



**- Simple random sampling (SRS)**

**- Stratified random sampling**

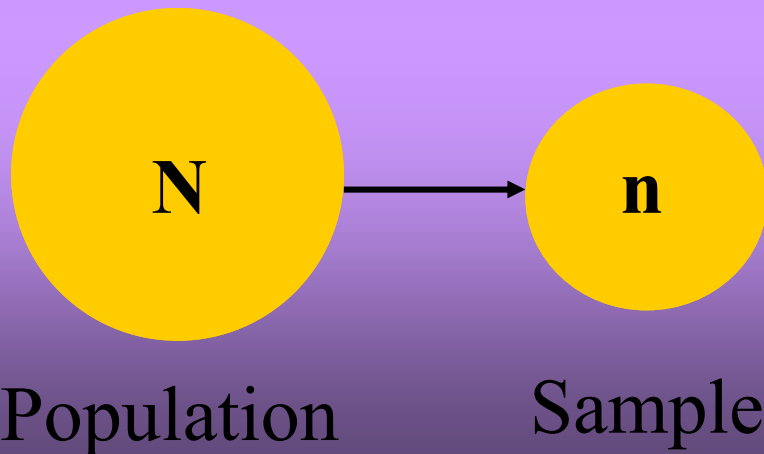
**- Systematic sampling**

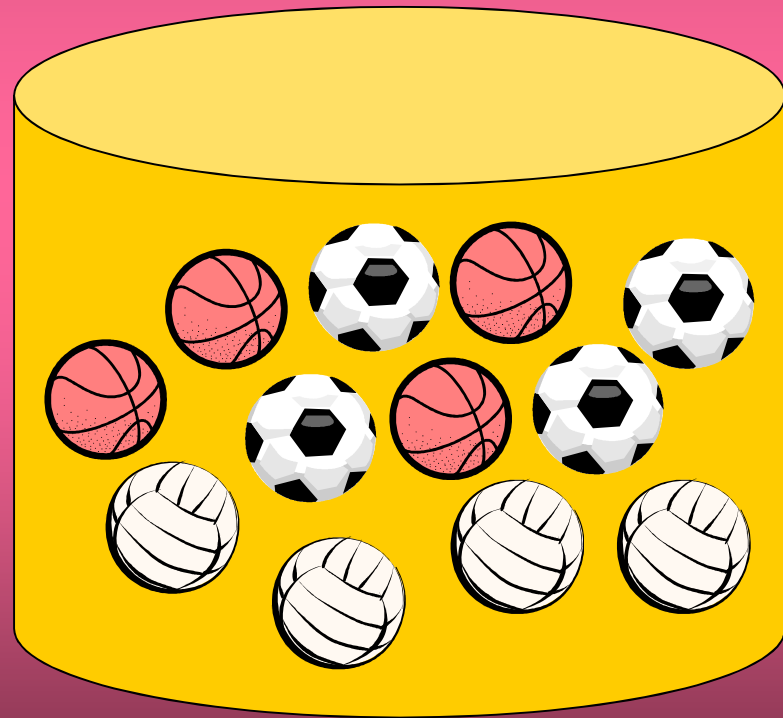
**- Cluster sampling**





A simple random sampling of sample size  $n$  is a sample of  $n$  units selected in such a way that every possible sample of given size  $n$  has the same chance.



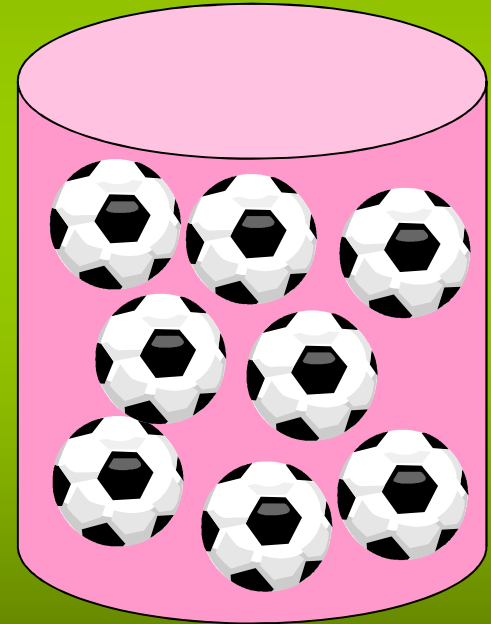
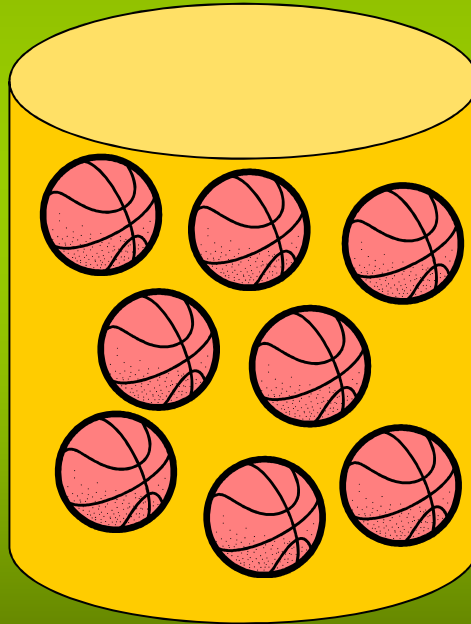
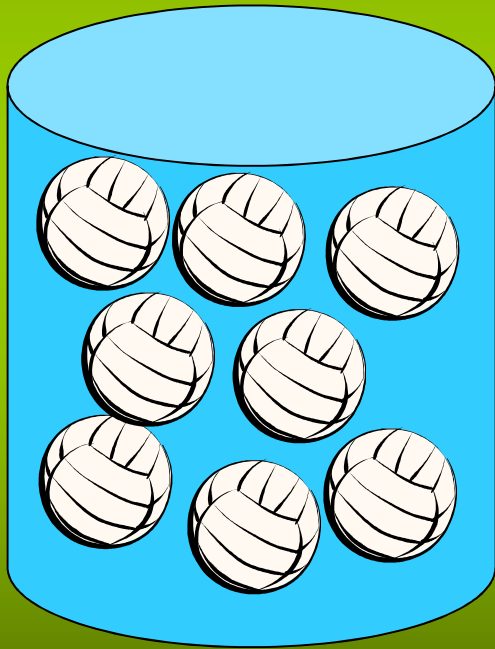


