This chapter shares a menu of options for displaying survey data, including ranking, rating, and check-all-that-apply questions. I’ll show you common visualization options, point out what the critics say about them, and offer possible solutions and alternatives that might better meet your communication needs. Our goal here is to present survey data so that readers can better understand survey respondents and effectively use the data to take more informed action.

Rating scales are usually shown in a stacked bar graph, which poses some significant obstacles to being seen as reader friendly. However, there are some options: design it thoughtfully with an intentional color scheme and order, or convert the data to another graph type.
A diverging stacked bar graph repositions Likert scale data so that it diverges around a central point, with the positive affect falling out to one side and the negative affect falling out to the other. It handles some of the criticisms of the regular stacked bar graph by making it easier to compare the middle values in your rating scale.

Breaking the data out into small multiples is another possibility that is particularly useful when one really wants to compare each of the response options in a rating scale. Each response option will essentially appear on its own baseline, making comparisons a snap.

Even though a rating scale might have an obnoxious nine response options that doesn’t mean we have to report on all of them. Often, our audience doesn’t care about the difference between “agree” and “somewhat agree.” If we aggregate the similar responses and graph those larger groups, then the traditional stacked bar doesn’t appear so cumbersome.

One of these alternatives will fit your rating data; but, ranking data is a different story.

The simplest way to show ranking data is through a column or bar chart, ordered by frequency from greatest to least. These charts work just fine, most of the time. When do they fall short? Well, when the values in your dataset are all high, such as in the 80% to 90% range (out of 100%). Then, a chart with a set of tall columns can be visually aggressive. In that case, try a lollipop graph, which looks like its name—a dot for the value, that sits on top of a stick, connecting the dot to an axis.

Another way to handle ranking data is to isolate the top three or five items with the highest ranking and assign an icon or picture to each item. The pair the icon with the corresponding percentage in a large, interesting font and you could be all set.

Branching questions are a whole different animal because their structures are questions, within questions, within questions. For shallow branching, you can get away with an annotation inside another graph. For deeper branching, try a nested map that visualizes a whole series of branched questions, one inside the other.

Finally, this chapter addresses the three ways to visually handle not applicable data:

1. If the missing data are small and consistent, just note this in the subtitle.
2. If the missing data are large and consistent, add the sample size to your data labels.
3. If the missing data are large and inconsistent, graph them off to the side.

This is one hefty chapter and by the end your ninja skills are going to be off the charts (or, literally, on the charts).

**WHAT STORIES CAN BE TOLD ABOUT WHAT THE SURVEY SAYS?**

Goodness knows, it seems as if every other phone call on a landline is someone with a survey. This type of call is so widespread because a survey remains one of the best ways to systematically discover the opinions of representatives of a group. Surveys have been conducted on every topic imaginable, so stories can include these variations:

- Respondents said Option A was most favorable
- Most of the respondents had a negative view of our service
Of the options we gave, respondents liked X, H, and O best
Customers said our top three services are resume coaching, mentor matching, and job skills training
Polls showed that 47% of the students knew a Hispanic/Latino who dropped out of school
Citizens believe A & J will be good candidates

Survey data tell the story of what people think, feel, do, or believe.

HOW CAN I VISUALIZE WHAT THE SURVEY SAYS?

So much of the decision making in the chapter leans on the survey question type. We walk through options for ranking, rating, and branching question types. Be sure to check out the resources at the end of this chapter for color, which is very important in our examples, and some visualization support for specialized question types, such as network analysis.

RATING

Rating questions come in two basic forms: those that have sequential response options (think Poor to Excellent) and those that are diverging (such as Strongly Disagree to Strongly Agree and other Likert-types). We can use similar graph types to visualize these two kinds of questions, with minor tweaks for better emphasis.

STACKED BAR

A stacked bar graph can be a reliable friend. Most of the time, when reporting on percentages that make up a whole, stacked bars can be trusted to come through for you. But, sometimes just like your best friends, stacked bars show up to the party loud and confused, wearing a little too much makeup. Let’s look at how to tame them into being supportive of your rating dataset.

Default stacked bar graphs often look like Figure 5.1.

Sit down and drink some water, default stacked bar. What’s going right is that it is easy to see that all of the yes, sorta, and no responses add up to 100%. Good! It’s easy to see that we asked seven questions in this section of the survey. I don’t really know if that’s important. But, I’m working hard to pull out anything good from this visual. The stacked bar as a graph type isn’t all that bad, it just needs some formatting help.

The common criticism about stacked bars is that they can be hard to interpret. Let’s say you were mostly curious about the students in the middle of this stacked bar, those who said “sorta.” While we are good at judging the length of bars, it can be hard to compare the sorta responses for each survey question because they don’t share a common baseline. In the example, do you think there are more students who reported sorta on “I see leadership opportunities for Latino/Hispanic youth” or for “My close friends have volunteered in the past 12 months”? It’s even harder to tell because the default color scheme assigned by Excel doesn’t distinguish the segments from one another all that well. On top of that, we have a disconnected legend that does little to help us understand what each segment represents (especially in black and white, right?).
While we can’t completely eliminate all of those problems with the stacked bar, the suggestions in this section can address the ones that are the most offensive.

One way to handle these issues is to rock the formatting of the traditional stacked bar. Same data, better told.

Tweak 1: Sort the questions from greatest to least on the category that matters the most to your audience. In this case, we are assuming that is the yes data. Others would be more likely to focus on the no data, especially in business and sales. Sorting the data makes it easier for readers to quickly assess what was most often reported and least often reported in this dataset. The typical stacked bar has no intentional sort order—it’s commonly the order that the questions were asked on the survey. The thing is, readers don’t care about the order of the questions on the survey! If you sort your data table from smallest to greatest on your category of interest, Excel will graph your data greatest to least.

Tweak 2: Apply a sequential color scheme. Recolor each segment of the stack from darkest to lightest shades of one color. I usually apply lightest color to the category of least importance (the no data, in this case). Matching a sequential color scheme to sequential data makes sense to readers and can help them mentally group the yes data and the sorta data if they want to. It also holds up better when reprinted in black and white.
**Tweak 3: Reposition the legend.** When the bar segments are horizontal, but the default legend is vertical, it makes the readers volley through a bunch of mental gymnastics to connect the information and interpret the graph. In this case, I just deleted the legend and inserted textboxes above each segment in the stacked bar. I linked the textboxes to the corresponding cells in my table. Remember how to do that?

