V32 - Hypothesis Testing – Part 8

- Chi-squared test statistic involving population variance
- Visual review of chi-squared distribution
- F test statistic involving ratio of 2 population variances (independent populations)
- Visual review of F distribution

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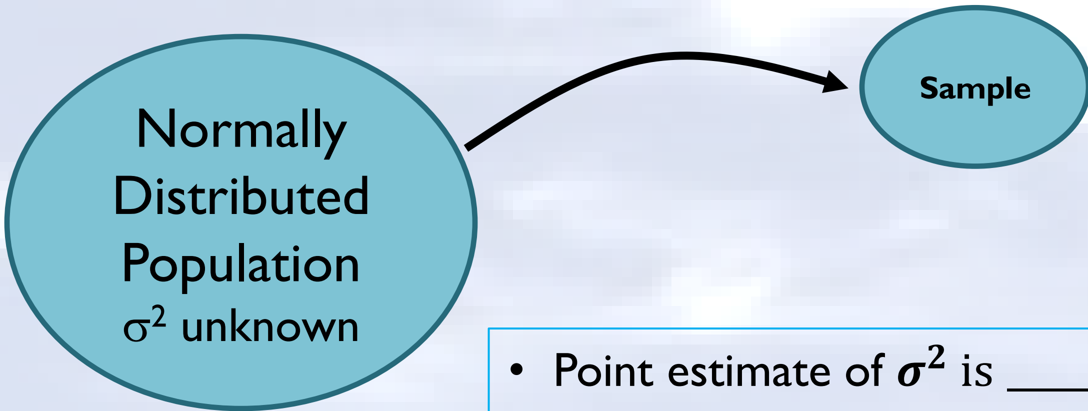
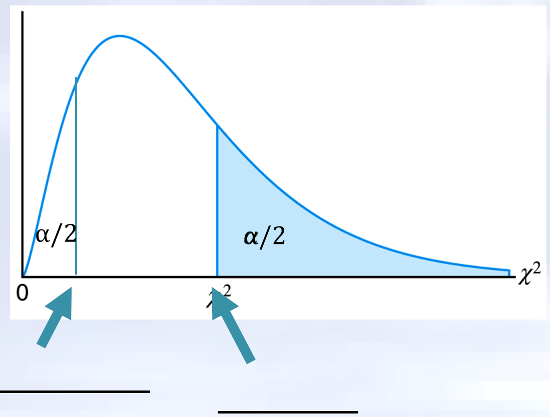
Inference for One Variance σ^2



- Point estimate of $\boldsymbol{\sigma^2}$ is ______
- Statistic $\frac{(n-1)s^2}{\sigma^2}$ = χ^2 has a ______________ distribution with _______ degrees of freedom
- Population must be _____________________

Review – Chi Squared Distribution

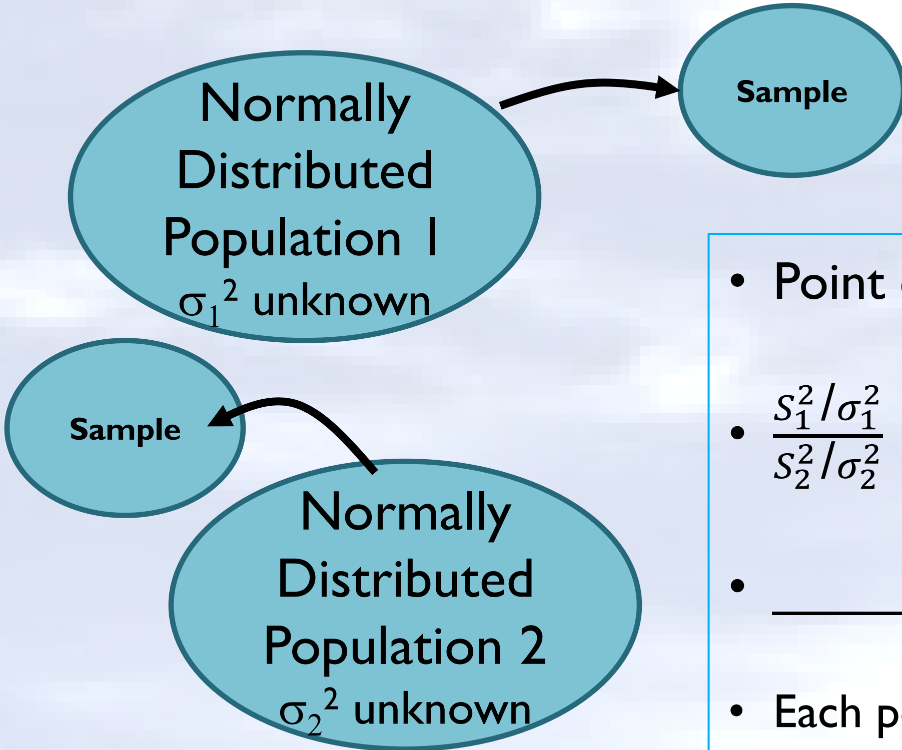


Inference for One Variance σ^2

H_0: $\sigma^2 = \sigma_0^2$

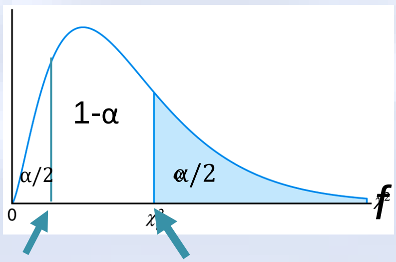
Test Statistic: $X^2 = \dfrac{(n-1)S^2}{{\sigma_0}^2}$

Inference for Ratio of Two Variances σ_1^2/σ_2^2



- Point estimate for $\boldsymbol{\sigma_1^2/\sigma_2^2}$ is ________________
- $\dfrac{s_1^2/\sigma_1^2}{s_2^2/\sigma_2^2} = \dfrac{\sigma_2^2 s_1^2}{\sigma_1^2 s_2^2}$ has an __________ distribution
- ________ and ________ degrees of freedom
- Each population must be ____________________

Review – F Distribution



Inference for Ratio of Two Variances σ_1^2/σ_2^2

$H_0: \sigma_1^2 = \sigma_2^2$

Test statistic

$$F = \frac{S_1^2/\sigma_1^2}{S_2^2/\sigma_2^2} = \frac{\sigma_2^2 S_1^2}{\sigma_1^2 S_2^2}$$

$$F = \frac{S_1^2}{S_2^2}$$

$v_1 = n_1 - 1$ and $v_2 = n_2 - 1$

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THE END