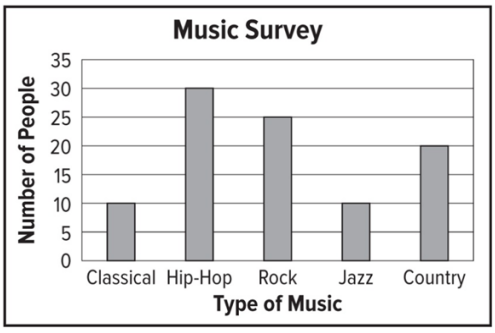
KeyConcept Study Types

Definition	Example
In a **survey**, data are collected from responses given by members of a population regarding their characteristics, behaviors, or opinions.	To determine whether the student body likes the new cafeteria menu, the student council asks a random sample of students for their opinion.
In an **experiment**, the sample is divided into two groups: • an *experimental group* that undergoes a change, and • a *control group* that does not undergo the change. The effect on the experimental group is then compared to the control group.	A restaurant is considering creating meals with chicken instead of beef. They randomly give half of a group of participants meals with chicken and the other half meals with beef. Then they ask how they like the meals.
In an **observational study**, members of a sample are measured or observed without being affected by the study.	Researchers at an electronics company observe a group of teenagers using different laptops and note their reactions.

Make an Inference About a Population

MUSIC: A random sample of the 922 people at a concert were surveyed and asked to name the type of music they listen to most often at home. Based on the results of the bar graph, what is the most reasonable inference about the number of people at the concert who would say that jazz is the type of music they listen to most often at home?



Step 1: **Determine the number of people surveyed at the jazz concert.** 922

Step 2: **Calculate the sample proportion. (Favorable Outcome / Number In The Sample)**

$\frac{10}{95} = 0.1052$

Step 3: **Use the sample proportion to make an inference about the population.** 97

Identify Bias

UNIFORMS A university wants to redesign the mascot it uses for each sports team. An administrator surveys a random sample of the football team to see whether the school's athletes want the same mascot with a new design, or a different mascot entirely, and finds that 10 of the 20 respondents want the same mascot. From this, the administrator determines that approximately 1532 of the university's 3064 athletes want the same mascot. Identify and explain any bias that might affect the validity of Jamar's inference.

Bias

Determine whether the survey question is *biased* or *unbiased*. If biased, explain your reasoning.

Are you planning on watching the ultimate sporting event, the Super Bowl?

A. unbiased

B. Biased; the question is confusing.

C. Biased; the question addresses more than one issue.

D. Biased; the question encourages a certain response.