Test Bank for Statistics A Gentle Introduction 4th Coolidge

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Chapter 2: Descriptive Statistics: Understanding Distributions of Numbers

Test Bank

Multiple Choice

1. Which of the following types of graphs are typically used with nominal or ordinal data?
a. bar chart
b. frequency polygon
c. histogram
d. frequency distribution
Ans: A
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Knowledge
Answer Location: Descriptive Statistics
Difficulty Level: Easy

2. The purpose of depicting data is a graph is to _____.
a. make statistical inferences
b. display categorical data
c. display knowledge relevant to cause and effect.
d. prove a hypothesis created by a researcher
Ans: C
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Comprehension
Answer Location: The Purpose of Graphs and Tables: Making Arguments and Decisions
Difficulty Level: Medium

3. How did the graphing of the data collect help stop a cholera epidemic?
a. It allowed for the presentation of alternative hypotheses presented by the researcher.
b. It allowed for the researcher to prove to officials that the cholera epidemic was originating.
c. The graph alone was able to rule out any alternative hypotheses.
d. It allowed the researcher to discover where the victims lived and deduce the contaminated source of water.
Ans: D
Learning Objective: 2.2: Learn how a good graph stopped a cholera epidemic.
Cognitive Domain: Knowledge
Answer Location: How a Good Graph Stopped a Cholera Epidemic
Difficulty Level: Hard

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4. One of the reasons behind the Challenger Explosion was _____.
a. The graphs and charts related to all of the temperature data for the prior launches.
b. The graphs and tables did not present the argument clearly of linking temperature to seal mishaps.
c. The presentation of the data illustrated the clear link between temperature and seal mishaps.
d. The graphs indicate that the data were extracted and presented in a manner that was easy for NASA to understand.
Ans: B
Learning Objective: 2.3: Learn how bad graphs, tables, and presentations contributed to the space shuttle *Challenger* explosion and the space shuttle *Columbia* disaster.
Cognitive Domain: Knowledge
Answer Location: How Bad Graphs and Tables Contributed to the Space Shuttle *Challenger* Explosion
Difficulty Level: Medium

5. Which of the following would best depict nominal level data?
a. bar chart
b. frequency distribution
c. histogram
d. stem and leaf plot
Ans: A
Learning Objective: 2.4: Make graphs and tables.
Cognitive Domain: Knowledge
Answer Location: Descriptive Statistics
Difficulty Level: Easy

6. _____ is where the distribution of scores is progressively represented by the total frequency.
a. Frequency distribution
b. Grouped frequency distribution
c. Cumulative distribution
d. Cumulative frequency distribution
Ans: D
Learning Objective: 2.6: Make a frequency distribution.
Cognitive Domain: Knowledge
Answer Location: The Cumulative Frequency Distribution
Difficulty Level: Medium

7. An internalized frequency distribution allows for _____.
a. a more meaningful picture of large data sets
b. a less meaningful picture of large data sets
c. expanding the number of categories
d. disaggregating of data
Ans: A

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Learning Objective: 2.6: Make a frequency distribution.
Cognitive Domain: Knowledge
Answer Location: Grouping Data Into Intervals
Difficulty Level: Easy

8. Which of these is a reason why researchers examine data by creating tables and figures?
a. to prove a hypothesis
b. to define their sample
c. to figure out which variable is the dependent variable
d. to make decisions based on evidence
Ans: D
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Knowledge
Answer Location: The Purpose of Graphs and Tables: Making Arguments and Decisions
Difficulty Level: Medium

9. A researcher asks residents in a neighborhood about how approachable they thought the police were (approachable, neither approachable or unapproachable, or very unapproachable). A _____ would be used to illustrate the resident's responses to this question.
a. frequency distribution
b. bar graph
c. frequency polygon
d. line chart
Ans: B
Learning Objective: 2.4: Make graphs and tables.
Cognitive Domain: Comprehension
Answer Location: Descriptive Statistics
Difficulty Level: Medium

10. Which of the following would best depict interval level data?
a. Bar chart
b. Bell-curved shape
c. Frequency polygon
d. Bimodal distribution
Ans: C
Learning Objective: 2.6: Make a frequency distribution.
Cognitive Domain: Application
Answer Location: Frequency Distributions
Difficulty Level: Medium

11. In a frequency polygon, the horizontal axis typically contains the line scale that measures the _____ variable and the vertical axis typically contains the _____ of the variable we are measuring.

