

Chapter-22 Working with Bubble chart in MS Excel

A **Bubble Chart** in Microsoft Excel is a variation of a scatter chart that adds a third dimension to the data by varying the size of the data points (bubbles). It allows you to display relationships between three numeric variables. The X-axis and Y-axis represent two variables, while the size of each bubble represents the value of the third variable.

Why Use a Bubble Chart?

- **Three-Dimensional Data Representation:** Bubble charts are perfect for visualizing data that involves three variables. For instance, you might have data on sales, time, and market size, and want to visualize how they relate.
 - **Comparison:** You can use bubble charts to compare different categories and show the relative sizes of the data points.
 - **Trend Analysis:** Like scatter charts, bubble charts are useful for identifying trends or correlations among variables.
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Creating a Bubble Chart in Excel

Step 1: Organize Your Data

For a bubble chart, you need at least three columns of data:

- The first column (X-axis values) represents the independent variable.
- The second column (Y-axis values) represents the dependent variable.
- The third column represents the size of the bubbles (this variable will determine the size of the bubble).

Example Data:

	A	B	C
1	X Value (Time)	Y Value (Sales)	Size (Market Size)
2	1	100	500
3	2	150	600
4	3	200	700
5	4	250	800
6	5	300	900

In this example:

- The **X Value** represents **Time**.
- The **Y Value** represents **Sales**.
- The **Size** represents **Market Size**, which will influence the size of each bubble.

Step 2: Select Your Data

1. Select the data range you want to use for the bubble chart. In the example above, you would select **A1:C6** (Time, Sales, and Market Size).
2. Make sure that each of the three columns contains data for the X-axis, Y-axis, and the bubble size.

Step 3: Insert the Bubble Chart

1. After selecting the data, go to the **Insert** tab in the Excel ribbon.
2. In the **Charts** group, click on the **Insert Scatter (X, Y) or Bubble Chart** dropdown.
3. From the dropdown, choose **Bubble**. The basic bubble chart option will display with the X-axis, Y-axis, and bubble sizes representing the three variables.

Step 4: Customize the Bubble Chart

Once your bubble chart is inserted, you can customize it to make it more informative and visually appealing:

1. **Chart Title:** Click on the chart title (default text) and change it to something relevant, such as "**Sales Over Time by Market Size**".
2. **Axis Titles:** Add axis titles to explain what each axis represents.
 - For the X-axis (Time), you might use "**Time (Months)**".
 - For the Y-axis (Sales), you could use "**Sales (Thousands)**".
 - To add axis titles, click on the chart, then go to **Chart Tools > Add Chart Element > Axis Titles**.
3. **Data Labels:** Add data labels to show the actual values for each bubble.
 - Right-click any bubble and select **Add Data Labels** to display the value for each point.
 - You can choose to display just the values or the values with labels such as X and Y coordinates.
4. **Legend:** The chart might display a legend, but if you don't need it, you can remove it.
 - Right-click the legend and select **Delete**, or move it to a different location by clicking and dragging.
5. **Gridlines:** You can adjust or remove the gridlines to make the chart cleaner.
 - Click the chart and go to **Chart Tools > Add Chart Element > Gridlines** to add or remove them.

Step 5: Format the Bubble Chart

1. **Change Bubble Colors:** You can change the color of the bubbles to improve the chart's visual appeal.
 - Right-click any bubble and choose **Format Data Series**. From the formatting options, select **Fill** and choose a color.

2. **Change Bubble Size:** To adjust the size of the bubbles based on your data, click on the chart, and then right-click a bubble and select **Format Data Series**. Under **Bubble Size**, you can modify the scaling of the bubble sizes.
 3. **Customize Bubble Transparency:** You can adjust the transparency of the bubbles to allow overlapping bubbles to be more visible.
 - o Right-click on the bubble, select **Format Data Series**, and adjust the **Transparency** under **Fill**.
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Example: Sales vs. Time with Market Size Bubble Chart

Let's use the following example data:

	A	B	C
1	Time (Months)	Sales (Thousands)	Market Size (Millions)
2	1	100	500
3	2	150	600
4	3	200	700
5	4	250	800
6	5	300	900

To create a bubble chart:

1. Select the range **A1:C6**.
 2. Go to **Insert > Scatter or Bubble Chart > Bubble**.
 3. Excel will create a bubble chart with **Time** on the X-axis, **Sales** on the Y-axis, and the **Market Size** affecting the size of the bubbles.
 4. Add axis titles like "**Time (Months)**" and "**Sales (Thousands)**".
 5. Optionally, add data labels to show the exact values.
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Advanced Features of Bubble Charts

1. Formatting the Bubble Size

- You can change the bubble size to ensure that they are properly scaled for easy comparison. In **Format Data Series**, adjust the **Bubble Size** setting. If your data points vary widely, you may want to adjust the size scaling to make smaller bubbles more visible.

2. Multiple Data Series

- You can add multiple data series to the same bubble chart to compare different datasets.
 - o Click on the chart and select **Chart Tools > Select Data** to add more series.

- For example, you could add a second series for a different product or region, allowing you to compare the market size and sales over time for each product.

3. Customizing Bubble Labels

- You can show more than just the bubble value. For example, you can display the names of the items in the bubble chart. To do this:
 - Right-click on the data series and choose **Add Data Labels**.
 - Right-click on the data labels and select **Format Data Labels** to include both X and Y values, or even series name, etc.

4. Dynamic Bubble Colors

- You can make bubble colors dynamic based on the values they represent. For example, use conditional formatting to assign colors based on sales volume, with red for low sales and green for high sales. This helps to add more meaning to the visualization.
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Benefits of Using a Bubble Chart

- **Three-Dimensional Data:** Bubble charts allow you to represent data in three dimensions (X-axis, Y-axis, and bubble size), which is perfect for showing complex relationships between variables.
 - **Comparing Categories:** You can easily compare multiple categories in a single chart, which helps in identifying trends or patterns.
 - **Visualizing Variability:** The bubble size offers an additional visual cue that helps to understand the magnitude of the third variable.
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Limitations of Bubble Charts

- **Too Much Data:** If you have too many data points, the bubble chart can become cluttered and hard to interpret.
- **Overlapping Bubbles:** When bubbles overlap, it can be difficult to see individual values, especially if the chart has large bubbles or closely grouped data.
- **Complexity:** For people unfamiliar with bubble charts, the concept of using size to represent data may be harder to understand compared to other chart types.