Here are five ways to create confidence intervals using Excel 2013.

The first two methods can only be used for a single group
The last three methodscan be used for multiple groups

UPDATE AUTOMATICALLY

SINGLE GROUP ONLY

1A   In the Data Analysis toolkit, use the Descriptive Statistics comand   NO
1B   Use the Average, Stdev, Count and Confidence.T functions   YES

MULTIPLE GROUPS

2A   Use Average, Stdev and Count functions inside a Pivot Table   NO
2B   Use AverageIf and CountIf functions. Use Stdev(IF) in an array   NO*
2C   Use Data functions: Daverage, Dstdev and Dcount   YES

* The use of an array does not permit any change to the data referenced in that array.

CONCLUSION: What is the best way to create confidence intervals in Excel 2013?
        For a single group, use the Confidence (or Stdev and Count) and Average functions
        For multiple groups, use the Data functions: Daverage, Dstdev and Dcount

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
0	1	0	0	3	5	67	5
0	1	0	1	4	1	62	4
0	1	0	1	3	4	60	5
0	1	1	0	4	5	60	4
0	0	1	0	3	1	71	3
0	0	0	0	5	2	76	6
0	0	1	0	1	1	63	5
1	0	0	0	4	3	65	5
1	0	1	0	3	5	59	7
0	1	1	1	2	1	67	6
0	1	0	0	1	5	60	5
1	0	1	0	3	2	68	5
0	1	1	1	1	3	61	3
0	0	1	0	4	2	67	6
1	0	0	0	4	2	70	6
1	0	0	1	5	1	54	5
1	0	1	1	3	2	48	6
1	0	1	1	4	1	64	6
0	1	1	1	3	1	73	4
1	0	0	0	5	1	66	7
0	0	1	0	3	2	69	5
0	0	1	0	2	3	76	4
0	0	0	0	4	2	65	6
0	0	1	0	3	4	62	4
0	1	1	1	5	4	76	6
0	0	1	0	4	4	73	6
1	0	1	0	5	1	76	3
0	0	0	0	1	4	67	6
0	0	1	1	4	2	43	6
1	0	1	1	4	2	73	6
1	0	0	0	5	4	57	6
0	0	0	0	2	4	66	7
1	0	0	0	5	1	52	4

1A Single sample: Create Margin of Error using Descriptive Statistics command

Step-by-step instructions: www.StatLit.org/pdf/Excel2013-Create-Confidence-Intervals-Slides.pdf
Formatted data worksheet: www.StatLit.org/XLS/Excel2013-Create-Confidence-Intervals-Data.xlsx

Step-by-step instructions

1) From Data menu, select "Data Analysis".   Select "Descriptive Statistics.; Press OK.
   Select input range: A1:H241. Make sure to include row 1 with column headings.
   Check the check box: "Labels in first row"
   Under "Output Options", select radio button for "Output Range". Set range at J19
   Check boxes for "Summary statistics" and "Confidence Level..."   Press OK.

2) Move Question IDs over the associated numeric results (one col to the right)
Select and delete columns with repeated row descriptions: X, V, T, R, P, N and L.
Tighten column width so it prints on single page (landscape). Format as shown.
Confidence (bottom line) is margin of error -- it is not the confidence interval
   You could use this data to create the confidence interval (not required for this exercise)
   Confidence interval for Q1: From 0.46-0.06 to 0.46+0.06. From 0.40 to 0.52.

Row	J	K (Q1)	Q2	Q3	Q4	Q5	Q6	Q7	Q8
19		*Q1*	*Q2*	*Q3*	*Q4*	*Q5*	*Q6*	*Q7*	*Q8*
20									
	Mean	0.46	0.28	0.59	0.37	3.48	2.59	65.40	5.51
	Standard Error	0.03	0.03	0.03	0.03	0.08	0.09	0.76	0.08
	Median	0	0	1	0	4	2	65	6
	Mode	0	0	1	0	3	2	76	6
	Standard Deviation	0.50	0.45	0.49	0.48	1.21	1.42	11.79	1.16
	Sample Variance	0.25	0.20	0.24	0.23	1.46	2.03	139.08	1.36
	Kurtosis	-1.99	-1.03	-1.87	-1.70	-0.33	-1.22	0.39	0.21
	Skewness	0.17	0.99	-0.38	0.56	-0.57	0.43	0.34	0.15
	Range	1	1	1	1	4	4	66	6
	Minimum	0	0	0	0	1	1	34	3
	Maximum	1	1	1	1	5	5	100	9
	Sum	110	67	142	88	835	622	15697	1323
	Count	240	240	240	240	240	240	240	240
	Confidence Level(95%)	0.06	0.06	0.06	0.06	0.15	0.18	1.50	0.15

