

# How to Create a Smooth Line Chart in Excel in 5 Steps

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The process of creating a visually appealing and smooth line chart in Excel requires careful attention to both data selection and formatting options. A standard line chart often presents jagged edges, particularly when analyzing volatile data, which can unintentionally obscure underlying long-term trends or cyclical patterns. Smoothing these lines enhances the professional appearance of your data visualization and significantly improves the audience's ability to interpret essential insights. This comprehensive guide details two expert methods for achieving a perfectly smooth representation of your time-series data, ensuring optimal clarity and analytical value.

Before diving into the smoothing techniques, the foundational step involves correctly generating the initial chart. First, you must select the range of data points--including the header rows and relevant numerical values--that you intend to plot. Navigate to the **Insert** tab on the Excel ribbon, locate the Charts section, and select a standard 2-D line chart option. Once the chart is generated, ensure that the data orientation is correct. If the horizontal axis (x-axis) labels are incorrect, right-click the chart, choose **Select Data**, and use the **Edit** button under the Horizontal (Category) Axis Labels section to define the correct data range for your time periods or categories. This preparation ensures that the subsequent smoothing methods are applied to a correctly structured visualization.

## Create a Smooth Line Chart in Excel (With Detailed Examples)

### Understanding the Two Primary Smoothing Methods

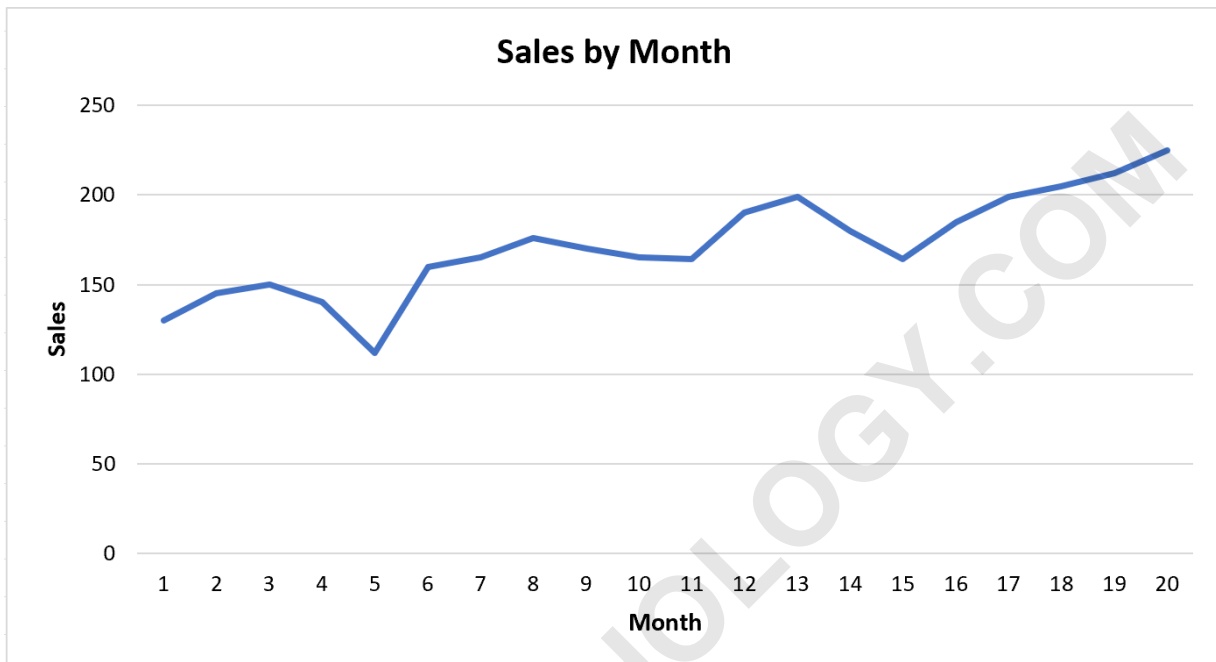
When working with datasets that exhibit significant fluctuations, the inherent variability can distract from the main story the data is trying to tell. Excel provides two distinct, powerful methods for mitigating this visual noise and creating a smooth representation of the data series. These methods address different visualization needs, depending on whether you require the original data line to be interpolated or if you prefer an overlay summarizing the underlying trend.

