

Solutions

Note: we provide these for instructors but we do not want to make all solutions available to the public/students.

Chapter 1

- 1.1 Several answers are possible, depending on justification provided.
- Ordinal, interval or ratio can all be justified with explanation.
 - Ordinal is most probable, assuming there are more than two choices.
 - Ordinal is most probable.
- 1.2 Several answers are possible, depending on justification provided.
- Ordinal or interval are most likely; should be justified with explanation.
 - Nominal (no meaningful ordering).
 - Ratio (zero represents no income).
- 1.3 Answers can vary; scales should be described and match the level of measurement given in the answers. For example:
- Dependent Variable = Mathematics proficiency measured by levels of proficiency, ordinal scale (e.g., advanced, proficient, basic, and minimal); Independent Variable = Sex measured by one demographic question, nominal scale (e.g., male or female).
 - Dependent Variable = Satisfaction with Life measured by a multiple item survey interval scale (e.g., each item measures on a Likert scale); Independent Variable = Relationship Status measured by one dichotomous demographic question, nominal scale (e.g., single, married, divorced, etc.).
 - Dependent Variable = Body Image measured by a multiple item survey, interval scale (e.g., each item measures on a Likert scale); Independent Variable = Sex measured by one demographic question, nominal scale (e.g., male or female).
 - Dependent Variable = Level of Education measured by number of years attended school, ratio scale; Independent Variable = Religious Affiliation measured by one demographic survey item, nominal scale (e.g., Christian, Jewish, Muslim, Other).
- 1.4 Answers can vary; scales should be described and match the level of measurement given in the answer. For example:
- Dependent Variable = Weight measured in kilograms or pounds, ratio scale; Independent Variable = Country of residence measured by a demographic question, nominal scale (e.g., living in U.S. or not).
 - Dependent Variable = Cholesterol level measured by a blood test, ratio scale (e.g., amount of cholesterol in blood); Independent Variable = Sex measured by one demographic question, nominal scale (e.g., male or female).
 - No distinction between dependent and independent variables. Political Affiliation measured by a demographic question, nominal scale (e.g., Democratic, Republican, Other); Sex measured by one demographic question, nominal scale (e.g., male or female).
 - No distinction between dependent and independent variables. Grades in High School measured by GPA, ratio scale (interval or ordinal also possible); Amount of sleep measured by a survey item that asks respondents the number of hours they sleep each night, ratio scale.

1.5 Answers can vary; scales should be described and match the level of measurement given in the answer. For example:

- a. The dependent variable in this scenario is presidential choice, which is a nominal variable. The independent variable in this scenario is income. If income is measured by the gross annual income, then it would be a ratio variable. However, if income is measured by a survey item that categorizes income (e.g., < 9,999; \$10,000 to \$29, 999, \$30,000 to \$49,999, etc.) then it is an ordinal variable. Regardless, since the dependent variable is a nominal variable, procedures for analyzing categorical data are needed.
- b. The dependent variable in this scenario is income, and the independent variable in this scenario is presidential choice, which is a nominal variable. If income is measured by gross annual income, then it would be a ratio variable and procedures for analyzing categorical data are not needed. However, if income is measured by a survey item that categorizes income (e.g., < 9,999; \$10,000 to \$29, 999, \$30,000 to \$49,999, etc.) then it is an ordinal variable and procedures for analyzing categorical data are needed.
- c. The dependent variable in this scenario is fat content in diet. If this is measured by having participants track their meals for a week and then counting up the grams of fat consumed on an average day, this is a ratio variable. The independent variable is whether or not one has had a heart attack, which is a nominal variable. Because the dependent variable is a ratio variable, procedures for analyzing categorical data are not needed.
- d. The dependent variable is whether or not one has had a heart attack, which is a nominal variable. The independent variable in fat content in diet, which can be measured as described in 1.5(c) and is a ratio variable. Because the dependent variable is a nominal variable, procedures for analyzing categorical data are needed.

1.6 Answers can vary; scales should be described and match the level of measurement given in the answer. For example:

- a. The dependent variable in this scenario is whether or not one graduated from high school, which is a dichotomous nominal variable. The independent variable in this scenario is grade point average, which can be considered a ratio variable. Because the dependent variable is a nominal variable, procedures for analyzing categorical data are needed.
- b. The dependent variable in this scenario is grade point average, which can be considered a ratio (or interval) variable. Therefore, procedures for analyzing categorical data are not needed.
- c. The dependent variable in this scenario is annual income. The independent variable is whether or not a respondent attended college, which is a nominal (dichotomous) variable. If income is measured by gross annual income, then it would be a ratio variable and procedures for analyzing categorical data are not needed. But, if income is measured by a survey item that categorizes income (e.g., < 9,999; \$10,000 to \$29, 999, \$30,000 to \$49,999, etc.) then it is an ordinal variable and procedures for analyzing categorical data are needed.
- d. The dependent variable in this scenario is whether or not one attended college, which is a nominal (dichotomous) variable. Therefore, regardless of the manner in which income is measured, procedures for analyzing categorical data are needed.