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a. dependent; frequency
b. independent; frequency
c. confounding; frequency
d. ordinal; frequency
Ans: A
Learning Objective: 2.6: Make a frequency distribution.
Cognitive Domain: Knowledge
Answer Location: Frequency Distributions
Difficulty Level: Hard

12. You would use a _____ to illustrate data for a variable measured at the _____ scale of measurement.
a. histogram; ordinal
b. frequency polygon; ratio
c. pie graph; ratio
d. bar chart; ratio
Ans: B
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Comprehension
Answer Location: Frequency Distributions
Difficulty Level: Hard

13. Which of the following is a way to avoid creating a bad graph?
a. Use as few data points as possible to avoid cluttering the graph
b. Use many colors and three dimensional shapes, as it attracts the readers' attention
c. Ensure when labeling the graph to keep the scale consistent
d. Fill the graph with as much information as possible
Ans: C
Learning Objective: 2.5: Avoid chart junk.
Cognitive Domain: Comprehension
Answer Location: Additional Thoughts About Good Graphs Versus Bad Graphs
Difficulty Level: Medium

14. _____ are derived from percentages and they describe the score at or below which a given percentage of the cases falls.
a. Cumulative percentages
b. Quartiles
c. Percentages
d. Percentile
Ans: A
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Knowledge
Answer Location: Cumulative Percentages, Percentiles, and Quartiles
Difficulty Level: Easy

15. Which of the follow is NOT a way to create a good chart that is easy for readers to

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understand?
a. Using multiple colors to make the graph artistically impressive
b. Make sure the scales used for each axis do not suddenly change
c. Ensuring that the graph labels are clear and easy to read
d. Making sure there are not too few but also not too many data points
Ans: A
Learning Objective: 2.5: Avoid chart junk.
Cognitive Domain: Comprehension
Answer Location: Additional Thoughts About Good Graphs Versus Bad Graphs
Difficulty Level: Medium

16. Filling in the blanks in this frequency distribution table, _____ of this sample took physics; on the other hand, _____took chemistry.

Fear of Crime	*f*	%	c%
Very Afraid	46	30.7	30.7
Somewhat afraid	44	29.3	_____
Somewhat unafraid	34	22.7	82.7
Very unafraid	26	_____	100
Total	_____		

a. 150; 17.3; 60
b. 149; 17.3; 29.3
c. 150; 16.7; 29.3
d. 150; 16.7; 60
Ans: A
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Application
Answer Location: The Cumulative Frequency Distribution
Difficulty Level: Medium

17. Which of the following is NOT a reason behind gathering statistical evidence statistical graphs and tables?
a. Gathering data is more organized and official as well as providing the researcher with standardized information.
b. Gathering statistical evidence allows for appropriate comparisons.
c. It supports the argument for causation between the independent and dependent variables.
d. Gathering data allows for the researcher to ensure that the relationship between the variables is univariate.
Ans: B
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Comprehension
Answer Location: A Summary of the Purpose of Graphs and Tables
Difficulty Level: Medium

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18. A distribution that is a normal curve but is flatter than a typical normal distribution is said to be _____.
a. leptokurtic
b. platykurtic
c. mesokurtic
d. skewed
Ans: B
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Comprehension
Answer Location: Non-normal Frequency Distributions
Difficulty Level: Medium

19. For which of these variables would you create a grouped frequency distribution table to summarize data you've collected?
a. type of crime
b. crime reported to police
c. respondents race
d. number of time victimized
Ans: D
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Comprehension
Answer Location: Grouping Data Into Intervals
Difficulty Level: Hard

20. A professor is analyzing test scores for the last exam. The distribution of letter grades for the last exam is as follows:

Letter Grade	Number in Category
A	10
B	15
C	12
D	15
F	10

What kind of distribution is this?
a. negatively skewed
b. positively skewed
c. normal
d. bimodal
Ans: D
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Application
Answer Location: Shapes of Frequency Distributions
Difficulty Level: Medium

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True/False

1. The data presented to NASA about the link between temperature and seal mishaps was clear.
Ans: F
Learning Objective: 2.3: Learn how bad graphs, tables, and presentations contributed to the space shuttle *Challenger* explosion and the space shuttle *Columbia* disaster.
Cognitive Domain: Knowledge
Answer Location: How Bad Graphs and Tables Contributed to the Space Shuttle *Challenger* Explosion
Difficulty Level: Easy

