Topic 4: Data Visualization, Excel Dashboards and Data Storytelling (Excel Charts, Pivot Charts, Excel Dashboards & Interactivity – using Form Controls, Dashboards collaboration & Publishing)

Excel Charts

A simple **chart** in **Excel** can say more than a sheet full of numbers. As you'll see, creating charts is very easy.

Create a Chart

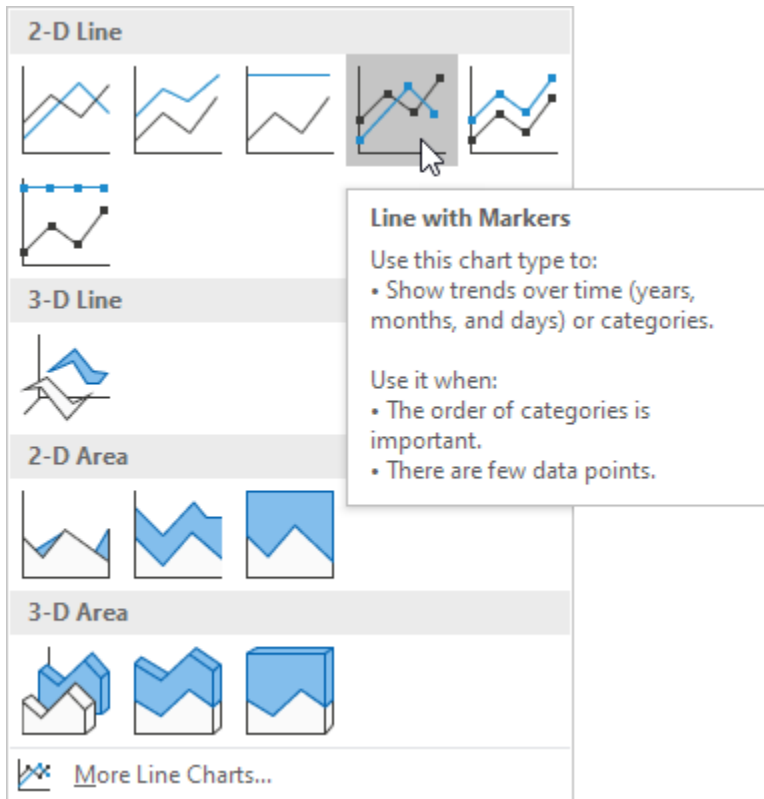To create a line chart, execute the following steps.

1. Select the range A1:D7.

	A	B	C	D	E
1	Month	Bears	Dolphins	Whales	
2	Jan	8	150	80	
3	Feb	54	77	54	
4	Mar	93	32	100	
5	Apr	116	11	76	
6	May	137	6	93	
7	Jun	184	1	72	
8					

2. On the Insert tab, in the **Charts** group, click the Line symbol.
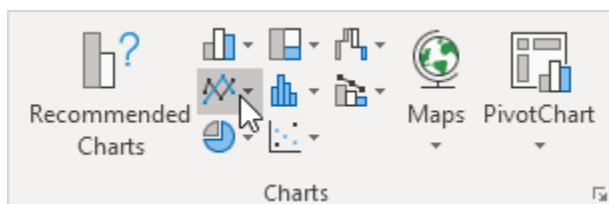
3. Click Line with Markers.

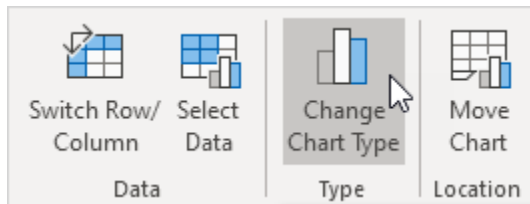

Result:
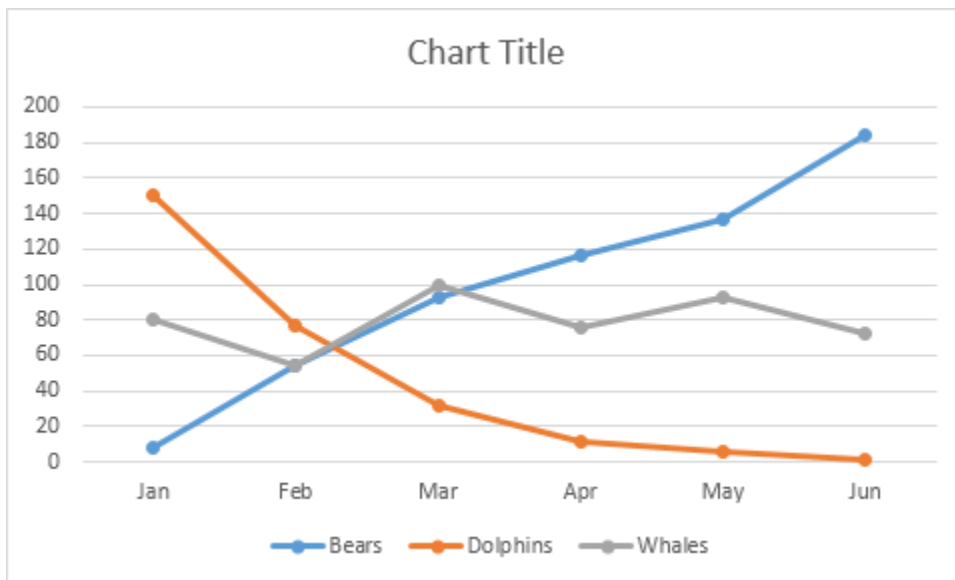
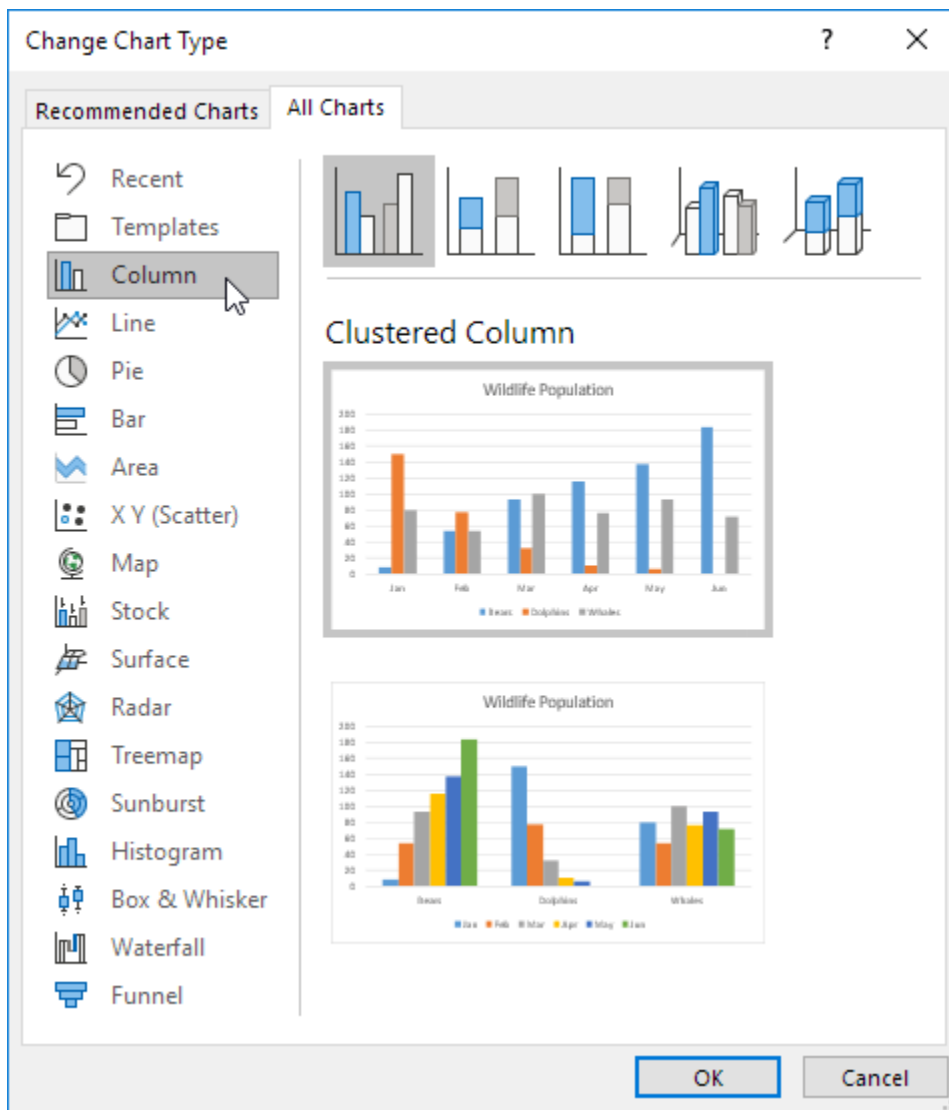Note: enter a title by clicking on Chart Title. For example, Wildlife Population.

