7

CREATING EFFECTIVE CHARTS

A. Reviewing

1. In a newspaper or journal article in your field, find a pie chart. Critique it using the criteria in chapter 7 of *Writing about Numbers*, 2nd Edition.
   a. Use table 7.1 in *Writing about Numbers*, 2nd Edition, to assess whether that type of chart is appropriate for the types of variables involved.
   b. Evaluate whether you can understand the meaning of the numbers in the chart based only on the information in the chart. Suggest ways to improve labeling and layout.
   c. Using information in the article, revise the table to correct those errors.
   d. Consider whether a different chart format would be more effective.
   e. Pick a table from the article. Draft a chart to present the same information, including complete title, axis labels, legend, and notes.

2. Repeat parts a through d of question A.1 for a simple bar chart.

3. Repeat parts a through d of question A.1 for a single-line chart.

4. Repeat parts a through d of question A.1 for a multiple-line chart.

5. Repeat parts a through d of question A.1 for a clustered bar chart.

6. In a journal article in your field, find a table that presents data on a relationship between two variables. Draft a chart to present the same information, including complete title, axis labels, legend, and notes.

7. In a published article or website such as the Bureau of Labor Statistics (www.bls.gov) or US Census (www.census.gov), find data on time trends in two related concepts (e.g., trends in unemployment rates for men and for women, or values of two different stocks over a few weeks). Create a chart to depict those patterns, complete with a title, axis labels, legend, and notes.

8. In a journal article in your field, find a chart that presents the relationship between a nominal predictor variable with more than two categories, and an outcome variable.
   a. Identify the principle the authors used to organize the categories of the nominal variable on the axis of the chart, with reference to the criteria in chapter 7.
   b. Critique whether that organization coordinates with the associated narrative.
   c. Sketch a revised version of the chart that addresses any shortcomings you identified in part b.

B. Applying Statistics

Hint: Save the charts you create for use in the suggested course extensions for chapters 9 and 11.

1. Estimate a frequency distribution on a nominal variable in your data set. Create a chart to present that information, complete with title, axis labels, footnotes, and legend (if pertinent). See table 7.1 in *Writing about Numbers*, 2nd Edition, to decide on the best format of chart for the type of variable.

2. Repeat question B.1 for an ordinal variable in your data set.

3. Repeat question B.1 for a continuous variable in your data set.

4. Run a cross-tabulation of two categorical variables in your data set, one of which has only two possible values. Create a chart to present the results, complete with title, axis labels, footnotes, and legend (if pertinent).

5. Estimate a difference in means for a continuous outcome variable according to values of a categorical predictor. Create a chart to present the results, complete with title, axis labels, footnotes, and legend (if pertinent). Explain the criteria you used to organize the values of the categorical predictor on the *x*-axis.

6. Obtain a copy of the instructions for authors for a leading journal in your field. Revise the charts you created in questions B.1 through B.5 to satisfy their criteria.

C. Writing and Revising

1. Design a chart to portray the frequencies or mean values of a series of related items (e.g., several symptoms, sources of income, or attitudinal measures) in your data set. Specify which of the principle(s) in chapter 7 you would use to organize those items on the *x* axis, and explain your choice
    a. for a description in the results section of an academic paper;
    b. for a chart to be used as a source of secondary data for other users.

2. Evaluate a chart you created previously to portray the univariate distribution of a nominal variable with more than two categories, using the checklist in chapter 7 of *Writing about Numbers*, 2nd Edition, and the instructions for authors for a journal in your field. Explain your choice of organizing principle, with reference to the specific objectives of your analysis.

3. Repeat question C.2 for an ordinal variable.

4. Repeat question C.2 for a continuous variable.

5. Evaluate a chart you created previously to portray results of a bivariate analysis involving a nominal predictor variable with more than two categories. Explain your choice of organizing principle, with reference to the specific objectives of your analysis and the criteria in chapter 7.

6. Read through the results section of your paper to identify topics or statistics for which to create additional charts that pertain to your research question. Draft them using pencil and paper, including complete title, labels, legend, and notes. If they include nominal variables or a series of related variables, identify the principle(s) you will use to organize those items on the axis and in the legend of the chart.

7. Identify a table in your paper that would be more effective as a chart. Draft and create that chart, including complete title, labels, legend, and notes. If it includes nominal variables or a series of related variables, identify the principle(s) used to organize those items on the axis and in the legend of the chart.

8. Exchange drafts of your charts from questions C.1 through C.5 with another student. Peer-edit their charts using the checklist at the end of chapter 7 and the instructions for authors for their chosen journal. Revise your charts to reflect the feedback you receive.