V6 - Sampling Distribution Theory Part 1

Course: Statistical Testing & Regression
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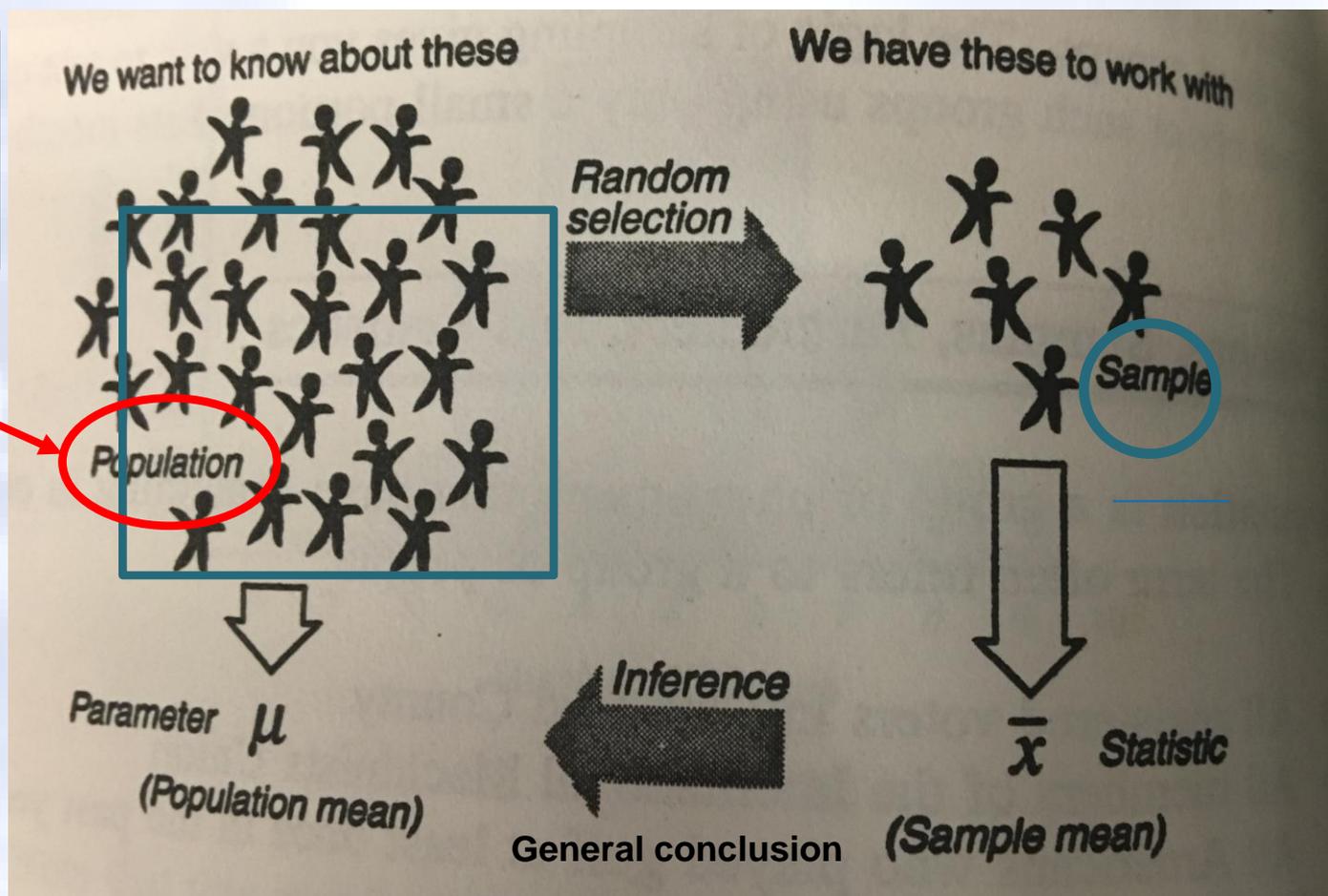University of Pittsburgh

Sampling Distribution Theory – Part 1

❑ Process of statistical inference

❑ Simple random sampling

❑ Stratified random sampling

❑ Biased sample

Process of Statistical Inference

1.

_____
observations
of _____.

All may

_____.

_____.

We want to know about these

We have these to work with

Random selection

Population

Sample

Parameter μ

(Population mean)

Inference

General conclusion

$\bar{x}$ Statistic

(Sample mean)

Statistical Inference

Relies on appropriate sampling from the _____.

2 types of sampling

      Simple

      Stratified

Simple Random Sampling (SRS)

- Best for _____ populations
  - when each item can be _____
- Example of:

- Each item has **equal probability** of being selected
- Selections made *randomly* & independently
- Sample _____ of population

Stratified Random Sampling

- For _____, more diverse populations
- Divides population into subgroups known as _____

- Strata based on differences in key characteristics (such as):
  - income level
  - Age group
  - gender
- Draw **simple random sample** (SRS) from each _____

- Combine all samples
- Final sample has subjects from *every* subgroup
- Final sample diverse & _____ of population
- Better estimate of variable

Biased Sample

If you must estimate average GPA at Pitt, can you sample only Swanson engineering students? _____

Why or why not?

_____

- **Not representative** of population of _____
- Any estimate would be limited to Swanson
- Sample does not align with your task

Acknowledgement

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