

Make a Box Plot in Google Sheets

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A **box plot**, often referred to as a box-and-whisker plot, is a powerful tool in [exploratory data analysis](#). Its primary function is to visually display the distribution of a dataset based on its [five number summary](#). This summary provides a concise statistical snapshot of the data's spread, skewness, and central location.

Understanding these five key values is essential for interpreting the plot:

The minimum value (Smallest observation)

The [first quartile](#) (Q1, 25th percentile)

The [median](#) (Q2, 50th percentile)

The third quartile (Q3, 75th percentile)

The maximum value (Largest observation)

Since **Google Sheets** does not offer a native chart type specifically dedicated to box plots, we must employ a clever workaround. This comprehensive tutorial details the step-by-step process for generating a robust box plot visualization in [Google Sheets](#) using the highly versatile Candlestick Chart.

Prerequisites: Understanding the Candlestick Chart Proxy

Before diving into the data, it is crucial to understand why we utilize the [Candlestick Chart](#). Typically used in finance to track price movements, this chart type requires four specific data points for each entry: an opening value, a closing value, a high value, and a low value.

We can map the statistical components of the five-number summary onto these four required inputs to successfully mimic the structure of a box plot:

The **Minimum** value of the dataset maps to the Low/Whisker bottom.

The **First Quartile (Q1)** maps to the Open/Box bottom.

The **Third Quartile (Q3)** maps to the Close/Box top.

The **Maximum** value of the dataset maps to the High/Whisker top.

Note that this method does not explicitly require the median (Q2) for the basic plot structure, although the median is usually represented by a line inside a true box plot. For simplicity and functionality within Google Sheets, we rely on the four main boundaries provided by the minimum, Q1, Q3, and maximum values.

Step 1: Data Preparation and Initial Entry

The foundation of any accurate visualization is clean data. Begin by inputting your raw dataset into a single column within your Google Sheet. It is recommended to label this column clearly for better organization.

For this example, assume we are analyzing a dataset consisting of 20 observations related to scores or measurements. Accurate entry in the first step minimizes errors down the line and ensures that subsequent calculations yield the correct statistical measures.

Ensure that all numerical values are correctly formatted and that no textual data is mixed within the column, as this will interfere with the statistical functions used in the next step.

<i>fx</i>				
	A	B	C	D
1	Data Values			
2	4			
3	6			
4	6			
5	7			
6	8			
7	12			
8	15			
9	17			
10	20			
11	21			
12	21			
13	23			
14	24			
15	27			
16	28			
17				
18				
19				
20				

Step 2: Calculating the Five Number Summary Components

The next critical step involves using built-in Google Sheets functions to derive the four essential values needed for the candlestick chart: Minimum, First Quartile (Q1), Third Quartile (Q3), and Maximum. These calculations must be performed in a separate, adjacent row or column to maintain a clear workflow.

We will use the following powerful functions for our calculations, assuming the raw data is located in column A:

Minimum: Use the `MIN` function. Syntax: `=MIN(A:A)`.

First Quartile (Q1): Use the `QUARTILE` function, specifying 1 as the second argument. Syntax:

`=QUARTILE(A:A, 1)`.

Third Quartile (Q3): Use the `QUARTILE` function, specifying 3 as the second argument. Syntax:

`=QUARTILE(A:A, 3)`.

Maximum: Use the `MAX` function. Syntax: `=MAX(A:A)`.

It is important to remember that the `QUARTILE` function requires two arguments: the data range and the quartile type (0 for min, 1 for Q1, 2 for median, 3 for Q3, and 4 for max). By strategically using these functions, we generate the exact statistical boundaries required for our visualization proxy.

The following image illustrates the placement of these formulas, yielding the necessary summary statistics:

	A	B	C	D	E
1	Data Values	4	7.5	22	28
2	4	=MIN(A2:A16)	=QUARTILE(A2:A16, 1)	=QUARTILE(A2:A16, 3)	=MAX(A2:A16)
3	6				
4	6				
5	7				
6	8				
7	12				
8	15				
9	17				
10	20				
11	21				
12	21				
13	23				
14	24				
15	27				
16	28				
17					
18					
19					
20					
21					

We recommend organizing these four resulting values in a single row, ready for charting. For instance, if the minimum is in B1, Q1 in C1, Q3 in D1, and the maximum in E1, this continuous row will form the basis of our chart data range.

