

Box Plot with Error Bars in Excel

Step 1 This tutorial is to show you how to make a Box Plot with plus and minus error

bar with Excel. This graph is mostly used for statistic purpose, but some other subject may use it as an analysis tool sometime. I will just make a simple sample question here.

So assume we've got the following data, and we want to make a Box Plot with error bars out of it.

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2	Sample A											
3		23	25	25	26	26	26	26	27	27	27	27
4		28	29	29	29	30	30	31	31	31	32	32
5		32	33	34	34	35	35	36	39			
6												
7	Sample B											
8		17	22	24	24	25	25	25	25	26	26	26
9		26	26	26	27	27	27	27	28	29	29	29
10		29	29	29	30	30						
11												

Before we start with graphing, we first need to get the following revised data.

12		Sample A	Sample B	
13	Max	39	30	
14	Quarter 3	32	29	
15	Median	29.5	26	
16	Quarter 1	27	25	
17	Min	23	17	

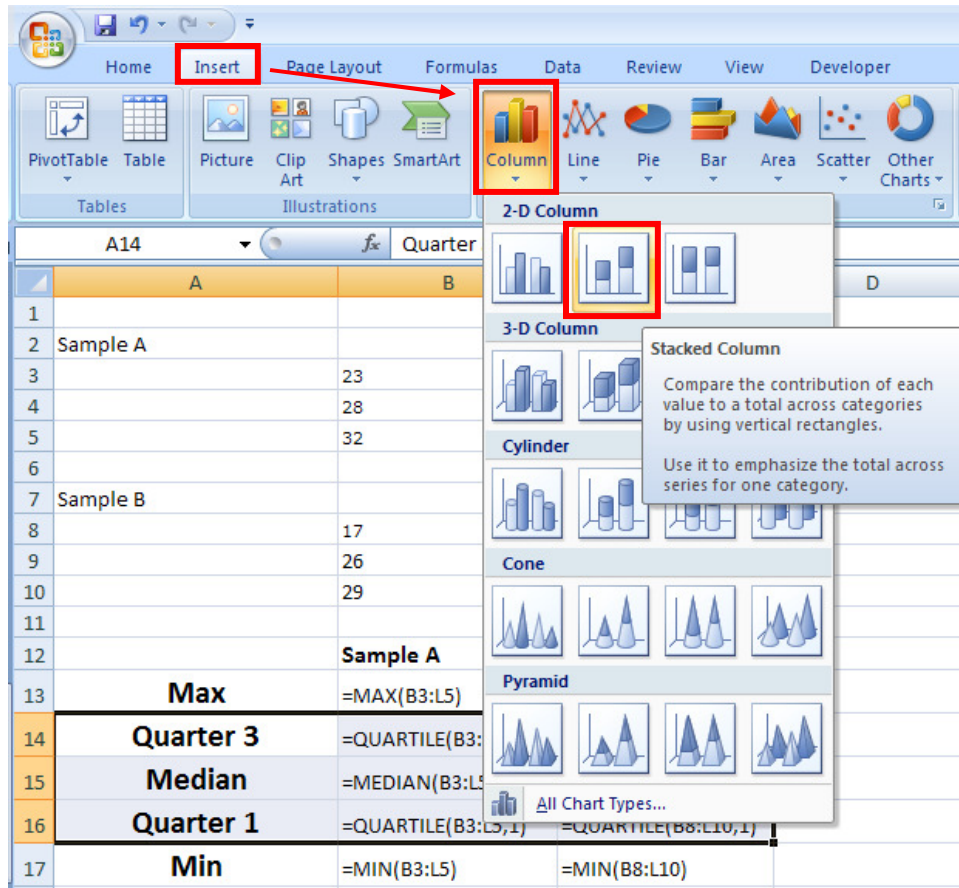
And here are the functions for calculating the above data:

6				
7	Sample B			
8		17	22	24
9		26	26	26
10		29	29	29
11				
12		Sample A	Sample B	
13	Max	=MAX(B3:L5)	=MAX(B8:L10)	
14	Quarter 3	=QUARTILE(B3:L5,3)	=QUARTILE(B8:L10,3)	
15	Median	=MEDIAN(B3:L5)	=MEDIAN(B8:L10)	
16	Quarter 1	=QUARTILE(B3:L5,1)	=QUARTILE(B8:L10,1)	
17	Min	=MIN(B3:L5)	=MIN(B8:L10)	

