Lab 1 Due Wednesday, 8/21

Professor Tim Busken

Try These! Identify the sampling technique used.

1. Using random digit dialing, researchers ask 300 U.S. adults if they care about the next election.

2. A student asks 12 friends in her dorm to participate in a psychology experiment.

3. A study of water quality in Rio de Janeiro, Brazil randomly selects and collects water samples from each of the 55 communities from the Rio metropolitan area.

4. Law enforcement officials at the Kaaboo concert stop and check the driver of every third vehicle for their blood alcohol content.

5. Twenty-six students are randomly selected from each grade level at a high school and surveyed about their study habits.

6. Soybeans are planted on a 48-acre field. The field is divided into one-acre subplots. In order to estimate the harvest amount, 10 subplots are randomly selected and harvested.

7. Using random digit dialing, researchers call 1400 people and ask what obstacles (such as childcare) keep them from exercising.

8. Soybeans are planted on a 48-acre field. The field is divided into one-acre subplots. A sample is taken from each subplot to estimate the harvest.

9. After a hurricane, a disaster area is divided into 200 equal grids. Thirty of the grids are selected, and every occupied household in the grid is interviewed to help focus relief efforts on what residents require the most.

10. Chosen at random, 500 rural and 500 urban people age 65 or older are asked about their health and their experience with prescription drugs.

11. After a hurricane, a disaster area is divided into 200 equal grids. Thirty occupied households from each grid are randomly selected, and interviewed to help focus relief efforts on what residents require the most.

For each sample listed below, determine if there are any obvious sources of bias. If bias is present state whether it is selection bias, measurement (response) bias or nonresponse bias.

12. Using random digit dialing, researchers call 1400 people and ask what obstacles (such as childcare) keep them from exercising.

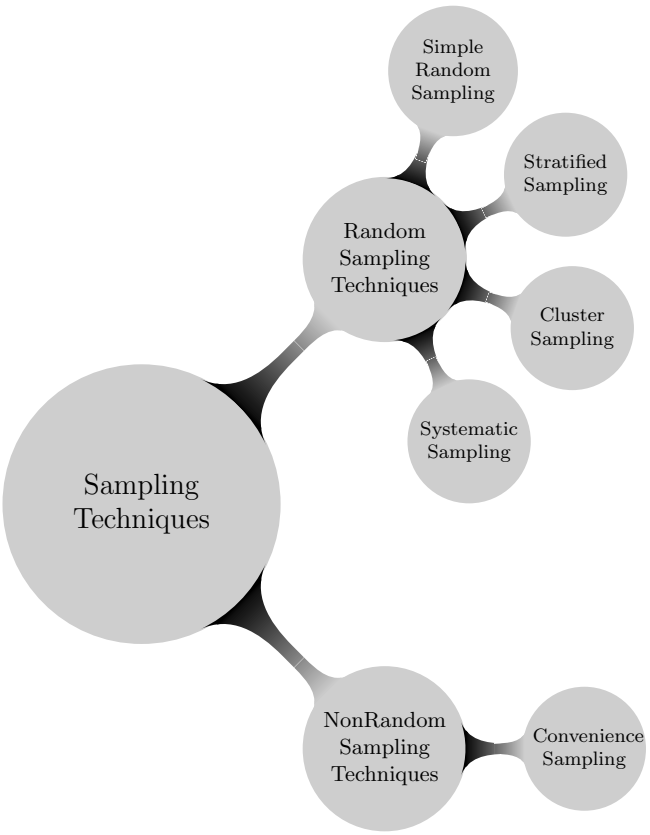
13. Sally and Bill are amongst those being randomly selected and surveyed today over the phone, but each refused to respond.

14. Joe and Bobby are the researchers asking the telephone survey questions. They both included their responses to the survey question in the sample.

15. After a hurricane, a disaster area is divided into 200 equal grids. Thirty of the grids are selected, and every occupied household in the grid is interviewed to help focus relief efforts on what residents require the most.

16. One part of the Nurses' Health Study is concerned with possible causes of skin cancer. Nurses were asked about different behaviors and aspects of their health when they entered the study. Then, the nurses were given the questionnaire again if they were diagnosed with cancer. When the questionnaires were analyzed, the investigators discovered that after the nurses were diagnosed with cancer they tended to report a reduced ability to tan. It is thought that the shift in reporting might be caused by an awareness of their diagnosis.

Simple Random Sample
Every possible sample of the same size has the same chance of being selected. One way to collect a simple random sample is to assign a number to each member of the population. Random numbers can then be generated by a random number table, a software program or a calculator. Members of the population that correspond to these numbers become members of the sample.



Example There are 37 students in Mr. Busken's Friday stats class. You wish to form a sample of five students to answer some survey questions. Select the students who will belong to the simple random sample. Use the calculator's "randInt" function.

Stratified Sample
Divide a population into groups (strata) so that subjects within the same subgroup share the same characteristics (such as gender or age bracket) and select a random sample from each group.

Example To collect a stratified sample of Mr. Busken's students, you could divide the students up into age groups, then randomly select a couple people from each age group.

Cluster Sample
Divide the population into groups (clusters) and select *all* of the members in one or more, but not all, of the clusters.

Example To collect a cluster sample of Mr. Busken's students, you could divide the students up into age groups, then select *all* the students in one or more age brackets.

Systematic Sample
Choose a starting value at random. Then choose every k^{th} member of the population.

Example To collect a systematic sample of Mr. Busken's students, you could number the students 1 through 37, randomly choose a starting number, then select every 4th person.

Convenience Sample
Choose only members of the population that are easy to get Often leads to biased studies (not recommended).