Change Chart Type

You can easily change to a different type of chart at any time.

1. Select the chart.

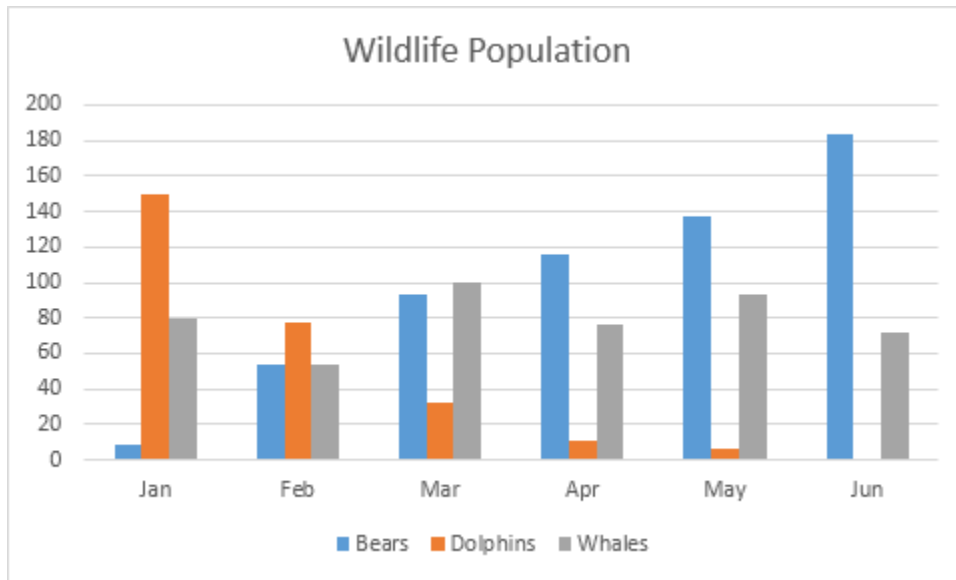2. On the Design tab, in the Type group, click Change Chart Type.

3. On the left side, click Column.

4. Click OK.

Result:

Switch Row/Column

If you want to display the animals (instead of the months) on the horizontal axis, execute the following steps.

1. Select the chart.

2. On the Design tab, in the Data group, click Switch Row/Column.
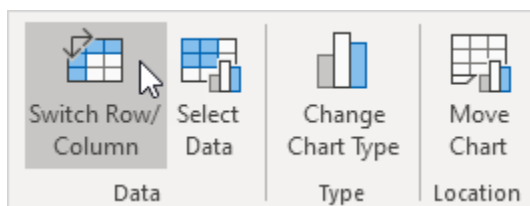
Result:
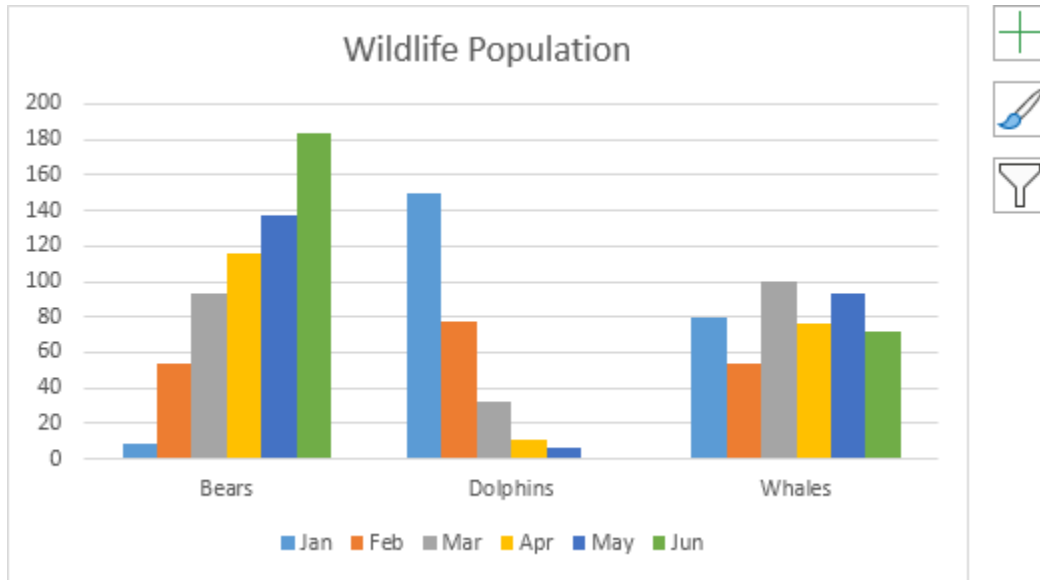
Legend Position

To move the legend to the right side of the chart, execute the following steps.