Step 3: Configuring the Candlestick Chart

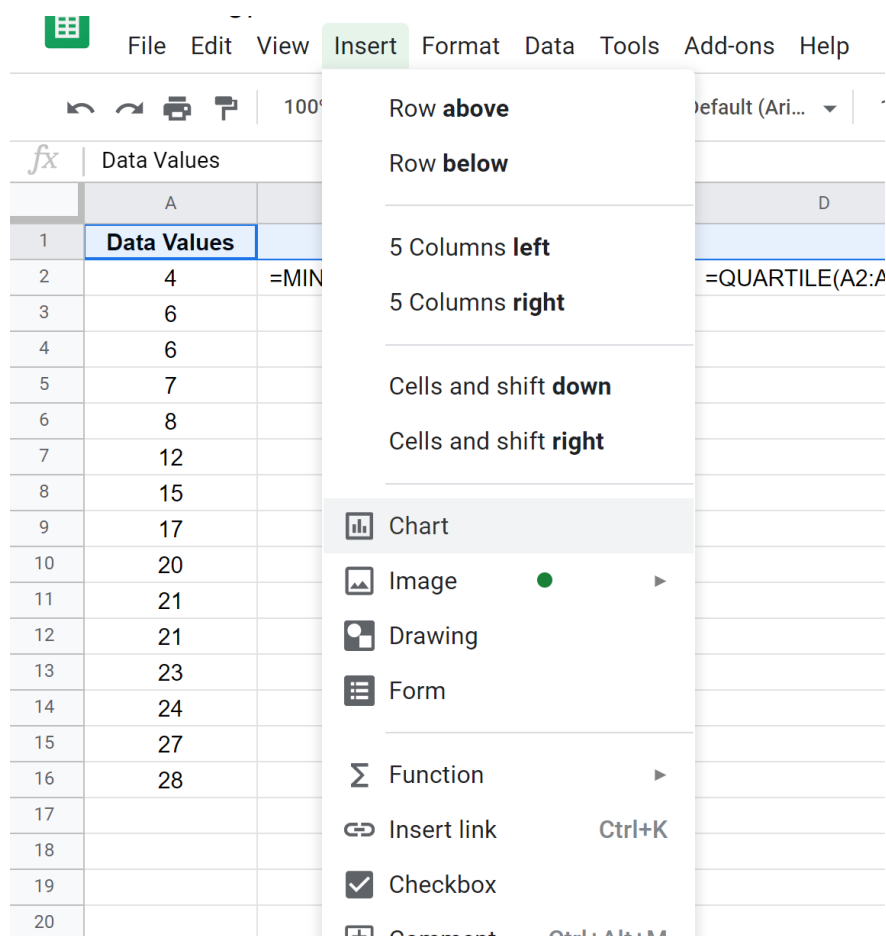
With the four necessary statistical values calculated and organized, we can now proceed to chart creation. This step involves selecting the correct data range and specifying the chart type that will

transform these numbers into a box plot visualization.

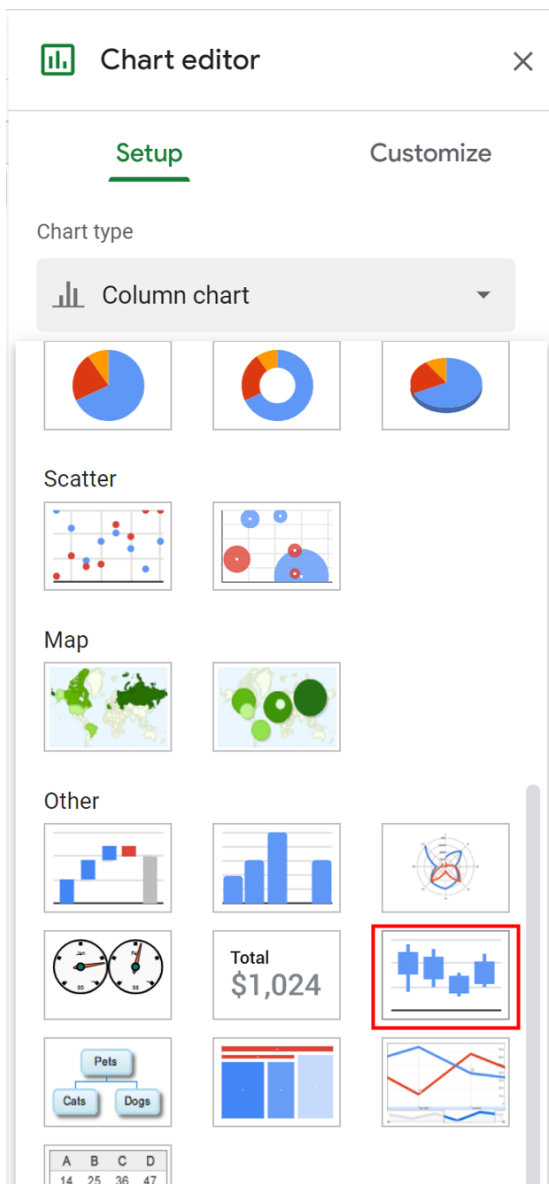
First, **highlight the row containing the four calculated values** (Minimum, Q1, Q3, Maximum). In our standard setup, this would be the range encompassing columns B through E in the first row. Highlighting this specific range tells Google Sheets exactly which values to use for the chart's structure.

