

Design a study!

August 29th, 2023

Dr. R

Instructions

- 1) Identify your group number.
- 2) Find the slide that has the same number on the top left.
- 3) Enter names of all members in the group.
- 4) Choose whether you think your question could be best answered with an **observational study** or an **experiment**.
- 5) Describe the study in a sentence.
- 6) Decide which **sampling method** you would use to answer the question:
 - SRS, Stratified, Cluster, Systematic, Voluntary Response, Multistage
- 7) What **variable(s)** would you use to answer the question of interest?
- 8) Specify each variable as **categorical** (specify nominal or ordinal) or **quantitative** (specify continuous or discrete).

(Ex) Does ungrading help STAT 100 students learn statistics better?

Group members: Wendy R.

Type of study: Experiment

Describe study: Randomly assign one section of STAT 100 to ungrading (treatment) and to traditional grading (control)

Sampling Method: Convenience sampling

Variable(s): Final grade, section (treatment or control)

Type of variable: Final grade (quantitative, continuous), section (categorical, nominal)

(1) Does smoking cause under eye bags?

A medical researcher conjectures that smoking can result in wrinkled skin around the eyes.

Group members: Sabrina Liu, sakshi, Bhanu Prakash

Type of study: Observational Study

Describe study: We will design a survey on social media. In the survey, we will ask the participants if they are non-smokers or smokers, then we will ask if they have eye bags or not. We will use the collected data to find out the correlation coefficient to determine the relationship

Sampling Method: voluntary response sampling

Variable(s): Y-dependent variable: eye-bag . X-independent variables: smoking

Type of variable: both variables are category, nominal variables

(2) Does wearing a fitbit increase the amount of exercise people do per week?

Group members: Nikhil, Andrea, Ashutosh

Type of study: Observational Study

Describe study: Start observing and recording amount of exercise people do with a fitbit and without fitbit doing for a week.

Sampling Method: Stratified

Variable(s): Number of days they attended, workout time, wearing fitbit

Type of variable: Number of days - quantitative, workout time - quantitative, wearing fitbit - boolean, categorical.

(3) Is your dominant hand stronger?

An instrument has been developed to measure the force exerted (in pounds) when squeezed by one hand.

Group members: Hou u, Mrudula, Van

Type of study: Observational Study

Describe study: Squeezed lemon. Measured of the juice that we squeezed

Sampling Method: Stratified Sampling Method

Variable(s): amount of juice, # people squeezed the lemon, force extend by people, which hand

Type of variable: lemon juice (quantitative, continuous), age, sex(categorical, nominal), hand (categorical, nominal)

(4) Do Queer faculty at Stanford earn the same as non-queer faculty?

Group members: Kreesh, Deepak, Manichandana

Type of study: Observational

Describe study: Two separate sections , one is for Queer and another will be Non-Queer.

Sampling Method: SRS

Variable(s): Salary, Queer or Non-Queer , Work Experience

Type of variable: Queer and Non-queer(Categorical, nominal), Salary(Qualitative ,continuous) Work Experience(Categorical, Ordinal)

(5) What color eyes are perceived as the most attractive?

Consider the following eye colors: blue, brown, green, and hazel

Group members: Zain, Pavan

Type of study: observational

Describe study: conduct a social media poll to get the responses.

Sampling Method: voluntary response sample

Variable(s): gender, eye color

Type of variable: gender(categorical, nominal), eye color(categorical, nominal)

(6) Do small Black-owned businesses earn as much as small non-Black businesses?

Group members: Jack, Sreenivas

Type of study: Observational

Describe study: Find out what is relative revenue generated by black owned businesses and non black owned businesses over a year based on locations and types of business.

Sampling Method: cluster sampling

Variable(s): location, type of business, black vs non black, profit

Type of variable: location- categorical, type of businesses- nominal, and categorical, black vs non black(categorical, nominal) , profit(quantitative, continuous)

(7) Do people in different time zones in the U.S. get the same amount of sleep on average?

There are 4 time zones in the U.S.: Eastern, Central, Mountain, and Pacific.

Group members: Nikhil, Kushagra

Type of study: Observational

Describe study: Take note of amount sleep people are getting from each time zone.

Sampling Method: Stratified Sampling

Variable(s): Amount of time(sleep), Time zones

Type of variable: Amount of time(continuous, quantitative), Time zones
(Categorical, nominal)

(8) Which drug slows the progression of Alzheimer's better: donanemab or lecanemab?

Group members: Zeina Abudamous, Vamshi Reddy

Type of study: Experiment

Describe study: Divide a sample of participants between donanemab and lecanemab

Sampling Method: Convenience sampling

Variable(s): Type of medication, memory test score

Type of variable: Type of medication (categorical, nominal), memory test (quantitative, continuous)

(9) How do Americans feel about the new student loan forgiveness plan proposed by the prez?

We want to know if people support or do not support the plan.

Group members: Sowmya Sree, Shreyas

Type of study: **Observational**

Describe study: **cross sectional study, survey**

Sampling Method: simple random sampling

Variable(s): opinion on loan plan, financials, age...

Type of variable: opinion (categorical, nominal),

(10) Do prison rehabilitation programs reduce the number of repeat offenders?

Group members: Surekha, Rakesh

Type of study: Observational

Describe study: Meeting people in rehabilitation center and taking survey based on their crime records

Sampling Method: convenience

Variable(s): criminal database (records), reports from rehab center

Type of variable: # of repeat offenses (quantitative, discrete)