CREATING RUN CHARTS IN EXCEL

A step-by-step guide for anyone creating a run chart in MS Excel for the first time.

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*For Excel version 2013 (similar to Windows Excel 2010 and almost identical to Excel 2016)

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HOW TO CREATE A RUN CHART IN EXCEL (MS OFFICE USERS*)

1) Open Excel and enter the following column titles: **Timeframe** to be used (i.e. date, week #, month), **Data** (i.e. rate or data), **Baseline Median**, and **Goa**l

	A	B	C	D
1	Month	Rate	Baseline Median	Goal
2				

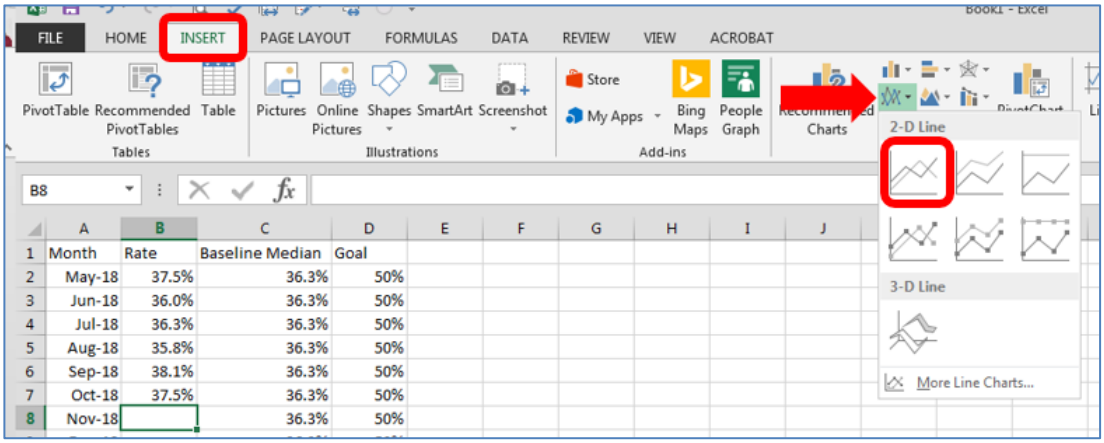
2) **Input the** timeframe **data** in the first column, to-date data (i.e. **rate**) you have in the 2nd column, **baseline median** in the 3rd column and **goal** in the last column

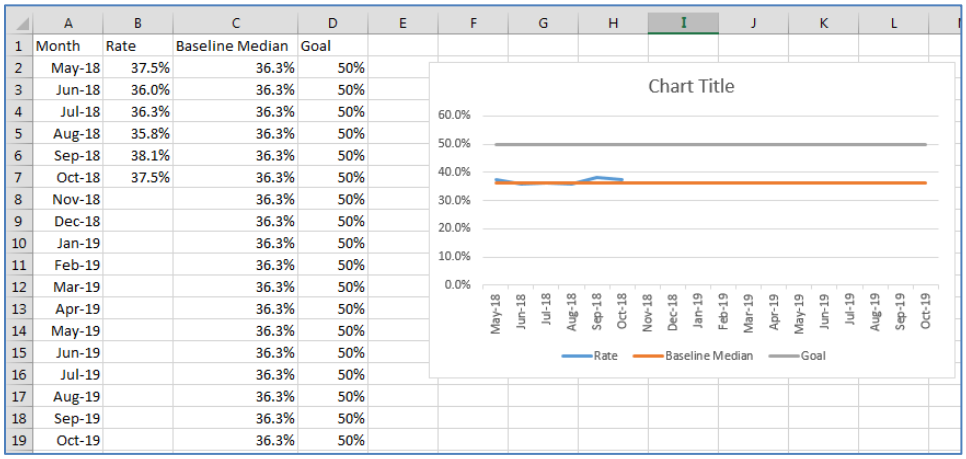
a) Notes: See the 'Calculating the Baseline Median' section for exactly how to calculate the baseline median. The goal is determined by the team

b) In the picture to the right, there is only data for the first 6 months of the run chart. The remaining data can be updated for each time period, as the data comes available

