Summary

- A confidence interval for variance gives an estimated range of values which is likely to include an unknown population variance, the estimated range being calculated from a given set of sample data
- The confidence level is the probability value (1 – α) associated with a confidence interval which is often expressed as a percentage

- 100 (1- α) % C.I for the population variance σ^2 when the mean is known as μ is given by
    - [∑(yi-μ)^2/ B , ∑(yi-μ)^2/ A] where B= $\chi^2_{\alpha/2}(n)$ and
    - A= $\chi^2_{(1-\alpha/2)}(n)$

- 100 (1- α) % C.I for the population variance σ^2 when the mean is unknown is given by
    - [∑(yi- $\bar{y}$)^2/ B , ∑(yi- $\bar{y}$)^2/ A] where B= $\chi^2_{\alpha/2}(n-1)$ and
    - A= $\chi^2_{(1-\alpha/2)}(n-1)$

- 100 (1- α) % C.I for the ratio of variances of two populations with unknown means is given by

  [$\dfrac{s_1^2}{Bs_2^2}$, $\dfrac{s_1^2}{As_2^2}$] where B= $F_{\alpha/2}(m-1, n-1)$ and

  A= $F_{(1-\alpha/2)}(m-1, n-1)$

- 100 (1- α) % confidence interval for the ratio of variances when the respective means are known is computed as

  [$\dfrac{n\sum_{i=1}^{m}(x_i-\mu_1)^2}{Bm\sum_{i=1}^{n}(y_i-\mu_2)^2}$, $\dfrac{n\sum_{i=1}^{m}(x_i-\mu_1)^2}{Am\sum_{i=1}^{n}(y_i-\mu_2)^2}$] where B=

  $F_{\alpha/2}(m,n)$ and A= $F_{(1-\alpha/2)}(m,n)$.