**Editing Graphs**

Once a graph or table is created, double clicking on the table or graph produced in the output will allow the user to make changes such as changing the X and/or Y axis, colors, and more. An illustration of the options available in chart editor is presented here.

![Chart Editor](chart_editor.png)

Mean = 15.56  
Std. Dev. = 3.163  
N = 25

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**2.5 Templates for Research Questions and APA-Style Paragraph**

Depending on the purpose of your research study, you may or may not write a research question that corresponds to your descriptive statistics. If the end result of your research paper is to present results from inferential statistics, it may be that your research questions correspond only to those inferential questions and thus no question is presented to represent the descriptive statistics. That is quite common. On the other hand, if the ultimate purpose of your research study is purely descriptive in nature, then writing one or more research questions that correspond to the descriptive statistics is not only entirely appropriate but (in most cases) absolutely necessary. At this time, let us revisit our graduate research assistant, Marie, who was introduced at the beginning of the chapter. As you may recall, her task was to summarize data from 25 students enrolled in a statistics course. The questions that Marie's faculty mentor shared with her were as follows: How can the quiz scores of students enrolled in an introductory
statistics class be graphically represented in a table? In a figure? What is the distributional shape of the statistics quiz score? What is the 50th percentile of the quiz scores? A template for writing descriptive research questions for summarizing data may be as follows. Please note that these are just a few examples. Given the multitude of descriptive statistics that can be generated, these are not meant to be exhaustive.

How can [variable] be graphically represented in a table? In a figure? What is the distributional shape of the [variable]? What is the 50th percentile of [variable]?

Next, we present an APA-like paragraph summarizing the results of the statistics quiz data example.

As shown in Table 2.2 and Figure 2.2, scores ranged from 9 to 20, with more students achieving a score of 17 than any other score (20%). From Figure 2.2, we also know that the distribution of scores was negatively skewed, with the bulk of the scores being at the high end of the distribution. Skewness was also evident as the quartiles were not equally spaced, as shown in Figure 2.7. Thus, overall the sample of students tended to do rather well on this particular quiz (must have been the awesome teaching), although a few low scores should be troubling (as 20% did not pass the quiz and need some remediation).

2.6 Summary

In this chapter, we considered both tabular and graphical methods for representing data. First, we discussed the tabular display of distributions in terms of frequency distributions (ungrouped and grouped), cumulative frequency distributions, relative frequency distributions, and cumulative relative frequency distributions. Next, we examined various methods for depicting data graphically, including bar graphs, histograms (ungrouped and grouped), frequency polygons, cumulative frequency polygons, shapes of distributions, and stem-and-leaf displays. Then, concepts and procedures related to percentiles were covered, including percentiles, quartiles, percentile ranks, and box-and-whisker plots. Finally, an overview of SPSS for these procedures was included, as well as a summary APA-style paragraph of the quiz dataset. We include Box 2.1 as a summary of which data representation techniques are most appropriate for each type of measurement scale. At this point, you should have met the following objectives: (a) be able to construct and interpret statistical tables, (b) be able to construct and interpret statistical graphs, and (c) be able to determine and interpret percentile-related information. In the next chapter, we address the major population parameters and sample statistics useful for looking at a single variable. In particular, we are concerned with measures of central tendency and measures of dispersion.