**1.4 Buteyko method, study components**

1. Cases – 600 asthma patients aged between 18 to 69 who relied on medication for asthma treatments.
2. Variables and Types
   1. Variables – Scores of patients for
      1. Quality of Life
      2. Activity
      3. Asthma Symptoms
      4. Medication reduction
      5. Another categorical variable is if the patients practiced the Buteyko method or not
   2. Type – Numerical values for above 4 variables and 5ht one categorical.
3. The main research question – Does Buteyko breathing method help in the reduction of asthma symptoms as well improvement in quality of life?

**1.6 Stealers, study components.**

1. Cases – 129 undergraduate students of University of California.
2. Variables and types
   1. Money – Categorical
   2. Education – Categorical
   3. Respected Jobs – Categorical
   4. Number of candies taken – Numerical.
3. The Main Research question – Do people with lower social economic class tend to be more unethical?

**1.14 Cats on YouTube.**

1. Percentage of all videos on YouTube that are cat videos – **Population parameter**
2. 2% - **Sample Statistic**
3. A video in your sample - **Observation**
4. Whether or not a video is a cat video - **Variable**

**1.18 Housing proposal across dorms.**

1. What type of study is this

* **Observational**

1. Suggest a sampling strategy for carrying out this study.

- **Stratified Sampling** – In this sampling strategy we pick up equal number of sample observations (students) from 4 groups which are

* First year students
* Sophomores
* Juniors
* Seniors

**1.20 Stressed out Part I.**

1. What type of study is this?

* Observational

1. Can this study be used to conclude a causal relationship between increased stress and muscle cramps?

* No, it is based on observations and not on experiment.

1. State possible confounding variables that might explain the observed relationship between increased stress and muscle cramps.

- Less sleep and more consumption of coffee.

**1.22 Random digit dialing.**

Give a possible reason the Gallup Poll chooses to use random digit dialing instead of picking phone numbers from the phone book.

* Not all phone numbers are registered in the phone book, so it would not be true random sample to go with phone book.
* Mobile numbers are not most probably listed as part of the phone book, so this will lead to elimination of people who have only mobile number and no land lines.
* Also going by the phone book could lead to some kind of human bias

**1.24 Family size**

* It will not be true measure of household size
* Yes the average would be biased
* It will overestimate
* Below are the reasons
  + We are choosing randomly children to represent their family/household size. There could be families with varying number of children, for e.g. family of 4 kids and family of 1 kid, so the number of children which gets picked up from this family increases to number from the family with single kid.

**1.26 City council survey**

1. Randomly sample 50 households from the city.

* Random sampling technique and is in effective in this scenario

1. Divide the city into neighborhoods, and sample 20 households from each neighborhood.

* Stratified sampling. This could be effective.

1. Divide the city into neighborhoods, randomly sample 10 neighborhoods, and sample all households from those neighborhoods.

* Cluster Sampling. This is ineffective as we are not covering sample from all neighborhoods which would not be true representation of the survey data collected.

1. Divide the city into neighborhoods, randomly sample 10 neighborhoods, and then randomly sample 20 households from those neighborhoods.

* Multistage sampling. Ineffective as well as its not covering all neighborhood.

1. Sample the 200 households closest to the city council.

* Convenience sampling. This is biased sampling as we are targeting audience based on the location convenience which will not be true representation of survey findings.