	A	B	C	D
1	Month	Rate	Baseline Median	Goal
2	May-18	37.5%	36.3%	50%
3	Jun-18	36.0%	36.3%	50%
4	Jul-18	36.3%	36.3%	50%
5	Aug-18	35.8%	36.3%	50%
6	Sep-18	38.1%	36.3%	50%
7	Oct-18	37.5%	36.3%	50%
8	Nov-18		36.3%	50%
9	Dec-18		36.3%	50%
10	Jan-19		36.3%	50%
11	Feb-19		36.3%	50%
12	Mar-19		36.3%	50%
13	Apr-19		36.3%	50%
14	May-19		36.3%	50%
15	Jun-19		36.3%	50%
16	Jul-19		36.3%	50%
17	Aug-19		36.3%	50%
18	Sep-19		36.3%	50%
19	Oct-19		36.3%	50%

3) Have a *single* cell selected somewhere *within one* of the 4 columns of data (see picture below). At the top of the Excel window, click on the **Insert** tab > click on the **Insert Line Chart** icon drop down > select the first **Line Chart** icon in the drop down. This will populate a chart in Excel for you (see bottom pic)

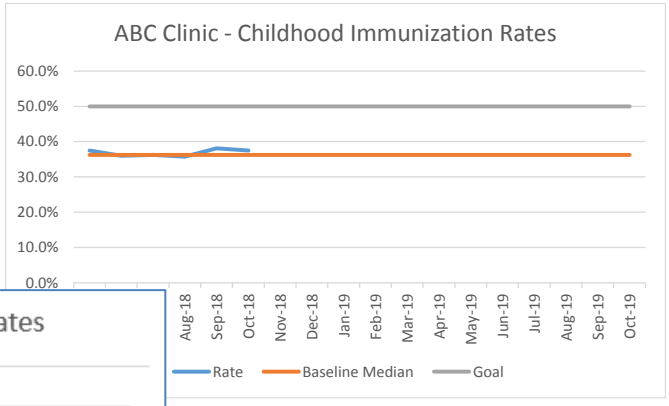




*For Excel version 2013 (similar to Windows Excel 2010 and almost identical to Excel 2016)

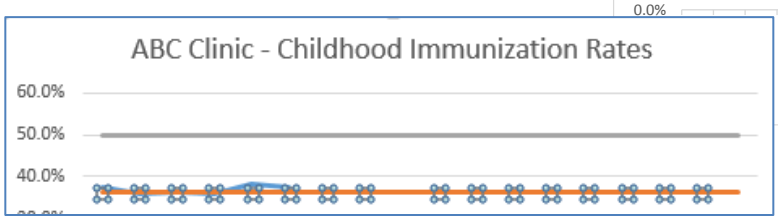
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4) **Click on the Chart Title** in the cart to edit the title:

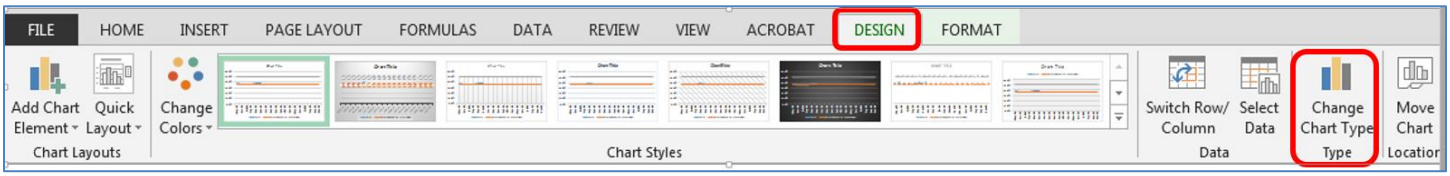


5) Add markers to your *data* in the chart:

