

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 1

Centered Stacked Bar-Charts for Even-Choice Ordinal Data

Milo Schield
Member: International Statistical Institute
US Rep: International Statistical Literacy Project
Director, W. M. Keck Statistical Literacy Project

Slides for Even # of Choices at: www.StatLit.org/pdf/Excel2013-Bar-Chart-Ordinal-Centered-Even-Slides.pdf

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 2

The Goal. The Data

Goal: Use Excel 2013 to create 100% stacked bar charts for ordinal data where each bar has an even number of choices and each bar is centered on its median.

This chart is not yet standard. For a review, see www.jstatsoft.org/v57/i05

Others name these bar-charts as diverging or sliding. We name these as 'centered' since their diverging and sliding forms are consequences of the centering.

The data spreadsheet is at www.StatLit.org/xls/Excel2013-Bar-Chart-Ordinal-Centered-Even-Data.xlsx

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 3

Steps to create 100% Bar chart: Ordinal Data, Centered & Even

Access Pre-formatted Data Worksheet:

1. Calculate Buffer amounts
2. Create 1st horizontal stacked 100% bar chart
3. Reverse columns and rows
4. Color buffer categories white
5. Clean up the graph
6. Eliminate white space; add bar descriptions
7. Eliminate horizontal (X) axis.

Upload completed worksheet.

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 4

0: Open Data worksheet

A	B	C	D	E	F	G	H
2							
3	Buffer1	SA	A	D	SD	Buffer2	
4		50%	35%	8%	7%		Question 1
5		70%	10%	10%	10%		Question 2
6		45%	30%	15%	10%		Question 3
7							
8		A=Agree; D = Disagree. Even # of choices.					
9		SA = Strongly Agree; SD = Strongly Disagree.					
10		No "Neutral"					

Data at www.StatLit.org/XLS/Excel2013-Bar-Chart-Ordinal-Centered-Even-Data.xlsx

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 5

1: Calculate Buffer Amounts

Enter formula in B4 and G4. Pull down to row 6.

A	B	C	D	E	F	G	H
2	SA = Strongly Agree; A=Agree; D=Disagree; SD = Strongly Disagree. No Neutral						
3	Buffer1	SA	A	D	SD	Buffer2	
4	15%	50%	35%	8%	7%	85%	Question 1
5		70%	10%	10%	10%		Question 2
6		45%	30%	15%	10%		Question 3
7							
8		B4 =100%-SUM(C4:D4)		G4 =100%-B4			
9		= E4 + F4					

V0A Excel2013: Create Centered Stacked 100% Bar Charts for Even-Choice Ordinal Data 6

2: Create Horizontal Stacked 100% Bar-Chart

Select A3:G6. Insert Chart/Horiz. Bar/2D Stacked 100%

The chart displays six horizontal stacked bars. From top to bottom, they are labeled Buffer2, SD, D, A, SA, and Buffer1. Each bar is composed of three segments: blue (left), orange (middle), and grey (right). The x-axis is labeled from 0% to 100% in 20% increments. A legend at the bottom identifies the colors as Series1 (blue), Series2 (orange), and Series3 (grey).

3: Reverse Columns & Rows

Right click on a data bar in the graph
Select "Select data". Select "Switch Row/Column".

4: Fill two Buffer categories with White

a. Right click on Buffer1. Select "Format Data Series"
b. Under "Format Shape", click on tipped paint bucket
c. Select Fill / Solid Fill / Color / White (Upper-left)

Repeat with Buffer2.

5: Clean up graph; Add Data Labels

a. Delete legend, Y-axis and gridlines. Add chart Title
b. Select Choice; Right-mouse; "Add Data Labels".

6: Eliminate White Spaces at Ends of Stacked Bars

Select X-axis. Right mouse. Select "Format Axis".
a. Set Minimum at $\text{MIN}(\text{Buffer1})/2 = 0.075$.
b. Set Maximum at $0.50 + [\text{MAX}(\text{Buffer1})/2] = 0.625$

7: Add titles for bars. Delete X-Axis

Summary

These centered 100% stacked bar charts aren't common.

But using traditional (un-stacked) bar charts

1. with separated bars treats ordinal data as categorical.
2. with touching bars treats ordinal data as quantitative.

There is no indication that these bars must sum to 100%. Stacked bar charts show that the total must be 100%.

