Def: A census involves obtaining information for the entire population of interest.

This can be

- time consuming.
- expensive.
- impractical.
- impossible!

Other ways to obtain information include sampling and experimentation.

Def: A representative sample reflects the relevant characteristics of the population as closely as possible.

Samples that are **not** representative: estimate average

- ...height of adults using a *sample of 100 men.*
- ...income in CA based on a *sample of Beverly Hills residents.*
- ...US opinion based on a *poll by a single news station.*

Choosing a sample based on what is convenient is called convenience sampling.

Usually, these samples are not representative samples.

Def: In probability sampling, a random device - usually a random number generator - is used to choose which members of a population are included in the sample.

- Helps eliminate selection bias.
- Increases chance of a representative sample.
- Allows us to use inferential statistics techniques.

Def: Simple random sampling is a sample procedure for which each member of the population is equally likely to be selected.

Def: A simple random sample is a sample obtained by simple random sampling.

There are two types of simple random sampling:

1. If we sample *with replacement*, a member may be selected more than once.
2. If we sample *without replacement*, a member cannot be selected again.

Unless otherwise specified, we assume that simple random sampling is done without replacement.