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
0	1	0	0	3	5	67	5
0	1	0	1	4	1	62	4
0	1	0	1	3	4	60	5
0	1	1	0	4	5	60	4
0	0	1	0	3	1	71	3
0	0	0	0	5	2	76	6
0	0	1	0	1	1	63	5
1	0	0	0	4	3	65	5
1	0	1	0	3	5	59	7
0	1	1	1	2	1	67	6
0	1	0	0	1	5	60	5
1	0	1	0	3	2	68	5
0	1	1	1	1	3	61	3
0	0	1	0	4	2	67	6
1	0	0	0	4	2	70	6
1	0	0	1	5	1	54	5
1	0	1	1	3	2	48	6
1	0	1	1	4	1	64	6
0	1	1	1	3	1	73	4
1	0	0	0	5	1	66	7
0	0	1	0	3	2	69	5
0	0	1	0	2	3	76	4
0	0	0	0	4	2	65	6
0	0	1	0	3	4	62	4
0	1	1	1	5	4	76	6
0	0	1	0	4	4	73	6
1	0	1	0	5	1	76	3
0	0	0	0	1	4	67	6
0	0	1	1	4	2	43	6
1	0	1	1	4	2	73	6
1	0	0	0	5	4	57	6
0	0	0	0	2	4	66	7
1	0	0	0	5	1	52	4

1B Single sample: Create Confidence Intervals using CONFIDENCE.T

Step-by-step instructions
1) R12: Input alpha (0.05): this is the amount of allowable sampling error.
2) R13: Enter sample size formula.
3) R16 and R17: Enter formula; Pull to the left to column K.
4) R19, R20, and R21: Enter formula; Pull to the left to column K
5) Format all decimal fractions as numeric with 2 digits after decimal

Row	J	K	L	M	N	O	P	Q	R	Formula in col S is for col R
12								Alpha	0.05	Manual Entry
13								Sample size	240	=COUNTA(A2:A241)
14										
15	Question	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Question
16	Average	0.46	0.28	0.59	0.37	3.48	2.59	65.4	5.51	=AVERAGE(H2:H241)
17	StDev Sample	0.50	0.45	0.49	0.48	1.21	1.42	11.79	1.16	=STDEV.S(H2:H241)
18	Stdev.S and confidence.T is most conservative									Enter dollar signs ($) as shown
19	Margin Error	0.06	0.06	0.06	0.06	0.15	0.18	1.50	0.15	=CONFIDENCE.T($R12,R17,$R13)
20	CnfInt: Up-Right	0.52	0.34	0.65	0.43	3.63	2.77	66.90	5.66	=R16+R19
21	CnfInt:Low-Left	0.39	0.22	0.53	0.31	3.33	2.41	63.90	5.36	=R16-R19

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
0	1	0	0	3	5	67	5
0	1	0	1	4	1	62	4
0	1	0	1	3	4	60	5
0	1	1	0	4	5	60	4
0	0	1	0	3	1	71	3
0	0	0	0	5	2	76	6
0	0	1	0	1	1	63	5
1	0	0	0	4	3	65	5
1	0	1	0	3	5	59	7
0	1	1	1	2	1	67	6
0	1	0	0	1	5	60	5
1	0	1	0	3	2	68	5
0	1	1	1	1	3	61	3
0	0	1	0	4	2	67	6
1	0	0	0	4	2	70	6
1	0	0	1	5	1	54	5
1	0	1	1	3	2	48	6
1	0	1	1	4	1	64	6
0	1	1	1	3	1	73	4
1	0	0	0	5	1	66	7
0	0	1	0	3	2	69	5
0	0	1	0	2	3	76	4
0	0	0	0	4	2	65	6
0	0	1	0	3	4	62	4
0	1	1	1	5	4	76	6
0	0	1	0	4	4	73	6
1	0	1	0	5	1	76	3
0	0	0	0	1	4	67	6
0	0	1	1	4	2	43	6
1	0	1	1	4	2	73	6
1	0	0	0	5	4	57	6
0	0	0	0	2	4	66	7
1	0	0	0	5	1	52	4

2A   Two subgroups: Create Confidence Intervals using a Pivot Table

Can't use Confidence function in a pivot table. Must use Z, StDev and Count

Insert Pivot table behaves like a command -- not a function! Data is not automatically updated

1. In cell N29, enter confidence level: 0.95
2. Select data in A1:B241. Insert pivot-table. **Output to existing sheet: K29.**
3. Use Q2 for column headings. Use Q1 for data values. Drag Q1 into values three times.
4. To get multiple data values to appear in same columns (multiple rows),
   drag "Σ Values" from Columns area to Rows area.
5. For data values, change "summarize values by" or "Value Field Settings":
   Change 1st Sum to Average; 2nd Sum to Stdev, 3rd Sum to Count
6. Create Margin of Error (N20), difference in proportions (N22) and confidence intervals (N23:N24)
   Don't reference pivot table cells by pointing. Reference them using column and row (E.g., N32)
   Pull N20 left to column L..   Pull N23:N24 left to column L.
7. Do confidence intervals overlap? Compare L23:L24 with M23:M24 for overlap.
   Is difference in proportions **statistically significant**? If no overlap, say "Yes"; otherwise "No".