Sources: www.jstatsoft.org/v57/i05
<http://stephanieevergreen.com/diverging-stacked-bars/>

Centered Stacked Bar-Charts for Even-Choice Ordinal Data

Milo Schield

Member: International Statistical Institute

US Rep: International Statistical Literacy Project

Director, W. M. Keck Statistical Literacy Project

Slides for Even # of Choices at: www.StatLit.org/pdf/Excel2013-Bar-Chart-Ordinal-Centered-Even-Slides.pdf

The Goal. The Data

Goal: Use Excel 2013 to create 100% stacked bar charts for ordinal data where each bar has an even number of choices and each bar is centered on its median.

This chart is not yet standard. For a review, see www.jstatsoft.org/v57/i05

Others name these bar-charts as diverging or sliding. We name these as ‘centered’ since their diverging and sliding forms are consequences of the centering.

The data spreadsheet is at www.StatLit.org/xls/Excel2013-Bar-Chart-Ordinal-Centered-Even-Data.xlsx

Steps to create 100% Bar chart: Ordinal Data, Centered & Even

Access Pre-formatted Data Worksheet:

1. Calculate Buffer amounts
2. Create 1st horizontal stacked 100% bar chart
3. Reverse columns and rows
4. Color buffer categories white
5. Clean up the graph
6. Eliminate white space; add bar descriptions
7. Eliminate horizontal (X) axis.

Upload completed worksheet.

0: Open Data worksheet

A	B	C	D	E	F	G	H
2							
3	Buffer1	SA	A	D	SD	Buffer2	
4		50%	35%	8%	7%		Question 1
5		70%	10%	10%	10%		Question 2
6		45%	30%	15%	10%		Question 3
7							
8		A=Agree; D = Disagree. Even # of choices.					
9		SA = Strongly Agree; SD = Strongly Disagree.					
10		No "Neutral"					