1. Select the chart.

2. Click the + button on the right side of the chart, click the arrow next to Legend and click Right.
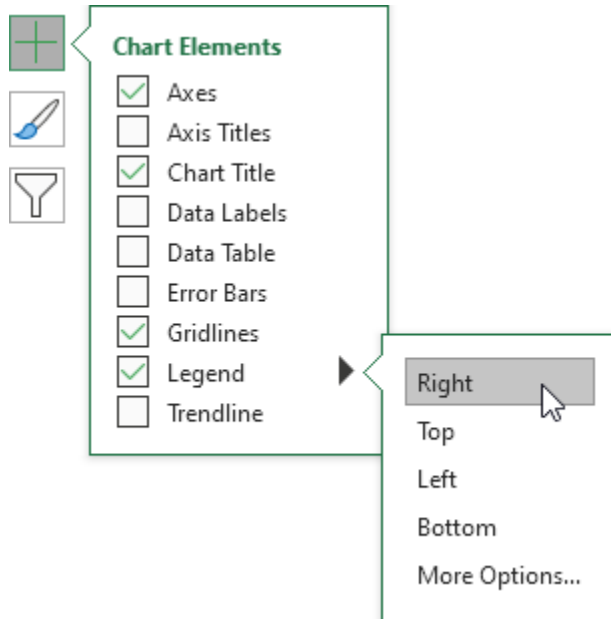
Result:
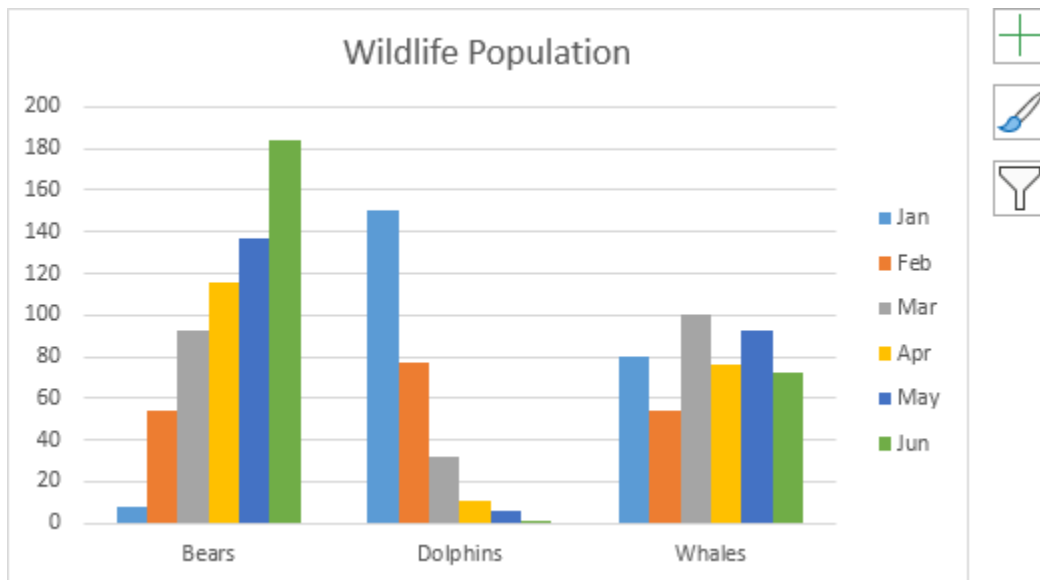
Data Labels

You can use data labels to focus your readers' attention on a single data series or data point.

1. Select the chart.

2. Click a green bar to select the Jun data series.

3. Hold down CTRL and use your arrow keys to select the population of Dolphins in June (tiny green bar).

4. Click the + button on the right side of the chart and click the check box next to Data Labels.

Result:

Pivot Charts

A **pivot chart** is the visual representation of a pivot table in **Excel**. Pivot charts and pivot tables are connected with each other.

Below you can find a two-dimensional pivot table. Go back to Pivot Tables to learn how to create this pivot table.

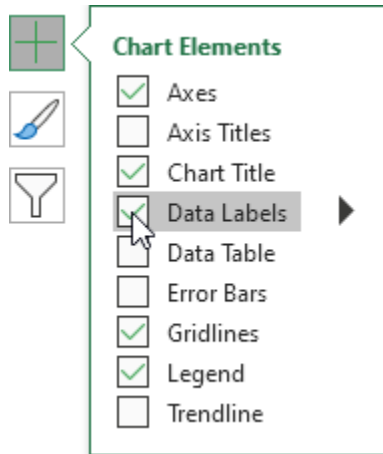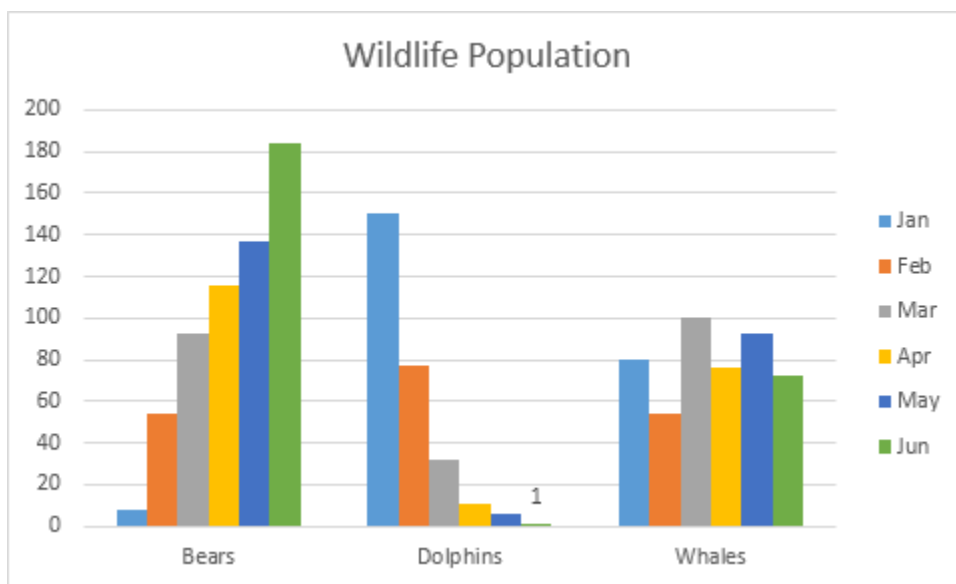| ▲	A	B	C	D	E	F	G	H	I	J
1	Category	(All) ▼								
2										
3	Sum of Amount	Column ▼								
4	Row Labels ▼	Apple	Banana	Beans	Broccoli	Carrots	Mango	Orange	Grand Total	
5	Australia	20634	52721	14433	17953	8106	9186	8680	131713	
6	Canada	24867	33775		12407		3767	19929	94745	
7	France	80193	36094	680	5341	9104	7388	2256	141056	
8	Germany	9082	39686	29905	37197	21636	8775	8887	155168	
9	New Zealand	10332	40050		4390			12010	66782	
10	United Kingdom	17534	42908	5100	38436	41815	5600	21744	173137	
11	United States	28615	95061	7163	26715	56284	22363	30932	267133	
12	Grand Total	191257	340295	57281	142439	136945	57079	104438	1029734	
13										