The choice between these two methods depends heavily on the analytical objective. If the goal is purely aesthetic--to make the existing plotted line less angular without altering the underlying data values--then interpolating the line using **Format Data Series** is the ideal approach. Conversely, if the objective is to summarize volatile data, reveal long-term momentum, and remove noise using statistical methods, then employing a Moving Average Trendline is the statistically sounder choice. Both techniques transform a complex, jagged visualization into a clear, easily digestible chart.

**Method 1: Smooth Out the Original Line** - This technique utilizes curve fitting to visually refine the appearance of the existing line series.

**Method 2: Add Smooth Trendline Over the Original Line** - This method involves calculating and overlaying a statistical model, such as a Moving Average, that summarizes the data pattern.

The following detailed examples illustrate how to implement each method practically, using a typical scenario involving sales data tracked over 20 consecutive months. The initial visualization, which serves as the starting point for both techniques, clearly shows the inherent volatility that necessitates smoothing:



### Method 1: Smoothing the Original Line Using Interpolation

The first and most direct way to generate a smooth line chart involves utilizing Excel's built-in interpolation feature. This feature does not modify the underlying data points; instead, it uses a mathematical algorithm, often cubic spline interpolation, to draw a curved path that passes through or near the existing data markers. This results in a line that is visually softer and more appealing, making it easier for the viewer's eye to follow the trajectory of the series without the distraction of sharp, abrupt corners.

This method is highly recommended when you need to retain the visual representation of every data point but wish to improve the presentation quality. It is a purely cosmetic change applied through the chart formatting panel. Understanding how to access and manipulate the **Format Data Series** options is key to executing this technique efficiently. By adjusting the line properties, users can instantly transform a rigid, angular chart into an elegant, flowing visualization.

#### Step-by-Step Guide for Method 1 Implementation

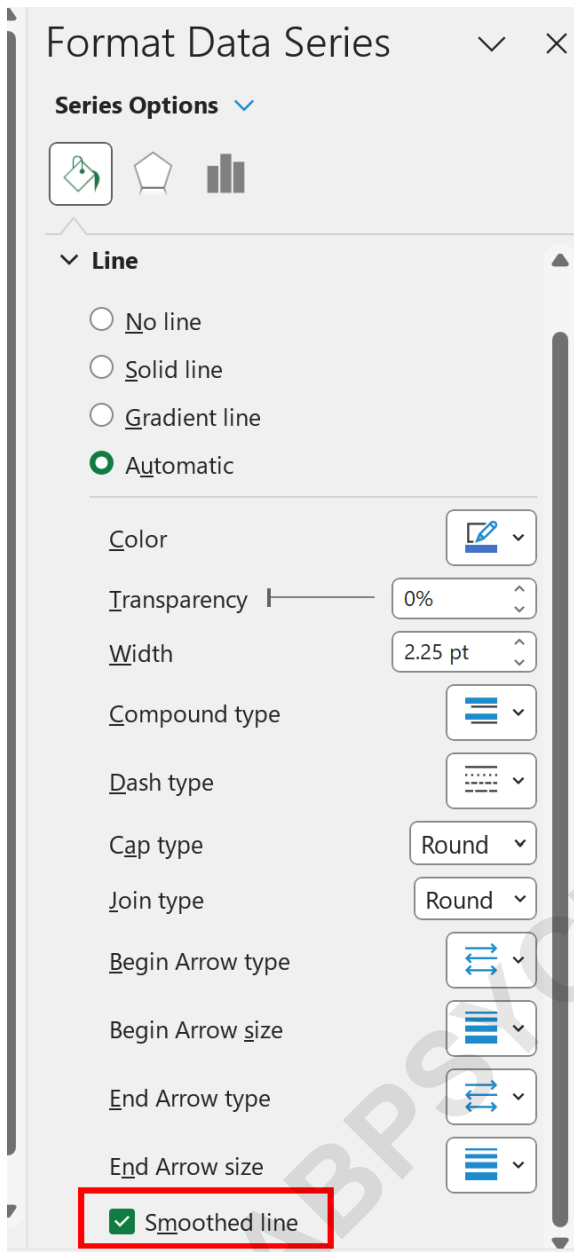
Implementing the visual smoothing feature is straightforward and requires only a few clicks within the chart customization interface. This process targets the specific data series line and adjusts its

