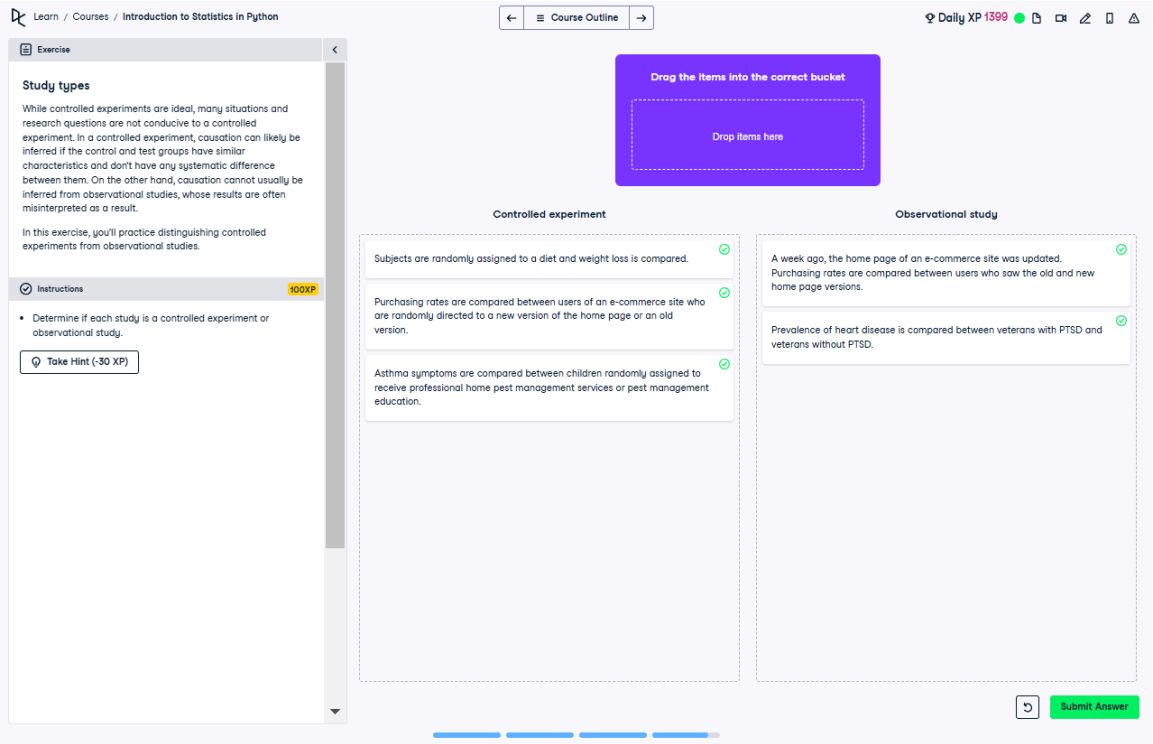
Study Types: Controlled Experiments vs. Observational Studies



Question:

While controlled experiments are ideal, many situations and research questions are not conducive to a controlled experiment. In a controlled experiment, causation can likely be inferred if the control and test groups have similar characteristics and don’t have any systematic difference between them. On the other hand, causation cannot usually be inferred from observational studies, whose results are often misinterpreted as a result.

Determine if each study is a controlled experiment or observational study.

Explanation of the Question:

This question requires identifying whether a study involves random assignment of participants to groups, which characterizes a controlled experiment, or if it observes existing conditions without intervention, which defines an observational study.

Answer:

Controlled Experiments:
- Subjects are randomly assigned to a diet and weight loss is compared.

- Purchasing rates are compared between users of an e-commerce site who are randomly directed to a new version of the home page or an old version.
- Asthma symptoms are compared between children randomly assigned to receive professional home pest management services or pest management education.

Observational Studies:
- A week ago, the home page of an e-commerce site was updated. Purchasing rates are compared between users who saw the old and new home page versions.
- Prevalence of heart disease is compared between veterans with PTSD and veterans without PTSD.

Explanation:
Controlled experiments involve random assignment, enabling researchers to infer causation. Observational studies, on the other hand, observe existing variables without intervention, which only allows for correlation analysis but not causation inference.