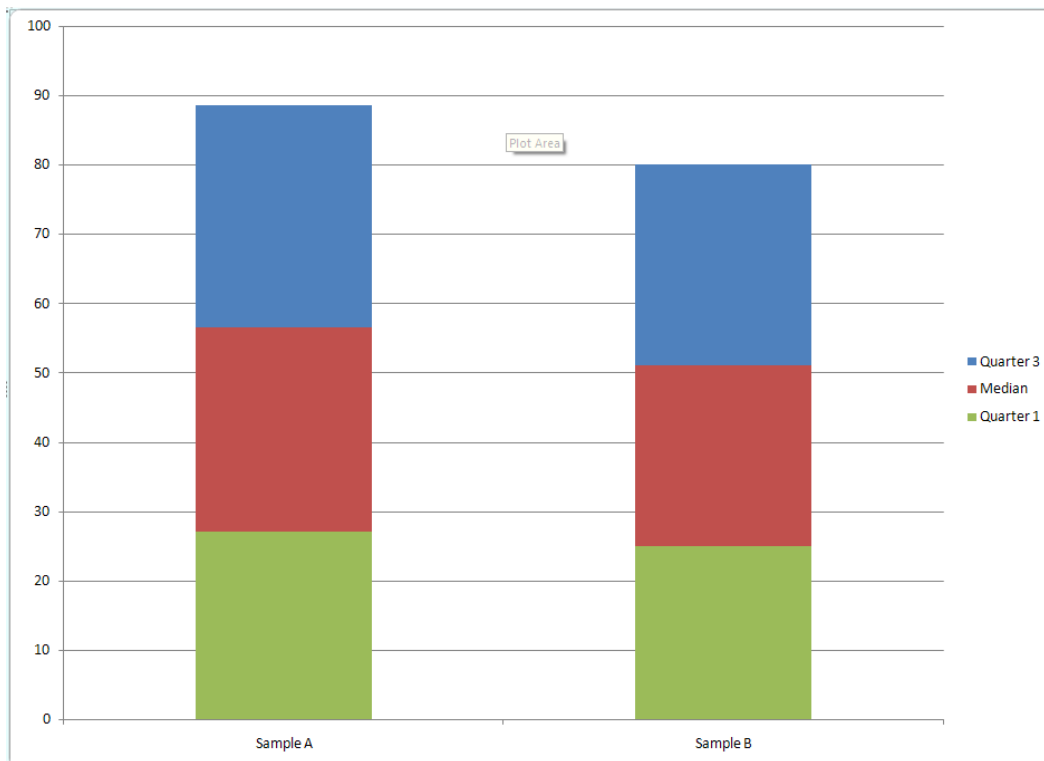
Step 2 After we get this revised data; we will start with the first part of the graph.

We will need to select **Quarter 3, Median, and Quarter 1** first, and after you select the data go to **Insert Tab**, and then **Column, Stacked Column**.

12		Sample A	Sample B
13	Max	=MAX(B3:L5)	=MAX(B8:L10)
14	Quarter 3	=QUARTILE(B3:L5,3)	=QUARTILE(B8:L10,3)
15	Median	=MEDIAN(B3:L5)	=MEDIAN(B8:L10)
16	Quarter 1	=QUARTILE(B3:L5,1)	=QUARTILE(B8:L10,1)
17	Min	=MIN(B3:L5)	=MIN(B8:L10)