Insert a textbox. It will have a dashed line border and a blinking cursor (Figure 5.3), waiting for your words. Click on the border of the textbox so the dashed lines become solid (Figure 5.4).

Then go straight to the formula bar in Excel and type in an equals sign (Figure 5.5). Then head to the cell in your table with the label you want to insert. In this case, it’s the label that says yes. Click inside that cell. Excel will add that cell’s location to the formula bar, right after your equals sign.

Hit Enter and your textbox will populate with the label. From there, you should change the color of the word yes so that it matches the color of the yes segments in the stacked bar below it. You can reposition the textbox as needed, too. That kind of flexibility doesn’t come with a default legend. So, if the legend isn’t working for you to maximize your graph, try linked textboxes instead.

**Figure 5.2** Slight tweaks make the standard stacked bar chart easier to interpret.

---

**Students volunteer more than they hold actual leadership positions.**

There’s a gap between seeing leadership opportunities and actually holding them.

- I enjoy doing kind acts for others.
- I am working on my leadership skills.
- I see leadership opportunities for Latino/Hispanic youth.
- My close friends have volunteered in the past 12 months.
- I try to find time to make a difference in my community.
- I have volunteered for a community organization in the past 12 months.
- I hold a leadership position in my school or community.
**Figures 5.3 and 5.4**  Click on the border of the textbox until it changes from dashed to a solid line.

**Figure 5.5**  Type an equals sign in the formula bar.

Students volunteer more than they hold actual leadership opportunities and they enjoy doing kind acts for others.
Those tweaks go a long way in making the default stacked bar work its best for your sequential data. The same strategies can help diverging response options, too. The only extra consideration involves the color-coding tweak. For diverging datasets, use a diverging color scheme. You’ll need two shades of two colors and a neutral color for neutral.
One end of the response set is cast in blues, with the darker blue on the outside and the lighter blue on the inside. The other end of the stacked bar gets two shades of another color (see Figure 5.7). Neutral is in a light gray. This works even better with culturally associated color schemes. In the United States, reds and oranges are viewed as more negative, so use them on the disagree side of the data. Blues tend to be seen as more positive.

FIGURE 5.7 Apply the darkest colors of each shade to the more strongly felt sentiments.

I like exploring my data.
I like working with Excel.
I like talking about my data with others.
I consider myself an Excel ninja.

I pulled the color schemes for several of the graphs in this section from ColorBrewer2.com. It is a website developed by Cynthia Brewer's team, designed for cartographers (mapmakers!) who deal with situations where they need several colors to be distinguishable when placed right up next to one another. The examples in this chapter don’t have anything to do with maps, but we can use the same tools because our data segments also touch each other. ColorBrewer has color schemes for both sequential and for diverging datasets. The website gives you the full color scheme, along with the RGB (Red, Green, Blue) color codes you need to customize your graph inside Excel.

SMALL MULTIPLES

The previous tweaks get us further away from the loud and obnoxious default stacked bar, but I’m still unsettled because they don’t entirely solve the problem of the difficulty comparing those middle values. This example and the next can give you a lift here. Let’s start with small multiples and apply it to the yes/sorta/no data from earlier. We are going to use ninja skills to break up the stacked bar into three sets of regular bars, all in the same graph.
We could simply make three separate bar graphs, one for the yes data, one for the sorta data, and one for the no data. That could be totally fine if that’s all the ninja skill you are up for today. The downside to that situation is the fidgeting you have to do to align all the graphs and labels and the care with which you must copy and paste them so they hang together as one visual. This next method takes a little more behind the scenes work, but it keeps the visuals in one tidy place.

We are going to use secret buffer columns. My table is in Figure 5.8.

**Figure 5.8** Insert a column next to each actual data column in your table.

<table>
<thead>
<tr>
<th>Yes</th>
<th>Yes Buffer</th>
<th>Sorta</th>
<th>Sorta Buffer</th>
<th>No</th>
<th>No Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>I hold a leadership position in my school or</td>
<td>22%</td>
<td>32%</td>
<td>46%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I have volunteered for a community org in th</td>
<td>34%</td>
<td>45%</td>
<td>21%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I try to find time to make a difference in my c</td>
<td>38%</td>
<td>57%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My close friends have volunteered in the ps</td>
<td>45%</td>
<td>39%</td>
<td>16%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I see leadership opportunities for Latino/His</td>
<td>47%</td>
<td>39%</td>
<td>13%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am working on my leadership skills.</td>
<td>50%</td>
<td>32%</td>
<td>18%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I enjoy doing kind acts for others.</td>
<td>60%</td>
<td>35%</td>
<td>5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

My actual data are separated by a column I inserted next to each. Those inserted columns are for my secret ninja buffer data. Each actual data column gets its own buffer buddy next door. Together, the data column and its buffer buddy need to add up to 100%.

See how the yes data and the yes Buffer data add up to 100% for each survey question (see Figure 5.9)? Compute this for each data and buffer duo.

**Figure 5.9** Subtract 100% from each value in your actual data column and put the remainder in the buffer column.

<table>
<thead>
<tr>
<th>Yes</th>
<th>Yes Buffer</th>
<th>Sorta</th>
<th>Sorta Buffer</th>
<th>No</th>
<th>No Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>I hold a leadership position in my school or</td>
<td>22%</td>
<td>78%</td>
<td>32%</td>
<td>46%</td>
<td></td>
</tr>
<tr>
<td>I have volunteered for a community org in th</td>
<td>34%</td>
<td>66%</td>
<td>45%</td>
<td>21%</td>
<td></td>
</tr>
<tr>
<td>I try to find time to make a difference in my c</td>
<td>38%</td>
<td>62%</td>
<td>57%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>My close friends have volunteered in the ps</td>
<td>45%</td>
<td>55%</td>
<td>39%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>I see leadership opportunities for Latino/His</td>
<td>47%</td>
<td>53%</td>
<td>39%</td>
<td>13%</td>
<td></td>
</tr>
<tr>
<td>I am working on my leadership skills.</td>
<td>50%</td>
<td>50%</td>
<td>32%</td>
<td>18%</td>
<td></td>
</tr>
<tr>
<td>I enjoy doing kind acts for others.</td>
<td>60%</td>
<td>40%</td>
<td>35%</td>
<td>5%</td>
<td></td>
</tr>
</tbody>
</table>

Now select all the data, even the headings, and insert a 100% stacked bar graph. I modified my earlier stacked bar to include the buffer data and it looks like Figure 5.10.
**Figure 5.10** Select the whole table and insert a 100% stacked bar. It will look loud and obnoxious.