Data at www.StatLit.org/XLS/

Excel2013-Bar-Chart-Ordinal-Centered-Even-Data.xlsx

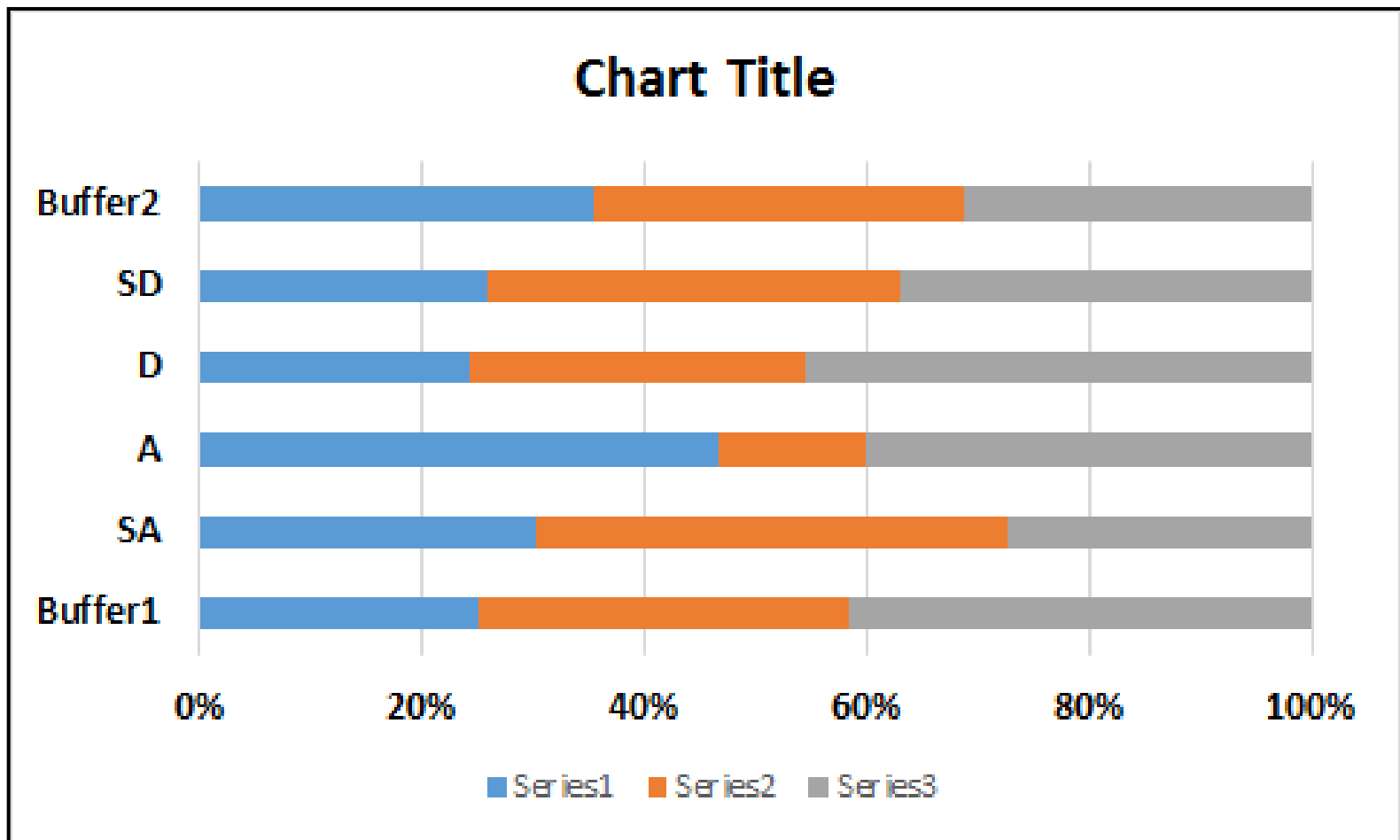
1: Calculate Buffer Amounts

Enter formula in B4 and G4. Pull down to row 6.

A	B	C	D	E	F	G	H
2	SA = Strongly Agree; A=Agree; D=Disagree; SD = Strongly Disagree. No Neutral						
3	Buffer1	SA	A	D	SD	Buffer2	
4	15%	50%	35%	8%	7%	85%	Question 1
5		70%	10%	10%	10%		Question 2
6		45%	30%	15%	10%		Question 3
7							
8	B4 =100%-SUM(C4:D4)			G4 =100%-B4			
9	= E4 + F4						

2: Create Horizontal Stacked 100% Bar-Chart

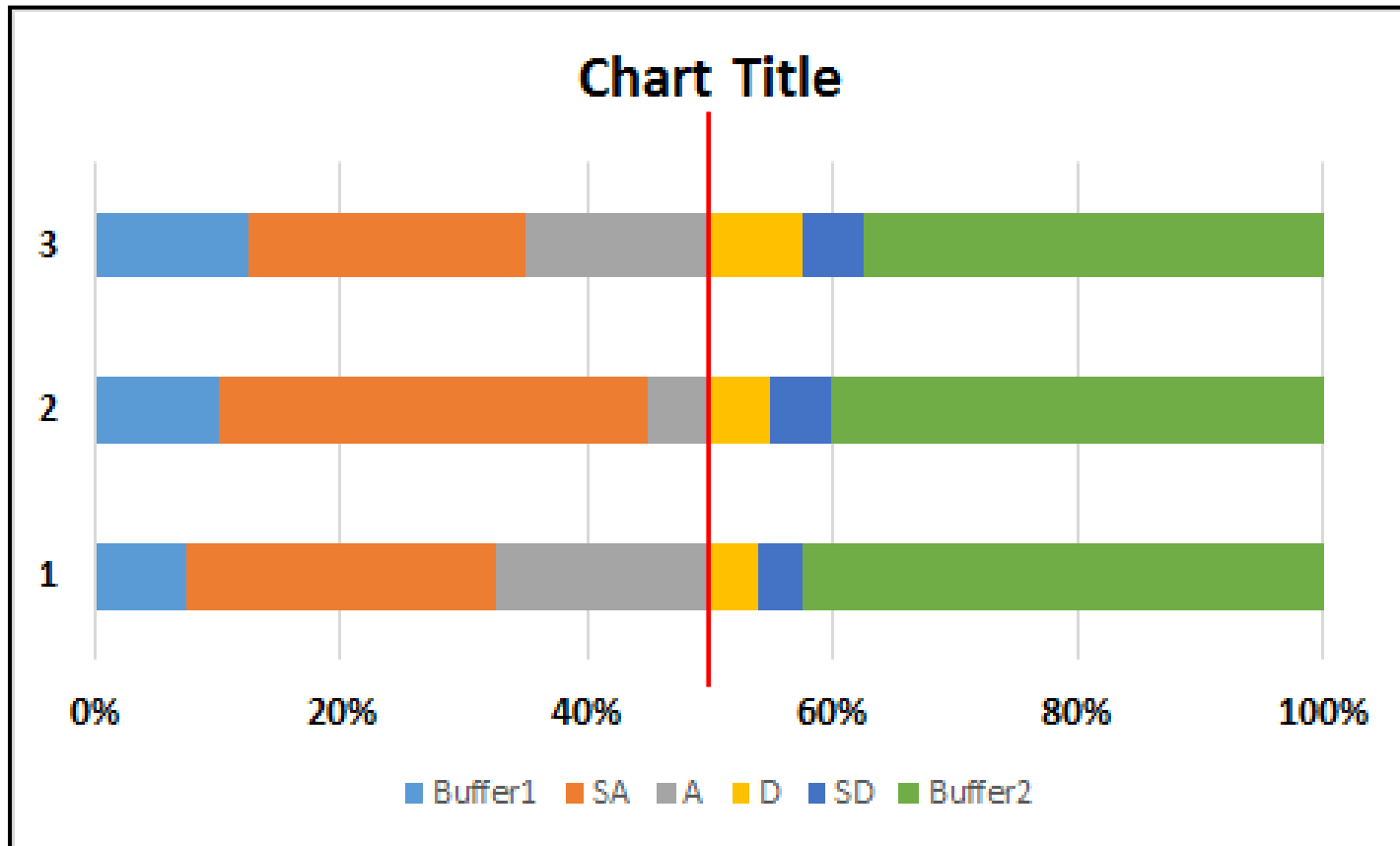
Select A3:G6. Insert Chart/Horiz. Bar/2D Stacked 100%