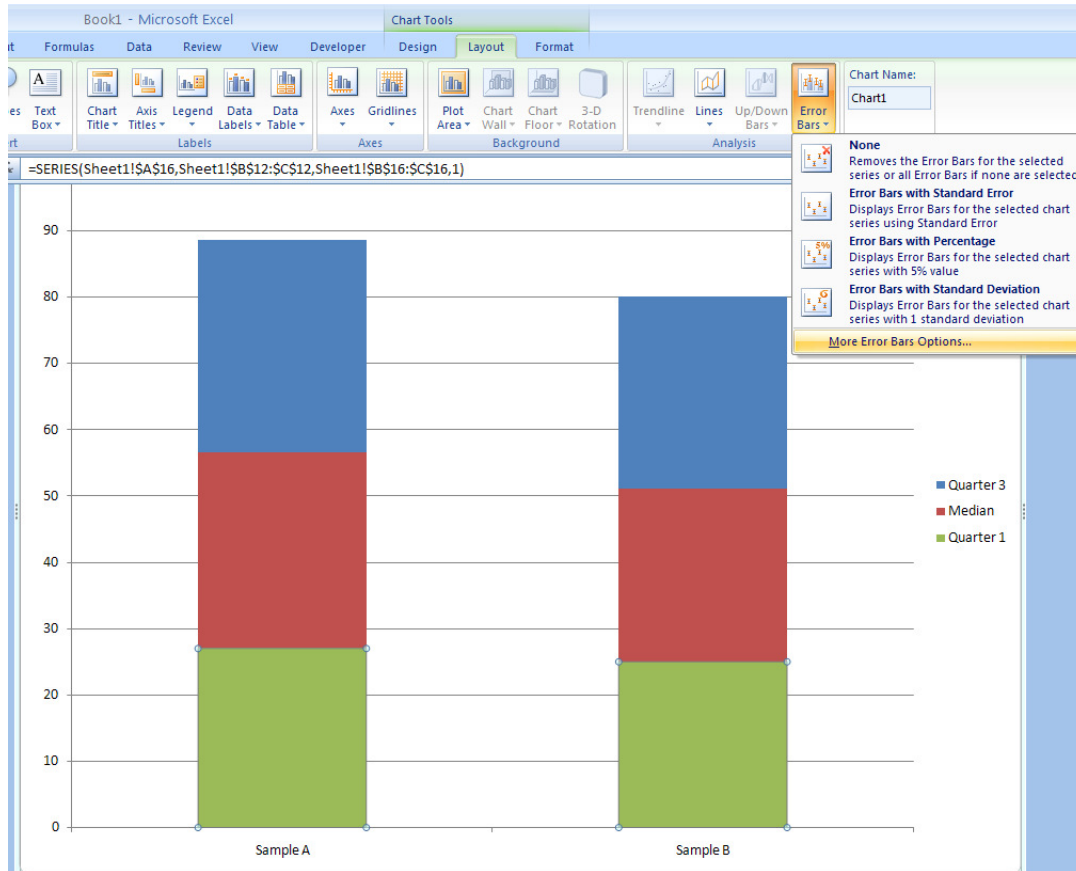
And you will get a graph like this one:



Step 3

This step we will add plus and minus error bars, we will modify the graph later.

To add a **Minus Error Bar** we need to select the green part first, and then go to the **Layout Tab** under **Chart Tools**. Over the right part you will see an option called **Error Bars**, select **More Error Bars Options**.



Then in **Display** we check **Minus** and **Error Amount** we select **Custom**, for the **Specify Value** we select the **Min** Value in our data set as the **Negative Error Value** and leave the Positive Error Value as it is. Then you will have a graph like this:

	A	B	C	D	E	F	G	O	P
1									
2	Sample A								
3		23	25	25	26	26			
4		28	29	29	29	30			
5		32	33	34	34	35			
6									
7	Sample B								
8		17	22	24	24	25			
9		26	26	26	27	27			
10		29	29	29	30	30			
11									
12		Sample A	Sample B						
13	Max	39	30						
14	Quarter 3	32	29						
15	Median	29.5	26						
16	Quarter 1	27	25						
17	Min	23	17						

Format Error Bars

Vertical Error Bars

Line Color: []
Line Style: []
Shadow: []