**Students volunteer more than they hold actual leadership positions.**

There’s a gap between seeing leadership opportunities and actually holding them.

Not much left to do to make this chart look amazing. Inside the graph, right click on each of the buffer segments and change their color to *No Fill* (Figure 5.11). Choose *Format Data Series* and look for the paint bucket icon or the *Fill* menu.

**Figure 5.11** Each buffer segment should not be filled with any color.
You should already see the three separate bars in one graph! Don’t stop, keep whipping this graph into shape by deleting the x-axis and gridlines, since they no longer make much sense. You’ll want to replace this with data labels inside the base of each actual data segment of the stacked bar. Next, reposition the legend labels over their corresponding bars (Figure 5.12).

Now we can tell whether the sorta responses are different for those two survey questions I mentioned earlier (they aren’t). Yes, the data labels are there to tell us, but even if the labels were gone, we can compare the lengths of those sorta bars because they now share a common baseline. It’s also true that we don’t necessarily need to have different colors on each set of bars, since they no longer touch one another. Make them all the same color if you aren’t trying to emphasize one set of response options over another.

Super cool ninja trick, isn’t it? These secret buffer zones are going to keep coming in handy. It’s all about mastering the software and what it can do in order to make the best possible visualizations for your data.

**Figure 5.12** Small multiples of regular bars in the same graph make it easier to compare values that were in the middle of the stacked bar.

**Students volunteer more than they hold actual leadership positions.**

There’s a gap between seeing leadership opportunities and actually holding them.

<table>
<thead>
<tr>
<th></th>
<th>yes</th>
<th>sorta</th>
<th>no</th>
</tr>
</thead>
<tbody>
<tr>
<td>I enjoy doing kind acts for others.</td>
<td>60%</td>
<td>35%</td>
<td>5%</td>
</tr>
<tr>
<td>I am working on my leadership skills.</td>
<td>50%</td>
<td>32%</td>
<td>18%</td>
</tr>
<tr>
<td>I see leadership opportunities for Latino/Hispanic youth.</td>
<td>47%</td>
<td>39%</td>
<td>13%</td>
</tr>
<tr>
<td>My close friends have volunteered in the past 12 mos.</td>
<td>45%</td>
<td>39%</td>
<td>16%</td>
</tr>
<tr>
<td>I try to find time to make a difference in my community.</td>
<td>38%</td>
<td>57%</td>
<td>5%</td>
</tr>
<tr>
<td>I have volunteered for a community organization in the past 12 months.</td>
<td>34%</td>
<td>45%</td>
<td>21%</td>
</tr>
<tr>
<td>I hold a leadership position in my school or community.</td>
<td>22%</td>
<td>32%</td>
<td>46%</td>
</tr>
</tbody>
</table>

**Diverging Stacked Bar**

Diverging stacked bar charts are great for showing the spread of negative and positive values, such as Strongly Disagree to Strongly Agree, and because they align to each other around the midpoint, they can handle some of the criticism directed at regular stacked bar charts, which is that it is difficult to compare the values of the categories in the middle of the stack (Heiberger & Robbins, 2014; Talbot, Setlur, & Anand, 2014). Making a diverging stacked bar was approximately 8 billion times easier than I expected; it just takes a little ninja skill.
The secret again is hidden buffer values at either end of the bars. I told you they’d come in handy!

Figure 5.13 is what my data table looks like after adding the buffer values.

![Image](image.png)

*Figure 5.13 I added some notes to the table to help you conceptualize how this is going to work.*

<table>
<thead>
<tr>
<th>Buffer</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
<th>Buffer</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>50%</td>
<td>35%</td>
<td>8%</td>
<td>7%</td>
<td>85%</td>
</tr>
<tr>
<td>20%</td>
<td>70%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>80%</td>
</tr>
<tr>
<td>25%</td>
<td>45%</td>
<td>30%</td>
<td>15%</td>
<td>10%</td>
<td>75%</td>
</tr>
</tbody>
</table>

^turn bars white

^turn bars white

Let’s walk through it a bit. In the middle, in the dark text, are my actual data values, what I ultimately want to show the audience. On either side I have Buffer columns. These are the secret columns! In gray you can see my notes. So here’s the plan. Within each row, all values from “Disagree” over to the right need to add up to 100%. Just mentally sum your Disagree and Strongly Disagree values and type the remainder in the Buffer column (or make a formula if you need to flex more Excel muscle). Same thing for Agree over to the left.

Then select all the headings and values, from Buffer to Buffer, and insert a 100% stacked bar graph. Mine looked like Figure 5.14 at first.

![Image](image.png)

*Figure 5.14 Excel made six stacked bars instead of three.*

Not cool. I should see six segments in the stacked bar, not six bars. So right-click on the graph, choose *Select Data*, and click on *Switch Row/Column*. Now, it looks like Figure 5.15.
Each of the three stacked bars has six segments.

Bingo! So now it’s time to make the two Buffer categories white. Just right-click directly on the Buffer bars and select the white fill color. When you’re done it should look like Figure 5.16.

Look at that! Now the only bars with color are the ones that encode our values. Still, it doesn’t look that great, right? So, delete the legend (we’ll add it back in later), delete the gridlines, and delete the y-axis. Delete the x-axis, too . . . BUT FIRST! We want more of the chart area taken up by our actual values. Right now, the stacked bars are squished together because Excel set the maximum of the x-axis to accommodate our Buffer zones. Right-click on the x-axis, select Format Axis, and in that dialogue box, pick a new max that it is nearer to the end of the bar segments you want showing. I chose 70%.

The Buffer bars become white so they essentially disappear—they are really only there to support the structure of the data visualization.
I also added data labels and changed the colors so that the positive values were bluer and the negative values were redder, to reflect what I discussed about colors in the last section (see Figure 5.17).

