

SUGGESTED COURSE EXTENSIONS

A. Reviewing

1. In a statistics textbook, find a discussion of an association between two or three variables. For each of those variables, identify
 - a. the type of variable (nominal, ordinal, interval, or ratio);
 - b. whether it is single- or multiple-response.
 - c. For continuous variables, identify
 - i. the system of measurement (e.g., British, metric, or other);
 - ii. the unit of analysis;
 - iii. the scale of measurement;
 - iv. the appropriate number of digits and decimal places for reporting the mean value in the text and a table.
 - d. For categorical variables, identify the categories for each variable, and units if pertinent.
 - e. If the items requested in c and d aren't described in your book, list plausible versions of that information. For example, if you are studying family income in the United States, you would expect the system of measurement to be United States dollars, the unit of analysis to be the family, and the scale of measurement to be either dollars or thousands of dollars.
2. Read the textbook's description of the variables you listed in question A.1. Does it provide the recommended information about the distribution of that type of variable? If not, what additional information is needed?
3. Read the literature in your field to determine whether standard cutoffs or standard patterns are used to assess one of the variables in the association you listed in question A.1. Find a reference source that explains its application and interpretation.
4. Repeat questions A.1–A.3 using variables described in a journal article in your field of study.
5. In a journal article that uses a scale or index variable, read the description in the methods section about how that scale or index was constructed.
 - a. Evaluate whether the items used to construct that scale
 - i. are a consistent level of measurement (type of variable);
 - ii. have similar levels and ranges of values to one another.
 - b. Consider whether the author(s) evaluated or described the distribution of values of the scale or index.
 - c. Note whether the author(s) included citation(s) about the items and method used to construct the scale.
 - d. If you found problems in parts a or b, make suggestions of additional information needed or a revised approach to analyzing the items.

4

FIVE MORE TECHNICAL PRINCIPLES

B. Applying Statistics

1. Repeat question A.1 for the key predictor and outcome variables for a research question that can be analyzed using variables available in your database.
2. Using the same data,
 - a. calculate the frequency distribution for each variable;
 - b. create a simple chart of the distribution;
 - c. select and calculate the appropriate measure of central tendency for that type of variable;
 - d. determine whether central tendency typifies the overall distribution. Why or why not? If not, what is a more typical value?
 - e. For continuous variables, identify the minimum and maximum values and the first and third quartiles of the distribution.
3. Complete the “Getting to Know Your Variables” exercise, available on the website of supplemental materials for *The Chicago Guide to Writing about Numbers*, 2nd Edition. Pay special attention to the following issues for your key predictor and outcome variables in your data set:
 - a. issues of missing by design
 - b. other missing values (e.g., item non-response)
 - c. definitional limits on the values of your variables
 - d. how substantive issues related to the concepts under study affect the plausible range of values
 - e. how the units of measurement affect plausible range of values
 - f. how the context of your study affects the plausible range of values
4. For a variable in your data set for which a standard or cutoff is used in the literature,
 - a. repeat question A.3.
 - b. use the standard or cutoff to classify what percentage of cases fall below the cutoff in your data.
 - c. evaluate whether your distribution follows the expected pattern for that variable based on information in the literature. If not, identify possible reasons for those differences (e.g., different context).
5. Repeat questions A.1–A.3 for an index or scale in your data set.
6. Compare the eligibility thresholds for your state’s State Children’s Health Insurance (S-CHIP) for families for the most recent year available against the Federal Poverty Thresholds (see websites for your state’s S-CHIP program and the “Poverty” page on the US Census website). What is the highest income that would qualify for free S-CHIP benefits for a family of one adult and one child? A family of one adult and two children? A family of two adults and two children?