1.1 Introducing Statistics: What Can We Learn from Data

AP Statistics Name: _____ **CA #1**

Use the statistical study given to answer the following. Be sure to include context-specific language.

1. A local fitness center wants to understand how much time members spend exercising each week. A group of 90 members is surveyed and asked to report the number of minutes they exercise in a typical day.

   a. Identify the population.

   b. Identify the sample.

   c. Identify the variable.

   d. Write a statistical investigative question.

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2. A city library wants to understand reading habits among visitors and whether they differ by age group. Librarians survey 150 visitors and record each person's age group and the number of books they checked out during their visit.

   a. Identify the population.

   b. Identify the sample.

   c. Identify the variables.

   d. Write a statistical investigative question.

Answer for Corrective Assignment 1.1

1.	2.
A. The population is all members of the local fitness center. B. The sample is the 90 members who were surveyed. C. The variable is the number of minutes each member exercises in a typical day. D. Example Investigative Question: "How many minutes per day do members of the fitness center typically exercise?"	A. The population is all visitors to the city library. B. The sample is the 150 visitors who were surveyed. C. The variables are age group AND number of books checked out. D. Example Investigative Question: "Is there an association between age group and the number of books visitors check out at a city library?"

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1.2 Variables

AP Statistics Name: _____ **CA #1**

Use the scenario given to complete the table.

1. A city transportation department wants to better understand how residents commute to work. The city randomly selects residents from across different neighborhoods to study travel behavior. For each variable, label it as categorical or quantitative. If the variable is quantitative, further classify it as discrete or continuous.

Variable	Categorical or Quantiative	If applicable, Discrete or Continuous
Number of days per week a resident uses public transportation		
Primary mode of transportation		
Average commute time (minutes)		
Do you work from home at least once per week		
Number of miles traveled to work each day		
Type of parking used at work (garage, street, none)		
Fuel cost spent per week on commuting		
Preferred commuting time (morning, midday, evening)		

Use the given scenario to answer the questions.

2. A hospital wants to better understand patient experience in its emergency room. The hospital randomly selects 120 patients from the emergency room and records whether each patient reports being satisfied with their visit (yes or no).

   a. Identify the variable and label as Categorical or Quantitative.

   b. Identify the observational unit.

   c. Identify the parameter.

   d. Identify the statistic.

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Answers to 1.2 corrective assignment

1.

Variable	Categorical or Quantiative	If applicable, Discrete or Continuous
Number of days per week a resident uses public transportation	**Quantitative**	**Discrete**
Primary mode of transportation	**Categorical**	**-------**
Average commute time (minutes)	**Quantitative**	**Continuous**
Do you work from home at least once per week	**Categorical**	**-------**
Number of miles traveled to work each day	**Quantitative**	**Continuous**
Type of parking used at work (garage, street, none)	**Categorical**	**-------**
Fuel cost spent per week on commuting	**Quantitative**	**Continuous**
Preferred commuting time (morning, midday, evening)	**Categorical**	**-------**

2.

a. Whether a patient reports being satisfied with their visit (yes or no) - Categorical
b. One patient in the emergency room
c. The true proportion of all emergency room patients who report being satisfied with their visit
d. The sample proportion of the 120 selected patients who report being satisfied with their visit.

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1.3 Tabular Representation & Summary Statistics for One Categorical Variable

CA #1

AP Statistics Name: _____

Use the scenario given to answer the questions.

1. A local nonprofit organization wants to redesign its volunteer program to better match what volunteers enjoy doing most. The organization has 1,480 registered volunteers and randomly selects 96 volunteers to ask, "Which type of volunteer role do you prefer?" The results are shown below.

   a. Complete the table of summary statistics.

   b. Describe the distribution of the preferred volunteering type.

Category	Counts	Relative Frequency
Event Support	29	
Tutoring	24	
Adiminstrative Task	18	
Community Outreach	15	
Facility Maintenance	10	

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3. A city media council wants to understand which streaming platform residents prefer so they can plan future digital-media partnerships. The council randomly selects 162 residents and records each person's preferred streaming platform (Netflix, Hulu, Disney+, Amazon Prime, or Max). The council believes that Netflix is the most popular platform, and they want to determine whether the data support this claim.

Amazon Prime: 28
Hulu: 38
Disney+: 22
Netflix: 56
Max: 18

a. Identify the population.

b. Identify the sample.

c. Identify the parameter.

d. Identify the statistic.

e. Identify the variable.

f. Identify the observational unit.

g. Does the data support the claim?

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Answers to 1.3 corrective assignment

1.

a.

Category	Counts	Relative Frequency
Event Support	29	0.302
Tutoring	24	0.25
Adiminstrative Task	18	0.188
Community Outreach	15	0.156
Facility Maintenance	10	0.104

b. Event Support is the most preferred role with 30.2% followed by Tutoring with 25%. Facility Maintenance is the least preferred with 10.4% Event Support is 3 times more than Facility Maintenance.

2.

a. The population is all residents of the city

b. The sample is the 162 residents that were randomly selected

c. The true proportions of all city residents preferred streaming platform

d. The sample proportions of residents preferred streaming platform. Amazon Prime = 17.3%, Hulu = 23.5%, Disney+ = 13.6%, Netflix = 34.6%, and Max = 11.1%

e. The preferred streaming platform

f. One resident in the survey

g. Yes, the data supports the claim that Netflix is the most popular streaming platform. Netflix was highest streaming platform at 34.6% followed by Hulu with 23.5%. Netflix was over 3 times more than the lowest platform Max at 11.1%.

