

Welcome [ap Statistics
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## Random Sampling

- All statistical sampling designs have in common the idea that

chance

**NOT HUMAN CHOICE**

is used to select the sample.



## Randomize – let chance do the choosing!

Randomization can protect you against  
-factors that you know are in the data  
-factors you are not even aware of

Randomizing makes sure that  
*on the average*

the sample looks like the population.

# Summary of Sampling Methods

- **Simple Random Sampling (SRS)**

- every individual has an equal chance of being selected
- every set of  $n$  individuals has an equal chance of being selected
- *\*most basic & fundamental type of sampling!*

# Describe how to select a SRS of 5 students from a group of 27:

- Assign each student a unique number from 1 – 27
- Use a RNG (on a calculator/computer) to generate 5 **UNIQUE** numbers from 1 – 27 (repeated numbers will be ignored).
- The 5 students who have their numbers drawn will...

**OR**

- Assign each student a unique number from 1 – 27
- Write the numbers 1 – 27 on slips of paper, and put them in a hat. **Stir the slips to mix them.**
- Without looking, draw 5 slips of paper from the hat **WITHOUT REPLACEMENT.**
- The 5 students who have their numbers drawn will...

# Summary of Sampling Methods

- **Stratified Sampling**

- divide population into strata (layers, subpopulations)
- Strata are **homogenous**
- take SRS from each strata

- **Cluster sampling**

- divide population into clusters
- Clusters are **heterogenous** (mixed)
- Randomly select one (or more) cluster(s)
- Take a CENSUS within cluster(s)

# Summary of Sampling Methods

- **Systematic Sampling**

- Randomly select a starting point, then take (for example) every 10<sup>th</sup> (or 20<sup>th</sup>, or 5<sup>th</sup>, etc.) subject...

- **Multistage Sampling**

- Randomness is involved at more than one stage
- Be careful not to confuse with CLUSTER sampling