

# Tables, Charts and Regression with Excel

*By Savas Papadopoulos, Ph.D.*

## 1. Tables

### 1.1 How to construct one-way and two-way tables in Excel from row data sets?

**Example 1.1:** Suppose the following data set from a company that sells three Products 1, 2, and 3, and three Salesman 1, 2, and 3. The prices of the products are given in the third column. Suppose that we want to construct the following tables:

- i) A table that shows the number of products sold.
- ii) A table that shows the total amount that each salesman made.
- iii) A table that shows the number of products that each salesman sold for each of the three products separately.

Product	Salesman	Price
1	1	100
1	1	100
1	1	100
1	2	100
1	2	100
1	2	100
1	2	100
1	2	100
1	3	100
1	3	100
2	1	150
2	1	150
2	1	150
2	2	150
2	2	150
2	2	150
2	2	150
2	3	150
3	1	180
3	1	180
3	2	180
3	3	180
3	3	180
3	3	180
3	3	180
3	3	180
3	3	180

**1.2 Steps in Excel for constructing one-way and two-way tables:**

- Start Excel and **Open or type** the dataset.
- **Click Data > Pivot Table and Pivot Chart Report.** We get the Pivot Table ... Wizard
- In the Step 1 of Wizard Window we keep the options “**Microsoft Excel list or database**” and “**Pivot Table**” and **Click Next** and go to Step 2.
- **Click** the small **Icon** at the right end of Range box and get a smaller window,
- **Drag** to select the data set and then **Click** again the small **Icon** at the end of the box. Then in the Range box, a range is given, e.g., “Sheet1!\$A\$1:\$C\$28”.
- **Click Next** and then at Step 3 of the Wizard **Click Layout.**
- **Drag** the **Field (Variable) Buttons**, appearing on the right, you need to construct the table and **Move** them to the places “**ROW**”, “**COLUMN**”, and “**DATA**” in the Diagram.

**For One-Way Table:**

- i) To construct the following table:

**Table 1.1**

Product	Total
1	10
2	8
3	9
Grand Total	27

- **Drag** the **Button for “Product”** and **Move** it to the places “**ROW**”, and “**DATA**”. In the place for “Data” we now get “Sum of Product”.
- **Double-Click** on the “**Sum of Product**” and **Select “Count”** and then
- **Click “OK”**.
- **Click “OK”** in the Wizard-Layout> and then
- In Step 3 **Click “Finish”**.

ii) To construct the following table:

**Table 1.2**

Sum of Price	
Salesman	Total
1	1110
2	1280
3	1430
Grand Total	3820

- **Drag the Button for “Salesman” and Move it to the place “ROW”.**
- **Then Drag the Button for “Price” and Move it to the place “DATA”.** In the place for “Data” we now get “Sum of Price”.
- **Click “OK”** in the Wizard-Layout> and then
- **In Step 3, Click “Finish”.**

**For Two-Way Tables:**

iii) To construct the following table:

**Table 1.3**

Count of Product	Salesman			
Product	1	2	3	Grand Total
1	3	5	2	10
2	3	4	1	8
3	2	1	6	9
Grand Total	8	10	9	27

- **Drag the Button for “Product” and Move it to the place “ROW”.**
- **Drag the Button for “Salesman” and Move it to the place “COLUMN”.**
- **Drag the Button for “Product” and Move it to the place “DATA”.** In the place for “Data” we now get “Sum of Product”.
- **Double-Click** on the “Sum of Product” and **Select “Count”** and then
- **Click “OK”**
- **Click “OK”** in the Wizard-Layout> and then
- **In Step 3 Click “Finish”.**

## 2. Charts

### 2.1 Steps in Excel to Draw Charts

- **Step 1: Open Excel**
- **Step 2: Enter the Data:**

a) For Simple Bar Chart and Pie Chart we **enter** a *One-Way Table*.

**Example 2.1:** Suppose we want to plot the data from Table 1.1 in Example 1.1. Then we enter in Excel the following data in two columns.

