Business Statistics (Canadian) 4th edition Black Test Bank

SKU: 9781119983187-TEST-BANK

CHAPTER 1

INTRODUCTION TO STATISTICS AND BUSINESS ANALYTICS

CHAPTER LEARNING OBJECTIVES

1. ***Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.*** The study of statistics can be subdivided into two main areas: *descriptive statistics* and *inferential statistics.* Descriptive statistics result from gathering data from a body, group, or population and reaching conclusions only about that group. Inferential statistics are generated from the process of gathering sample data from a group, body, or population and reaching conclusions about the larger group from which the sample was drawn.

2. ***Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.*** Most business statistics studies contain *variables*, measurements, and data. A variable is a characteristic of any entity being studied that is capable of taking on different values. Examples of variables might include monthly household food spending, time between arrivals at a restaurant, and patient satisfaction rating. A *measurement* is when a standard process is used to assign numbers to particular attributes or characteristics of a variable. Measurements of monthly household food spending might be taken in dollars, time between arrivals might be measured in minutes, and patient satisfaction might be measured using a 5-point scale. *Data* are recorded measurements. It is data that are analyzed by business statisticians in order to learn more about the variables being studied. Two major types of inferential statistics are (1) *parametric statistics* and (2) *nonparametric statistics.* Use of parametric statistics requires interval or ratio data and certain assumptions about the distribution of the data. The techniques presented in this text are largely parametric. If data are only nominal or ordinal in level, nonparametric statistics must be used. The appropriate type of statistical analysis depends on the level of data measurement, which can be (1) *nominal,* (2) *ordinal,* (3) *interval,* or (4) *ratio.* Nominal is the lowest level, representing the classification of only data such as geographic location, sex, or social insurance number. The next level is ordinal, which provides rank ordering measurements in which the intervals between consecutive numbers do not necessarily represent equal distances. Interval is the next to highest level of data measurement, in which the distances represented by consecutive numbers are equal. The highest level of data measurement is ratio, which has all the qualities of interval measurement, but ratio data contain an absolute zero and ratios between numbers are meaningful. Interval and ratio data are sometimes called *metric* or *quantitative* data. Nominal and ordinal data are sometimes called *nonmetric* or *qualitative* data.

3. Explain the differences between the four dimensions of big data. The data that is available to decision makers is exponentially growing, as are the sources for that data. This growth has resulted in a new set of data called 'big data'. Big data is defined as *a collection of large and complex datasets from different sources that are difficult to process using traditional data management and processing applications.* There are four key characteristics associated

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

with big data and they are: variety, velocity, veracity and volume. Each of these characteristics are discussed in the text.
The computer allows for the storage, retrieval, and transfer of large data sets. Furthermore, computer soft ware has been developed to analyze data by means of sophisticated statistical techniques. Business statisticians use many popular statistical soft ware packages, including Minitab, SAS, and SPSS. In this text, the computer statistical output presented is from the Microsoft Excel software, which in spite of its limitations, is the most commonly used package in the business environment.

4. Compare and contrast the three categories of business analytics. There are three main categories of business analytics, or *the application of processes and techniques that transform raw data into meaningful information to improve decision making.* The three categories are descriptive analytics, predictive analytics and prescriptive analytics. Descriptive analytics describe what has or is happening relative to the data collected. On the other hand, predictive analytics which look to find relationships in the data. Tools in this category include regression analysis, time-series and forecasting; all of which are designed to allow management to estimate what might happen based on a given set of criteria or circumstance. The last category is prescriptive analytics which take risk into account when analyzing data and making decisions based on that data. Examples of where prescriptive analytics may be used include performance management or network analysis.

5. Describe the data mining and data visualization processes. Data mining is *the process of collecting, exploring and analyzing large volumes of data in an effort to uncover hidden patterns and/or relationships that can be used to enhance business decision-making*. Data mining allows businesses to take large amounts of data, pull out what they need to facilitate decision making. Data visualization is *the study of visual representation of data and is employed to convey data or information by imparting it as visual objects displayed in graphics*. By presenting the information or data visually can make the data and data results more understandable and thereby more useable.

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

TRUE-FALSE STATEMENTS

1. Statistics is a science that only deals with the analysis of numerical data.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

2. The complete collection of all entities under study is called the sample.

Answer: False

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

3. A portion or subset of the entities under study is called the statistic.

Answer: False

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

4. A descriptive measure of the population is called a parameter.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

5. A census is the process of gathering data on all the entities in the population.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

6. Statistics is commonly divided into two branches called descriptive statistics and summary statistics.

Answer: False

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

7. Statistics is commonly divided into two branches called descriptive statistics and inferential statistics.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

8. A descriptive measure of the sample is called a statistic.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

9. Gathering data from a sample to reach conclusions about the population from which the sample was drawn is called descriptive statistics.

Answer: False

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

10. Gathering data from a sample to reach conclusions about the population from which the sample was drawn is called inferential statistics.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

11. The basis for inferential statistics is the ability to make decisions about population parameters without having to complete a census of the population.