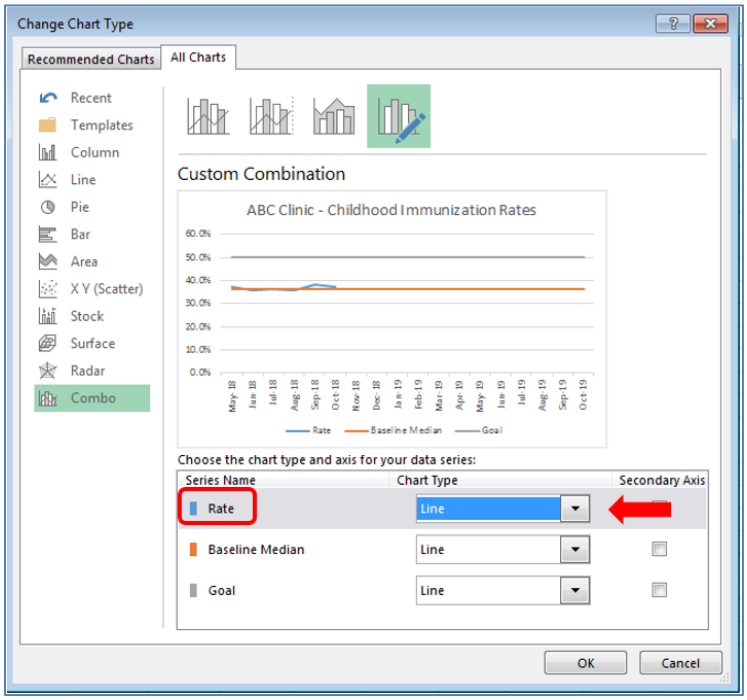
a) **Click on *any* line in your chart**, which will highlight data points on the chart



b) *With the highlighted points selected* (see above), go to the **Design** tab on the top of the Excel window > Select **Change Chart Type**



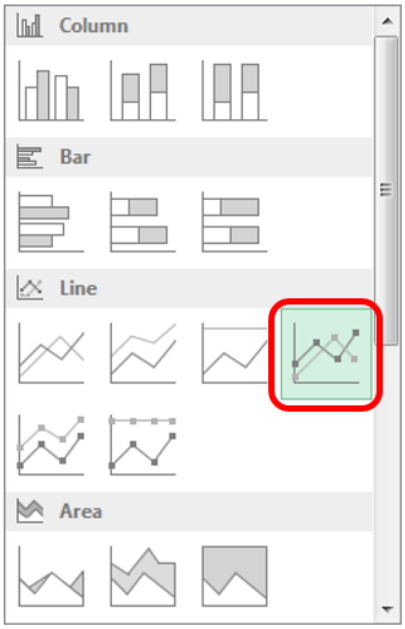
c) A new menu will open on your screen. **Go to Series Name column** at the bottom, locate the data/rate (the blue box), and **click the drop-down** for that data set only. This will pull up line styles



