

Test Bank

Chapter 2: Types of Variables and Levels of Measurement

Multiple Choice

1. A *constant* is best defined as _____.
- A. a characteristic that assumes only one value in a sample
 - B. a characteristic whose values vary over categories
 - C. a multiple-regression technique used to determine causality
 - D. a binomial characteristic whose value alters with respect to specific categorization

Ans: A

Cognitive Domain: Comprehension

Answer Location: Introduction: Types of Variables and Levels of Measurement

Difficulty Level: Medium

2. Which of the following is defined as a characteristic that takes on multiple values in a sample or population?

- A. a constant
- B. a variable
- C. a distribution
- D. a skew

Ans: B

Cognitive Domain: Comprehension

Answer Location: Introduction: Types of Variables and Levels of Measurement

Difficulty Level: Medium

3. A professor is undertaking a longitudinal research project into the criminal behavior of Irish women residing in Chicago. In this example *Irish Women* would be an example of which of the following?

- A. accio analytic unit
- B. standard deviation unit
- C. a constant variable
- D. unit of analysis

Ans: D

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

4. A factor that is used to try to explain or predict a dependent variable is referred to as what in statistics and research?

- A. an empirical variable
- B. a skewed variable
- C. an independent variable

D. an effectual variable

Ans: C

Cognitive Domain: Comprehension

Answer Location: Independent Variables and Dependent Variables

Difficulty Level: Medium

5. Which level of measurement is the most basic and least descriptive?

A. ordinal

B. ratio

C. interval

D. nominal

Ans: D

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

6. Which of the following lists the levels of measurement in statistics?

A. categorical and ordinal

B. categorical, ordinal, and quantitative

C. nominal, ordinal, interval, and ratio

D. nominal, categorical, frequency, and empirical

Ans: C

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

7. A ruler could be described as which type of level of measurement?

A. interval

B. categorical

C. nominal

D. ratio

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

8. A researcher has collected data for her most recent study into criminal incidents in rural areas. She has one variable that has a ranked characteristic. This variable would be described as belonging to what level of measurement?

A. ordinal

B. binomial

C. nominal

D. ratio

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables
Difficulty Level: Medium

9. For a study into rural crime, a researcher has a good amount of descriptive data. One variable is a basic demographic data point indicating a subject's racial/ethnic origin. This variable is composed of classifications indicating *Hispanic, Caucasian, Pacific Islander, and African-American*. What type of data is this variable?

- A. ratio
- B. categorical
- C. continuous
- D. binomial

Ans: B

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables
Difficulty Level: Medium

10. What study is conducted by the Bureau of Justice statistics as a supplement to the National Crime Victimization Survey in which respondents are asked questions regarding recent experiences with police?

- A. The Police–Public Contact Survey
- B. The National Law Enforcement Quality Survey
- C. The General Social Survey
- D. The National Police Survey

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Police–Public Contact Survey
Difficulty Level: Medium

11. What is the Department of Justice's data repository?

- A. The Inter-University Consortium for Political and Social Research (ICPSR)
- B. The Office of Juvenile Justice and Delinquency Programs (OJJDP)
- C. The Library of Congress
- D. The Bureau of Justice Statistics (BJS)

Ans: D

Cognitive Domain: Comprehension

Answer Location: The Bureau of Justice Statistics (BJS)
Difficulty Level: Medium

12. The only level of data that contains a TRUE zero is _____.

- A. interval
- B. nominal
- C. ratio
- D. categorical

Ans: C

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

13. The level of measurement that is numeric, rank-orderable, and has equal intervals between adjacent points, but that does not have a true zero is _____.

- A. nominal
- B. ratio
- C. interval
- D. ordinal

Ans: C

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

14. Which of the following words describes a phenomenon that is measured, observed, or tangible?

- A. empirical
- B. independent
- C. dependent
- D. didactic

Ans: A

Cognitive Domain: Comprehension

Answer Location: Independent Variables and Dependent Variables

Difficulty Level: Medium

15. A researcher has started analyzing data in a project investigating urban crime. Unbeknownst to him, he has inadvertently omitted one very important variable that would have explained the dependent variable very well. What error has been committed in this study?

- A. eliminated variable dilemma
- B. ecological fallacy
- C. There has been no error as the researcher will simply manipulate the data and arrive at meaningful results.
- D. omitted variable bias

Ans: D

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

16. The results of a study on police use of conducted energy devices (CED) indicated that police were more likely to use CEDs for what race of suspects?

- A. Blacks
- B. Whites
- C. Hispanics
- D. There was no difference in suspects' race for CED deployment.

Ans: C

Cognitive Domain: Comprehension

Answer Location: Choosing Variables for a Study on Police Use of Conductive Energy Devices

Difficulty Level: Medium

17. Categorical variables are generally divided into two distinct types. What are the two types?

- A. categorical and discrete
- B. nominal and ordinal
- C. nominal and categorical
- D. interval and ratio

Ans: B

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

18. Continuous variables are generally divided into two types. What are the two types?

- A. categorical and discrete
- B. nominal and ordinal
- C. nominal and categorical
- D. interval and ratio

Ans: A

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

19. The General Social Survey (GSS) is one of the most important sociological questionnaires proctored. The GSS is conducted by which organization?

