

Warm Up



A study in Switzerland examined the number of C-Sections performed in a year by samples of male and female doctors. Here are summary statistics for the two distributions:

	\bar{x}	s_x	min	Q_1	med	Q_3	max
male	41.333	20.6	20	27	34	50	86
female	19.1	10.13	5	10	18.5	29	33

Based on the numbers, which distribution would you guess has a more symmetrical shape? *female; the mean is closer to the median than with male doctors*

Objective: SWBAT distinguish a simple random sample from a stratified random or cluster sample

SWBAT describe how the design of a survey can lead to bias in the results

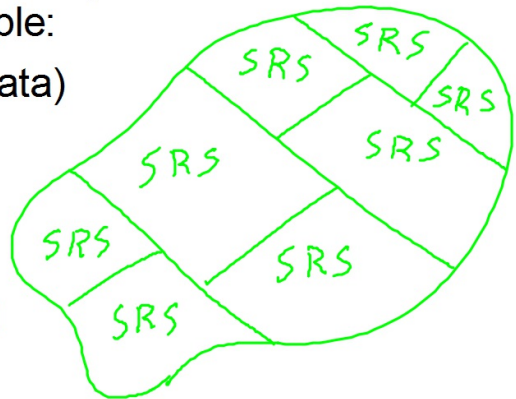
Agenda:

- Warm Up
- Notes
- Activity
- Practice
- Reflection

Notes: Stratified Random Sample

Sometimes doing SRS is too difficult or we expect some feature of the population to change our results. So we get a more accurate summary from a stratified random sample:

1. Break the population into groups (strata) by a certain characteristic
2. Do a SRS on each group
3. Combine the samples from #2 to get your full sample



When you stratify, the individuals in each group should be similar to *each other*, but with large differences *between groups*.

Example

Suppose we want to ask the students of Harding how many hours they drive per week.

- What is our population? *students of Harding*
- What is our sample? *the students we ask*
- What feature of the population can we use to stratify before sampling? *age, method of transportation, ...*

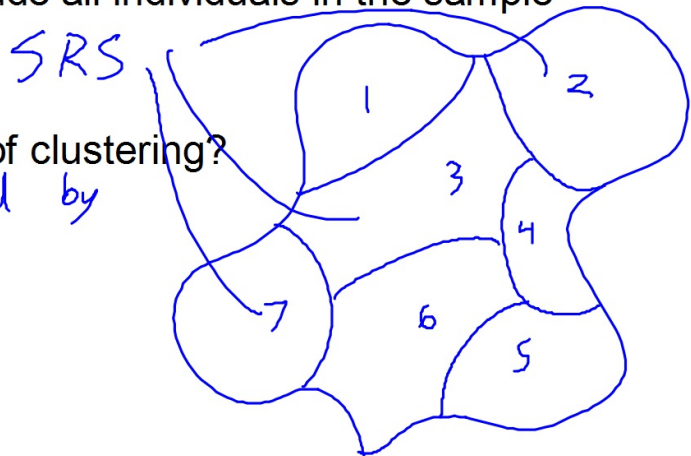
Notes: Cluster Sample

If the population we're looking at is large and/or spread out, SRS and stratified random sampling is difficult to do. So we do a cluster sample:

1. Divide the population into groups (clusters) that are as similar to the whole population ^{as} ~~and~~ possible
2. Take a SRS of the clusters
3. From those clusters, include all individuals in the sample

Are homerooms an example of clustering?

no - they're stratified by grade level



Example

pg. 218

Activity

Arrange the M&Ms (clean hands!) to illustrate

- convenience sampling
- simple random sampling
- stratified random sampling
- cluster sampling

Practice

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Reflection

How is stratified random sampling different from cluster sampling?