**Figure 5.17** Use shades of two colors to help the audience mentally group each half of the diverging stacked bar.

I find it helpful to add a line down the middle so that readers really can see how the segments diverge. To do that, click on the Insert tab. Look in the Illustrations group and you should see an icon that looks like a group of shapes. Open it and click on the line (Figure 5.18). You’ve probably done this plenty of times in PowerPoint or Word! Then click to draw the line on top of the graph.

**Figure 5.18** Insert a line down the midpoint of the graph.
To finish it off, I just need to add back my legend (across the top, using linked textboxes), give it a descriptive chart title, and add in my survey questions as data labels (also using linked textboxes) as in Figure 5.19. I ultimately added a white border to each segment of the bar, too.

**Figure 5.19** The diverging stacked bar makes it easier to compare all positive responses to all negative responses.

**While feeling confident in data wrangling, more participants shied away from calling themselves nerds.**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I would call myself a data nerd.</td>
<td>45%</td>
<td>30%</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>I can manipulate Excel to do what I want it to do.</td>
<td>70%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>I should get paid well for my dataviz ninja skills.</td>
<td>50%</td>
<td>35%</td>
<td>8%</td>
<td>7%</td>
</tr>
</tbody>
</table>

POW! That’s right! It takes just a little forethought with some basic math to better represent diverging survey data and circumvent some of the issues of a basic stacked bar.

**WHAT ABOUT NEUTRAL?**

Can I still use the diverging stacked bar chart if I have a neutral category (i.e. a five point scale instead of a four point scale)?

Meredith

Yes, Meredith, you can! Go back to the table and insert two columns in the middle of the table. Now, divide your neutral value by two and type that number to each column such that half of neutral belongs with your positive values and half with your negative. This keeps the neutral category aligned to the middle, sort of straddling the midline. It does get a little tricky to add data labels to each segment, though, because Excel wants to label each half. You’ll want to insert a textbox and type in your total neutral value. You may also decide that the line isn’t as impactful or necessary. Personally, I don’t think it has quite the same effect, but try it out and let me know your take on the neutral situation!
You can turn a sequential response set into a diverging set by choosing a place in your response options where you want the divergence to occur. For example, if the response options are Poor, Fair, Good, and Excellent, then you might decide that these options split between Fair and Good. Or, your group might have really high standards and the split falls between Good and Excellent. However, because that divergence choice is largely up to the subjective opinion of the graph maker, sequential response options don’t naturally feel as well-suited to a diverging bar graph. But hey, I’m not going to hold you back. It might be just the perfect visualization for your particular sequential data.

**AGGREGATED STACKED BAR**

Probably the most common way of visualizing rating survey data is via a stacked bar chart, just like the one below (Figure 5.20) created by the team at The Hole in the Wall Gang Camp. (Long sidenote: Have you ever heard of this place? It’s a camp, started by Paul Newman [swoon], for children with severe illnesses, such as cancer, hemophilia, sickle cell, and other terrible things that should never happen to children. Just reading their latest data report made me cry. Then, thinking about their data report later made me cry again. Just a little something in my eye right now, must be an eyelash.)

Their basic stacked bar chart reports on Camper Appreciation and the team already wisely ordered the bars from greatest to least on Strongly Agree and made the title into a takeaway sentence. However, when looking at Figure 5.20 you can probably see a few
things that aren’t really working. The labels in the skinny parts are scrunched. The x-axis is labeled in 5% increments, which is overkill. And just overall, it feels like a lot to mentally process. What do we do?

My strategy was to first find out what they really wanted to say about their data.

Ann Gillard, Director of Research and Evaluation, said, “We were fortunate to see such strong positive outcomes and want to celebrate this as we share the story of Hole in the Wall with potential campers, families, funders, and friends.”

Lucky for us, they neatly encapsulated it in their title. Notice how they are grouping “agreed and strongly agreed” with their words? They are doing a bit of digestion for their readers by collapsing those categories into a number that’s more meaningful.

And Ann knew it. She said, “We have found that our readers like to see percentages of people rather than numbers of responses, and that readers want to know what people agree with rather than reading about averages. So, we moved away from reporting means in these charts and put the means into an appendix for the other data nerds to view.” Ann is on the right track, plus she called them data nerds so now she is my best friend.

I followed their lead and aggregated those categories in the graph by summing their values in the Excel spreadsheet. This equals the Aggregated Stacked Bar seen in Figure 5.21.

You’ll also notice I reversed their categories. Since they are emphasizing the positive responses in their messaging, I put those bar segments on the left, so they share a common baseline that’s easier for the audience to read. I only put number labels

**Campers were overwhelmingly thankful for their Camp experience.**

Note that last question is intentionally negatively worded.

![Figure 5.21](image-url)
on those positive responses. I also used their Hole in the Wall Gang brand color there (it’s green) and grayed out the rest to add further emphasis where they want it. Notice that I followed this pattern even for the last question, which was reverse-coded, where answering negatively is a good thing. I reduced the number of increments on the x-axis and color-coded the title a little more.

With those tweaks, the amazing things happening at Hole in the Wall Gang are even clearer to their readers (i.e., future campers, donors, etc.). Aggregated stacked bars are a really good visualization choice when the level of detail in a Likert-type scale is unnecessary.

**CHANGING THE WORDING OF THE SURVEY**

When you have one item that needs to be reverse-coded would you consider rewording the question when you present the data? I would probably have tried to word the question in a different way in the survey to avoid this, but there are certainly times where the question needs to be worded as it is.

Sheila

Hi Sheila, I definitely wrestled with how to handle this reverse-scored question. One thing I might consider for the future is rewording this question in the chart/report with an asterisk explaining how this was originally reverse-worded and scored.

Ann Gillard

I’ll just chime in to say I do think researchers tend to be a little too loyal to the survey when it may not be ideal for the audience. I support changing the wording on the graph, carefully, and with a note, as Ann mentions. While we don’t want to mislead anyone about the questions asked, no matter what, reverse-coded questions are a little confusing and there’s no perfect way to handle their presentation, but I think slightly altering the wording in the graph probably does the least damage.

