[notes for days 2 and 3]

Welcome Statistics

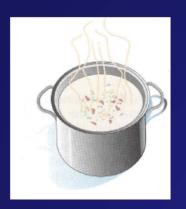
### Random Sampling

 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...



- 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