



## ***Module 2: Environmental Sampling***

### 2.5 Other Sampling Designs



### ***Cluster Sampling***

- ◆ Useful when population units are found in groups or clusters. Often useful in sampling plants and animals.
- ◆ Randomly select a cluster (or find one) and then sample all of the units in that cluster



## *Cluster Sampling*

- ◆ Advantages:
  - May be cheaper and easier than simple random sampling in some situations
- ◆ Disadvantages:
  - Population units in a cluster may be more similar than across the population as a whole so the variance may be underestimated

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## *Multi-Stage Sampling*

- ◆ Population units fall within a staged structure
- ◆ First sample stage 1, then stage 2, and so on.
- ◆ When sampling for lead contamination in homes, first randomly select a neighborhood, then a block, then a home.

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## *Multi-Stage Sampling*

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## *Composite Sampling*

- ◆ Useful when the cost of taking samples is lower than the cost of measuring them.
- ◆ This is often true when samples must be chemically analyzed for contaminants.

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## *Composite Sampling*

- ◆ Compositing involves taking several physical samples from an area, mixing them together, and taking a sub-sample from the mixture.
- ◆ It is a type of physical averaging (as opposed to mathematical averaging)
- ◆ It's appropriate when information on the mean is sought and NOT appropriate when information on high values and/or variability is needed.

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## *Other Sampling Designs*

- ◆ There are other sampling designs as well
  - Ranked set sampling
  - Ratio estimation
  - Double sampling

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