Stephanie

I’m sure you have the hang of this by now, but it is also totally possible to collapse sequential categories into aggregate bars. Perhaps Poor and Fair combine on one side and Good and Excellent combine on the other. As long as it makes sense to your readers and you feel you are fairly representing the survey respondents, collapse away!
RANKING

Ranking questions are the kind of survey questions where you allow the respondents to select more than one answer. It could be that they can check all that apply. It could be that you are asking them to rate each answer option on its own scale. It could be that you ask respondents to rank a given set of answers from Best to Worst. Whichever way, there are a couple of right ways and tons of wrong ways to visualize ranking data.

COLUMN GRAPH

Let’s say you want to poll your clients about which social justice topics are most important to them. You craft a survey with the question “Which social justice topics are most important to you? (Check all that apply)” and your survey lists 20 options plus an “other” fill in the blank option. Because respondents can pick more than one option, there’s no way these responses will add up to 100%. No. Way. Take a look at Figure 5.22 for the table of data.

But, often when people see a set of percentages that belong to one survey item, they are too quick to pull the pie chart trigger. Such errors of assumption produce visualizations that look like Figure 5.23.

Excel shouldn’t even allow pie charts to be made from check-all-that-apply data. It’s all too easy to insert one and think the job is done. But, this is how visualizations end up making the rounds on Twitter as jokes among the slightly savvy crowd or end up on wtfviz.com. The values do not add up to 100%, so a pie chart is the wrong visualization.

Figure 5.22  A quick sum of these values shows they add to 1,119%.

Figure 5.23  A pie chart is not the right visualization for this data.
It makes much more sense to graph this data as a simple bar chart, and it makes much MUCH more sense to order those bars from greatest to least as in Figure 5.24.

Remember back in Chapter 1 when we discussed how humans are pretty decent at comparing the lengths of things? Bar charts encode data by length, so it is less onerous for viewers to read a bar chart. But, we can make it even easier by ordering the bars by greatest to least values (or least to greatest; I could hear arguments either direction). This way, readers can quickly scan the graph and see what was most popular and what was least popular.

**FIGURE 5.24** A bar chart is a better fit for check-all-that-apply data.

And on that note, it’s entirely possible that people really only care about the most popular (or the least). This long list of possible areas of concern could very well be overkill. Sure, we need to provide a fairly exhaustive list of response options on the survey, but that doesn’t mean we have to visualize all of those options for the reader. It may be more effective to limit the reporting to the top three or five concerns. Focusing the visual in this way can help readers hone in on what is most important, make the visualization less overwhelming, and more quickly compel action (see Figure 5.25).
The top five areas of concern were broad—including national origin, ethnicity, race, and sexual orientation.

![Bar chart showing top five areas of concern]

**The Lollipop Variation**

Another way to make the lengthy bar chart less visually overwhelming is to remove even more ink. We’ve already come a long way—we deleted tick marks, lightened gridlines, and removed an axis line. What else is left to remove? Well, what’s left is all that ink making up each bar. I know it sounds ridiculous to think we could remove any of that ink because it is what encodes our data. But, really all we care about on those bars is the very end, where it stops, since that’s what tells us the value. Instead of an ink-heavy bar chart, we are going to make an ink-friendly lollipop graph.

The backbone of the lollipop graph is a scatterplot, which means we will need x-values and y-values. The x-values are easy—those are my survey responses. The y-values are going to be faked, just inserted to make each lollipop equidistant from each other. So Figure 5.26 shows the new data table, with my actual survey responses and a new column next door where I typed in placeholder data, from 1 to 21.
Now highlight both columns with numbers and insert a simple scatterplot (Figure 5.27). Don't highlight the data labels or the header row, or else the graph won't work out properly.

The scatterplot process created dots—these are the lollipops! It is basically visualizing just the end of the bars in the bar graph. Right now, I suggest you click on the horizontal gridlines and delete them. They can confuse things if we keep them in place any longer.

It’s time to make the stick of the lollipop. We are going to create these using error bars. In Excel 2013, navigate up to the Chart Tools>Design tab and look for the button that says Add Chart Element. Click the drop-down arrow there, hover down to Error Bars, hover on it’s arrow to open another menu, and finally click on More Error Bars Options. In Excel 2010, you should just see a button in the Chart Tools ribbon for Error Bars.

As soon as I clicked on More Error Bars Options, my graph went wacky (see Figure 5.28). We do not need the vertical error bars at all. So, in the dialogue box that opened, change the number in the Fixed value box to zero and the figure now looks like Figure 5.29.
Figure 5.29 Adjust the fixed value under the Error Amount.

This action eliminated one set of error bars. To get to the other set, click on the little arrow next to Error Bar Options and then switch from Series 1 Y Error Bars to Series 1 X Error Bars (Figure 5.30).

Figure 5.30 Switch between graph elements through the drop-down menu at the top of the dialogue box.
You'll see the same basic options, now just for the horizontal set of error bars. Here is where the magic happens. You'll want to adjust every bit of this dialogue box. To make our lollipops, we really only want the error bars that shoot out to the left, so in the Direction area, switch from Both to Minus (Figure 5.31).

In End Style, get rid of the cap. In Error Amount, click the radio button by Percentage and type in 100% (Figure 5.31). This will fix your x-axis so it starts at 0%, just as it should, and will extend the lollipop stick from the lollipop head to the y-axis (Figure 5.32).

Give yourself a fist pump because that was awesome.

Next up, let's fix that y-axis, shall we? Right-click on it and adjust the maximum to 22—that is one more than the highest number we listed in our fake data. If, in doing so, Excel then adjusts your minimum, just change it back to zero. Now you can delete the y-axis labels altogether.

Let's get the data labels in place now, so we know which lollipop represents what. We are going to insert another series of fake data so that we can use its labels. Since we are still working with a scatterplot, the y-values for the data are already here—we will use the same y-values in
the Lollipop spacing column. But, the x-values that we are adding will be new. So, add another column of data and this time just fill it up with zeroes. This way, the new series of data will be a set of dots all the way over on the left side of the graph and the labels we eventually put there will look like regular, standard, proper labels for the lollipops. The table will now look like Figure 5.33.