Row	J	K	L	M	N	Formula for cell to the left
17	1	Go to Step 2	Confidence Level		0.95	Manual entry
18	**	** ** ** **	** ** ** ** **	** ** **	** ** **	** ** ** ** ** **
19			Q1 if Q2=0	Q1 if Q2=1	Q1	
20	6	Margin of Error	7%	12%	6%	=CONFIDENCE.NORM(1-$N17,N32,N33)
21			Pull N20 left ot L20.			Type cells (N32) -- do not point (Won't drag)
22		Difference in sample proportions.			3%	=ABS(M31-L31)
23		CI-Upper-Right	53%	60%	52%	=N31+N20 Pull N23 left to L23
24		CI-Lower-Left	38%	36%	40%	=N31-N20 Pull N24 left to L24
25		Note: Formulas in columns L and M are determined by those in column N				
26	7	Confidence Intervals overlap/touch?			YES	Manual entry.
27		Is difference statistically significant?			NO	Manual entry. Use overlap test
28	**	** ** ** **	** ** ** ** **	** ** **	** ** **	** ** ** ** ** **
29	2	Column Labels				
30		Values	0	1	Grand Total	
31	3	Average of Q1	0.45	0.48	0.46	
32	4	StdDev of Q1_2	0.50	0.50	0.50	
33	5	Count of Q1_3	173	67	240	
34						

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
0	1	0	0	3	5	67	5
0	1	0	1	4	1	62	4
0	1	0	1	3	4	60	5
0	1	1	0	4	5	60	4
0	0	1	0	3	1	71	3
0	0	0	0	5	2	76	6
0	0	1	0	1	1	63	5
1	0	0	0	4	3	65	5
1	0	1	0	3	5	59	7
0	1	1	1	2	1	67	6
0	1	0	0	1	5	60	5
1	0	1	0	3	2	68	5
0	1	1	1	1	3	61	3
0	0	1	0	4	2	67	6
1	0	0	0	4	2	70	6
1	0	0	1	5	1	54	5
1	0	1	1	3	2	48	6
1	0	1	1	4	1	64	6
0	1	1	1	3	1	73	4
1	0	0	0	5	1	66	7
0	0	1	0	3	2	69	5
0	0	1	0	2	3	76	4
0	0	0	0	4	2	65	6
0	0	1	0	3	4	62	4
0	1	1	1	5	4	76	6
0	0	1	0	4	4	73	6
1	0	1	0	5	1	76	3
0	0	0	0	1	4	67	6
0	0	1	1	4	2	43	6
1	0	1	1	4	2	73	6
1	0	0	0	5	4	57	6
0	0	0	0	2	4	66	7
1	0	0	0	5	1	52	4

2B Two sub-groups: Create Confidence Intervals using array functions

This approach uses only functions -- no commands. But one function is inside an array.

A function inside an array doe not permit any changes in the array data.

Step-by-step instructions:

1 Enter confidence level in L15.   Create Z-cutoff (2 tails) in cell N15.

2 M18: Enter AVERAGEIF function for Q1 when Q2=1. Drag left to L20. Replace =1 with =0.

3 M21: Enter STDEV of Q1 if Q2=1. **Enter using CTRL-SHIFT-ENTER**. Drag left. Change =1 to =0.

4 M24: Enter COUNTIF of Q1 for Q2=1. Drag left. Replace =1 with =0.

5 M25: Enter Margin of Error for Q1 when Q2=1. Drag left.

6 M27: Enter upper right end of Q1 confidence interval for Q2=1. Drag left.

M28: Enter lower-left end of Q1 confidence interval for Q2=1. Drag left.