	Data Values				
	A	B	C	D	E
1	Data Values	4	7.5	22	28
2	4	=MIN(A2:A16)	=QUARTILE(A2:A16, 1)	=QUARTILE(A2:A16, 3)	=MAX(A2:A16)
3	6				
4	6				
5	7				
6	8				
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Next, navigate to the top menu ribbon, click the **Insert** tab, and then select **Chart** from the dropdown menu. This action opens the Chart Editor pane on the right side of the screen.



The Chart Editor will attempt to auto-detect the chart type, which is often incorrect for this specific visualization goal. In the Setup tab of the Chart Editor, locate the Chart Type dropdown menu. Scroll through the options until you find and select the **Candlestick Chart**. This selection is critical, as it forces the visualization to interpret the four input values as a range (Low, Open, Close, High), forming the box-and-whisker structure we require.



Once you select the Candlestick Chart, the visualization will immediately update, displaying a graphic representation that effectively mimics a traditional box plot, based entirely on the statistical summary derived in Step 2.



Step 4: Interpreting the Resulting Box Plot

Successfully generating the candlestick chart proxy means you now have a visual aid to understand the distribution of your data. Interpreting this visualization requires mapping the geometric elements of the chart back to the statistical components of the five-number summary. The chart clearly outlines the range, the interquartile range (IQR), and the general spread of the dataset.

The way to interpret the chart is as follows, using the sample data for reference:

The **Top Whisker Line** extends to the **maximum value** of the dataset (e.g., **28**). This represents the highest data point observed.

The **Top Edge of the Box** represents the value of the **third quartile (Q3)** (e.g., **22**). Fifty percent of the data falls below this point.

The **Bottom Edge of the Box** represents the value of the **first quartile (Q1)** (e.g., **7.5**). Twenty-five percent of the data falls below this point.

The **Bottom Whisker Line** extends to the **minimum value** of the dataset (e.g., **4**). This represents the lowest data point observed.

The box itself encapsulates the central 50% of the data, known as the **Interquartile Range (IQR)**. A narrow box indicates that the central data points are tightly clustered, while a wide box suggests greater variability in the middle half of the distribution.

Step 5: Customization and Refinement

While the basic chart provides the necessary statistical insight, refining its appearance significantly improves readability and professionalism. The **Chart Editor** panel, specifically the **Customize** subsection, offers extensive options for fine-tuning the visualization.

Key customization elements include:

Chart and Axis Titles: Add a descriptive title (e.g., "Distribution of Scores") and clearly label the vertical axis (Y-axis) to indicate the measured units.

Series Customization: Adjust the colors of the box and whiskers. Changing the fill color can make the box stand out more prominently against the background.

Gridlines and Ticks: Modify the appearance and density of gridlines on the vertical axis. Adding minor gridlines can help users more accurately estimate where the quartiles fall on the scale.

Horizontal Axis (X-axis): Since this plot typically represents a single variable, the horizontal axis might only show a single category label. Ensure this label is clear and descriptive of the dataset analyzed.

By utilizing these customization options, you transition the basic candlestick output into a high-quality box plot suitable for presentations, reports, and detailed data analysis documentation. The ability to modify colors and labels ensures that the visualization aligns with any organizational style guides or specific reporting requirements.

Additional Resources for Data Visualization

Mastering the box plot is just one step in data visualization using Google Sheets. Exploring other chart types can provide different perspectives on your data's structure and trends. The following tutorials explain how to create other common charts in Google Sheets, enabling a broader analytical toolkit:

Generating Scatter Plots to analyze correlation.

Creating Histograms to visualize frequency distribution.

Building Bar Charts to compare categorical data.

These skills collectively allow analysts to move beyond simple tabular data and communicate complex statistical findings effectively through visual means.