3: Reverse Columns & Rows

Right click on a data bar in the graph

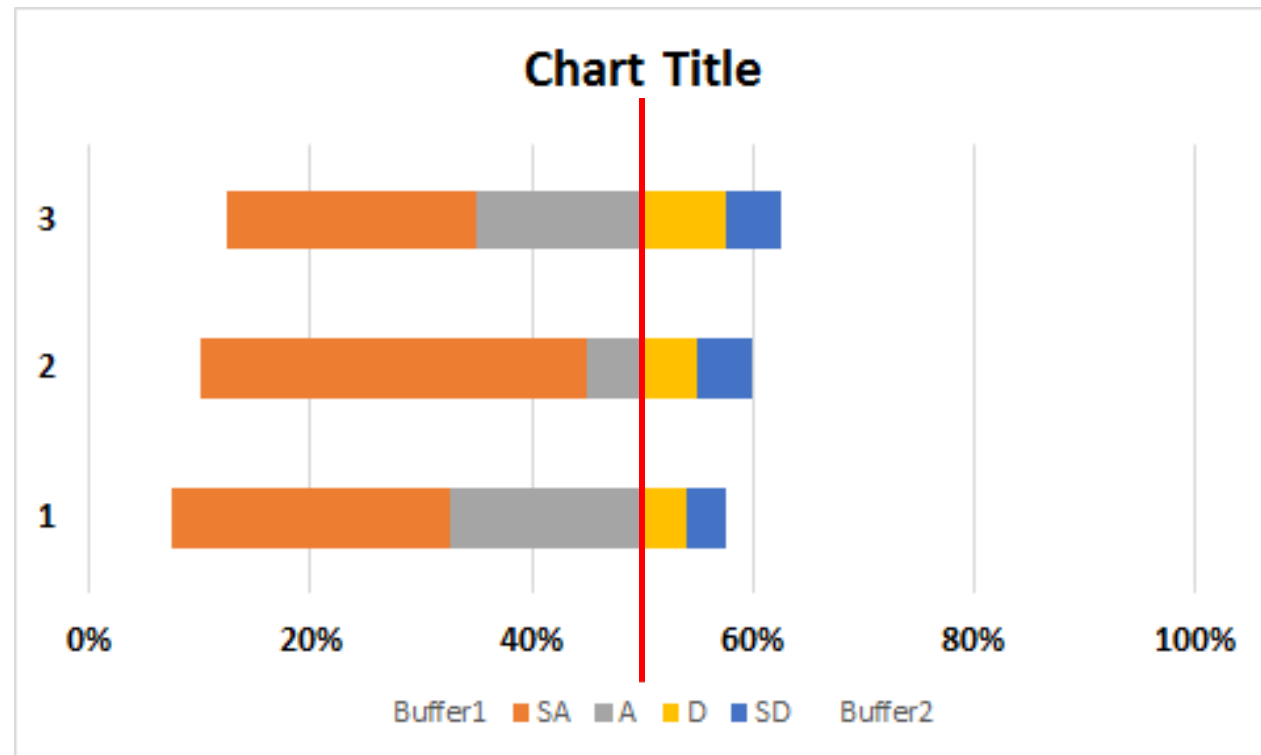
Select “Select data”. Select “Switch Row/Column”.