Right-click on the graph and click Select Data. In the dialogue box that opens, click on Add in the Legend Entries section. Use the cell picker icons in the new box to select Label holders as your series name, all those zeroes as the Series X values, and all the numbers underneath Lollipop spacing as your Series Y values as shown in Figure 5.34.
Click OK and your graph now has a second set of dots going up the left side of the graph. Sweet! We are going to add data labels to the dots! But, there's no room for the data labels yet. So, click inside the graph, on the white background (Excel calls this the plot area). Its border will become active and you should see a little square white box on the left, in the midst of your new series of dots. Click on that baby and drag it over to the right so that you are shrinking the plot area and making room for your labels (Figure 5.35).

**Figure 5.35** Drag the side handle over to the right so you have space for the labels.

---

**Chart Title**

---

Now that there's room to breathe, right-click on the new set of dots and select *Add data labels*. Excel is going to give you the y-axis values, which are a secret. But, click on each one and link it to the cell with the label you desire using the linked textbox trick we discussed elsewhere in this book. Be sure you select the *Left* label position. You may need to readjust your plot area here or enlarge your entire graph to make room for all those labels (I did both).

Labels are in place, lollipop and stick are ready to go. It's time to get rid of the second set of dots that our labels are attached to. Right-click on those dots and select *Format Data Series*. In the *Marker Options* window, select *None* to eliminate the marker dots altogether.

The last step now is to add an awesome title and make any color adjustments (Figure 5.36). Go ahead and compare this lollipop graph (Figure 5.36) to the original bar graph of the same data a few pages back (Figure 5.24). Less visually demanding, isn't it? Even though it took us several more steps to make the lollipop chart, we put in that elbow grease in order to make life easier for our readers. Plus you learned about the secret power of error bars in this process!
Lollipops can also be vertical and thankfully that doesn’t take as much work. We are talking about Excel Ninja Level 3 here. You’ll simply highlight your actual data values and insert a line graph with markers (instead of a scatterplot—so also no need for extra columns of fake data [I hear you cheering!]). Then delete the line. Add error bars to the markers the same way we just did (only you’ll notice half as many error bars to deal with). I usually like to increase the size of the markers to something really big, like 20, and position my data labels smack in the center (see Figure 5.37).

Yummy enough to eat, I know! Just be thoughtful here because the size of the marker technically spans a
range of values, not just the one in its label. This kind of a lollipop is a little less visually accurate, but has all kinds of appeal for its simplicity.

Lollipop charts are decent alternatives to standard bar and column charts any time, for any kind of data that would work in a bar or column, not just for check-all-that-apply data. They are especially helpful when the visualization is overpowering due to its massive ink because the lollipop focuses attention at the value.

LARGE NUMBER WITH ICON
I saw this next example in a magazine (Figure 5.38) and thought of you.

We don’t have the survey question that Consumer Reports asked, but it was probably something like “When you tried to negotiate a better bundle package, which of these deals did you receive? (Check-all-that-apply).” The clue that the respondents could check multiple answers is that the five answers we can see here add to more than 100%. Rather than try any sort of graph, Consumer Reports chose to display the five answers using large numbers paired with a simple icon.

The most tedious part of developing a graphic like this is simply finding the icons that match your underlying category. Most of us have probably spent hours searching through websites trying to find suitable images. Add to that task the challenge of finding a set of images that all look like they belong together! Let me rescue your afternoon with two very helpful websites:

The Noun Project—accessed at https://thenounproject.com/ was started by folks who dreamed of having an icon for everything. It’s a super exhaustive site with a powerhouse search system that makes finding icons an easy task. The icons generally have a similar look and feel to them, too—meaning they mostly look like they were drawn by the same hand (or hand on a mouse). The icons come in black and white for easy recoloring. Many are free or at most they cost $1.00 USD.

Flat Icon—accessed at http://www.flaticon.com/. The awesomeness of Flat Icon can be summed up in two words: Free. Vector. Vector means that you can resize the image as large as you’d like and it won’t blur or fuzz on you. The icon you create for your graphic in your report can also appear on your slides in a much larger and visible form and it

**FIGURE 5.38** Try combining a single large number with an icon that represents that category.

![Image of a lollipop chart with large numbers and icons.](source: © George, P. [2014, March]. How to save money on triple play cable services. Consumer Reports. Used with permission.)
will still look crisp and clean. The icons on this site are no charge, but many do require attribution, in that you need to give the icon designer credit somewhere in your report or on your site, wherever the icon appears.

Alternatively, you could simply make your own icons. It wouldn’t be all that difficult or time consuming to construct the icon for Nothing (though maybe think a little harder about something more effective than a circle with a line through Thing). To construct an entire graphic like this one, use any kind of blank canvas software—even PowerPoint would do the trick. You just insert textboxes and icons and be happy.

I wouldn’t want to see a report full of the large number with icon visuals, but it can work well in limited doses for check-all-that-apply data.

**BRANCHING**

Branching questions are the type of question where if a respondent answers one way, then he or she is given an additional set of questions that branch out from the first answer. Anytime you hear someone talking about data, and describing the survey responses this way “... and of those, 45% said ...” then he or she is talking about subsets of respondents who were given particular questions based on their answers to previous questions. For example, when the survey says “if you said Yes, proceed to question 32,” the path through the survey branched. Sure, you could just graph those answers with one of the other options presented in this chapter. But, it isn’t likely that your readers will quickly grasp that you have isolated a subset of respondents for examination. Let’s look at a few other visualizations that make it clearer.

**ANNOTATED GRAPH**

If your branches don’t extend very far or the data you need to report is limited, consider the simplest charting method: add an annotation inside another graph. The annotated note provides just a little extra explanation—the data from your branch.

The data here in Figure 5.39 came from a survey where young adults with autism were asked whether they work part time or full time. The survey branched from there, probing about hourly pay, benefits, and promotions, depending on which side of the branch the respondent followed. Both groups were asked about hourly pay at some point and it was this extra data that we wanted to display for both groups.

**FIGURE 5.39** Embed extra data from down the branch into the original graph to give it more impact.

Most young adults with autism worked part time, averaging $9.11 /hour.
Full time employees made less.

$8.08 per hour on average
35+ hours per week

$9.11 per hour on average
<35 hours per week

The annotated graph strategy can be applied to any kind of graph type, but a pie chart works here because we only have two slices. Each slice has an annotation, detailing the average hourly pay for full-time and part-time workers, including a note that defines full- and part-time hours. The annotations were inserted with textboxes—and several of them. I inserted one text box for the hourly dollar amount and linked it to the cell in the table so that when those numbers change with next year’s data, the textbox will update. I inserted a second textbox below each hourly rate and typed in the text “per hour on average” and the definition.