**Simple random sampling**



**A stratified random sampling is selected by deviding the population in mutually exclusive subgroups and taking a simple random sample of units from each stratum.**





**Stratified random sampling**



## A systematic sampling

We order the unit of the population and randomly select one of the first  $k$  units in the ordered list.

This selected unit is the first unit to be include in the sample and we select every  $k^{th}$  unit from them on.

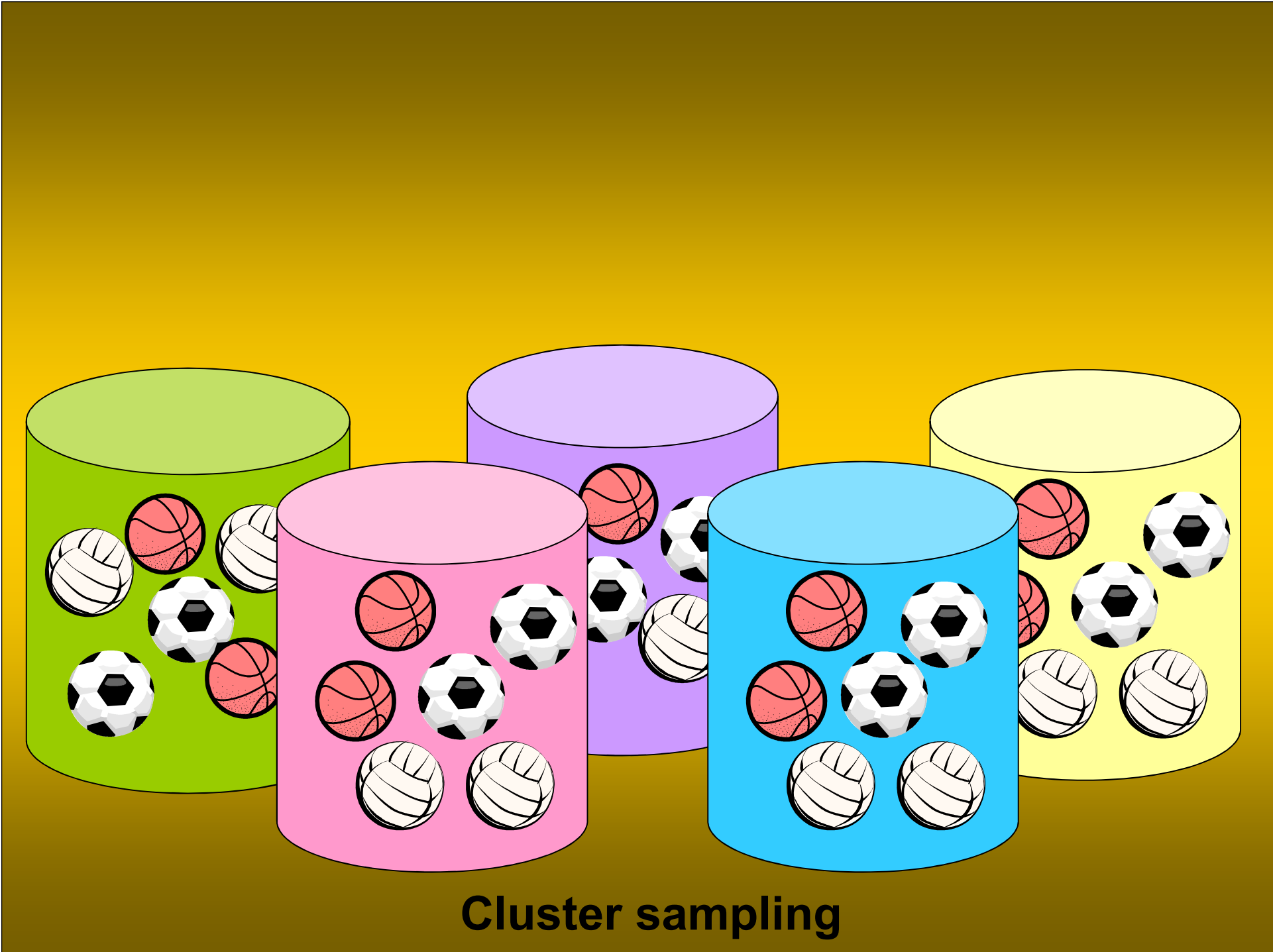




## A cluster sampling

The units of the population are grouped into clusters. On or more clusters are selected at random. If a cluster is selected, all of the units that from that cluster are include in the sample.





**Cluster sampling**



# Distribution of variable

can be summarized graphically, numerically and model.

We can display distribution of qualitative in common types of graphs

- Pie chart
- Bar chart





We can display distribution of quantitative variables in common types of graphs for quantitative variables

- frequency plots
- stem and leaf plots
- histograms





- A frequency plot is a useful graphical display to show how often data values occur.

- Outliers is the observations that are far from the most of data



# Shapes of Distributions