drawing style properties.

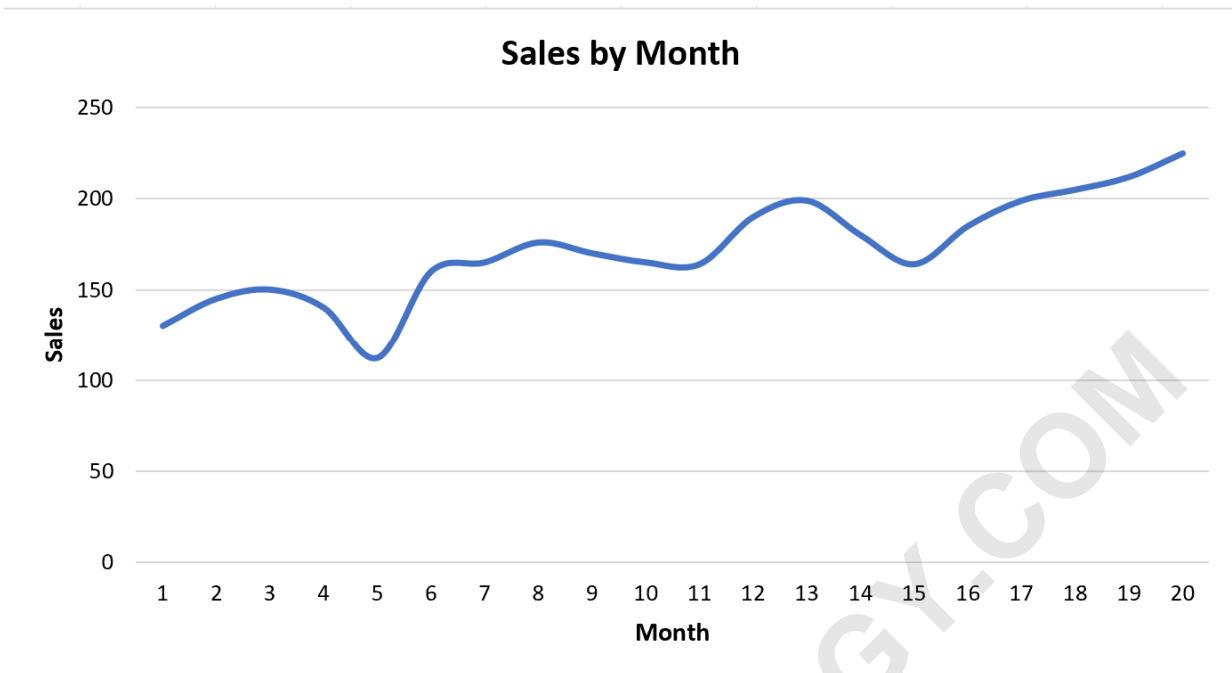
**Activate the Format Data Series Panel:** To initiate the process, double-click directly on the line within the chart. This action opens the **Format Data Series** task pane, usually appearing on the right side of your Excel workspace. This panel contains all adjustable visual and statistical properties for the selected series.

**Access Line Formatting Options:** Within the **Format Data Series** panel, click on the "Fill & Line" icon, which is typically represented by a paint bucket or spilled paint symbol. This section controls the visual aspects of the line, including color, thickness, and style.