4: Fill two Buffer categories with White

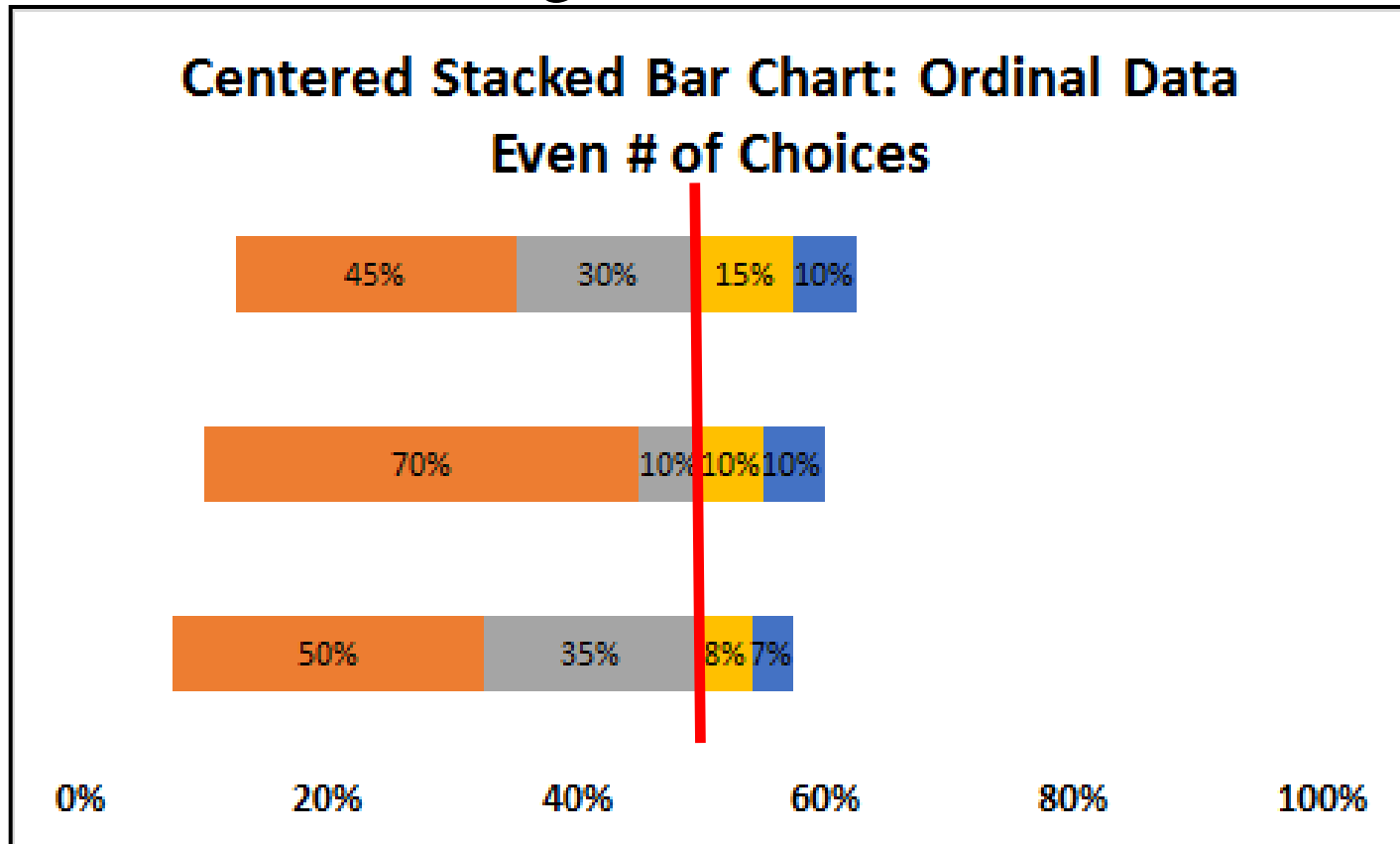
- Right click on Buffer1. Select “Format Data Series”
- Under “Format Shape”, click on tipped paint bucket
- Select Fill / Solid Fill / Color / White (Upper-left)

Repeat
with
Buffer2.



