Sampling Techniques

Why Sampling?

- Gathering information about an entire population often costs too much or is virtually impossible.
- Instead, we use a sample of the population.
- How to form a sample?

Principal

- A sample should have the same characteristics as the population it is representing.

Still very stereotypic.

Hypothesiss

Students in our class (Math201) like Basketball more than Football.

Population: 35 students in our class

Sample:

Multiple ways to Sample

- Simple Random Sampling
- Systematic Sampling
- Stratify Sampling
- Convenience Sampling (Not recommended!)

Simple Random Sampling

Simple Random Sampling

- Step 1: Number all items in the population
- Step 2: Decide the sample size
- Step 3: Use a random number generator to select items/data for the sample

Population

1	Ambrosone	Michael	19	Madrid Portillo	Anthony
2	Ballou	Spencer	20	McCabe	William
3	Bergen	Samantha	21	McGrail	Sean
4	Burns	Luke	22	Merritt	Wade
5	Cornejo	Kaitlyn	23	Minichiello	Francesca
6	Donovan	Patrick	24	Moroney	John
7	Eldridge	Faith	25	Oscar	Dana
8	Famiglietti	Paige	26	Quill	Jennah
9	Harrington	Catherine	27	Rauza	Gavin
10	Hovnanian	Ariana	28	Rewenko	Jacob
11	Iskenderoglu	Safiye	29	Shephard	Timothy
12	Jones	Cody	30	Sousa	Joshua
13	Kalluri	Aditya	31	Van Luling	Michael
14	Keith	Makenzie	32	Velazquez	Victoria
15	Knight	Cody	33	Venckus	Jake
16	Lemay	Dylan	34	White	George
17	Lyshoj	Jonas	35	Wilson	Aden
18	MacLeod	Alec			

- Let say we want to go with a sample size of 30% population.
- We would need about 35*.3 = 10 or 11 data points.
- Use a random number generator to generate a random number, for example

  Link

- Collect data from the students associated with the generated numbers.

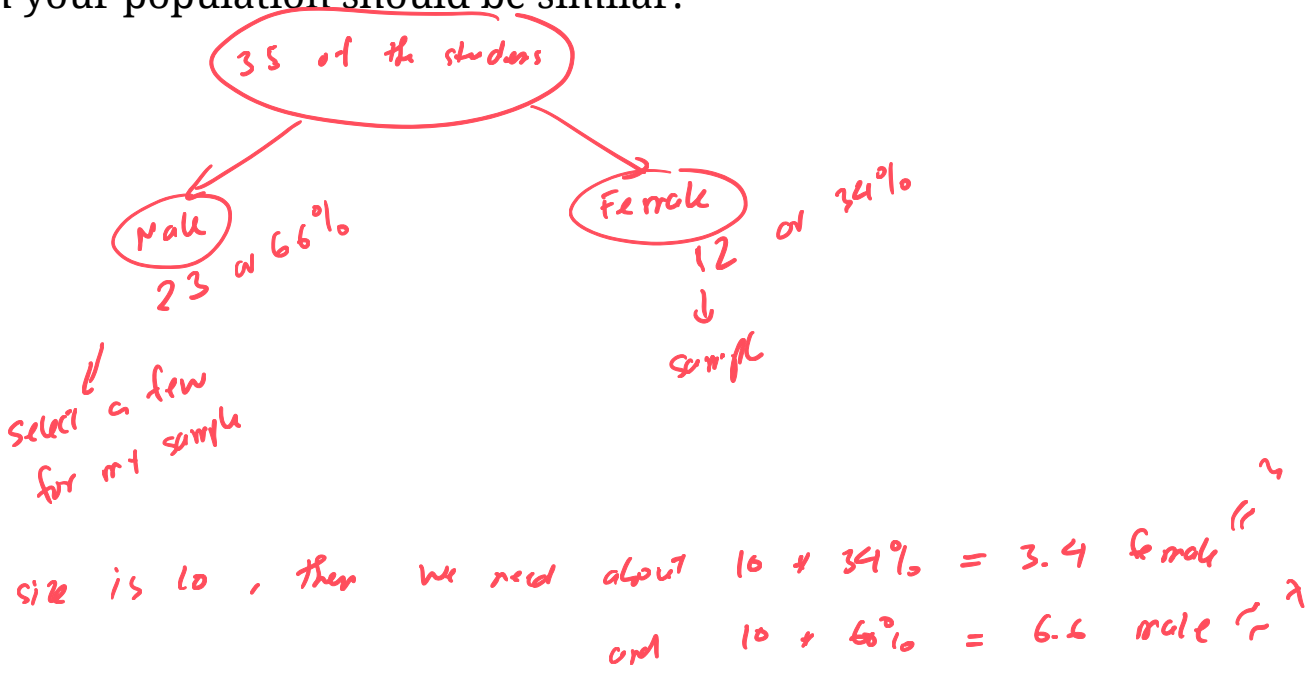
data 10 out 10 says the hypothesis is not correct.

Systematic Sampling

- Step 1: Number all items in the population
- Step 2: Pick a random number, says 7, then select items starting from 7, 8, 9...to a desired number.

Stratified Sampling

- Breaks down the population into groups
- Randomly select items from each groups
- The proportion of each group in your samples and the proportion of each group in your population should be similar.



Convenience Sampling (Not recommended!)

- Conveniently select items from the population
- For example: Only collect data from the people you know