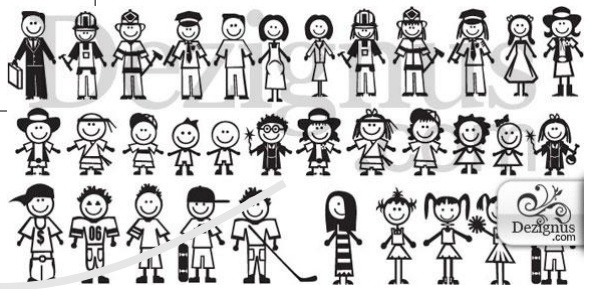
Chapter 10
Population and Sample

2023

Population and sample

- Population: the complete set of the individual having some common characteristics
- Element: single member of a population

- Sample: Subset of the population that is selected to represent the population.



Population and sample

- Accessible population: the total cases that conform to the designated criteria and accessible for the researcher.
- Target population: the cases that the researcher would like to make generalization of the findings.

Sample eligible criteria

- Inclusion criteria: the exact criteria by which it could be decided whether the individual would or would not be classified as a member of population.

- Exclusion criteria: some characteristics that people must not possess.

Example of inclusion and exclusion criteria: Keele-Smith and Price-Daniel (2001) used an experimental design to examine the effect of crossing legs on blood pressure measurements. Study participants were seniors, and could be either normotensive or hypertensive. People were excluded if they were taking antihypertensive medications and had not taken their medication that day; had a diagnosis of peripheral vascular disease; had lower leg amputations; had had surgery within the 2 prior weeks; or could not cross their legs.

Sampling

- The most important consideration in evaluating a sample in a research study is to be

Representative for the population.

Representativeness: A sample whose key characteristics closely approximate those of the population

More easily achieved with:

- Probability sampling
- Homogeneous populations
- Larger samples

Types of sampling method

- **Probability random sample**.
- random sample: each element in the population has an equal chance of being selected.

- **Non probability sample**

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Probability random sample

- **1. simple random** sample: researcher establish sample frame (list of elements) from which the sample will be chosen.
- For small size of simple random sample

	student name	.ID no
1	محمد	200320998
2	معاذ	200510500
3	[illegible]	200511426
4	قاسم	200520080
5	احمد	200520143
6	علاء	200610139
7	قاسم	200610159
8	توفيق	200611004
9	عمر	200611066
10	مهند	200611343
11	محمد	200611702
12	غسان	200620552
13	ايمان	200630105
14	هلة	200630240
15	هيام	200630241
16	فرزل	200731478

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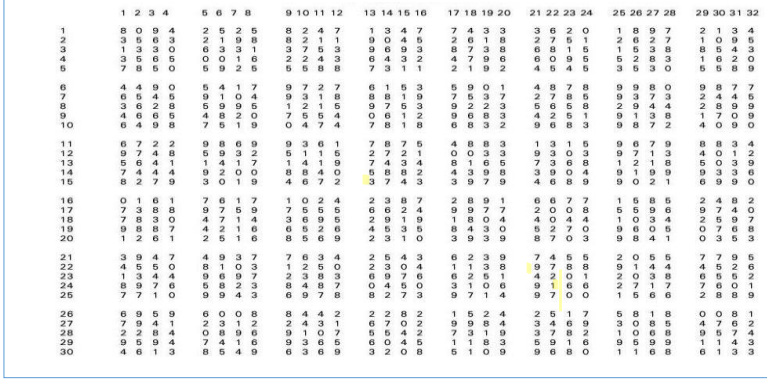
Example of a simple random sample:
Yoon and Horne (2001) studied the use of herbal products for medicinal purposes in a sample of older women. A random sample of 86 women aged 65 or older who lived independently in a Florida County was selected, using a sampling frame compiled from information from the state motor vehicle agency.

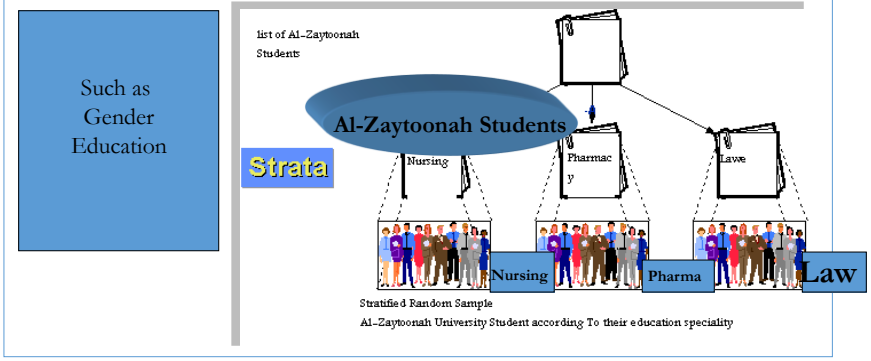
Probability random sample

- For large number sample use a table of random sample number.
- There is no order or sequence of number.