2. The title slide in the power point presentation on debris impact suggested that the shuttle managers had made the decision not to seek additional pictures.
Ans: T
Learning Objective: 2.3: Learn how bad graphs, tables, and presentations contributed to the space shuttle *Challenger* explosion and the space shuttle *Columbia* disaster.
Cognitive Domain: Knowledge
Answer Location: How a Poor PowerPoint Presentation Contributed to the Space Shuttle *Columbia* Disaster
Difficulty Level: Easy

3. A researcher can make a problem look more significant by exaggerating the tiny differences with an inappropriate bar graph.
Ans: T
Learning Objective: 2.4: Make graphs and tables.
Cognitive Domain: Comprehension
Answer Location: Graphical Cautions
Difficulty Level: Medium

4. Including three-dimensional bars on a histogram is not advisable if it does not add any meaning to the chart.
Ans: T
Learning Objective: 2.5: Avoid chart junk.
Cognitive Domain: Comprehension
Answer Location: Chart Junk
Difficulty Level: Easy

5. Cumulative percentages are derived from percentages, and they describe the score at or below which a given percentage of the cases falls.
Ans: F
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Comprehension
Answer Location: Cumulative Percentages, Percentiles, and Quartiles
Difficulty Level: Medium

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Essay

1. What are the five main purposes of charts and graphs?
Ans: Document the Sources of Statistical Data and Their Characteristics—method of data gathering should be organized and official; this method also provides standardized and essential information.
Make Appropriate Comparisons—by making relevant comparisons you can eliminate doubt of rival explanations.
Demonstrate the Mechanisms of Cause and Effect and Express the Mechanisms Quantitatively—most effective argument for a causative hypothesis is when we are able to demonstrate how varying the cause has a clear effect.
Recognize the Inherent Multivariate Nature of Analytic Problems—most problems have more than one cause.
Inspect and Evaluate Alternative Hypotheses—make relevant comparison to dismiss other plausible alternatives.
Learning Objective: 2.1: Learn the purposes of graphs and tables.
Cognitive Domain: Comprehension
Answer Location: A Summary of the Purpose of Graphs and Tables
Difficulty Level: Medium

2. What is a normal distribution, a positively skewed distribution, and a negatively skewed distribution?
Ans: A normal distribution has a single peak in the middle of the distribution, with fewer and fewer cases as you move away from this middle. A positive skew has the long tail of the distribution to the right, and the right side of the number line moves toward positive numbers. A negative skew has the long tail of the distribution to the left, and the left side.
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.
Cognitive Domain: Comprehension
Answer Location: Shapes of Frequency Distributions
Difficulty Level: Medium

3. When grouping data into class intervals, what are the important pieces of advice and why are they important?
Ans: Choose Interval Widths That Reduce Your Data to 5 to 10 Intervals. Too few intervals crunch up the data while too many intervals spread the data out too far.
Choose the Size of Your Interval Widths Based on Understandable Units, for Example, Multiples of 5 or 10. Perhaps because humans generally have five digits on each hand or foot, we intuitively favor base-10 systems.
Make Sure That Your Chosen Intervals Do Not Overlap. This is important so that we know exactly which category a person falls into.
Learning Objective: 2.7: Understand the essential characteristics of frequency distributions.

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Cognitive Domain: Knowledge
Answer Location: Advice on Grouping Data Into Intervals
Difficulty Level: Easy

4. Create a cumulative frequency distribution from the following data.

Number of Victimizations	f	%	c%
0–1	20		
2–3	30		
4–5	15		
6–7	10		
8–9	5		
10–11	2		

Ans:

Number of Victimizations	f	%	c%
0 – 1	20	24.4	24.4
2 – 3	30	36.6	61.0
4 – 5	15	18.3	79.3
6 – 7	10	12.2	91.5
8 – 9	5	6.1	97.6
10 – 11	2	2.4	100

Learning Objective: 2.6: Make a frequency distribution.
Cognitive Domain: Application
Answer Location: The Cumulative Frequency Distribution
Difficulty Level: Medium

5. What are some of the key issues for researchers to avoid when presenting their data in charts and graphs?
Ans: Avoid low- and high-density graphs. Do not attempt to fill up blank spaces of a graph with meaningless information. Ensure that the scales used for each axis do not suddenly change. Make sure that the graph labels can be read. The graph needs to be conceptually clear, do not confuse the reader with extra colors on the graph. Make the graphs on the power point presentation clear, do not dumb down or oversimplify the data.
Learning Objective: 2.5: Avoid chart junk.
Cognitive Domain: Comprehension
Answer Location: Additional Thoughts About Good Graphs Versus Bad Graphs
Difficulty Level: Medium

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