**Apply Smoothed Line Setting:** Scroll down to the very bottom of the "Line" options within the panel. Locate and check the box labeled **Smoothed line**. Checking this box instantly applies the interpolation algorithm to the line series, causing the sharp corners to be replaced by smooth curves.



Upon selecting this option, the visual transformation is immediate. The jagged points that characterized the original representation are automatically smoothed out, resulting in a continuous, flowing curve that maintains fidelity to the original data points:



## Method 2: Applying a Moving Average Trendline for Statistical Smoothing

The second method offers a more analytical approach to smoothing. Instead of merely adjusting the visual appearance of the original line, this technique involves overlaying a trendline based on a statistical model. The most effective model for smoothing time-series data is the Moving Average, which calculates a new data series by averaging values within a defined window or "period."

A **Moving Average** is exceptionally useful because it filters out short-term fluctuations, highlighting the longer-term trend and cyclical components within the data. By choosing a wider period (e.g., 5 months instead of 3), the resulting trendline becomes significantly smoother, as it encompasses more data points in each calculation, thereby reducing the influence of individual outliers or sharp peaks and troughs. This technique is crucial when the focus shifts from reporting instantaneous values to understanding underlying momentum and forecasting future directions.

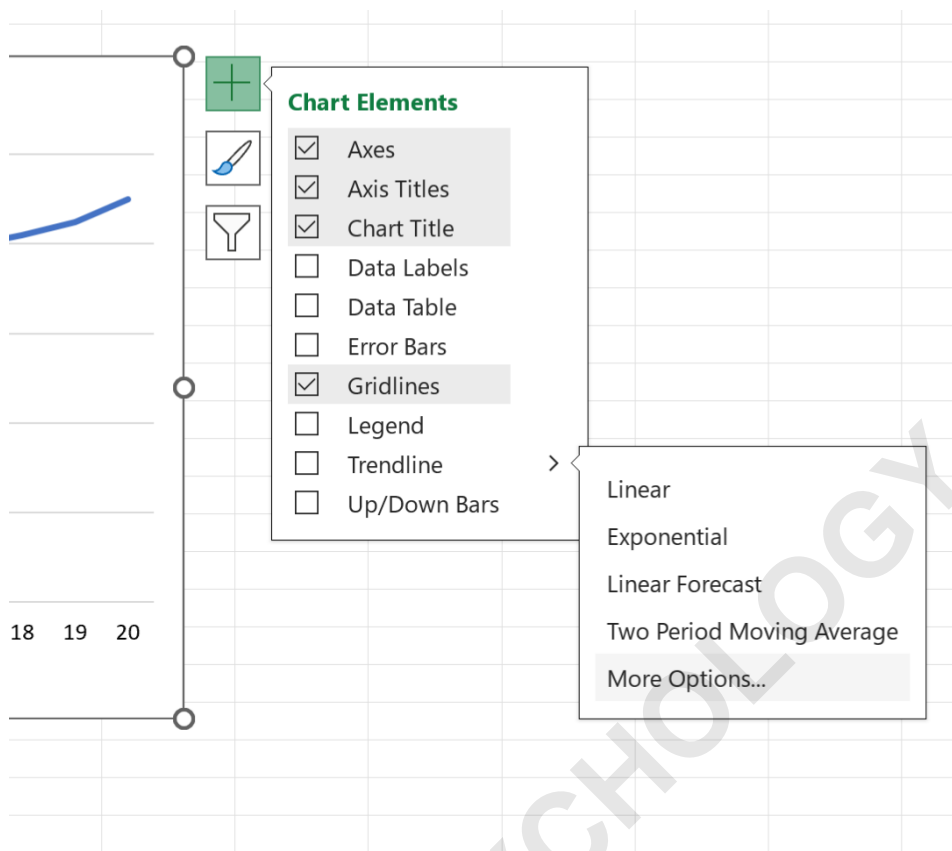
### Step-by-Step Guide for Method 2 Implementation

Adding a statistically significant smoothing element requires utilizing Excel's chart elements interface to introduce a new layer of analysis--the trendline.