Insert Pivot Chart

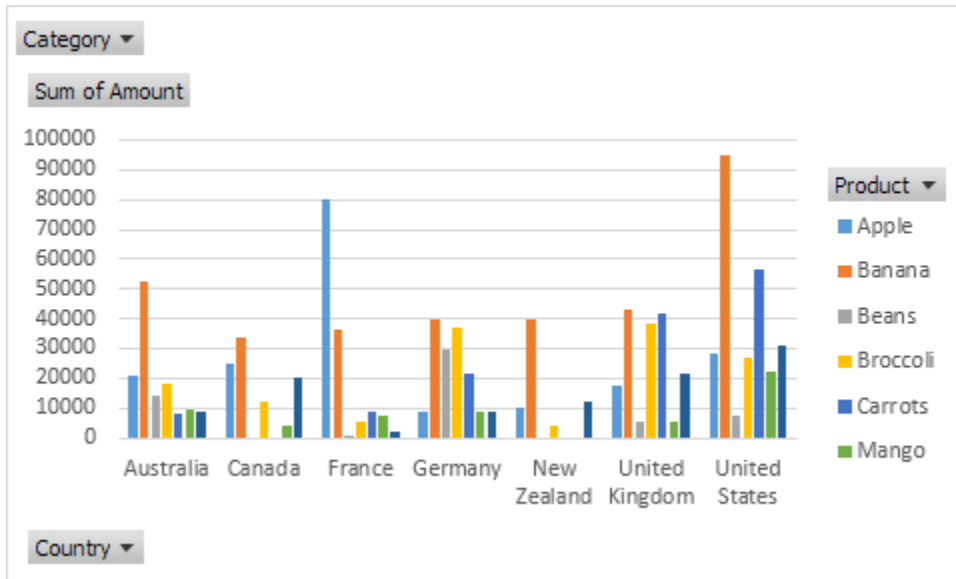To insert a pivot chart, execute the following steps.

1. Click any cell inside the pivot table.

2. On the Analyze tab, in the Tools group, click PivotChart.
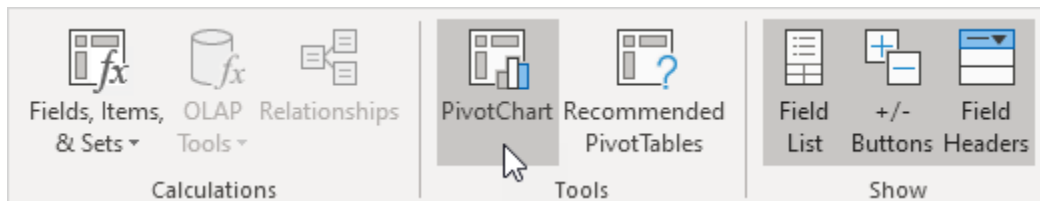
The Insert Chart dialog box appears.

3. Click OK.

Below you can find the pivot chart. This pivot chart will amaze and impress your boss.

Note: any changes you make to the pivot chart are immediately reflected in the pivot table and vice versa.

Filter Pivot Chart

To filter this pivot chart, execute the following steps.

1. Use the standard filters (triangles next to Product and Country). For example, use the Country filter to only show the total amount of each product exported to the United States.
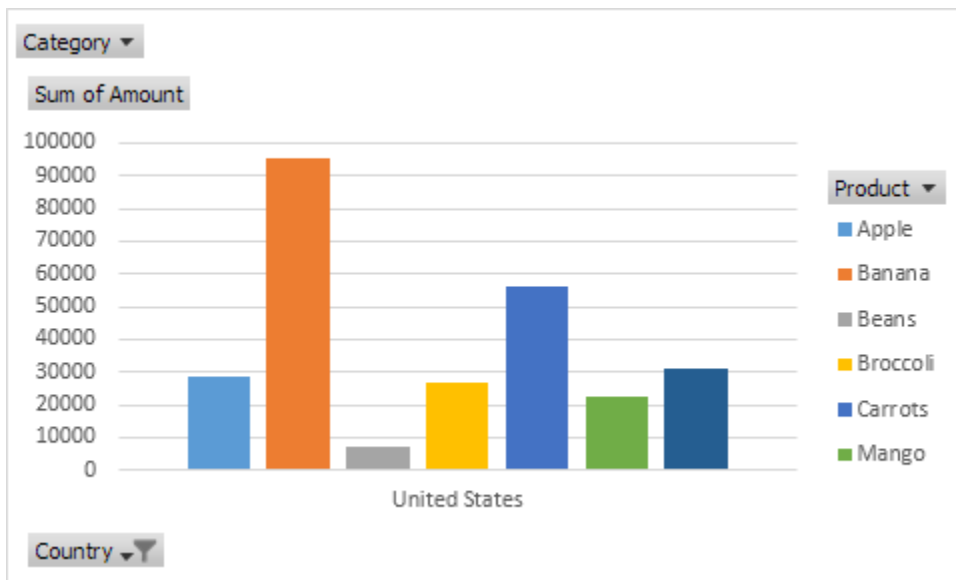
2. Remove the Country filter.