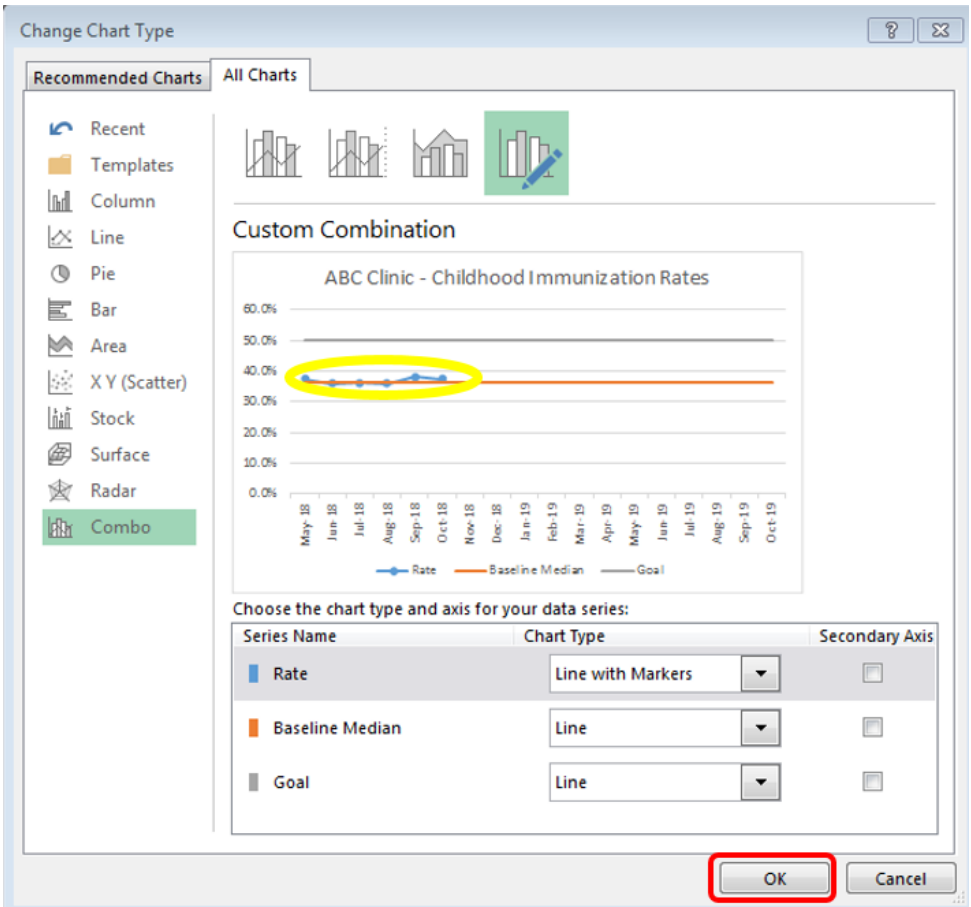
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d) Select the **Line with Markers** icon on the right



e) Your updated run chart will preview in the pop up. Click **OK**

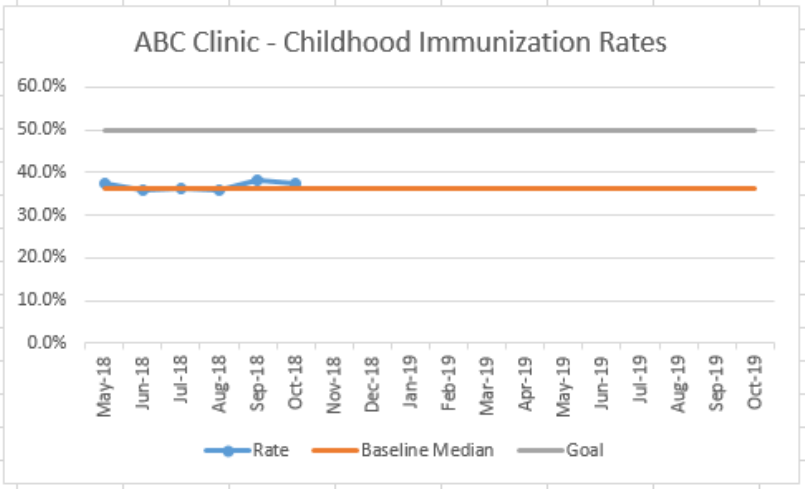


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6) **You run chart is completed!** Just update your data at each defined time period, and your run chart will automatically update. You can copy and paste the run chart into any other document – Word or PowerPoint

	A	B	C	D
1	Month	Rate	Baseline Median	Goal
2	May-18	37.5%	36.3%	50%
3	Jun-18	36.0%	36.3%	50%
4	Jul-18	36.3%	36.3%	50%
5	Aug-18	35.8%	36.3%	50%
6	Sep-18	38.1%	36.3%	50%
7	Oct-18	37.5%	36.3%	50%
8	Nov-18		36.3%	50%
9	Dec-18		36.3%	50%
10	Jan-19		36.3%	50%
11	Feb-19		36.3%	50%
12	Mar-19		36.3%	50%
13	Apr-19		36.3%	50%
14	May-19		36.3%	50%
15	Jun-19		36.3%	50%
16	Jul-19		36.3%	50%
17	Aug-19		36.3%	50%
18	Sep-19		36.3%	50%
19	Oct-19		36.3%	50%
20				