Clearly, there’s only so much extra text we can pack into one data visualization, so the annotated graph strategy for branching data can handle limited depth down the branch.

**NESTED AREA GRAPH**

Figure 5.40, my friends, is a nested area graph.

See how it works? In this case, 25% of the survey respondents said no (and they skipped to the next section). 75% of the respondents said yes, they visualize data. The people who do visualize data were of most interest in this study, so they were given an extra set of questions. Of that 75% who visualize data, 81% reported “daily.” This software company is only curious about primary users, those who visualize daily, so those folks saw even more questions pop up in their survey window. And of those who visualize data daily, 64%
said they use software. You get it? It’s a pretty intuitive visualization. Nested area graphs can handle more levels of branching than the pie chart plus large number example.

This is graphing by area—which is tricky. Remember how Chapter 1 pointed out that humans are bad at interpreting area? Turns out the difficulty with judging area isn’t any different if the area is in a circle (like a bubble graph) or a square (um . . . that’s a nested area graph) (Heer & Bostock, 2010). Therefore, the rule is that the area must be proportional to the data it’s representing—a reader should be able to put down a ruler and calculate the area of the “daily” square and it had better be 81% of the area of the “yes” square. And it is.

I made this diagram in PowerPoint. I started by calculating the total rectangle area by just throwing out some dimensions that would be easy to work with. Area is height times width (oh, high school geometry class). I said 6 inches by 10 inches, or 60 square inches, would be the area to represent all 500 respondents. The dark blue yes rectangle had to be 75% of that size, or .75 multiplied by 60 square inches, which is 45 square inches. I wanted the yes rectangle to be the same height as the overall rectangle, which was 6 inches. So, I divided 45 square inches by the 6” height and got 7.5” for my width. So far I’ve just been using a calculator. Now it’s time to actually visualize! Insert a rectangle in PowerPoint (see Figure 5.41).

**FIGURE 5.41** Over in the right of the Drawing Tools section, you’ll see where to enter the height and width dimensions you calculated.
Look in the orange Drawing Tools section, inside the Format tab, for the Size area where you can punch in those dimensions you just calculated.

To get to the blue daily rectangle, I calculated 81% of the size of the yes rectangle, which you’ll recall was 45 square inches. The product is 36.45 square inches. I wanted it to nest inside the yes rectangle, so the height needed to be smaller than 6”. I chose to lay this out with 5” in height, which leaves a width of 7.29”. So, I inserted another rectangle and sized it up properly. And so on.

Sounds complicated, but it really isn’t too hard. You just pick an area to start with for your total set of respondents and divide it up in proportion to the data it needs to represent.

What makes the nested area graph seen in Figure 5.40 work best: Listing the n’s along-side the main heading in each rectangle. This will help people who are having a hard time wrapping their brains around the visualization because they can see how the n’s carry down into each section, such that the numerator for the parent rectangle becomes the denominator for the child. Main headings can be inserted with textboxes.

What doesn’t work: Using PowerPoint’s Scale Height and Scale Width features. You might have started exploring PowerPoint and noticed that if you right-click on the rectangle, you see a menu option called Size and Position. If you open it, you’ll see a place to enter height and width, just as we’ve been doing. You’ll also see spots that say Scale Height and Scale Width, where PowerPoint offers the ability to scale the rectangle by a specific percentage. You may be tempted to shortcut the above process and simply copy one rectangle and type 81% into the Scale Height and Scale Width boxes. At first, it may even appear to work, but once we get down to the inner rectangles of the nested area graph, it becomes clear that the scale option is a little wonky. Try it if you don’t believe me. The surefire way to make a proportionally representative nested area graph is to break out the calculator and crunch those numbers by hand.

**VISUALIZING NOT APPLICABLE OR MISSING DATA**

Yes, I know the jig is up. All of my examples in this chapter so far have been pretty tidy, as if every response option was addressed by every single respondent. The truth is that life and data collection are messy. How can we show that different questions have different sample sizes? The most appropriate visualization method will depend on the severity and inconsistency of your problem.

**NOTE SMALL CONSISTENT MISSING DATA**

The easiest solution when data is acting like a tiny, but equal opportunity absentee for every response option is to just make a note of it somewhere in the graph. My preferred location is in a subheading, underneath the main takeaway point of the visualization. Make it smaller (in a report, like 9-point font) and gray (see Figure 5.42).

If the data is missing consistently it is good to note, but not a super critical issue. This treatment marks the issue, but relegates its importance to a background matter.
Add a subtitle to the graph to explain the missing or removed data, if it is consistent across all categories.

**SBIRT increased across all races and ethnicities between 2013 and 2014.**

Gray dots represent 2011. Data missing for 10.3% of respondents. Each race category excludes Hispanic/Latino.

<table>
<thead>
<tr>
<th>Race Category</th>
<th>2013</th>
<th>Benchmark: 13.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American/Black</td>
<td>1.7%</td>
<td>7.2%</td>
</tr>
<tr>
<td>White</td>
<td>2.0%</td>
<td>7.3%</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>1.9%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Hawaiian/Pacific Islander</td>
<td>1.3%</td>
<td>5.6%</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>2.2%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Asian American</td>
<td>0.6%</td>
<td>3.8%</td>
</tr>
</tbody>
</table>

**Source:** Stephanie Evergreen (2015). “SBIRT Graph.” Oregon Health Authority Office of Health Analytics. Used with permission.

**ADD SAMPLE SIZE FOR LARGE CONSISTENT MISSING DATA**

Here’s everyone’s favorite nightmare: You sent your reliable research assistants out to collect data with some paper and pencil surveys . . . only one page of the survey was missing. It’ll be OK because you have more data, but what to do with those questions that have many fewer responses? The answer: Note the sample size in the data label.

To do this in Excel, you can add the sample size to each data label cell in your table. Make a line break within a cell (on a PC) by holding down the Alt key while you hit Enter. In the formula bar, the data appear broken onto two lines (Figure 5.43).