7 M29: Do confidence intervals overlap or touch?   Compare L27:L38 with M27:M28.

M30: is difference in proportions statistically significant? If M29 = No, say "Yes", otherwise "No"

Row	J	K	L	M	N	
14						**Formula for cell to the left**
15	1	Confidence Level	0.95	Z (2 tail)	1.960	=NORM.S.INV(0.5+L15/2)
16						
17		L18: Change 1 to 0	**Q2=0**	**Q2=1**		Drag M19 to M18. Change =1 to =0
18	2	Q1 average	45%	48%		=AVERAGEIF($B2:$B241,"=1",$A2:$A241)
19				Pull left		
20		L21: Change 1 to 0				**Do not enter braces shown below!**
21	3	Q1 Stdev	50%	50%		{=STDEV(IF($B2:$B241=1,$A2:$A241))}
22				Pull left		**Use CTRL-SHIFT-ENTER to create braces!**
23		L24: Change 1 to 0				
24	4	Q1 sample size	173	67		=COUNTIF($B2:$B241,"=1") Pull left
25	5	Q1 Margin of Error	7%	12%		=$N15*M21/SQRT(M24) Pull left
26						
27	6	Q1 Cnf Int Up-Right	53%	60%		=M18+M25 Pull left
28		Q1 Cnf Int Low-Left	38%	36%		=M18-M25 Pull left
29	7	Overlap or touch?		YES		
30		Is difference stat. significant?		NO		Use overlap test
31		Change =1 to =0 in L19, L22 and L25.				
32						
33		If quantitative data, use T in N15.		1.970		=T.INV.2T(1-L15,COUNTA(A2:A241))

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	2C
0	1	0	0	3	5	67	5	
0	1	0	1	4	1	62	4	
0	1	0	1	3	4	60	5	
0	1	1	0	4	5	60	4	
0	0	1	0	3	1	71	3	
0	0	0	0	5	2	76	6	
0	0	1	0	1	1	63	5	
1	0	0	0	4	3	65	5	
1	0	1	0	3	5	59	7	
0	1	1	1	2	1	67	6	
0	1	0	0	1	5	60	5	
1	0	1	0	3	2	68	5	Row
0	1	1	1	1	3	61	3	14
0	0	1	0	4	2	67	6	15
1	0	0	0	4	2	70	6	16
1	0	0	1	5	1	54	5	17
1	0	1	1	3	2	48	6	18
1	0	1	1	4	1	64	6	19
0	1	1	1	3	1	73	4	20
1	0	0	0	5	1	66	7	21
0	0	1	0	3	2	69	5	22
0	0	1	0	2	3	76	4	23
0	0	0	0	4	2	65	6	24
0	0	1	0	3	4	62	4	25
0	1	1	1	5	4	76	6	26
0	0	1	0	4	4	73	6	27
1	0	1	0	5	1	76	3	28
0	0	0	0	1	4	67	6	29
0	0	1	1	4	2	43	6	30
1	0	1	1	4	2	73	6	31
1	0	0	0	5	4	57	6	32
0	0	0	0	2	4	66	7	33

Two sub-groups: Create Confidence Intervals using Data functions

This approach uses only functions -- no commands. A pivot table behaves like a command.

Step-by-step instructions:

1 M15: Enter confidence level. M16: Create Z-cutoff (2 tails).
2 M21: Enter DAVERAGEIF function for Q1 when Q2=1. Drag left to L21.
3 M22: Enter DSTDEV function of Q1 for Q2=1. Drag left to L22.
4 M23: Enter DCOUNT of Q1 for Q2=1. Drag left to L23.
5 M25: Enter Margin of Error for Q1 when Q2=1. Drag left to L25.
6 M27: Enter lower-left end of Q1 confidence interval for Q2=1. Drag left to L27.
   M28: Enter upper right end of Q1 confidence interval for Q2=1. Drag left to L28.
7 M30: Do confidence intervals overlap or touch?   Compare L27:L28 with M27:M28.
   M31: is difference in proportions statistically significant? If M30 = No, say "Yes", otherwise "No"

Row	J	K	L	M	N	
14						**Formula for cell to the left**
15			Confidence Level	0.95		Manual Entry
16			Z (2 tail)	1.960		=NORM.S.INV(0.5+M15/2)
17						
18		Q1	Q2	Q2		subgroups using Q2 data
19		Confidence Interval	0	1		
20						Enter formula and then drag left to column L
21		Average	0.45	0.48		=DAVERAGE($A$1:$H$241,"Q1",M$18:M$19)
22		Std. Deviation	0.50	0.50		=DSTDEV($A$1:$H$241,"Q1",M$18:M$19)
23		Count	173	67		=DCOUNT($A$1:$H$241,"Q1",M$18:M$19)
24						
25		95% Margin of Error	0.11	0.17		=$M16*SQRT(M22/M23)
26		Confidence Interval				
27		Lower Limit	0.35	0.31		=M21-M25
28		Upper Limit	0.56	0.65		=M21+M25
29						
30		Overlap		Yes		Manual entry (Yes or No)
31		Statistically-significant difference		No		Manual entry (Yes or No) Use overlap test
32						
33		If quantitative data, use T in M16.		1.97		=T.INV.2T(1-M15,COUNTA(A2:A241))