HOW TO CALCULATE THE BASELINE MEDIAN

1) **Identify all data points that occur prior to the first PDSA** (i.e. before any test of change has been completed). The rule of thumb is at least 5 data points (no action in Excel yet – Just know which data points you will be using to calculating the baseline)

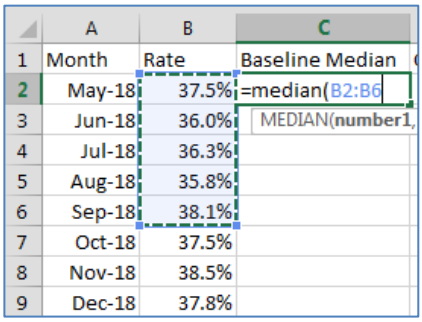
2) In the 'Baseline Median' column type in: **=median(**

	A	B	C	D
1	Month	Rate	Baseline Median	Goal
2	May-18	37.5%	=median(	
3	Jun-18	36.0%	MEDIAN(**number1**, [number2],	
4	Jul-18	36.3%		
5	Aug-18	35.8%		
6	Sep-18	38.1%		
7	Oct-18	37.5%		
8	Nov-18	38.5%		
9	Dec-18	37.8%		
10	Jan-19	39.0%		
11	Feb-19	38.8%		
12	Mar-19	39.0%		
13	Apr-19	39.5%		
14	May-19	42.0%		
15	Jun-19	40.5%		
16	Jul-19	40.0%		
17	Aug-19	43.0%		
18	Sep-19	42.0%		
19	Oct-19	41.0%		

*For Excel version 2013 (similar to Windows Excel 2010 and almost identical to Excel 2016)

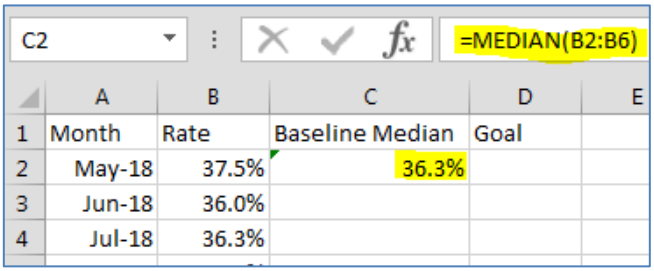
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3) Highlight the data cells that represent the baseline (prior to any test of change). This will update the formula to look something like this: **=median(B2:B6**



	A	B	C
1	Month	Rate	Baseline Median
2	May-18	37.5%	=median(B2:B6
3	Jun-18	36.0%	MEDIAN(number1,
4	Jul-18	36.3%	
5	Aug-18	35.8%	
6	Sep-18	38.1%	
7	Oct-18	37.5%	
8	Nov-18	38.5%	
9	Dec-18	37.8%	

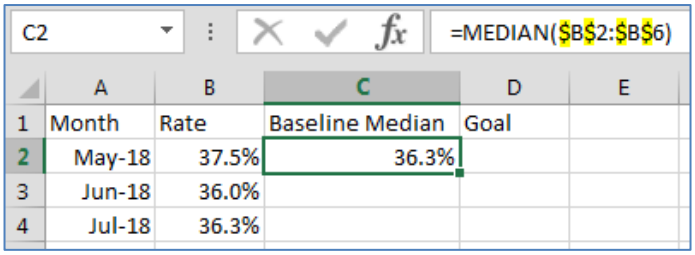
4) **Put in a closed parenthesis and hit enter**. This will provide you the median needed for your entire run chart. Note: While the data is displayed in the cell (36.3%), when you highlight that cell, you can see the actual formula in the formula bar



C2 =MEDIAN(B2:B6)

	A	B	C	D	E
1	Month	Rate	Baseline Median	Goal	
2	May-18	37.5%	36.3%		
3	Jun-18	36.0%			
4	Jul-18	36.3%			