**Figure 5.43** Type Alt+Enter at the end of a line to create a line break within a cell.

Do you have health coverage of any kind for yourself?  
*n=487*
In the graph, the “missing” data show up as part of your data label, under its corresponding question. In this case, the prenatal question was asked on a different page, but it was grouped with other healthcare data from the missing page for reporting purposes. The data label makes it clear that the sizes are inconsistent among the questions in this graph (Figure 5.44).

**FIGURE 5.44** Add the sample size for each question when there is significant missing data.

While many report having a primary doctor, most didn’t see the doctor for regular checkups and one quarter didn’t even get care when it was needed.

The same strategy can be used for large amounts of Not Applicable data. You can delete it from the graph, but the remaining data labels need to note the sample size. Again, the strategy here is to note the absence in a clear but diminished way.

**ADD A GRAPH ON THE SIDE FOR LARGE INCONSISTENT MISSING DATA**

The messiest data to deal with are those cases when lots of respondents skipped questions that weren’t applicable to them. The most accurate way to handle such data is to be super honest that it is gone and show it in the graph—just off to the side.

To do this in Excel, we are going to combine two graph methods we already discussed in this chapter: diverging stacked bars and small multiples.

The left portion of this table should remind you of the way we set up the diverging stacked bar table. We add secret hush-hush buffer zones to either end of the Likert scale so that both halves add to 100%. Not Applicable answers are way over to the right, followed by a secret buffer column that pairs up with the Not Applicable data to also add to 100%. Adding across each row here should total 300% (see Figure 5.45). I know it goes against your survey methodologist instincts, but see this through.
Add secret buffer columns for the negative responses, the positive responses, and the Not Applicable responses.

Graph everything—the whole table, including the headings—as a 100% stacked bar graph. As with the other secret buffer graphs, you’ll mark the secret buffer bars as No Fill, and you should have three of those buffer values represented in each stack. You have now created a diverging stacked bar graph illustrating your main responses and a separate graph to the right with your Not Applicable responses (see Figure 5.46).

Front desk staff had the most positive responses but also the most guest complaints. Room service and the spa had no negative responses, but very few people made use of them.

Copyright ©2017 by SAGE Publications, Inc. This work may not be reproduced or distributed in any form or by any means without express written permission of the publisher.
If you have forgotten any of the steps, review the sections that discuss Diverging Stacked Bar and Small Multiples graphs. But, really it’s just formatting from here, folks. I used strong color coding and inserted linked textboxes for labels at the top of each response option.

The title here is important because it needs to explain why both graphs are included and necessary for proper interpretation. It’s a complicated concept. If it becomes difficult to encapsulate both graphs in a single title, it’s probably a good sign that you are trying to convey too much information and that perhaps the Not Applicable data should be dropped and mentioned in another way. If you do drop the Not Applicable data, then go back to the previous section and be sure to add the sample size to each label.

The overarching point of this section is that you should treat the missing or Not Applicable data differently from the main data you collected. Your primary data need to be seen in its own light.

**EXERCISES**

Head over to [ColorBrewer2.com](http://ColorBrewer2.com) and snag a color scheme for your favorite rating data. Look for one that is close to your organizational color scheme, or one that makes semantic sense to you (as in reds for Strongly Disagree). If you don’t see the RGB color codes right away, look for a drop-down menu that may be set to HEX (those are web codes). Select RGB to get the codes you need for Excel. The numbers are listed in order so that the first one is for R, the second for G, and the third for B.

Look up wtfviz at [http://viz.wtf/](http://viz.wtf/) and have a hearty chuckle at the illogical data visualizations that actually made it to print and screen. Then pick one that you laugh at the hardest and remake it so that it’s better. You will likely need to rethink the graph type and review the formatting in terms of color and legend. Sketch it first on paper and then try to remake your redesign on a computer.

Network diagrams stem from specific types of surveys, where you essentially research the strength of the networks within a group of people. Try this: Make a list of all the students in your class and distribute that list to everyone in class, asking them to mark the students with whom they’ve had at least two previous classes together. Collect all the data by tallying responses. This data would be visualized in a network diagram.

I’ll illustrate this by using an example from my colleague, John Burnett, who runs Haiku Analytics, which is located at [http://haikuanalytics.com/](http://haikuanalytics.com/). John was working with a senior center who wanted to get their seniors together to regularly interact for bridge or cribbage or gin and tonics or whatever to reduce isolation and improve their fun and quality of life. The smart launch of any program should be preceded by a little fact-finding mission. I mean, who’s to say the seniors aren’t already connected and whooping it up? There should be some data to drive the decision to fund a new social program. John ran a small study similar to the one I’m asking you to do in this exercise.

Analyzing these connections takes a specialized software program: NodeXL is a handy one because it is free, acts as a plug-in for Excel, and allows plenty of visual customization. It visualizes the data
by assigning each person in the survey list as a dot (or node) and draws connections between the people in the network via lines, where the thickness of the line represents more connections. The network diagram also groups together those who report hanging together. John’s senior center network diagram shows four main groups.

The interpretations able to be made off of a network diagram are glorious. First, we can clearly see that the seniors are fractured into four groups, which don’t even all gather in the same place. So, yes we can confirm that a senior social program is necessary. We can also see that in order to get everyone to buy-in to the program, the staff will need to develop a strategy around each group’s kingpin, like Donna. We can also see connections between groups, so we know that if the staff can convince Donna, it’s likely that Edgar and the others at the condo association will be game. The visualization drives strategy and action.

Use pencil and paper or try out NodeXL (can be accessed at https://nodexl.codeplex.com/) or another software program and visualize your class survey data. Check out the Resources section at the end of this chapter for more extensive training on social network diagrams. Even with their potential to get a bit complex, network diagrams are becoming more popular as a concise way to show many interconnections with specific check-all-that-apply data.
RESOURCES

Visualizing social network diagrams can be clunky using some traditional analysis programs. The most elegant network diagrams are often made through specialized software and perhaps some programming skills. For a great overview of the software available for network diagramming, check out Andy Kirk’s collection of resources, which can be retrieved from http://www.visualisingdata.com/index.php/resources/

The nested area graph example first came in front of my eyes via Innovation Network’s State of Evaluation Report. It’s an amazing, visual forward report and even if you have no interest in its subject matter, you’ll want to click through it to stare in awe at the thoughtful (and proportionate) data visualizations. Go to http://www.innonet.org/client_docs/innonet-state-of-evaluation-2012.pdf

REFERENCES

