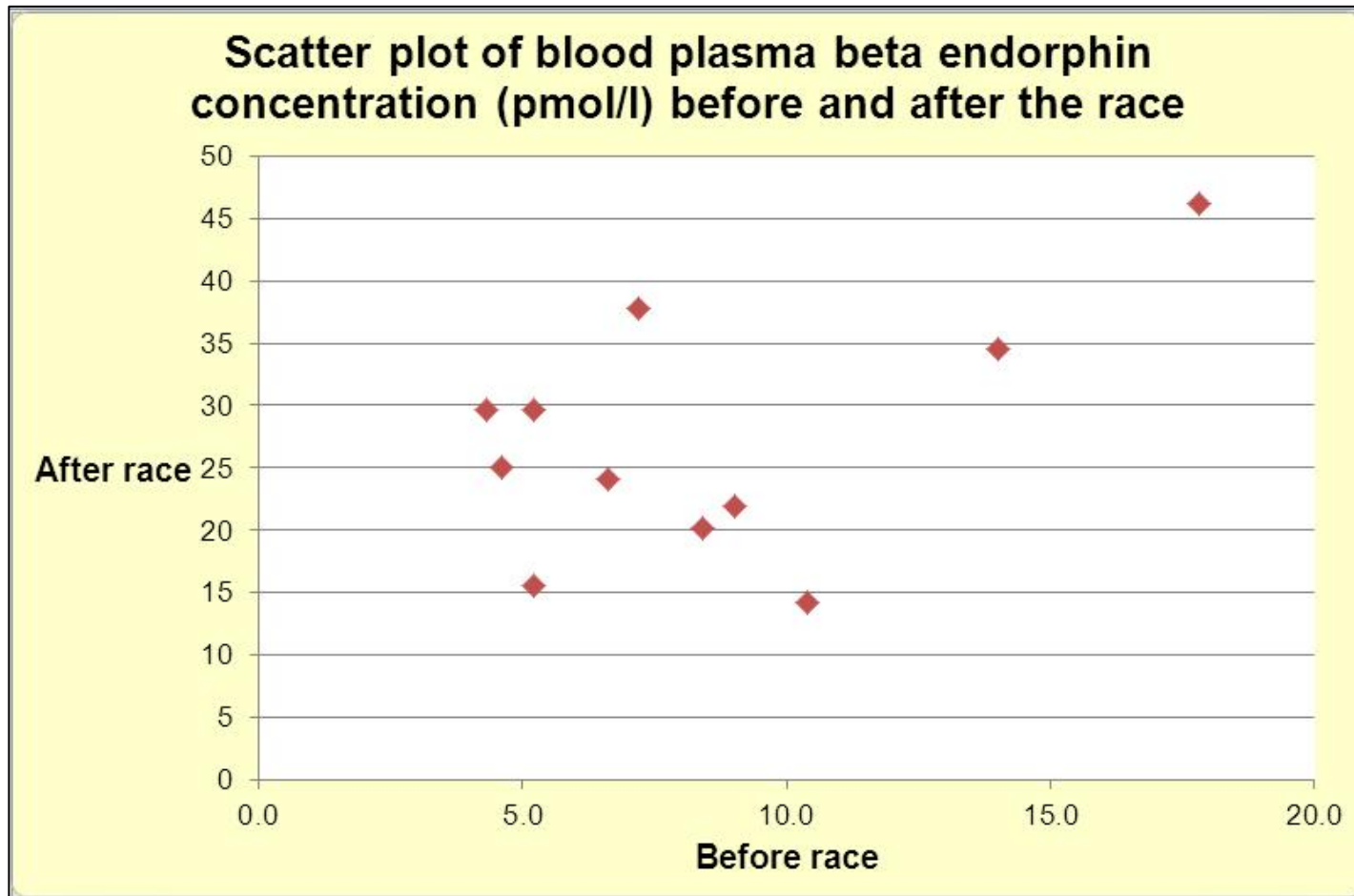
8. Double click on the data markers. This opens the Format Data Series dialogue box.