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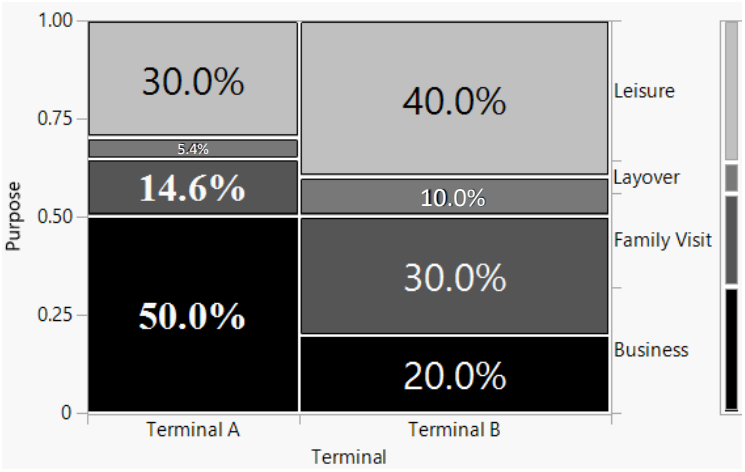
1.4 Graphical Representation for One Categorical Variable

AP Statistics Name: _____ **CA #1**

1. An airport is interested in the primary purpose for flying among travelers at its two terminals. The airport randomly surveys 130 travelers in Terminal A and 190 travelers in Terminal B. Results below.



An airport manager looks at the mosaic plot and claims,

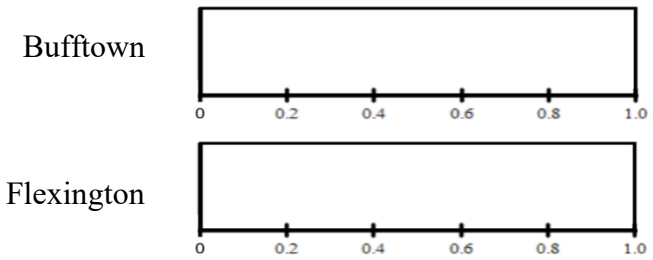
"Business is the largest segment in Terminal A's bar, so more travelers at Terminal A were flying for business than any other group of travelers for any purpose at either terminal."

Is this claim correct? Justify your answer using the data.

2. A fitness researcher wants to know if preferred type of workout differs between members at two gym locations: Bufftown and Flexington. The researcher randomly surveys 160 Bufftown members and 220 Flexington members and asks each person their primary type of workout.

Location	Weightlifting	Cardio	Group Class
Bufftown	96	32	32
Flexington	66	110	44

a. Construct a segmented bar graph to display the distribution of preferred method of getting around the city.



b. Describe the distribution of preferred workout type for both locations using relative frequencies.

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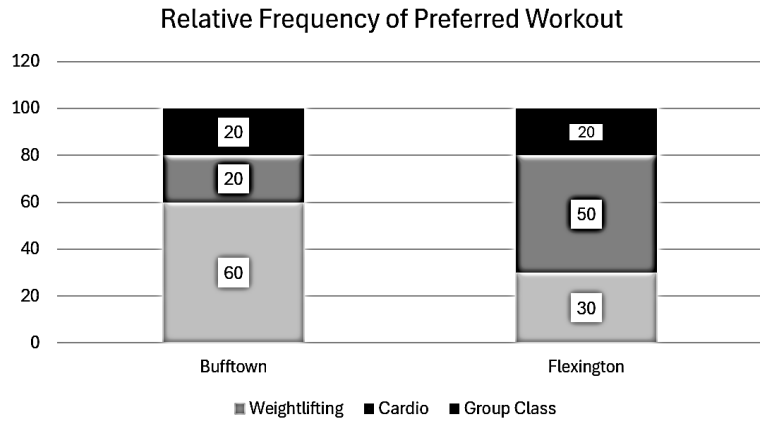
Answers to 1.4 Corrective Assignment

1. The claim is incorrect. Business is the largest segment within Terminal A's bar at 50%, which corresponds to 65 travelers (50% of 130). However, Terminal B's Leisure segment, at only 40% of its bar, represents 76 travelers (40% of 190) — more than Terminal A's 65 business travelers, despite having a lower relative frequency.
   This happens because Terminal B has a much larger sample size overall (190 vs. 130). A segment with a smaller relative frequency in a larger group can still represent more actual people than a segment with a larger relative frequency in a smaller group. The manager's error is comparing relative frequencies directly across two bars without converting them into actual counts:
   Terminal A Business: 50% × 130 = 65 travelers
   Terminal B Leisure: 40% × 190 = 76 travelers
   Since 76 > 65, more travelers were flying for leisure out of Terminal B than for business out of Terminal A, making the manager's claim false — even though Business has the higher percentage.

2.



Among Bufftown members, Weightlifting was the most preferred workout type at 60%, followed by Cardio and Group Classes, which were tied at 20% each. Among Flexington members, Cardio was the most preferred workout type at 50%, followed by Weightlifting at 30%, and Group Classes at 20%. The two locations differ substantially in their top preference — Weightlifting dominates at Bufftown while Cardio dominates at Flexington. Group Classes is identical between the two locations at 20%, showing that preference for this category does not differ by location even though the other two categories do.

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