3. Because we added the Category field to the Filters area, we can filter this pivot chart (and pivot table) by Category. For example, use the Category filter to only show the vegetables exported to each country.
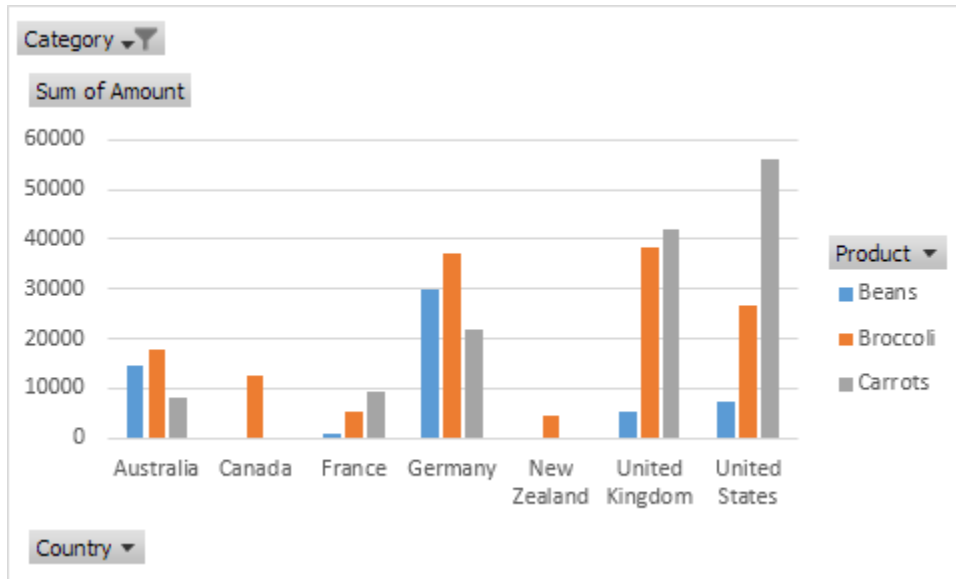
Change Pivot Chart Type

You can change to a different type of pivot chart at any time.

1. Select the chart.

2. On the Design tab, in the Type group, click Change Chart Type.

3. Choose Pie.

4. Click OK.

Result:

Note: pie charts always use one data series (in this case, Beans). To get a pivot chart of a country, swap the data over the axis. First, select the chart. Next, on the Design tab, in the Data group, click Switch Row/Column.
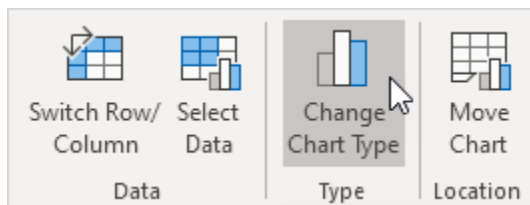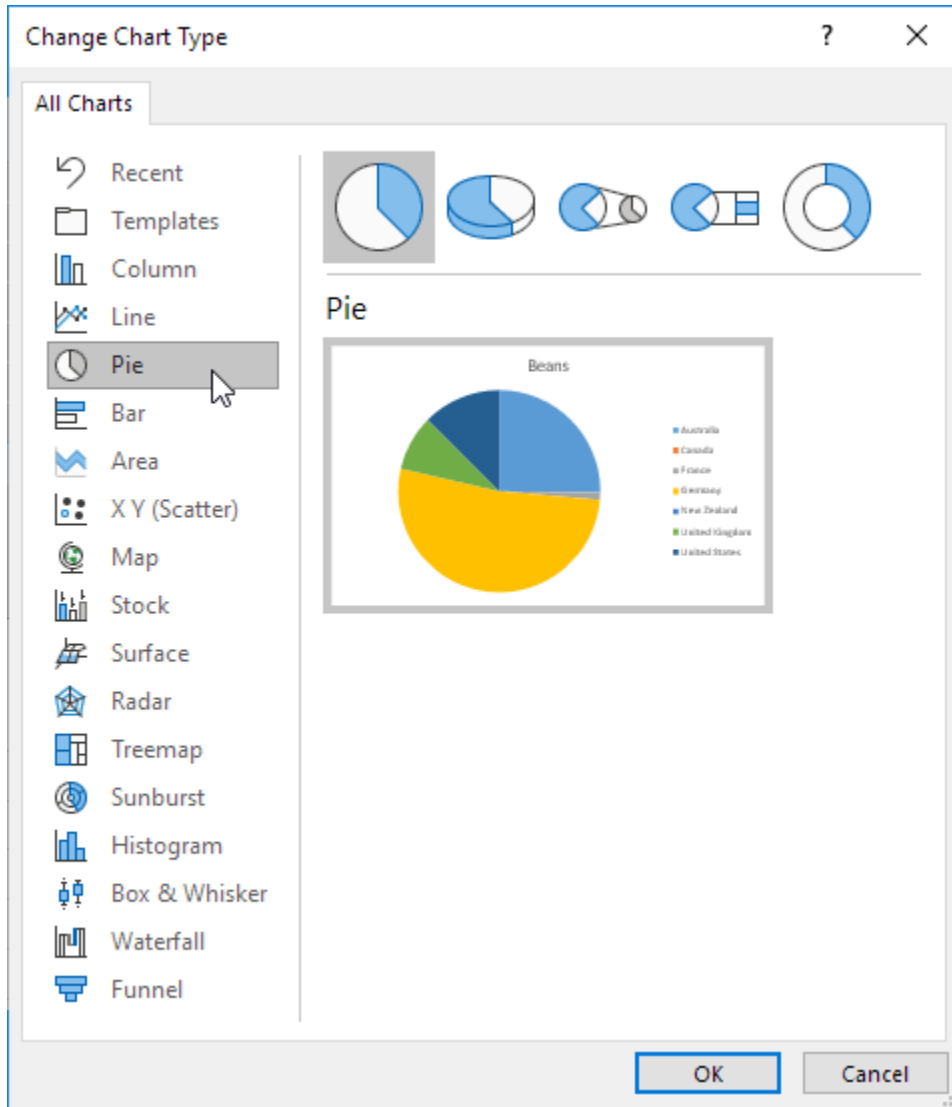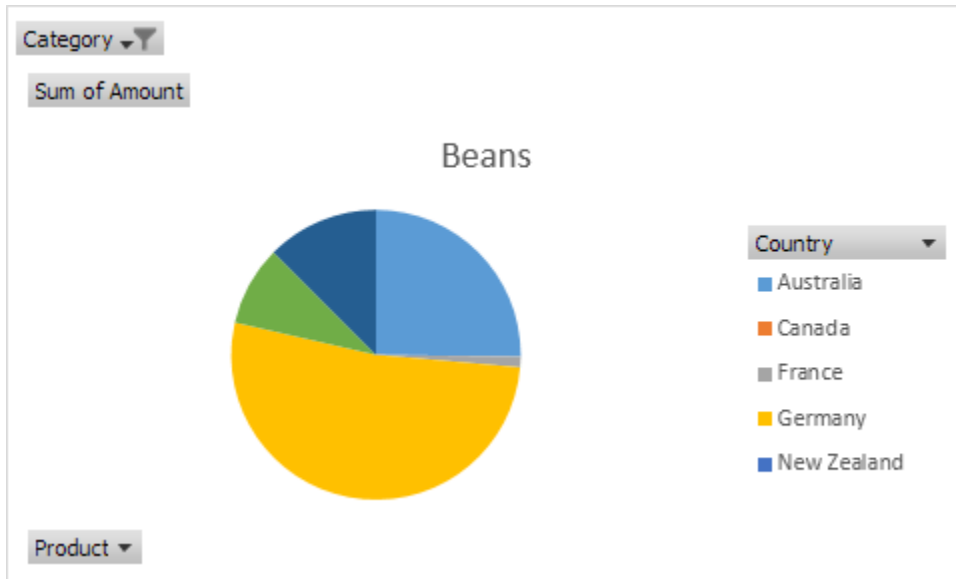
Excel Dashboards & Interactivity – using Form Controls