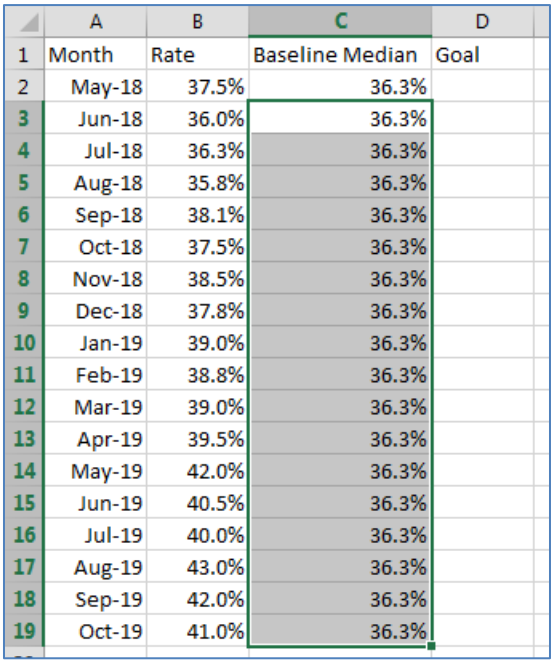
5) Edit the formula to lock the range for the calculation by **inserting dollar signs before each column letter and each row number**:



C2 =MEDIAN($B$2:$B$6)

	A	B	C	D	E
1	Month	Rate	Baseline Median	Goal	
2	May-18	37.5%	36.3%		
3	Jun-18	36.0%			
4	Jul-18	36.3%			

6) *Copy and paste the first cell with the formula down the range of dates*. Note: All data displayed in the 'baseline median' column should be exactly the same. If you are having trouble, you can always manually enter the baseline median calculated in the first cell into the remaining cells in the column



	A	B	C	D
1	Month	Rate	Baseline Median	Goal
2	May-18	37.5%	36.3%	
3	Jun-18	36.0%	36.3%	
4	Jul-18	36.3%	36.3%	
5	Aug-18	35.8%	36.3%	
6	Sep-18	38.1%	36.3%	
7	Oct-18	37.5%	36.3%	
8	Nov-18	38.5%	36.3%	
9	Dec-18	37.8%	36.3%	
10	Jan-19	39.0%	36.3%	
11	Feb-19	38.8%	36.3%	
12	Mar-19	39.0%	36.3%	
13	Apr-19	39.5%	36.3%	
14	May-19	42.0%	36.3%	
15	Jun-19	40.5%	36.3%	
16	Jul-19	40.0%	36.3%	
17	Aug-19	43.0%	36.3%	
18	Sep-19	42.0%	36.3%	
19	Oct-19	41.0%	36.3%	

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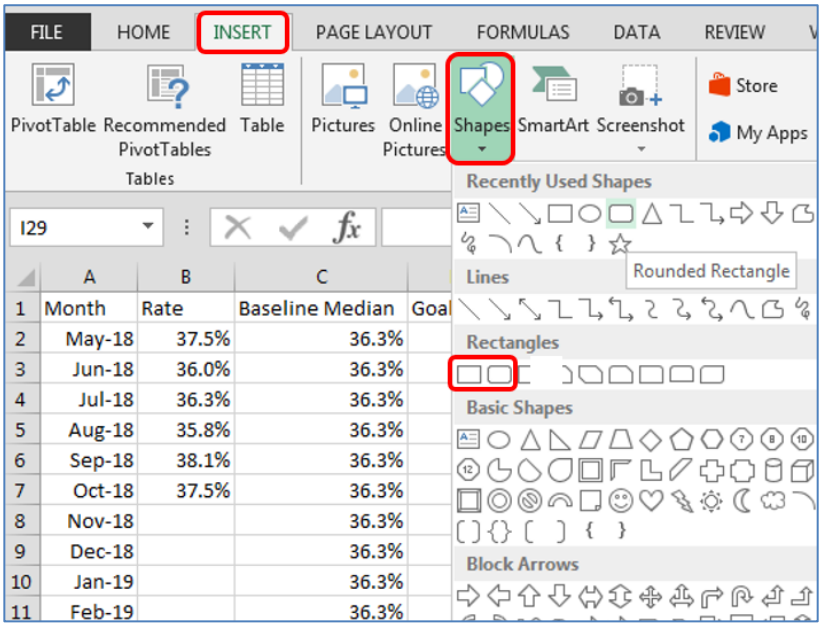
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ANNOTATING YOUR RUN CHART

