

**Topic:** Sampling and bias

**Question:** A restaurant wants to know how the new chef's special is received. The owner of the restaurant polls 20 patrons on whether they enjoyed the special by asking the question, "Did you enjoy our chef's new delicious special today?" What type of bias does the sample have?

**Answer choices:**

- A      Measurement bias
- B      Response bias
- C      Leading questions
- D      Selection bias



**Solution: C**

The sample has leading question biased. Since the words “enjoy” and “delicious” have been included in the question, people will feel more pressure to answer in favor of the new chef’s special.

Instead, we could have asked, “What do you think about the new chef’s special?” This wording does not lead people to answer in a certain way.



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**Question:** A political poll conducts a survey on current presidential approval in the United States. Which choice would be the best representative sample of the US population?

**Answer choices:**

- A      The poll asks 100 people in Alabama if they approve of the president.
- B      The poll asks 100,000 people across the United States if they approve of the president.
- C      The poll asks 50,000 people in the eastern United States if they approve of the president.
- D      The poll asks 100 people across the United States if they approve of the president.



**Solution: B**

A poll that asks 100,000 people across the United States will be the best representative sample, because it's large and it surveys people across the country.

Answer choices A and C are only surveying people in narrow regions of the country. If we want a representative sample of the United States, then all 50 states should be included.

Answer choice D doesn't survey enough people to give a clear representation of the total population, even though it's surveying people in all 50 states.



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**Question:** The state of Colorado conducts a study on the GPA of college students throughout the state. They randomly sample GPA within the majors of English, Science, Mathematics, Business, and Arts. Which sampling technique was used in the experiment?

**Answer choices:**

- A Simple random sample
- B Stratified random sample
- C Clustered random sample
- D Voluntary random sample



**Solution: B**

The study used a stratified random sample since it divided the population into groups according to type of major, and then sampled within those groups.

A simple random sample would have been a random collection of GPAs with no regard to type of major. A clustered random sample would have divided the population into clusters with a mix of majors in each cluster. A voluntary random sample would have been a sample of individuals who voluntarily respond to a general survey asking about their GPA.