9. Change the marker size using the Marker Options – Built In, 12

10. As before, change the background colour of the chart to light yellow using the Format ribbon



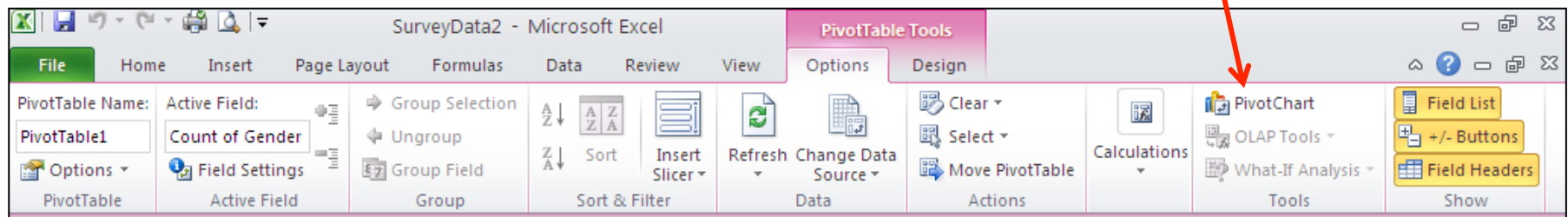
This should create a scatter plot that looks like this:



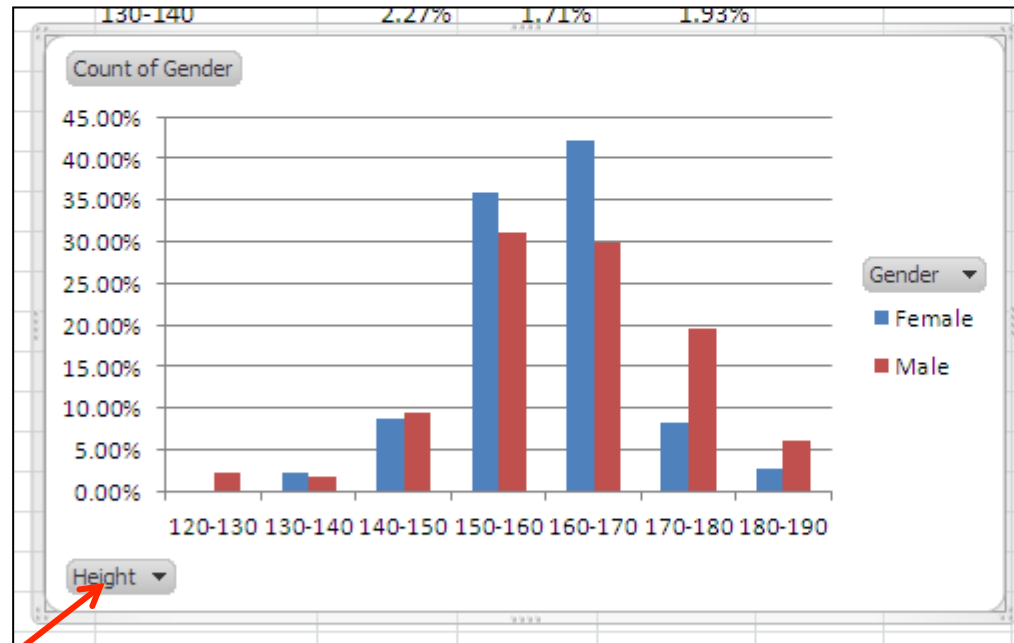
11. Save the file and close it

# Using pivot tables to create a multi series bar chart

- ❑ Copy the file SurveyData2 from the 5ExcelCharts folder in the iCity site below and save it as SurveyData4 in the folder 5ExcelCharts on your computer
- ❑ Open this file
- ❑ Go to sheet *GenderHeight*
- ❑ Click within the pivot table
- ❑ Select the Options tab and the button PivotChart



- ❑ Select the default chart and click on OK
- ❑ This should create a chart like this:

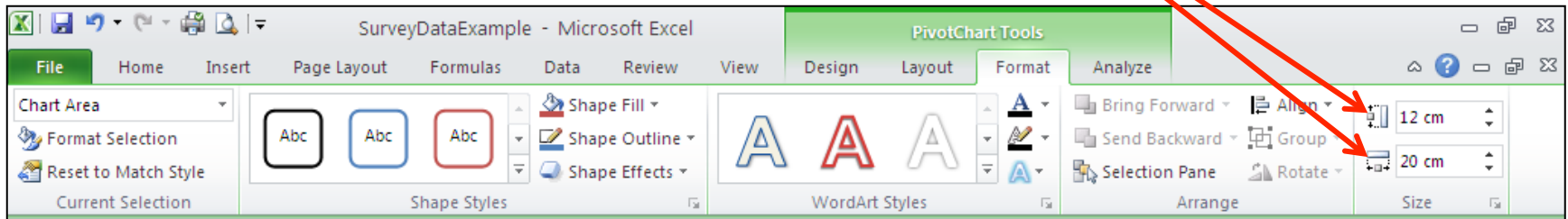


- ❑ Right click on one of the grey buttons and select **Hide All Field Buttons on Chart**
- ❑ We shall keep this chart on the same sheet

