

7/23/2023

Biostatistics

LIX

SAMPLING METHODS Part 2

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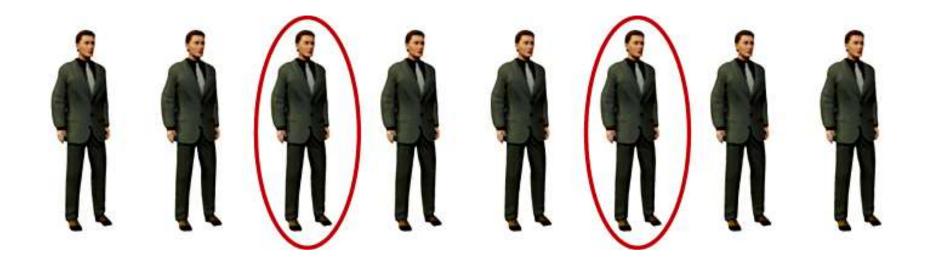
PROBABILITY SAMPLING

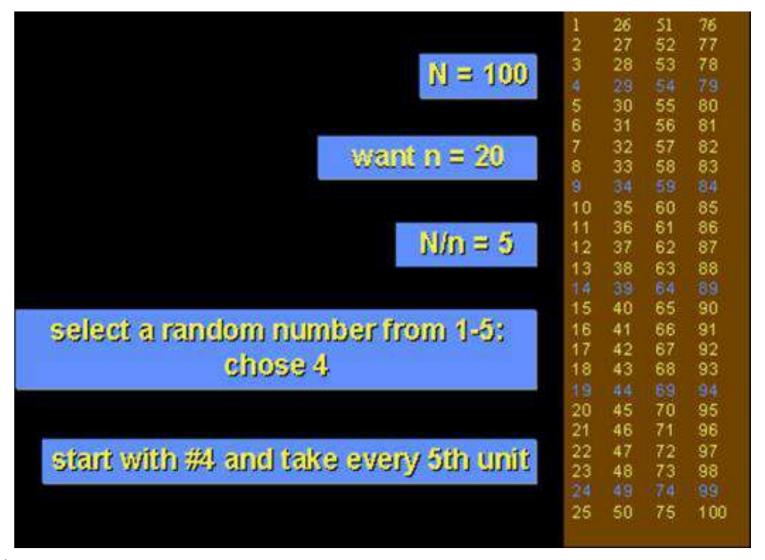
- Simple Random Sampling,
- Systematic Random Sampling,
- Stratified Random Sampling,
- Cluster Sampling
- Multistage Sampling.
- Multiphase sampling

- •Sampling with system.
- By using predefine system :
- Identify population size .
- Identify sample size .
- Identify predefine system we need 10th 8th . every kth element
- In this case, k=(population size/sample size).
- **Chose first No. By using random digit.**
- ☐ It is important that the starting point is not automatically the first in the list, but is instead randomly chosen from
- **within** the first to the kth element in the list.
- Use predefine system to collect 2nd 3rd K No.
- then selecting elements at regular intervals through that ordered list.
- Collect the sample size

- Simple Random Sampling,
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•All elements have the same probability of selection (in the example given, one in ten). It is not 'simple random sampling' because different subsets of the same size have different selection probabilities - e.g. the set {4,14,24,...,994} has a one-in-ten probability of selection, but the set {4,13,24,34,...} has zero probability of selection





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ADVANTAGES:

- -Sample easy to select
- -Suitable sampling frame can be identified easily
- -Sample evenly spread over entire reference population

• DISADVANTAGES:

- -Sample may be biased if hidden periodicity in population coincides with that of selection.
- -Difficult to assess precision of estimate from one survey.

STRATIFIED SAMPLING

By using well define stratum

- Simple Random Sampling,
- Systematic Random Sampling,
- Stratified Random Sampling,
- Cluster Sampling
- •Multistage Sampling.
- Multiphase sampling
- •Where population enclose(put in), a number of distinct categories,
- the frame can be organized into separate "strata.
- "Each stratum is then sampled as an independent sub-population, out of which individual elements can be randomly selected.
- Every unit in a stratum has same chance of being selected.
- Using same sampling fraction for all strata ensures proportionate representation in the sample.

Cont. ...STRATIFIED SAMPLING

- Simple Random Sampling,
- Systematic Random Sampling,
- Stratified Random Sampling,
- Cluster Sampling
- Multistage Sampling.
- Multiphase sampling
- •Adequate representation of minority subgroups of interest can be ensured by stratification & varying sampling fraction between strata as required.
- •Finally, since each stratum is treated as an independent population, different sampling approaches can be applied to different strata.