Dashboards track KPIs, metrics, and other data points in one visual, central place. They give you a high-level view of work, helping you make quick decisions and keeping everyone up to date. A dashboard's visual nature simplifies complex data and provides an at-a-glance view of current status or performance in real time.

Dashboards are made up of tables, charts, gauges, and numbers. They can be used in any industry, for almost any purpose. For example, you could make a project dashboard, financial dashboard, marketing dashboard, and more.

1. How to Bring Data into Excel

Before creating dashboards in Excel, you need to import the data into Excel. You can copy and paste the data, or if you use CommCare, you can create an Excel Connection to your export. But, the best way is to use ODBC (or Live Data Connector). ODBC can connect your apps to Excel, passing real-time data from your app to Excel. As data is updated in your app, your Excel dashboard will also be updated to reflect the latest information. This is a perfect option if you track and store data in another place, and prefer creating a dashboard in Excel. Data can be imported two different ways: in a flat file or a pivot table.

2. Set Up Your Excel Dashboard File
- Once you have added your data, you need to structure your workbook.
- Open a new Excel Workbook and create two to three sheets (tabs).
- You could have one sheet for your dashboard and one sheet for the raw data (so you can hide the raw data). This will keep your Excel workbook organized. In this example, we'll have two

3. Create a Table with Raw Data

In the Raw Data sheet, import or copy and paste your data. Make sure the information is in a tabular format. This means that each item or data point lives in one cell.

In this example, we're adding columns for *Project Name, Timeline, Number of Team Members, Budget, Risks, Open Tasks,* and *Pending Actions*.

PROJECT DATA

Project Name	Start Date	End Date	Duration	# of Team Members	Project Budget	Actual Budget	Remainder	Risk: High	Risk: Medium	Risk: Low	Issues	Revisions	Pending Actions
Project A	05/05/16	07/01/16	57	10	$1,000,000	$880,000	$120,000	1	0	4	2	0	4
Project B	05/10/16	08/10/16	92	5	$900,000	$920,000	-$20,000	2	3	5	1	2	3
Project C	06/10/16	03/01/17	264	10	$860,000	$850,000	$10,000	3	4	3	2	1	2
Project D	06/22/16	08/04/16	43	5	$1,000,000	$998,050	$1,950	5	8	1	1	0	0
Project E	07/14/16	11/01/16	110	10	$294,000	$280,000	$14,000	8	6	4	0	3	1
Project F	07/14/16	01/20/17	190	5	$123,400	$125,000	-$1,600	5	0	0	2	0	2
Project G	08/01/16	10/01/16	61	10	$250,500	$246,000	$4,500	6	4	0	1	2	3
Project H	08/14/16	08/30/16	16	5	$127,200	$126,000	$1,200	7	3	3	0	1	4
Project I	09/01/16	12/10/16	100	10	$80,000	$79,900	$100	0	2	4	1	3	2
Project J	10/01/16	11/15/16	45	5	$77,000	$77,000	$0	4	4	5	2	0	0
Project K	10/01/16	12/01/16	61	10	$65,000	$65,000	$0	3	6	4	3	2	0
Project L	11/01/16	12/01/16	30	5	$550,000	$551,000	-$1,000	2	3	6	0	1	1
Project M	11/10/16	12/10/16	30	10	$45,000	$42,000	$3,000	1	1	7	1	0	2
Project N	12/01/16	02/10/17	71	5	$32,500	$33,000	-$500	5	0	2	2	1	3
					$5,404,600	$5,272,950	$131,650	52	44	48	18	16	27

If needed, you can use a formula to automatically add all the values in a column. We will do this for our *Budget, Risks, Open*, and *Pending Actions* columns. Click on an empty cell at the bottom of the column, and type =SUM(. After the open parenthesis, click the first cell in the column and drag your mouse down to the last cell. Then, add a close parenthesis to your formula. Repeat as necessary.

Project Budget	Actual Budget
$1,000,000	$880,000
$900,000	$920,000
$860,000	$850,000
$1,000,000	$998,050
$294,000	$280,000
$123,400	$125,000
$250,500	$246,000
$127,200	$126,000
$80,000	$79,900
$77,000	$77,000
$65,000	$65,000
$550,000	$551,000
$45,000	$42,000
$32,500	$33,000
=SUM(F3:F16)	$5,272,950

SUM(**number1**, [number2], ...)

4. Analyze the Data

Before building the dashboard, take some time to look at your data and figure out what you want to highlight. Do you need to display all the information? What kind of story are you trying to communicate? Do you need to add or remove any data?

Once you have an idea of your dashboard's purpose, think about the different tools you can use. Options include:

Excel formulas like SUMIF, OFFSET, COUNT, VLOOKUP, GETPIVOTDATA and others

Pivot tables

Excel tables

Data validation

Auto-shapes

Named ranges

Conditional formatting

Charts

Excel dashboard widgets

Macros

Don't worry, you don't need to know how to use every single one of these Excel tools. With some basic knowledge of charts and pivot tables, you can make a beautiful Excel dashboard.

