Summary

- A Stratified sample is sometimes desirable if the population is to be broken up into different groups based on one or more characteristics of the population
- The strength of stratified sampling is that a sample obtained is representative of the population.
- Stratified Random sampling is a Restricted random sampling is one of the random methods which by using the available information concerning the population attempts to design a more efficient sample than obtained by the simple random procedure.
- Stratified Random sampling has its own merits and demerits but stratified random estimates are more efficient than SRS estimates.
- Variance of the estimated population mean under Stratified Random Sampling when Optimum allocation is used

$$V(\bar{y}_{ST})_{OPT} = \sum_{h=1}^{k} \frac{(W_h S_h)^2}{n} - \sum_{h=1}^{k} \frac{W_h S_h^2}{N}$$

- Variance of the estimated population mean under Stratified Random Sampling when Proportional allocation is used

$$V(\bar{y}_{ST})_{PROP} = \sum_{h=1}^{k} \frac{W_h S_h^2}{n} - \sum_{h=1}^{k} \frac{W_h S_h^2}{N}$$

- One can observe that

$$V(\bar{y})_{O.A.} \leq V(\bar{y})_{P.A} \leq V(\bar{y})_{SRSWOR}$$

- Stratification will give us better estimates for the population parameters compared to those we would get using Simple Random Sampling