- A. The RAND Corporation
- B. The Virgin Corporation
- C. The ICPSR
- D. The National Opinion Research Center (NORC)

Ans: D

Cognitive Domain: Comprehension

Answer Location: The General Social Survey

Difficulty Level: Medium

20. Which large-scale survey is available only in the English language?

- A. The General Social Survey (GSS)
- B. The Police-Public Contact Survey (PPCS)
- C. The Minnesota Multiphasic Police Interview (MMPI)
- D. The National Police Survey (NPS)

Ans: B

Cognitive Domain: Comprehension

Answer Location: The Police–Public Contact Survey

Difficulty Level: Medium

21. The difference between the ratio level and interval level of measurement is which of the following?

- A. Ratio-level scales have meaningful zero points that represent the absence of a given characteristic, but interval-level scales do not.
- B. Ratio-level scales are quantitative while interval-level scales are qualitative.
- C. The ratio-level has equal and know distances between adjacent points while interval level does not.
- D. Interval-level scales have a true zero point, but ratio-level scales do not.

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

22. What were the units of analysis for the Hart and Meithe (2009) study on self-defensive gun use?

- A. guns
- B. victims
- C. criminal incidents
- D. self-defense

Ans: C

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

23. What were the units of analysis for the Kleck and Kovandzic (2009) study on the choice to keep a firearm in the home and local levels of crime and police strength?

- A. individuals and cities
- B. firearms and local levels of crime
- C. police strength and firearms
- D. homes and local levels of crime

Ans: A

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

24. What two variables are often used interchangeably in the “real world” of statistical analysis?

- A. ratio and interval
- B. ordinal and interval
- C. categorical and ordinal
- D. interval and ratio

Ans: D

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

25. Which kind of variable is a quantitative measurement of the presence or absence of a certain characteristic in a group of people or objects?

- A. nominal variable
- B. continuous variable
- C. categorical variable
- D. ordinal variable

Ans: B

Cognitive Domain: Comprehension

Answer Location: Chapter Summary

Difficulty Level: Medium

26. Which of the following is the lowest level of measurement?

- A. nominal variable
- B. ordinal variable
- C. interval variable
- D. ratio variable

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

27. The Centigrade and Fahrenheit temperature scales would be considered which of the following levels of measurement?

- A. nominal variable
- B. ordinal variable
- C. interval variable
- D. ratio variable

Ans: D

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

28. Which of the following is the level of measurement of the variable *gender*?

- A. nominal variable
- B. ordinal variable
- C. interval variable
- D. ratio variable

Ans: A

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables

Difficulty Level: Medium

29. Which of the following is the level of measurement of the variable *number of times arrested*?

- A. nominal variable
- B. ordinal variable
- C. interval variable
- D. ratio variable

Ans: D

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

30. It is possible for a researcher to take continuous data and generate _____ data.

- A. fake data
- B. categorical data
- C. focus group data
- D. none of these

Ans: B

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

31. A _____ is a variable that takes on only one value in a sample or population and is often used by researchers examining multiple variables to determine more nuanced statistical associations.

- A. dependent variable
- B. auxiliary variable
- C. constant
- D. mediating variable

Ans: C

Cognitive Domain: Comprehension

Answer Location: Introduction: Types of Variables and Levels of Measurement

Difficulty Level: Medium

32. The _____ is essentially the object of target of a research project.

- A. research question
- B. unit of analysis
- C. hypothesis
- D. none of these

Ans: B

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

33. _____ is an example of a unit of analysis/

- A. People
- B. Cities

- C. Newspaper articles
- D. All of these

Ans: D

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

34. The frequently hardest to overcome element when trying to establish a cause and effect.

- A. temporal order
- B. empirical relationship
- C. nonspurious
- D. none of these

Ans: C

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

35. Which of the following is the most rudimentary level of measurement?

- A. nominal
- B. ordinal
- C. interval
- D. ratio

Ans: A

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

True/False

1. A unit of analysis is defined as the target or object under study.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Units of Analysis

Difficulty Level: Medium

2. The empirical event a researcher is trying to explain is known as the independent variable in a research study.

Ans: F

Cognitive Domain: Comprehension

Answer Location: Independent Variables and Dependent Variables

Difficulty Level: Medium

3. In research methods, the terms *independent variable* and *dependent variable* are synonymous with *cause* and *effect*.

Ans: F

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

4. The exclusion of one or more important variables in a research study is referred to as *omitted variable bias*.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

5. A characteristic that takes on multiple values in a sample or population is defined as a variable.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Introduction: Types of Variables and Levels of Measurement

Difficulty Level: Medium

6. Statistical analyses are scientific examinations of aggregate trends.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

7. An independent variable is better understood as an outcome rather than an effect.

Ans: F

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

8. It is vital in statistics to acknowledge the fact that all statistical relationships and associations are causal in nature.