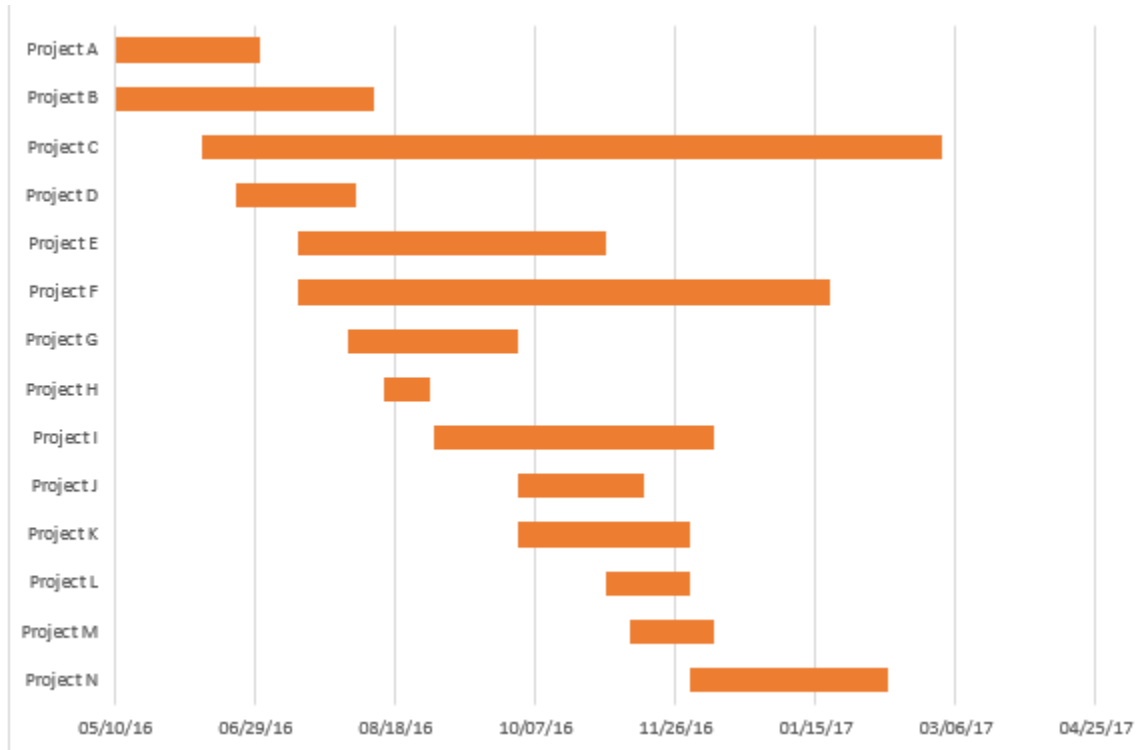## 5. Build the Dashboard

Add a Gantt Chart

We'll add a Gantt chart to visually show your project timeline.

- Go to your Dashboard sheet and click *Insert*.

- In the *Charts* section, click the bar chart icon and select the second option.
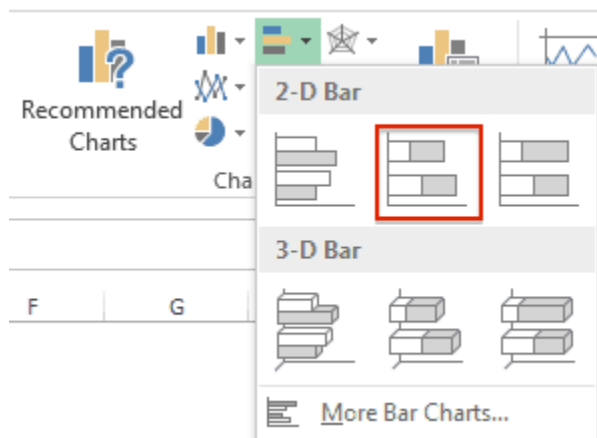
You'll now have to link this bar chart to the *Project Name, Start Date*, and *Duration* columns in your Raw Data sheet.

Create and Format Charts

In your Dashboard sheet, click *Insert* and select the kind of chart you'd like to make. For this first example, we'll create a column chart.

- Right-click on the chart and click *Select Data*.

- Click *Add in Legend Entries (Series)*.

- In the *Series name* field, click the title of the column you want to add on the Raw Data sheet. Hit enter.

- In the *Series values field,* select all the data in that corresponding column. Hit enter and then click *Ok*.

You'll notice that your X-axis is not correctly labeled. To fix this, click *Edit* in the *Horizontal (Category) Axis Labels* and in the Raw Data Sheet, select what you'd like to display on the X-axis.
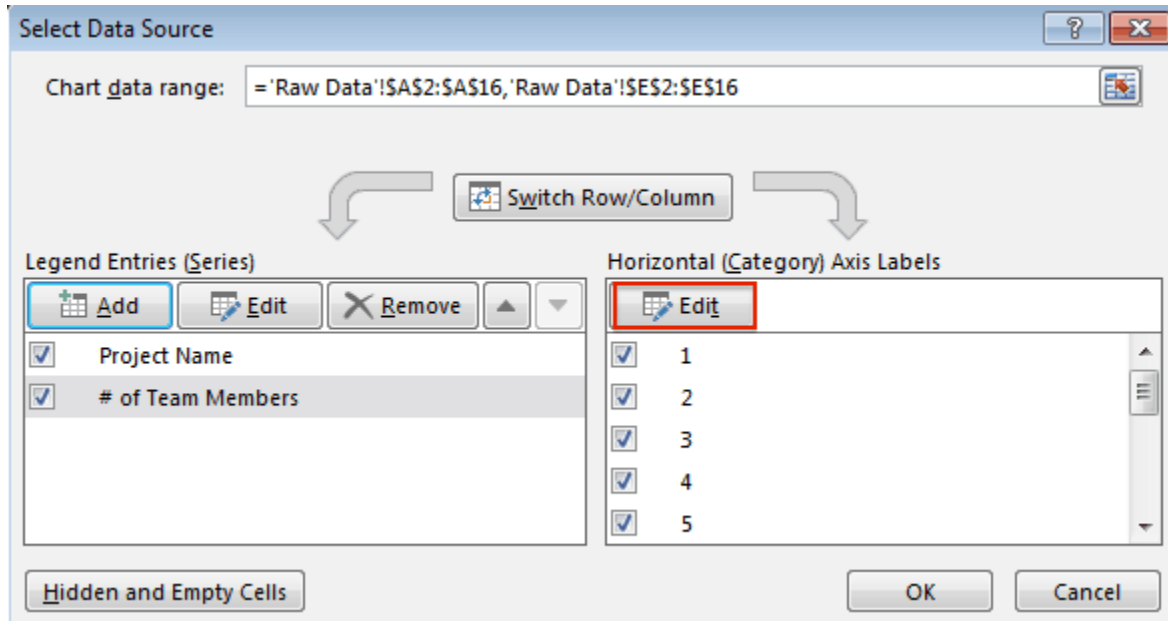
- To add a title to your chart, select your chart and click the *Design tab*.

