

How do I create a Statistical Process Control Chart in Excel?

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Statistical Process Control (SPC) charts are commonly used in quality control to monitor and analyze data from a process. These charts display data points over time and help identify trends and patterns in the process. In order to create a SPC chart in Excel, you will need to follow a few steps. First, gather the data you want to analyze and organize it in a table. Then, select the data and click on the "Insert" tab in Excel. From there, choose the "Charts" section and select the type of chart you want to create, such as a line or scatter plot. Next, customize the chart by adding labels, titles, and formatting options. Finally, add the control limits, which are calculated based on the data, to the chart. These limits will help determine if the process is in control or if there are any variations that need to be addressed. By following these steps, you can easily create a SPC chart in Excel to track and improve the quality of your process.

Create a Statistical Process Control Chart in Excel

A statistical process control chart is a type of chart that is used to visualize how a process changes over time and is used to determine whether or not a process remains in a state of control.

The following step-by-step example shows how to create a statistical process control chart in Excel.

Step 1: Enter the Data

First, let's enter the values for our sample data:

	A	B	C	D	E	F	G
1	Data						
2	8						
3	11						
4	12						
5	13						
6	10						
7	9						
8	9						
9	10						
10	13						
11	19						
12	12						
13	15						
14	12						
15	16						
16	14						
17	11						
18	9						
19	8						
20	10						
21	12						
22							
23							
24							
25							

Step 2: Calculate the Mean

Next, we can use the following formula to calculate the mean value of the dataset:

=AVERAGE(\$A\$2:\$A\$21)

	A	B	C	D	E	F	G
1	Data	Mean					
2	8	11.65					
3	11	11.65					
4	12	11.65					
5	13	11.65					
6	10	11.65					
7	9	11.65					
8	9	11.65					
9	10	11.65					
10	13	11.65					
11	19	11.65					
12	12	11.65					
13	15	11.65					
14	12	11.65					
15	16	11.65					
16	14	11.65					
17	11	11.65					
18	9	11.65					
19	8	11.65					
20	10	11.65					
21	12	11.65					
22							
23							
24							
25							

Step 3: Calculate the Upper & Lower Limits

Next, we can use the following formula to calculate the upper and lower limits for the chart:

#Upper limit calculation

=B\$2+3*STDEV.S(\$A\$2:\$A\$21)

#Lower limit calculation

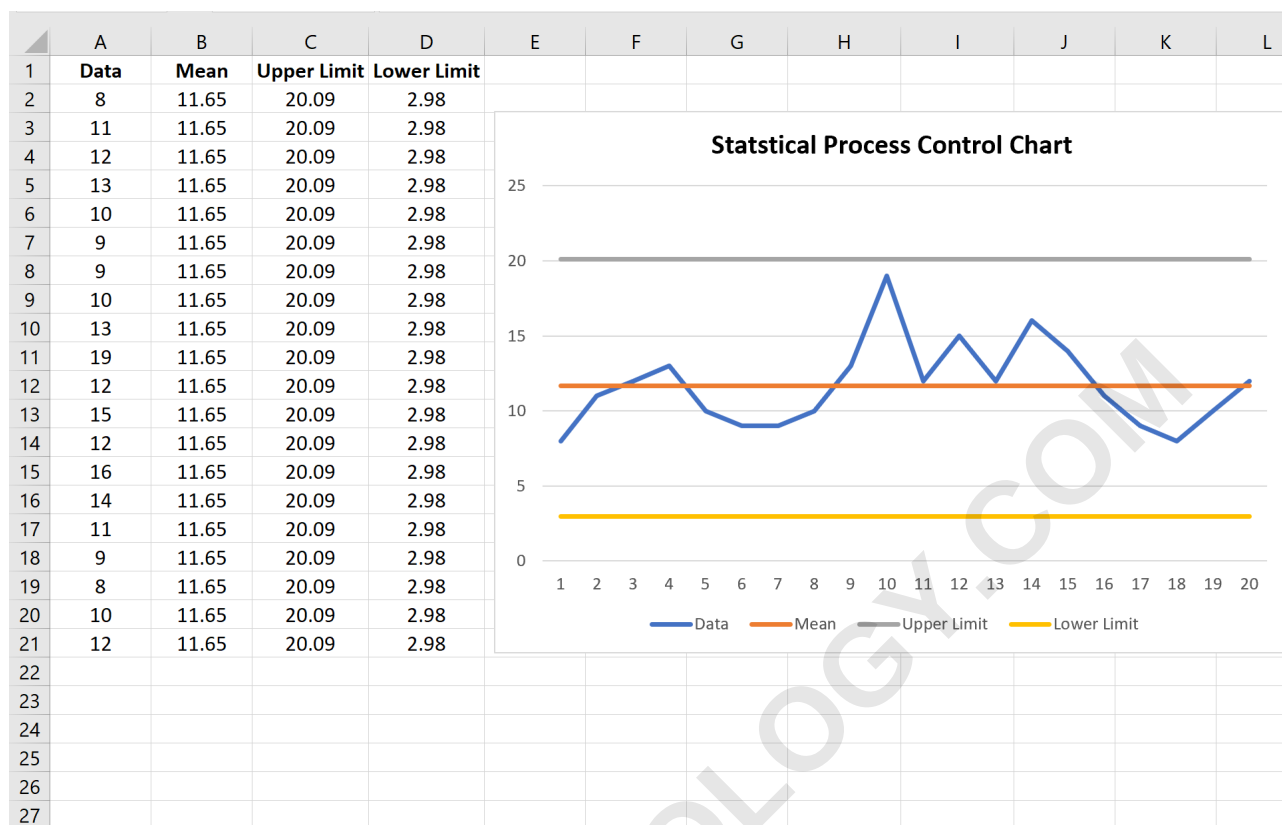
=B\$2-3*STDEV.S(\$A\$2:\$A\$21)

	A	B	C	D	E	F	G
1	Data	Mean	Upper Limit	Lower Limit			
2	8	11.65	20.09	2.98			
3	11	11.65	20.09	2.98			
4	12	11.65	20.09	2.98			
5	13	11.65	20.09	2.98			
6	10	11.65	20.09	2.98			
7	9	11.65	20.09	2.98			
8	9	11.65	20.09	2.98			
9	10	11.65	20.09	2.98			
10	13	11.65	20.09	2.98			
11	19	11.65	20.09	2.98			
12	12	11.65	20.09	2.98			
13	15	11.65	20.09	2.98			
14	12	11.65	20.09	2.98			
15	16	11.65	20.09	2.98			
16	14	11.65	20.09	2.98			
17	11	11.65	20.09	2.98			
18	9	11.65	20.09	2.98			
19	8	11.65	20.09	2.98			
20	10	11.65	20.09	2.98			
21	12	11.65	20.09	2.98			
22							
23							
24							
25							

Step 4: Create the Statistical Process Control Chart

Lastly, we can highlight every value in the cell range A1:D21, then click the Insert tab along the top ribbon, then click Insert Line Chart.

The following statistical process control chart will appear:



Blue line: The raw data
Orange line: The mean value of the data
Grey line: The upper limit on the process
Yellow line: The lower limit of the process

Since the blue line (the raw data) never crosses the upper limit or lower limit on the chart, we would say that the process remained in a state of control for the entire duration of the data collection.

In more technical terms, we would say that the data values never exceeded 3 standard deviations above or below the mean value of the dataset.

The following examples explain how to create other common charts in Excel:

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