This is Professor Rogers. This presentation is the second video in a two-part series on univariate, descriptive statistics in the analysis of numeric variables.

Across the two videos we look at how to get these statistics in SPSS and PSPP. We take a look at two different types of numeric descriptive statistics—arithmetic and positional. We close the second video with how to report descriptive statistics in APA-style tables.

Arithmetic measures are determined by using the basic arithmetic operations—addition, subtraction, multiplication, and division. Positional measures are determined by where the number sits in the distribution. Each type of measure has its own measure of central tendency and measure of dispersion.

As an example, we look at state-level data and specifically three variables—the Violent Crime Rate, the imprisonment rate, and the poverty rate.

Follow the path Analyze > Descriptive Statistics. Two different commands can be used for numeric descriptive statistics—Frequencies and Explore. The Descriptives command, appropriate for arithmetic measures, is not appropriate for positional measures.

Between the Frequencies and Explore command, much depends on what we seek the accomplish and issues related to missing data. Both commands allow determining descriptive statistics for more than one variable at a time. The Explore command provides more detail than Frequencies, but cases are removed if missing values are present in any of the selected variables. In the example used in this presentation, the District of Columbia would have be removed for all variables, not just Imprisonment Rate. Frequencies has less detail than Explore, but can run multiple variables without worrying about cases being removed for missing values. Since we have already learned how to use the Frequencies command in the first video in this two-part series, we will use Explore here to analyze Violent Crime Rate, and later highlight the positional measures in the Frequencies output.

First, we select our variables using the Explore command. We place the variables for analysis in the top right box marked Dependent List.

Second, select the statistics we want. In SPSS in the Explore command dialog box, click on the Statistics option box in the upper right-hand corner. This action opens a second dialog box, which we see on the right. Check the boxes for Descriptives and Percentiles.

We take the same actions in PSPP, though the location of items to click and check are in different locations.

Two tables get our attention—the Descriptives and Percentiles table. Here is the Descriptives Table with the numbers of Violent Crime Rate shown. This table has several numbers of interest. The median is the measure of central tendency for positional measures. The median is the 50th percentile of the distribution. If there is an even number of points in the distribution, the difference between the two middle points is split to determine the median. The minimum and maximum are the points in the distribution with the lowest and highest values respectively, and the range is the distance between minimum and maximum. The Interquartile Range is the measure of dispersion and is the distance between the 25th and 75th percentiles.

The Descriptives Table does not give us the 25th and 75th percentiles used in creating the Interquartile Range, but we can find them in the Percentiles table.

Here is the output from the Frequencies command. This output was generated as part of our example in the first video. Here the positional measures on the output from the first video are highlighted. We have all the numbers except for the Range and Interquartile Range, which we could calculate by hand from the numbers in the Frequencies output.

Positional statistics are often summarized using what is called the five-number summary. The five numbers in the summary are, in order, the minimum, 25th percentile, median or 50th percentile, 75th percentile, and maximum.

Here is an example of an APA-style table reporting descriptive statistics. It is general practice to include descriptive statistics for both numeric and categorical variables in a study to familiarize readers with the data. APA style does not require specific elements to be in the table, though in this table I have included both arithmetic and positional measures of central tendency and dispersion.

However, arithmetic measures are important to report because most bivariate and multivariate statistics build on the N, mean, and standard deviation. In the video on the normal distribution, we will see situations in which reporting the median and interquartile range may also be important.

The formatting of an APA-style table for reporting descriptive statistics follows the same guidelines as a frequency table. Since this video series already has a video dedicated to APA-style frequency tables, it would be redundant to create a separate one for reporting descriptive statistics for numeric variables. One difference should be noted: There is no issue in reporting deciminated numbers for samples less than 100 because the numeric distribution is continuous. Nonetheless, the N should be normally a whole number, even if all the other variables are not reported as whole numbers.

This ends the two-part video series on descriptive statistics for numeric data. We have learned ways to obtain and graph descriptive statistics in SPSS and PSPP, we have identified the arithmetic and positional measures in the output, and we have seen how an APA-style table is formatted to report descriptive statistics.