- Click *Add Chart Element > Chart Title > Above Chart*.
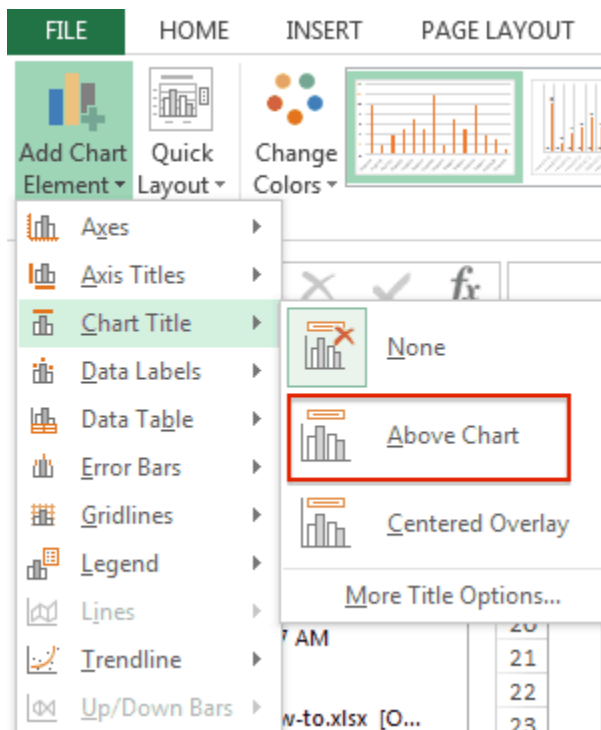
- Type your title in the text field on the chart.

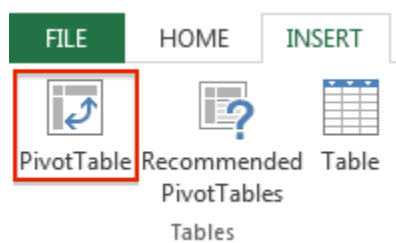- Repeat this process for any other charts you want to create.
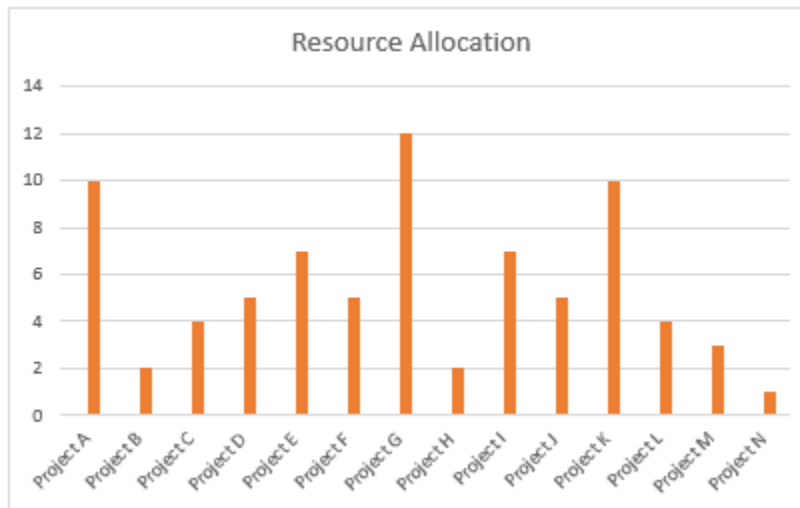

Insert PivotTables

A pivot table allows you to extract and highlight the most important information from a large data set.

Here's how to insert a pivot table:

- Go to your Dashboard sheet and on the *Insert* tab, click the *PivotTable* button.

- A pop-up box will appear.
- In the *Table/Range field*, click the icon at the end and aselect your whole data table from your Raw Data sheet.
- Click *Ok*.
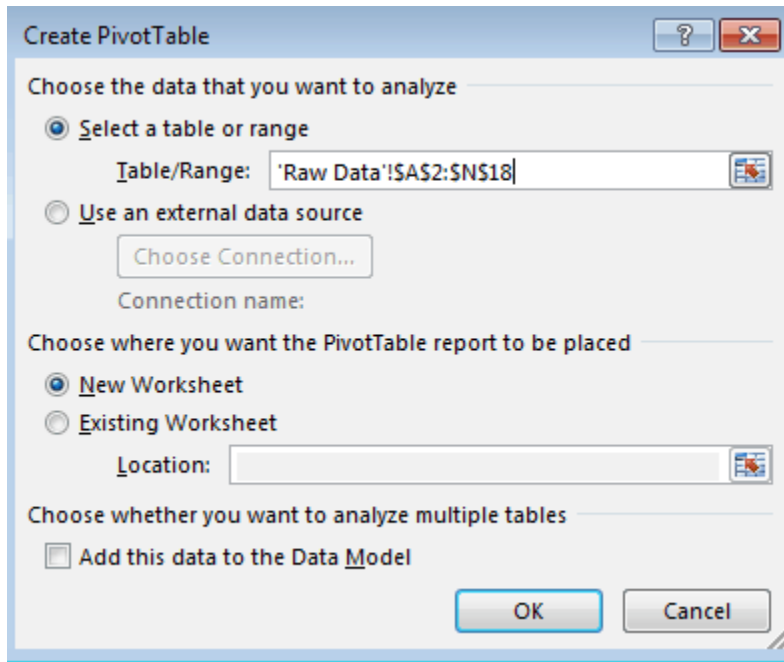
- The *PivotTable Field List* will appear on the right side of your screen.
- Select which subsets of data you would like to include in your pivot table by clicking the boxes.

PivotTable Fields ▾ ✕

Choose fields to add to report: ⚙ ▾

- ☐ Project Name
- ☐ Start Date
- ☐ End Date
- ☐ Duration
- ☐ # of Team Members
- ☐ Project Budget
- ☐ Actual Budget
- ☐ Remainder
- ☐ Risk: High
- ☐ Risk: Medium
- ☐ Risk: Low

Drag fields between areas below:

▼ FILTERS	⦀ COLUMNS
≡ ROWS	Σ VALUES

☐ Defer Layout Update   UPDATE

If you'd like to include another pivot table in your dashboard, repeat steps 1-3.

Project Name ▾	Sum of High Risk	Sum of Medium Risk	Sum of Low Risk
Project A	1	0	4
Project B	2	3	5
Project C	3	4	3
Project D	5	8	1
Project E	8	6	4
Project F	5	0	0
Project G	6	4	0
Project H	7	3	3
Project I	0	2	4
Project J	4	4	5
Project K	3	6	4
Project L	2	3	6
Project M	1	1	7
Project N	5	0	2
Grand Total	52	44	48

Dashboards collaboration & Publishing

You can save an Excel dashboard to a static web page, save the Excel sheet as a PDF and upload it to your company Intranet, or add the file to Dropbox or another cloud storage tool and share the link.

If you don't need the Excel dashboard to live on the web, you can send it via email.