**Activate the Chart and Elements Menu:** Click anywhere on the chart area to ensure it is active. Then, locate the tiny green plus sign (Chart Elements icon) that appears near the top-right corner of the chart visualization.

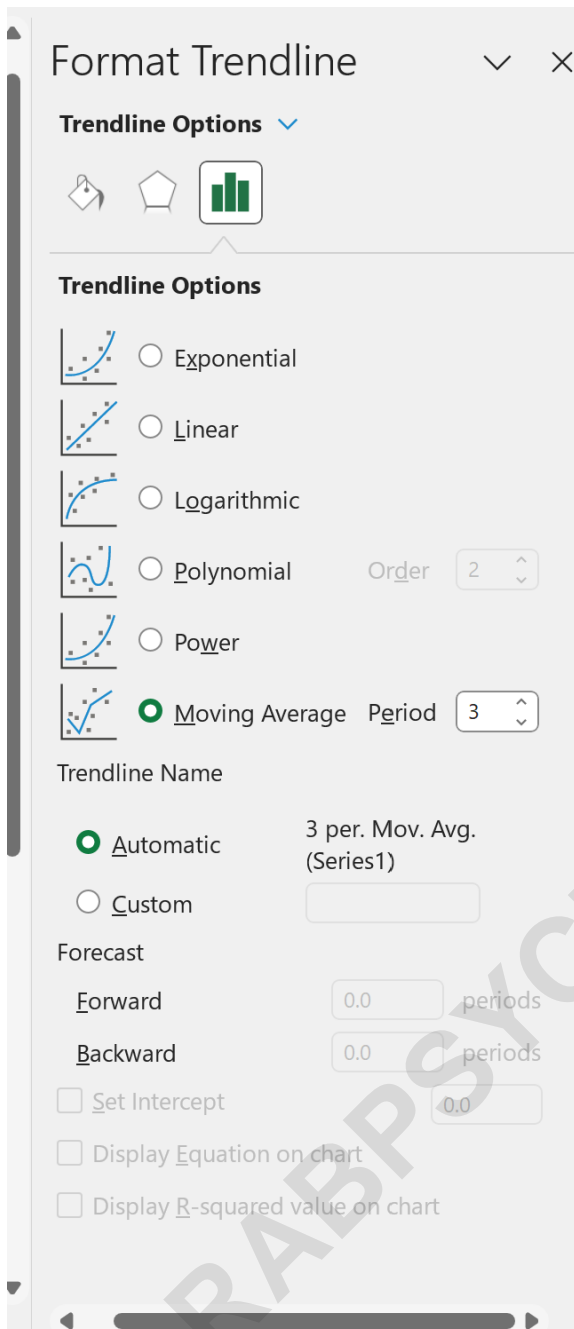
**Add and Customize Trendline:** Click the plus sign to open the Chart Elements menu. Check the

box next to **Trendline**. To access specific smoothing settings, click the small arrow next to the Trendline option and select **More Options**. This action opens the **Format Trendline** task pane.