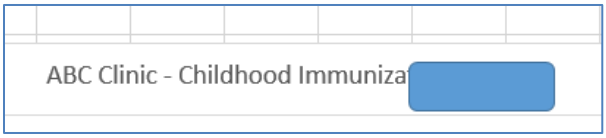
There are several ways to annotate your run charts to point out PDSA's or astronomical points. Several options are provided below.

Option #1 – Inserting Comments Box and Lines

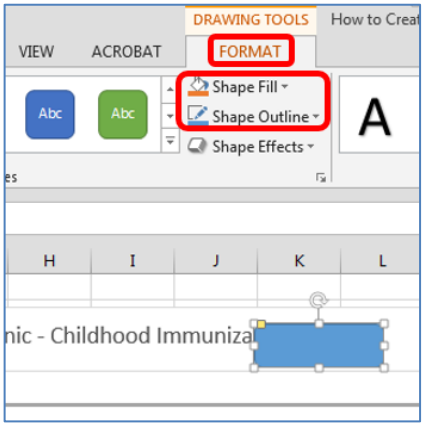
1) Go to the **Insert** tab > select the **Shapes** button > Select the shape you would like to put on the run chart and type a note into (rectangle recommended to the right)



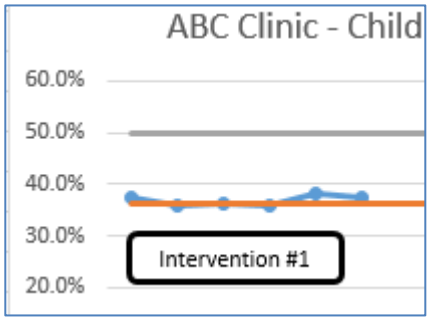
2) Once selected, your cursor will change from looking like an arrow to a plus sign (+). **Click**, **hold** and **drag your cursor** to create the initial comments bubble, which will be blue



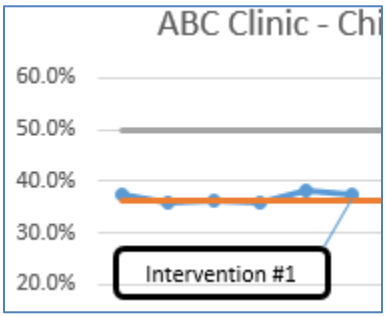
3) Once created, click on the comments bubble to select it, which will prompt a new, **Format** tab to appear > Change the **Shape Fill** to *No Fill* or *White* > Change the outline to your preferred color and outline weight to your desired width



4) **Place** your bubble where you would like to display it on your chart **and type in your annotation**. Note: If you type in and nothing appears, you will want to select the whole bubble and change the font color to black



5) Draw a line from the bubble to the data point you are connecting the bubble to. To do this, follow Ste #1 above and select a line instead of a rectangle