Display

Direction: Both, Minus, Plus

End Style: No Cap, Cap

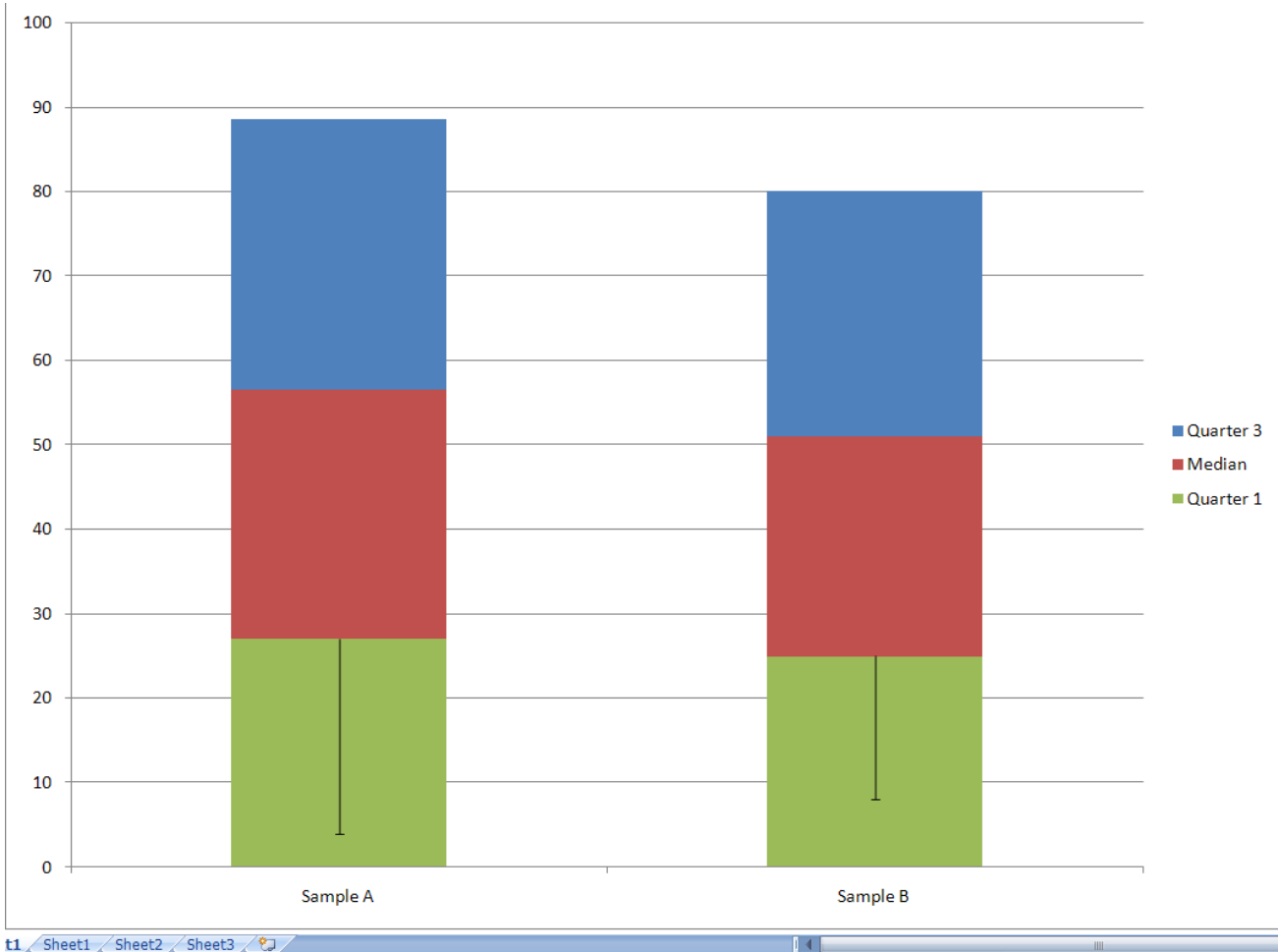
Error Amount: Fixed value: 10.0, Percentage: 5.0%, Standard deviation(s): 1.0, Custom: [Specify value]