- ❑ Add a title above the chart “Height Percentage Frequency Distribution against Gender”
- ❑ Change the number of decimal places of the vertical axis to 0
- ❑ Add a rotated title to the vertical axis of “Percentage frequency”
- ❑ Add a title to the horizontal axis of “Height (cm)”
- ❑ Change the colour of the *Female* data series to pink and the *Male* data series to Blue
- ❑ Change the background colour of the chart to light yellow

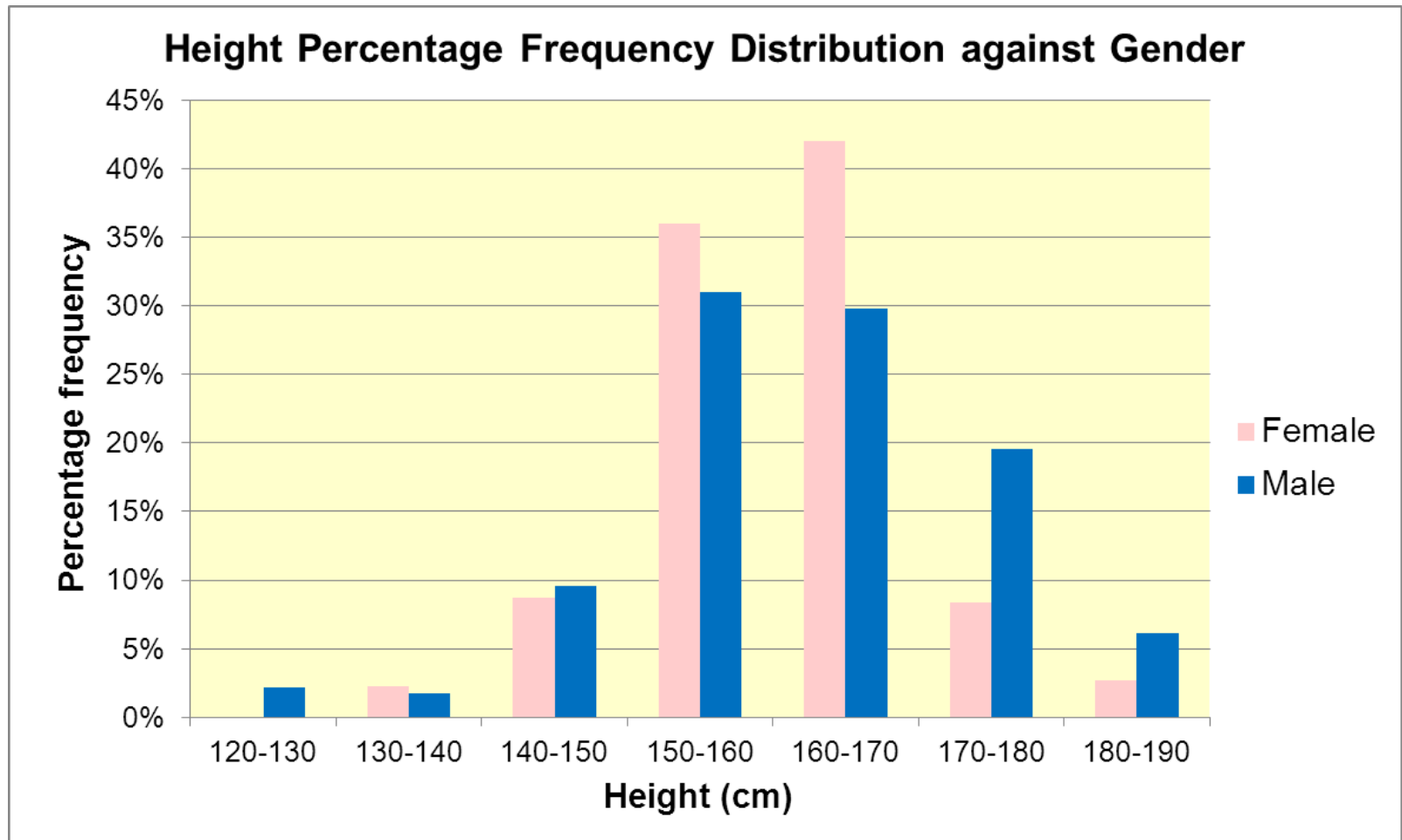


- ❑ Increase the size of the chart to 12cm by 20cm using size fields in the Format tab



- ❑ Change the font of all the text to Arial:
  - Change the chart title to 16pt
  - Change the axis titles and legend to 14pt
  - Change the axis values to 12pt
- ❑ You may need to adjust the size of the chart and the position of some of the labels slightly

Your completed chart should look like this:



Save your file and exit





# Recap

We have looked at creating:

- Pie charts
- Single series bar charts
- Scatter plots
- Multiple series bar charts from pivot tables