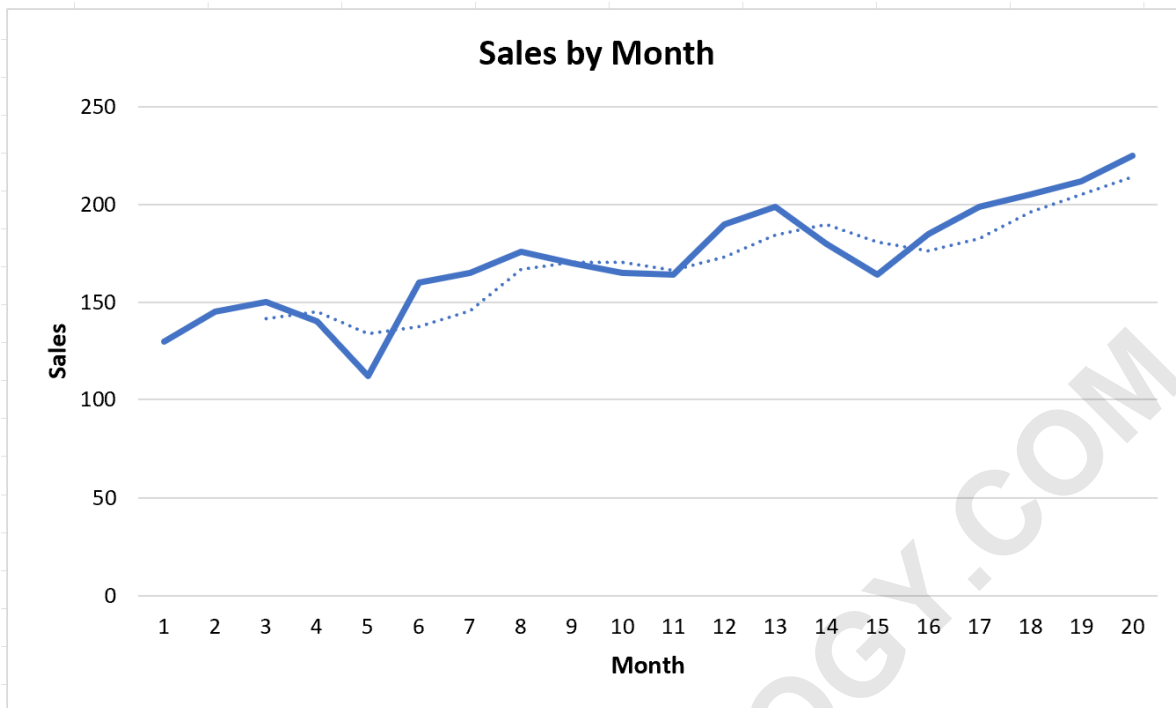


Once the **Format Trendline** panel is visible, you must select the appropriate type of smoothing function. Scroll through the available Trendline Options (Exponential, Linear, Logarithmic, Polynomial, Power, and Moving Average).

**Select Moving Average:** Check the radio button next to **Moving Average**. Immediately after selection, you will need to define the **Periods** parameter. This number determines the calculation window--a 3-period moving average calculates each point by averaging the current data point and the two preceding data points. A higher period value results in a smoother, less reactive Moving Average trendline.



Applying these settings produces a distinct, smooth trendline over the original, volatile line in the chart. For instance, selecting 3 periods creates a visual representation of the 3-month average of sales values:



This resulting trendline is inherently smoother than the underlying original series because each plotted point represents an average calculation, effectively dampening the impact of short-term volatility. Note that while a 3-period Moving Average provides immediate smoothing, analysts often experiment with different **Periods** (e.g., 5, 7, or 12 periods for monthly data) to best capture the cyclical nature of their specific dataset. The appropriate period selection is critical for accurate statistical interpretation.

## Summary of Smoothing Techniques and Applications

Choosing between interpolating the original line (Method 1) and adding a statistical Moving Average (Method 2) should be driven by the presentation's purpose. Method 1 is purely cosmetic; it ensures that the line chart looks sleek and modern, utilizing the visual properties available in Excel's Format Data Series options. It is suitable for executive summaries where visual polish is prioritized over deep statistical modeling.

Method 2, however, is an analytical tool. By introducing a Trendline, you are performing a statistical transformation of the data. This is invaluable in financial analysis, quality control, or any field requiring the extraction of core trends from noisy data. The flexibility of adjusting the **Periods** allows for tailored analysis, enabling the detection of quarterly, semi-annual, or annual trends depending on the data frequency. Mastering both techniques ensures maximum versatility when creating professional data visualizations in **Excel**.

The following resources provide further guidance on performing advanced data visualization and

analysis tasks in Excel:

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