**Table 2.1**

Product	Number of Products
1	10
2	8
3	9

- **Step 3a: Drag** the second column and go to Step 4.

b) For Multiple Bar Chart, Component Bar Chart, and Percentage Bar Chart. We **enter** a *Two-Way Table*.

**Example 2.2:** Suppose we want to plot the data from Table 1.3 in Example 1.1. Then we enter in Excel the following data:

**Table 2.2**

	Sm1	Sm2	Sm3
Pr1	3	5	2
Pr2	3	4	1
Pr3	2	1	6

- **Step 3b: Drag** the table (four columns and four rows), and go to Step 4.

c) For Scatter Plot, and Time Plot **enter** the data in two columns with titles on the top.

- **Step 3c: Drag** the two columns and go to Step 4.
- **Step 4: Click Insert > Click Chart** (or **Click the Chart Icon** in the toolbar)
- **Step 5: Select:** a) *Column or Bar*
  - i) For Simple Bar Chart. Choose the first *Chart sub-type*.
  - ii) For Multiple Bar Chart. Choose the first *Chart sub-type*.
  - iii) For Component Bar Chart. Choose the second *Chart sub-type*.
  - iv) For Percentage Bar Chart. Choose the third *Chart sub-type*.
- b) *Pie* for Pie Chart
- c) *XY (Scatter)*
  - i) For Scatter Plot. Choose the first *Chart sub-type*.
  - ii) For Time Plot. Choose the fourth or fifth *Chart sub-type*.

➤ **Step 6: Click *Finish*.**

**Note:** The Wizard has 4 steps and we finished it on the first step. There are two ways:

- i) To go through all the steps and then finish the Wizard, or
- ii) Finish the Wizard at its first step and then on the chart use the mouse, **Right-Click**, to get the options. These options include the steps of the wizard as follows: **Chart Type** is actually Step 1 of the wizard, **Source Data** is Step 2, **Chart Options** is Step 3, and Location is Step 4.

**2.1 Additional Topics**

- 1) Adding **Titles** for the Chart, Axes, and Categories.
- 2) **Formatting** the Chart.
- 3) Changing the values of the **Axes** and adding **Gridlines**.
- 5) Changing the location and form of the **Legend**.
- 6) Adding **Data Labels** or a **Data Table**.

### 3. Correlation and Regression

In this section we are going to use the option in Excel *Tools > Data Analysis*.  
If you cannot find Data Analysis in Tools,

- **Click** in *Tools > Add-Ins*,
- **Select** “*Analysis ToolPak*”,
- **Insert** the CD for Excel, and
- **Click OK**).

#### 3.1 Steps in Excel to Compute the Correlation Coefficient

- **Open Excel**.
- **Click** *Tools > Data Analysis*.
- **Select** *Correlation*
- **Click** the **Icon** at the end of the box for *Input Range*.
- **Drag** and **Select** the columns of the variables for which you want to compute the correlation coefficient.
- **Click** the new *Icon* at the end of the box to go back to the previous step.
- **Select** “*Labels in First Row*” and add labels in the first row if you do not already have them.
- **Click OK**.

#### 3.2 Steps in Excel to Get Output for Regression

- **Open Excel**.
- **Click** *Tools > Data Analysis*.
- **Select** *Regression*
- **Click** the **Icon** at the end of the box for *Input Y Range*.
- **Drag** and **Select** the column of the Y variable.
- **Click** the new *Icon* at the end of the box to go back to the previous step.
- **Click** the **Icon** at the end of the box for *Input X Range*.
- **Drag** and **Select** the columns of the X variables.
- **Click** the new *Icon* at the end of the box to go back to the previous step.
- **Select** “*Labels*” (add labels in the first row if you do not already have them) “*Residuals*”, “*Standardized Residuals*”, “*Residual Plots*”, “*Line Fit Plots*”, and “*Normal Probability Plots*”.
- **Click OK**.