Custom Error Bars

Positive Error Value: =1

Negative Error Value: =Sheet1!\$E\$17

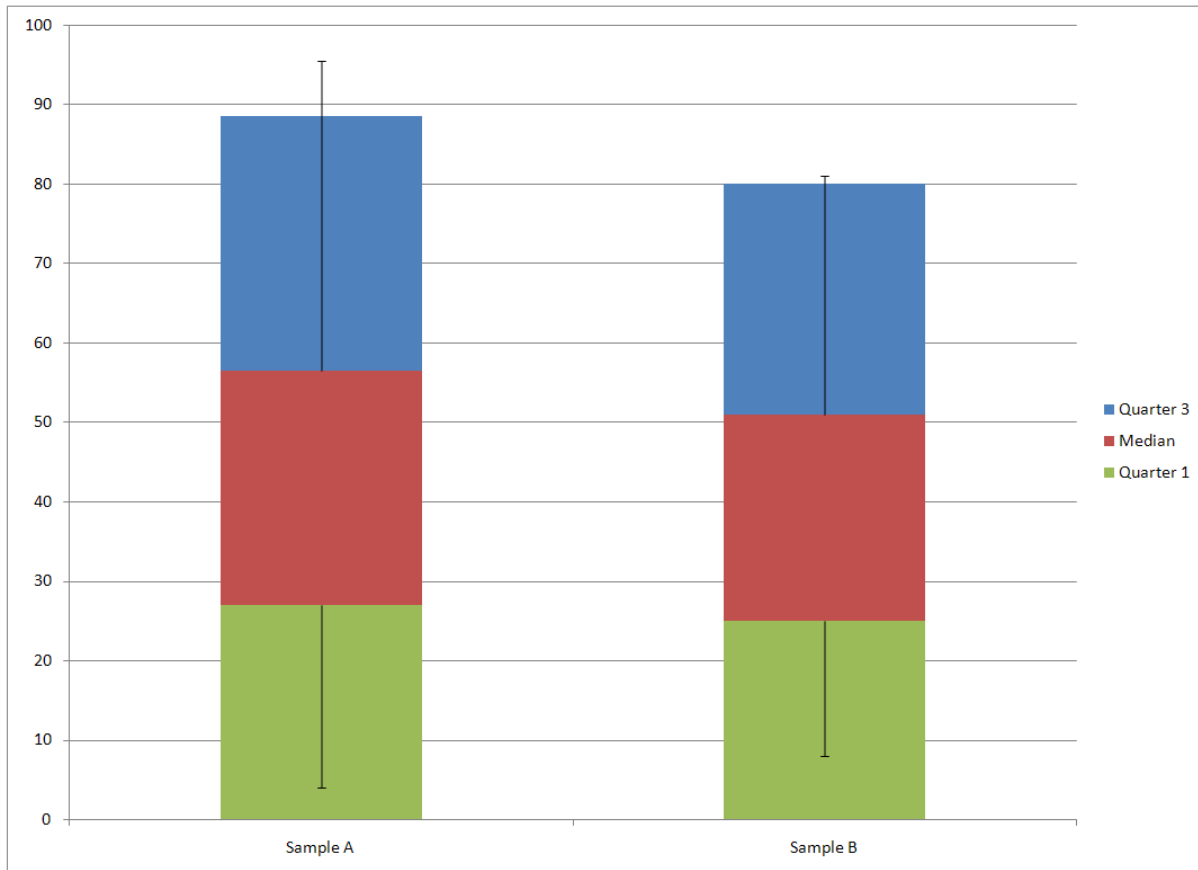
OK Cancel



Step 4

Now we need to do the same thing for Positive Error Bar, but this time we

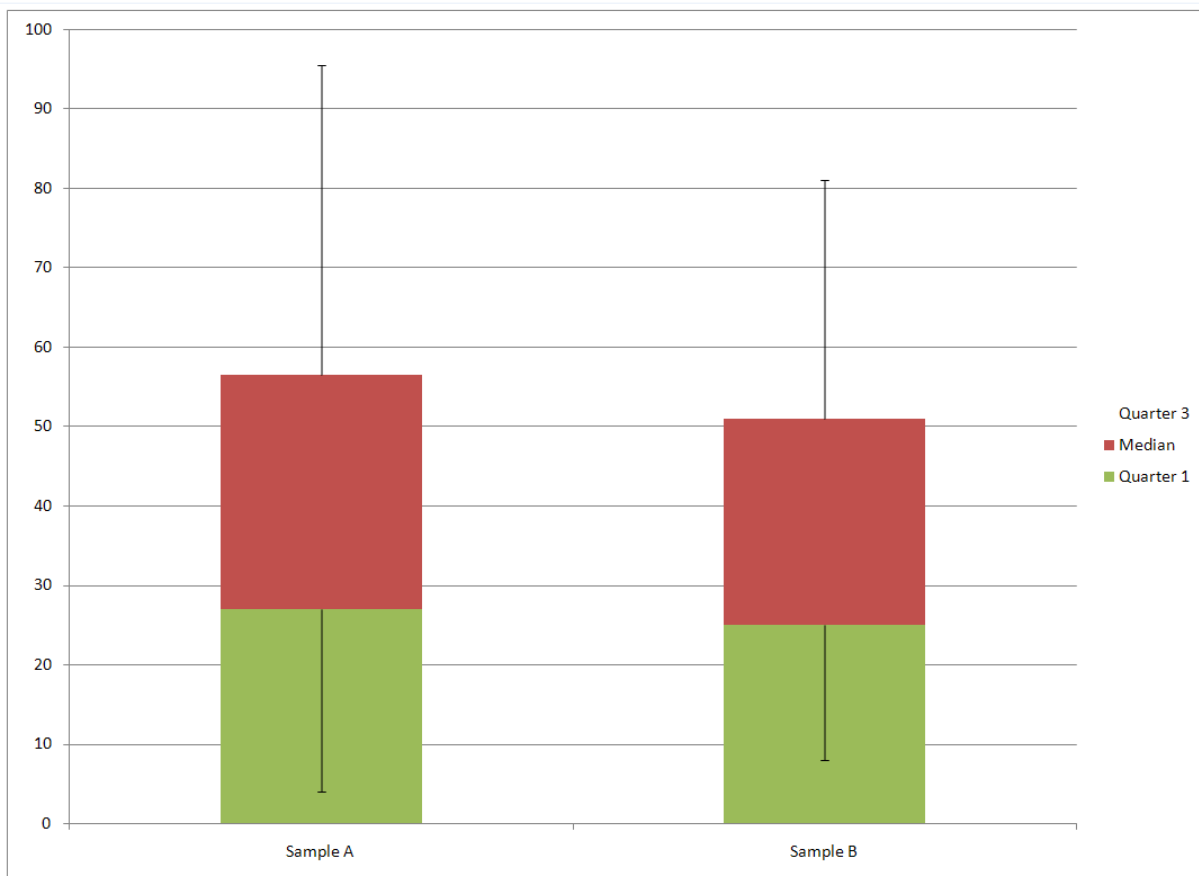
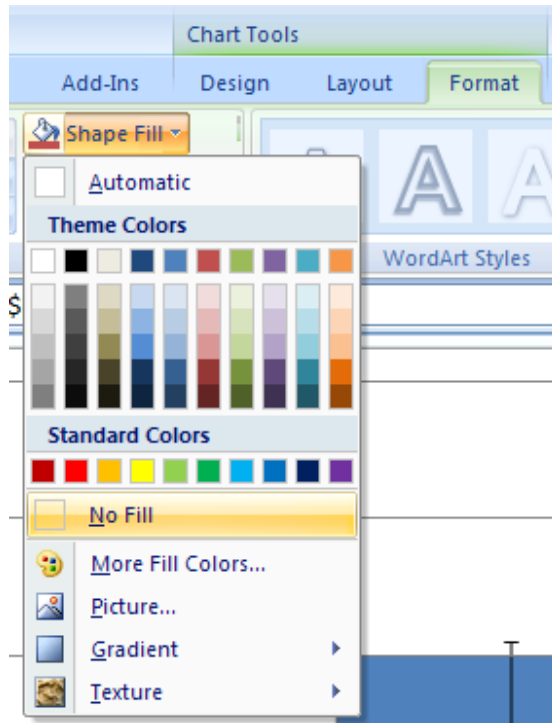
need to select the red part, where the Median located. And in **Display** we check **Plus** and **Error Amount** we select **Custom**, for the **Specify Value** we select the **Max** Value in our data set as the **Positive Error Value** and leave the Negative Error Value as it is.



Step 5

We have one last thing to do, which is eliminate the blue and green color,

where Quarter 1 and 3 located. To do this we first click on one of the color once, and go to **Design Tab** under the **Chart Tool** section. In the **Shape Fill** drop down list, we select **No Fill**. Then you will notice the graph become this:



Do the same thing for green color and delete the series name for Quarter 1 and 3.

Just click on Quarter 1 twice, and then hit delete key. The final graph should look like this.