Probability random sample

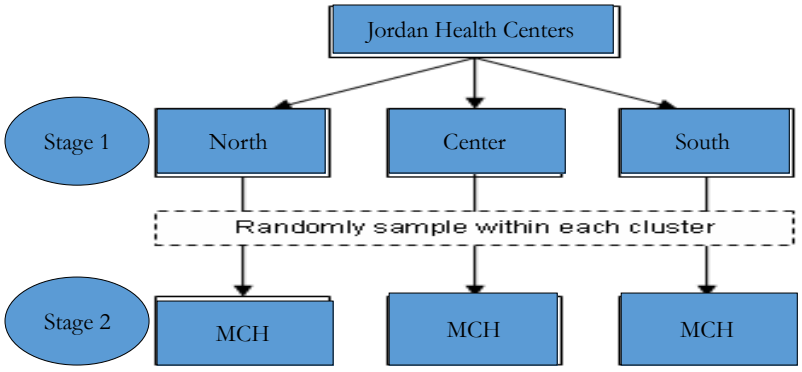
- **2. stratified random sample**: the population is divided into subgroup, or strata according to some variables, then simple random sample is withdrawn from each strata



Example of stratified random sampling: Bath, Singleton, Strikas, Stevenson, McDonald, and Williams (2000) conducted a survey to determine the extent to which hospitals with labor and delivery services had policies about screening pregnant women for hepatitis B. A stratified random sample of 968 hospitals (stratified by number of beds and affiliation with a medical school) was selected.

Probability random sample

- 3. cluster random sample:



Probability random sample

- Systematic random sampling: selection every Kth element of the population
- Example: every 7^{th} , or 8^{th}, or 10^{th} element
- **Sample size = <u>Number of population</u> = K**
  number of sample

$$k = \frac{40{,}000}{200} = 200$$

Example of a systematic sample:

Tolle, Tilden, Rosenfeld, and Hickman (2000) explored barriers to optimal care of the dying by surveying family members of decedents. Their sampling frame was 24,074 death certificates in Oregon, from which they sampled, through systematic sampling, 1458 certificates. They then traced as many family members of the decedents as possible and conducted telephone interviews.

Non probability sample

- **Sample chosen from the population in non random method**

- **1. Convenient sample**: accidental choosing readily available subjects for the study
- **2. Snowball sample (network):**

  Not representative to the population
- **3. Quota sample:** divide population in to strata and **select convenient** sample from each of these strata.
- **4. Purposive sample**: handpicking of the subjects

TABLE 13.1 Numbers and Percentages of Students in Strata of a Population, Convenience Sample, and Quota Sample

STRATA	POPULATION	CONVENIENCE SAMPLE	QUOTA SAMPLE
Male	200 (20%)	10 (5%)	40 (20%)
Female	800 (80%)	190 (95%)	160 (80%)
Total	1000 (100%)	200 (100%)	200 (100%)

Example of a convenience sample:

Board and Ryan-Wenger (2002) prospectively examined the long-term effects of the pediatric intensive care unit experience on parents and on family adaptation. The researchers used convenience sampling to recruit three groups of parents: those with a hospitalized child in the pediatric intensive care unit, those with a child in a general care unit, and those with nonhospitalized ill children.

Example of a convenience sample:

Young, Lynam, Valach, Novak, Brierton, and Christopher (2001) studied parent and adolescent conversations about health. Participants of Indo-Canadian and Euro-Canadian descent were recruited by posting notices in community centers, schools, health units, doctors' offices, and through visits to community agencies. Thirty-five parent—adolescent dyads volunteered.

Example of purposive sampling:

Friedemann, Montgomery, Rice, and Farrell (1999) studied family members' involvement in the nursing home. The first stage of their sampling plan involved purposively sampling 24 nursing homes with a diversity of policies related to family involvement, based on a survey of 208 nursing homes in southern Michigan. In the second stage, all family members of residents admitted to these nursing homes during a 20-month window were invited to participate.

Example of a snowball sample:

Meadows, Thurston, and Berenson (2001) studied the messages that rural midlife women get about preventive health care. Study participants were recruited through convenience sampling at first, and subsequently through snowball sampling. A sample of 24 midlife women were interviewed.

Example of an ethnographic sample:

Hoga, Alcantara, and deLima (2001) explored the involvement of men in reproductive health in a low-income community in Brazil. These ethnographers used Leininger's ethnonursing research method to collect data. Their sample consisted of 15 adult men, 7 of whom were key informants. "The key informants were selected based on their full knowledge about the domain of inquiry and the observations during the observation-participation-reflection process that they dictate their norms, values, and beliefs during social and mainly in their familiar examples and conversations with children and relatives" (p. 110).

Example of a sample in a phenomenological study:

Orne, Fishman, Manka, and Pagnozzi (2000) studied the lived experience of being a medically uninsured working person. They purposively sampled 12 people who were working but lacked health insurance. The participants varied in terms of gender, occupation, and income.