5: Clean up graph; Add Data Labels

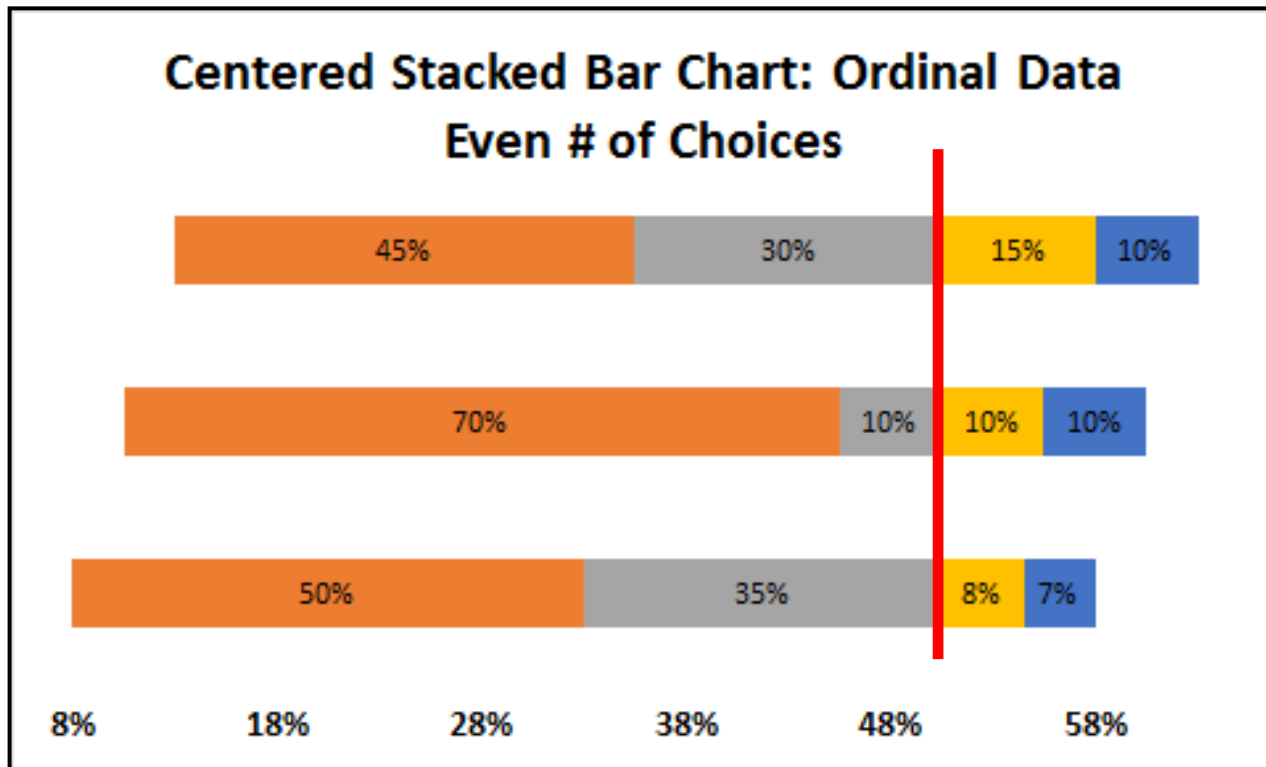
- Delete legend, Y-axis and gridlines. Add chart Title
- Select Choice; Right-mouse; “Add Data Labels”.