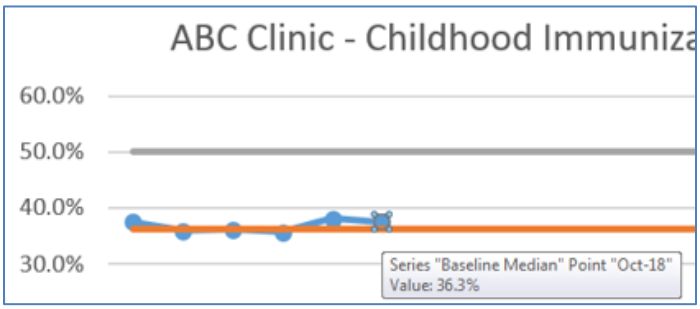


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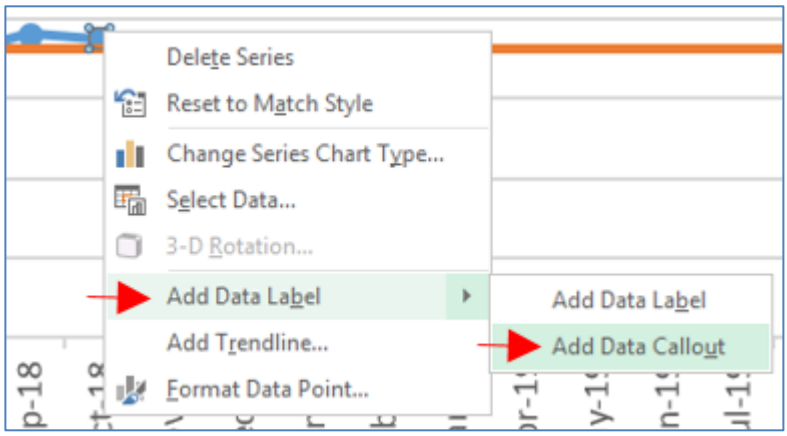
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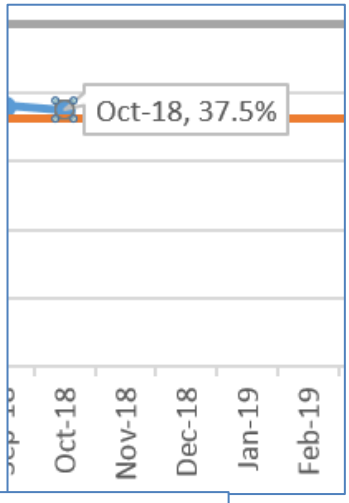
Option #2 – Inserting and Modifying the Data Label

1) **Click 2 times on the data point you would like to annotate** (First click will select all points on the line. The second click will change to only select the data point you have chosen)

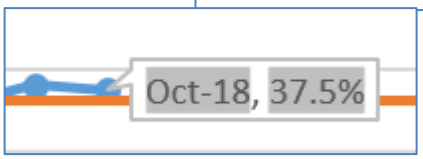


2) **Right click on the data point** > Select **Add Data Label** > Select **Add Data Callout**. The information about that data point will populate

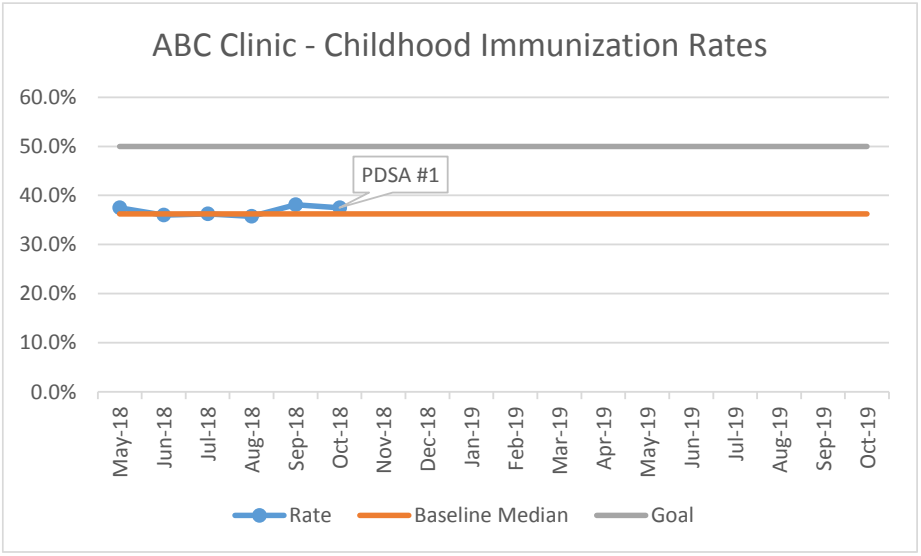




3) **Double-click the text** in the callout bubble, to make the text highlighted and editable



4) **Typeover/insert your the text** into annotation > **move the call out bubble** to an appropriate locate in your chart



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