

شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية



شرح الدرس الأول Random sampling من الوحدة الثامنة

موقع المناهج ← المناهج الإماراتية ← الصف الحادي عشر المتقدم ← رياضيات ← الفصل الأول ← الملف

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التواصل الاجتماعي بحسب الصف الحادي عشر المتقدم



روابط مواد الصف الحادي عشر المتقدم على تلغرام

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- **Statistics** is an area of mathematics that deals with collecting, analyzing, and interpreting data.
- A **population** consists of all the members of a group of interest.
- A **bias** is an error that results in a misrepresentation of a population.

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Sample type	Definition	Example	Biased?
Self-selected	Self-selected Members volunteer to be included in the sample.	A TV show host asks his viewers to visit his website and respond to an online poll.	probably biased: People who take the time to respond tend to have similarly strong opinions compared to the rest of the population
Convenience	The researcher chooses a sample that is readily available in some non-random way.	A researcher polls people as they walk by on the street.	probably biased: The location and time of day and other factors may produce a biased sample of people.
Simple random	Each member has an equal chance of being selected	A teacher puts students' names in a hat and chooses without looking to get a sample of students.	Sometimes: Random samples are usually fairly representative since they don't favor certain members IF the sample size is big enough.
Systematic	Members of the population are put in some order. A starting point is selected at random, and every n^{th} member is selected to be in the sample	A principal takes an alphabetized list of student names and picks a random starting point. Every 20 th student is selected to take a survey	unbiased IF the sample size is big enough.
Stratified	The population is first split into groups. The overall sample consists of some members from every group. The members from each group are chosen randomly	A student council surveys 100 students by getting random samples of 25 freshmen, 25 sophomores, 25 juniors, and 25 seniors	unbiased

Ex1:

Identify each sample, and suggest a population from which it was selected. Then classify the sample as *simple random*, *systematic*, *self-selected*, *convenience*, or *stratified*. Explain your reasoning.

1. Berton divides his sports T-shirts by team. Then he randomly selects four T-shirts from each team and records the size.

Sample answer: The T-shirts Berton selects; population: all of Berton's sports T-shirts; stratified: Berton divides the T-shirts by team before the sample is selected.

2. The project manager at a new business inspects every tenth smart phone produced to check that it is operating correctly.

Sample answer: Every 10th smart phone; population: all smart phones the company produces; systematic: each selection was made at a regular interval.

3. A grocery store manager asks its customers to submit suggestions for items on the salad bar during the week.

Sample answer: The customers who submit suggestions; population: all customers; self-selected: the customers voluntarily submit suggestions.

Ex2:

Identify each sample or question as *biased* or *unbiased*. Explain your reasoning.

4. A random sample of eight people is asked to select their favorite food for a survey about Americans' food preferences.

Biased; sample answer: The sample is too small and does not represent the population.

5. Every tenth student at band camp is asked to name his or her favorite band for a survey about the campers.

Unbiased; sample answer: The students are randomly selected. The fact that the sample is selected at band camp does not influence the response of the selected sample.

6. Every fifth person entering a museum is asked to name his or her favorite type of book to read for a survey about reading interests of people in the city.

Biased; sample answer: Participants are randomly selected, but the museum might be more likely to attract people with specific interests.

7. Do you think that the workout facility needs a new treadmill and racquetball court?

Biased; sample answer: The question is asking about two issues: whether the workout facility needs a new treadmill and whether the workout facility needs a new racquetball court.

8. Which is your favorite type of music, pop, or country?

Biased; sample answer: The question only gives two options, and thus encourages a certain response.

9. Are you a member of any after-school clubs?

Unbiased; sample answer: The question does not influence participants.

10. Don't you agree that employees should pack their lunch?

Biased; sample answer: The question encourages a certain response. The phrase "don't you agree" suggests that the people surveyed should agree.

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Survey (VS) Experiment (VS) Observational study

- In a **survey**, data are collected from responses given by members of a group regarding their characteristics, behaviors, or opinions.
- In an **experiment**, the sample is divided into two randomly selected groups, the experimental group and the control group. The effect on the experimental group is then compared to the control group.
- In an **observational study**, members of a sample are measured or observed without being affected by the study.

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To understand the differences correctly watch the video

<https://www.youtube.com/watch?v=-6cl8vF0lGo>



Ex3:

Determine whether each situation describes a *survey*, an *experiment*, or an *observational study*. Then identify the sample, and suggest a population from which it may have been selected.

- 11.** An Internet service provider conducts an online study in which customers are randomly selected and asked to provide feedback on their customer service.
Survey; sample answer: Customers that take the online survey; population: all customers
- 12.** A research group randomly selects 100 business owners, half of whom started their own businesses, and compares their success.
Observational study; sample answer: The 100 business owners selected; population: all business owners
- 13.** A research group randomly chooses 50 people to participate in a study to determine whether exercising regularly reduces the risk of diabetes in adults.
Experiment; sample answer: The 50 adults participating in the study; population: all adults
- 14.** An online video streaming service mails a questionnaire to randomly selected people across the country to determine whether they prefer streaming movies or sports.
Survey; sample answer: People that receive the questionnaire; population: all online video streaming viewers

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