Ans: F

Cognitive Domain: Comprehension

Answer Location: Relationships between Variables: A Cautionary Note

Difficulty Level: Medium

9. Categorical data are measured using numbers that have equal intervals between adjacent points on a scale.

Ans: F

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

10. If the variable *monthly income* were to be measured as *number of dollars earned in 1 month*, then this variable would be ratio level.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Levels of Measurement

Difficulty Level: Medium

11. Ordinal variables are important and useful in research because high powered statistical analyses and algebraic functions can readily be applied to them.

Ans: F

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables

Difficulty Level: Medium

12. The General Social Survey (GSS) has been conducted annually or every 2 years since 1972.

Ans: T

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables

Difficulty Level: Medium

13. The Bureau of Justice Statistics (BJS) gathers national data on a variety of criminal justice agencies, institutions, and issues.

Ans: T

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

14. Continuous variables can be added, subtracted, multiplied, and divided, whereas categorical variables cannot.

Ans: T

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

15. When selecting which type of data to use, it is wise to select the lowest level possible as that would be the easiest to manipulate numerically.

Ans: F

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

16. Continuous variables can be made into categorical variables.

Ans: T

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

17. Categorical variables can be made into continuous variables.

Ans: F

Cognitive Domain: Comprehension

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

18. An omitted variable is an independent variable that is significantly related to a dependent variable but has erroneously been excluded from a statistical analysis.

Ans: T

Cognitive Domain: Comprehension

Answer Location: Relationships Between Variables: A Cautionary Note

Difficulty Level: Medium

19. A variable such as *race* would be considered an interval level of measurement by a researcher.

Ans: F

Cognitive Domain: Comprehension

Answer Location: The Categorical Level of Measurement: Nominal and Ordinal Variables

Difficulty Level: Medium

20. The Police–Public Contact Survey is conducted by the U.S. Census.

Ans: F

Cognitive Domain: Comprehension

Answer Location: The Police–Public Contact Survey

Difficulty Level: Medium

Essay

1. Describe the different levels of measurement.

Ans: Nominal measures simply divide entities into discrete categories. Ordinal measures have the added characteristics of rank ordering. Interval measures are divided into discrete categories, have rank ordering, and have equal intervals between their ranks. Ratio levels of measurement are divided into discrete categories, have rank ordering, equal intervals between the ranks, and include a true, meaningful zero point.

Cognitive Domain: Application

Answer Location: Levels of Measurement

Difficulty Level: Medium

2. Why is it important to correctly identify a particular variable's level of measurement before proceeding with any type of statistical analysis?

Ans: Level of measurement determines the types of statistical analyses that can be employed. A variable's level of measurement must, therefore, be correctly identified at the outset, so that the proper analytic techniques can be selected.

Cognitive Domain: Application

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables
Difficulty Level: Medium

3. Define the term *unit of analysis*. In criminal justice and criminology research, what is often the unit of analysis?

Ans: The unit of analysis is the object or target of a research study. In criminal justice and criminology research, individual people are often the units of analysis.

Cognitive Domain: Application

Answer Location: Units of Analysis

Difficulty Level: Medium

4. Explain why it is possible to generate categorical variables from continuous data but not possible to obtain continuous data from categorical variables.

Ans: It is possible to have a data set containing continuous data and simply categorize variables into discrete blocks of information. This same process cannot be performed with categorical variables. For example, suppose a researcher has a data set containing a variable identified as *income*. This variable is simply income on a per dollar basis, with no specific categories. A researcher can easily take the continuous variable and create smaller blocks or categories of income. The income data could be broken up into categories such as US\$0–5000, US\$5001–10,000, US\$10,001–15,000, and so on and so forth.

This process is not possible with categorical data. If a researcher began with the income variable already divided up into blocks or discrete categories, there is no method by which to determine exactly what any specific individual's income on a per-dollar basis would be in any given year.

Cognitive Domain: Application

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

5. Briefly explain why it is easier to scientifically and mathematically analyze continuous data and not so easy a task to examine categorical data.

Ans: Continuous data are empirical observations that can be manipulated via algebraic equations such as used within statistics. Any continuous variable can be readily added, subtracted, multiplied, and divided. Higher end mathematical and statistical operations can be performed with relative ease using continuous data. For example, the variable of *income* can be added to other individual's annual income to give an impression of an economic base of a certain geographic region. This variable could also be subtracted, multiplied, or even divided by various techniques to arrive at very real and meaningful outcomes for a researcher. On the other hand, categorical variables cannot easily be manipulated mathematically. For example, a variable of gender, defined as *male* and *female* categories, cannot readily be manipulated via statistics. It's not possible to add one male to two females and then divide by three females and arrive at any meaningful or proper answer.

Cognitive Domain: Application

Answer Location: The Continuous Level of Measurement: Interval and Ratio Variables

Difficulty Level: Medium