Answer: True

Difficulty: Easy
Learning Objective: Define important statistical terms, including population, sample, and parameter, as they relate to descriptive and inferential statistics.
Section Reference: 1.1 Basic Statistical Concepts
Blooms: Knowledge
AACSB: Analytic

12. All numerical data must be analyzed statistically in the same way because all of them are represented by numbers.

Answer: False

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Comprehension
AACSB: Analytic

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

13. The manner in which numerical data can be analyzed statistically depends on the level of data measurement represented by numbers being analyzed.

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

14. The lowest level of data measurement is the ratio-level.

Answer: False

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

15. The highest level of data measurement is the ratio-level.

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

16. Numbers which are used to classify or categorize the observations represent data measured at the nominal level.

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

17. Numbers which are used to rank-order the performance of workers represent data

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

measured at the interval level.

Answer: False

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

18. Nominal and ordinal data are sometimes referred to as qualitative data.

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

19. Nominal and ordinal data are sometimes referred to as quantitative data.

Answer: False

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

20. With interval-level data, the zero point is a matter of convention and does *not* mean the absence of the phenomenon under observation.

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

21. Interval- and ratio-level data are sometimes referred to as quantitative data.

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

Answer: True

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

22. Parametric statistics require that all data used be either interval or nominal.

Answer: False

Difficulty: Easy
Learning Objective: Explain the difference between variables, measurement, and data, and compare the four different levels of data: nominal, ordinal, interval, and ratio.
Section Reference: 1.2 Variables, Data and Data Measurement
Blooms: Knowledge
AACSB: Analytic

23. Big data refers to a standard set of variables collected from customers, suppliers, and staff.

Ans: False

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

24. If big data has variety, then it can be said that the data are from several different sources such as videos, retail scanners, and the internet.

Ans: True

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

25. Velocity refers to the speed with which data are available to the business and can be processed.

Ans: True

Difficulty: Easy

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

26. The accuracy, quality and correctness of data is referred to as veracity.

Ans: True

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

27. The term “garbage in, garbage out” refers to the volume of the data used by a business.

Ans: False

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

28. Big data can include unstructured data such as writings and photographs.

Ans: True

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

29. The characteristics of big data are variety, velocity, veracity, volume, and sometimes value.

Answer: True

Difficulty: Easy
Learning Objective: Explain the differences between the four dimensions of big data.
Section Reference: 1.3 Big Data
Blooms: Knowledge
AACSB: Analytic

30. Descriptive analytics focuses on what has happened or is happening within the business.

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

Ans: True

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

31. Prescriptive analytics is the second step in big data analysis, following descriptive statistics.

Ans: False

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

32. Prescriptive analytics takes uncertainty into account, recommends ways to mitigate risks, and tries to see what the effect of future decisions will be.

Ans: True

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

33. Simulation is a mathematical strategy one would expect to find within both predictive and prescriptive analytics.

Ans: True

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

34. If a manager relies on his/her gut instinct to make critical business decisions, this is an example of business analytics in action.

Ans: False

Difficulty: Easy

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

35. The three categories of business analytics could be described as describing what has happened, predicting potential relationships among data, and prescribing future decisions under uncertainty.

Ans: True

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

36. The main objective of business analytics is to transform data into meaningful information for decision-makers.

Ans: True

Difficulty: Easy
Learning Objective: Compare and contrast the three categories of business analytics.
Section Reference: 1.4 Business Analytics
Blooms: Knowledge
AACSB: Analytic

37. One goal of data visualization is to make complex data easier to understand.

Ans: True

Difficulty: Easy
Learning Objective: Describe the data mining and data visualization processes.
Section Reference: 1.5 Data Mining and Data Visualization
Blooms: Knowledge
AACSB: Analytic

38. The process of turning large amounts of raw data into information that may lead to business advantages is data mining.

Ans: True

Difficulty: Easy
Learning Objective: Describe the data mining and data visualization processes.
Section Reference: 1.5 Data Mining and Data Visualization
Blooms: Knowledge
AACSB: Analytic

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank

39. Data mining involves finding data, converting that data into useful forms, storing and managing the data and making the data available to all employees of the organization.

Ans: False

Difficulty: Easy
Learning Objective: Describe the data mining and data visualization processes.
Section Reference: 1.5 Data Mining and Data Visualization
Blooms: Knowledge
AACSB: Analytic

40. Using a bubble chart to display production levels for an organization's various product lines is an example of data visualization.

Ans: True

Difficulty: Easy
Learning Objective: Describe the data mining and data visualization processes.
Section Reference: 1.5 Data Mining and Data Visualization
Blooms: Knowledge
AACSB: Analytic

Copyright © 2023 John Wiley & Sons Canada, Ltd. Unauthorized copying, distribution, or transmission of this page is prohibited

Business Statistics (Canadian) 4th edition Black Test Bank