STRATIFIED SAMPLING

Draw a sample from each stratum

Women

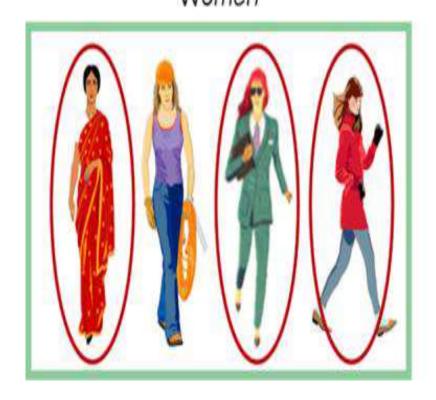




Table No1 distribution of the total sample size (286) T2DM patients on six CHC centers according to the original CHC centers attendance.

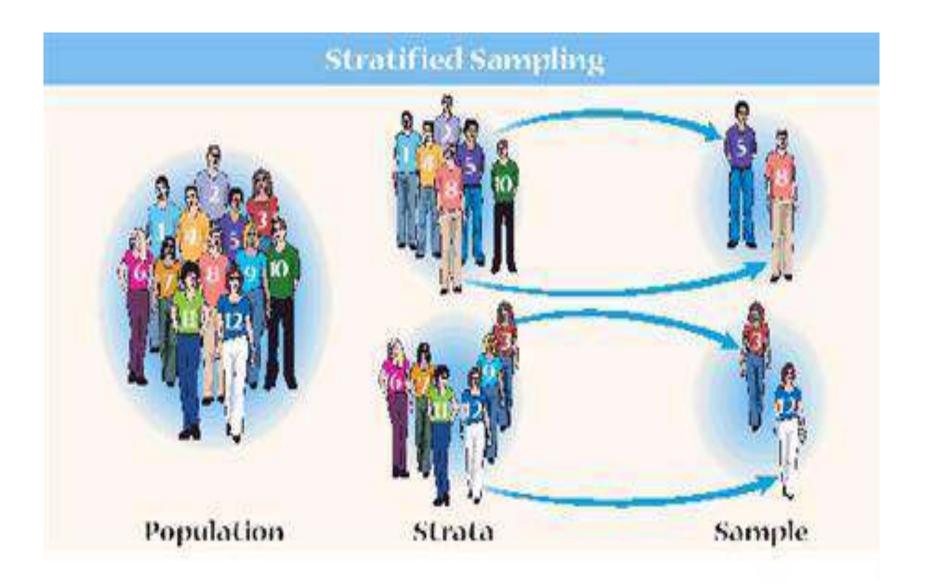
	Number of DM patients/year	Percentage	Sample
Tafilah (ALqasaba)Center	3840	34%	97
Basira Center	2196	19%	54
ALQadisiyah Center	1032	9%	26
ALHassa Center	2280	20%	57
ALAyes Center	1176	10%	29
Ain Al Bayda Center	936	8%	23
Total	11460	100%	286

3840/11460= 0.34 0.34X286=97

Stratified R.S.

By using well define stratum:

- Identify the variable that we need.
- Identify the population size .
- Identify the sample size .
- Dived population into well define non overlapping group or subgroup (stratum).
- Chose from each stratum No. of observation randomly (or sample size) that is proportional to its original size.
- Collect the total sample size, this will include the right proportion.



- Simple Random Sampling,
- Systematic Random Sampling,
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- •Multistage Sampling.
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CLUSTER SAMPLING

- Cluster sampling is an example of 'two-stage sampling'.
- First stage a sample of areas is chosen;
- Second stage a sample of respondents within those areas is selected.
- A Population is divided into clusters of homogeneous units, usually based on geographical contiguity.
- Sampling units are groups rather than individuals.
- A sample of such clusters is then selected.
- All units from the selected clusters are studied.

Cont.CLUSTER SAMPLING

- Two types of cluster sampling methods.
- –One-stage sampling.

All of the elements within selected clusters are included in the sample.

-Two-stage sampling.

A subset of elements within selected clusters are randomly select selected for inclusion in the sample

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- Simple Random Sampling,
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MULTISTAGE SAMPLING

•The Complex form of cluster sampling in which two or more levels of units are embedded one in the other.