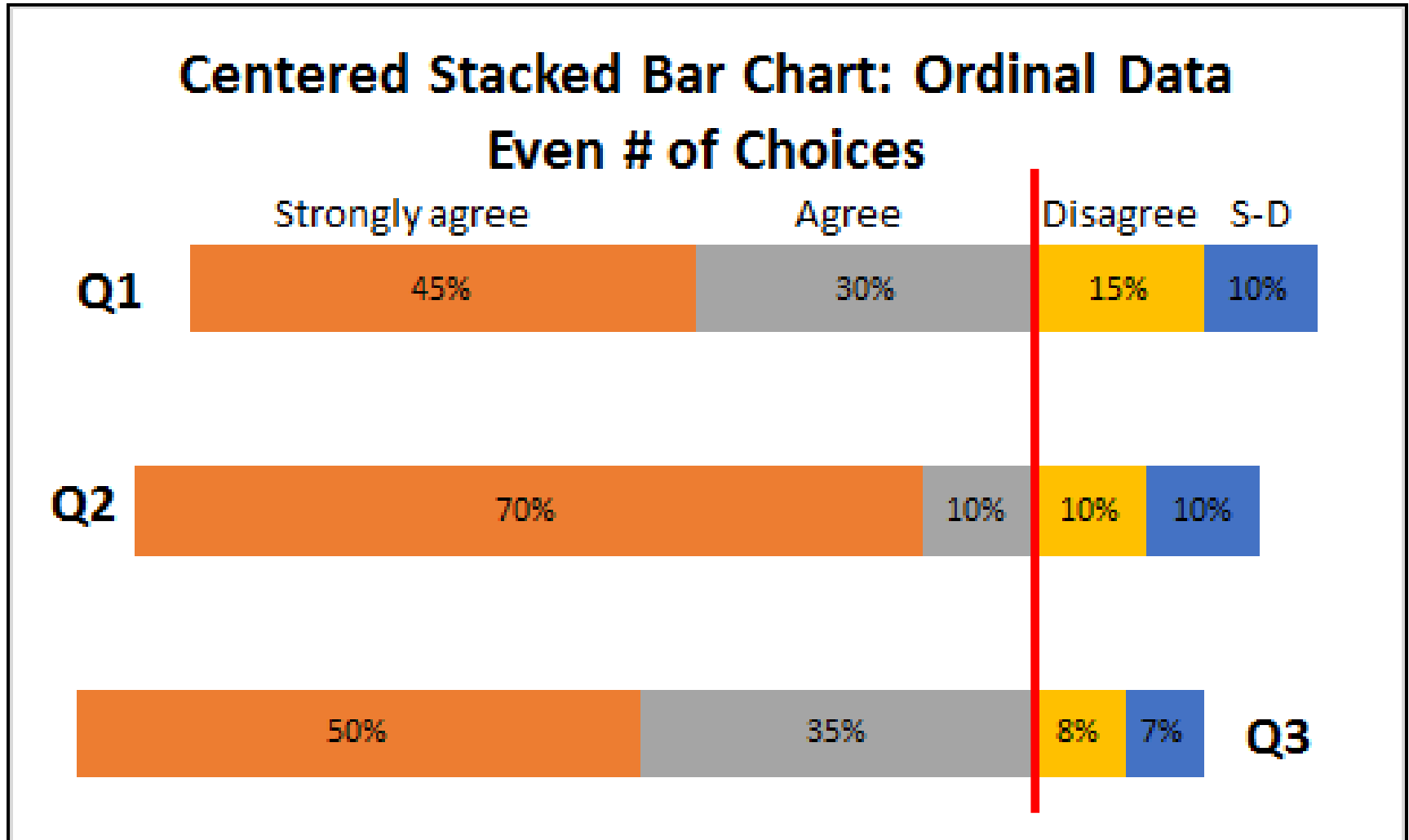
6: Eliminate White Spaces at Ends of Stacked Bars

Select X-axis. Right mouse. Select “Format Axis”.

- Set Minimum at $\text{MIN}(\text{Buffer1})/2 = 0.075$.
- Set Maximum at $0.50 + [\text{MAX}(\text{Buffer1})/2] = 0.625$



7: Add titles for bars. Delete X-Axis



Summary

These centered 100% stacked bar charts aren't common.

But using traditional (un-stacked) bar charts

1. with separated bars treats ordinal data as categorical.
2. with touching bars treats ordinal data as quantitative.

There is no indication that these bars must sum to 100%.

Stacked bar charts show that the total must be 100%.

Sources: www.jstatsoft.org/v57/i05

<http://stephanieevergreen.com/diverging-stacked-bars/>