- -First stage, a random number of districts chosen in all states.
- -Followed by a random number of villages.
- -Then third stage units will be houses

table 3.1: distribution of the total sample size (500) of mutah university students according to the original population of each chosen faculty

faculty	original size N	percent	sample size
Medicine	2620	0.055×2620	144
nursing	658	0.055×658	37
law	945	0.055×945	52
sport	1215	0.055×1215	67
science	1632	0.055×1632	90
engineering	1989	0.055×1989	110
total	9059		500

First stage categorizing all the 12 governorates in Jordan into three geographic regions

North (Irbid, Ajloun, Jerash, and Al-Mafraq), **Central** (Al-Balqa, Amman, Al-Zarqa, and Madabah), the **South** (Al-Karak, Al-Tafilah, Ma'an, and Al-Aqaba)

Second stage, one governorate from each region was chosen by simple random sampling technique

North: Irbid Center: Amman South: Al-Karak

Third stage, all hospitals in each chosen Governorate were categorized, Then the Governmental hospitals were chosen randomly

Irbid (Abu Obaida, Princess Raya, Princess Rahma, Al-Ramtha, Al-Yarmouk, Moaz bin Jabal)

Amman (Al Bashir, Dr. Jamil Al-Tutanji, Al-Karama, Prince Hamzah)

Al-Karak (Ghor Al Safi , Al-Karak governmental)

Fourth stage: a systematic random sample was applied for participating collect

The first participant was chosen blindly from the patient's list attending, then using the sampling interval, the sampling interval repeatedly until the last participant on the list. Until the required sample from each hospital have been collected.

Each participant had been interviewed face to face directly by the researcher. Using well constructed validated and reliable questionnaire. This questionnaire composed of (52 items) four sections.

NON-PROBABILITY SAMPLING

NON PROBABILITY SAMPLING

- Any sampling method where some elements of population have no chance of selection
- or where the probability of selection can't be accurately determined.

It involves the selection of elements based on assumptions regarding the population of interest, which forms the criteria for selection.

QUOTA SAMPLING

- •The population is first segmented into mutually exclusive sub-groups, just as in stratified sampling.
- •Then judgment used to select subjects or units from each segment based on a specified proportion.
- •For example, an interviewer may be told to sample 200 females and 300 males between the age of 45 and 60.
- It is this second step which makes the technique one of non-probability sampling.
- In quota sampling the selection of the sample is non-random.

Cont. ..Quota Sampling

- In quota sampling the selection of the sample is non-random.
- •For example interviewers might be tempted to interview those who look most helpful.

The problem is that these samples may be biased because not everyone gets a chance of selection.

This random element is its greatest weakness and quota versus probability has been a matter of controversy for many years

CONVENIENCE SAMPLING

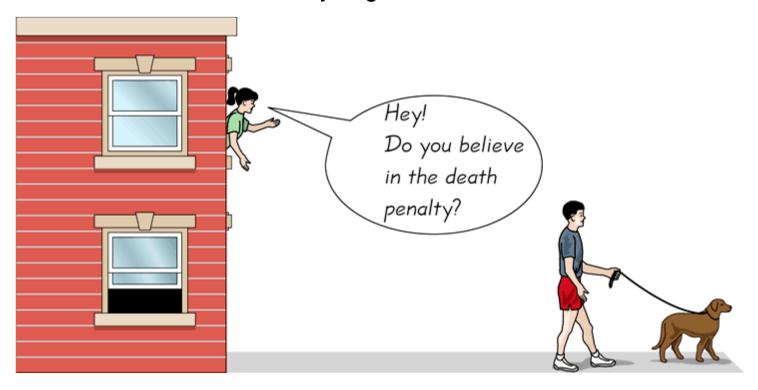
- •Also known as grab (grasp) or opportunity sampling or accidental عرضي or haphazard sampling.
- ❖ ·Involves the sample being drawn from that part of the population which is close to hand.
- That is, readily available
- ✓ and convenient مریح.
- •The researcher using such a sample
- cannot scientifically make generalizations about the total population from this sample because it would
- not be representative enough.

Examples,

- -if the interviewer was conductng a survey at a shopping center early in the morning on a given day, the people that he/she could interview would be limited to those given there at that given time, which would not represent the views of other members of society in such an area, if the survey was to be conducted at different times of day and several times per week.
- a student working on a project ask an entire class to fill out a survey.
- A researcher standing outside a bank asking customers what they think about bank's service.
- Those who thinks the bank service is poor would be doing business elsewhere.

CONVENIENCE SAMPLING

•Use results that are easy to get



SNOWBALL SAMPLING

Existing study subjects are used to recruit more subjects into the sample

JUDGMENTAL OR PURPOSIVE SAMPLING

- The researcher chooses the sample based on who they
- think would be appropriate for the study.

This is used primarily when there is a limited number of people that have expertise in the area being researched

SAMPLING PROCESS

- •The sampling process comprises several stages:
- 1. Defining the population of concern
- 2. Specifying a sampling frame, a set of items or events possible to measure
- 3. Specifying a sampling method for selecting items or events from the frame
- 4. Determining the sample size
- 5. Implementing the sampling plan
- 6. Sampling and data collecting
- 7. Reviewing the sampling process

Cont. ..STRATIFIED SAMPLING

- Using same sampling fraction for all strata ensures proportionate representation in the sample.
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- •Finally, since each stratum is treated as an independent population, different sampling approaches can be applied to different strata.



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