

SESSION 8 OF

STATISTICS FOR BUSINESS

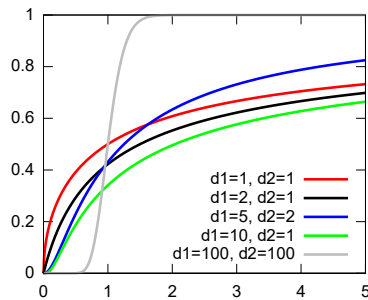
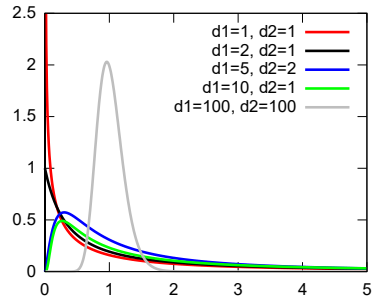
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TODAY'S TOPIC

**HYPOTHESIS
TESTING FOR
TWO
POPULATIONS**

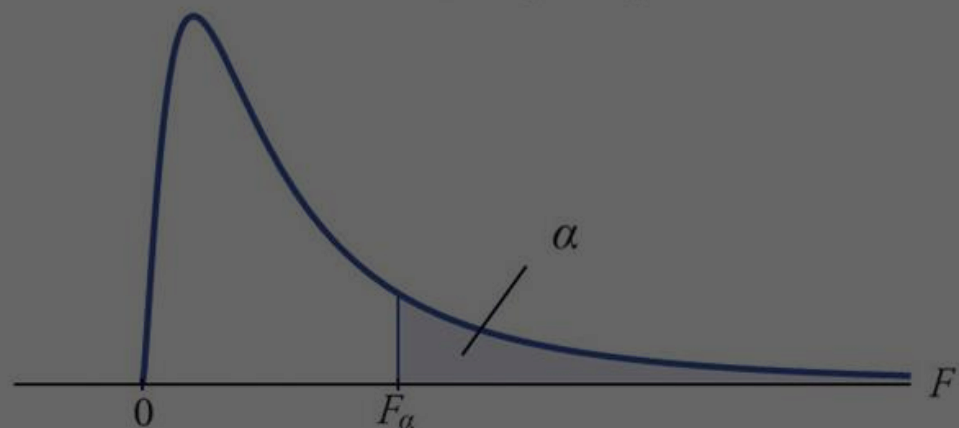


FISHER-SNEDECOR DISTRIBUTION (F-DISTRIBUTION)

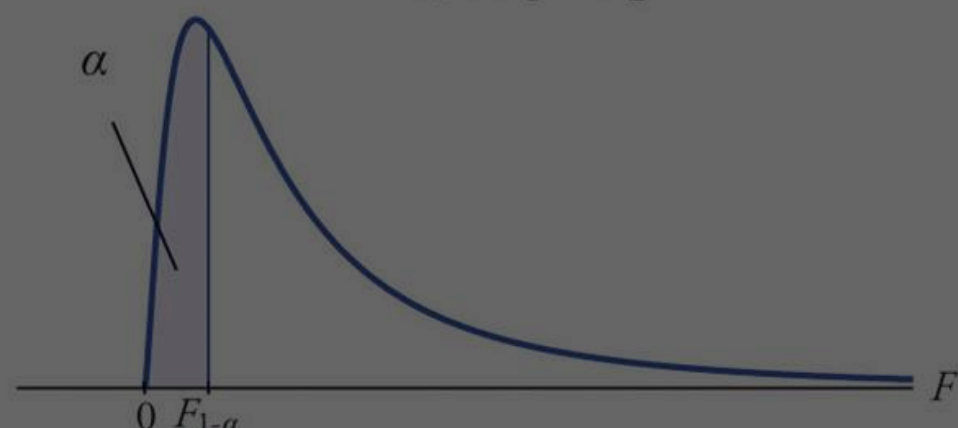
$$H_a : \sigma_1^2 > \sigma_2^2$$

$$H_a : \sigma_1^2 < \sigma_2^2$$

(a)



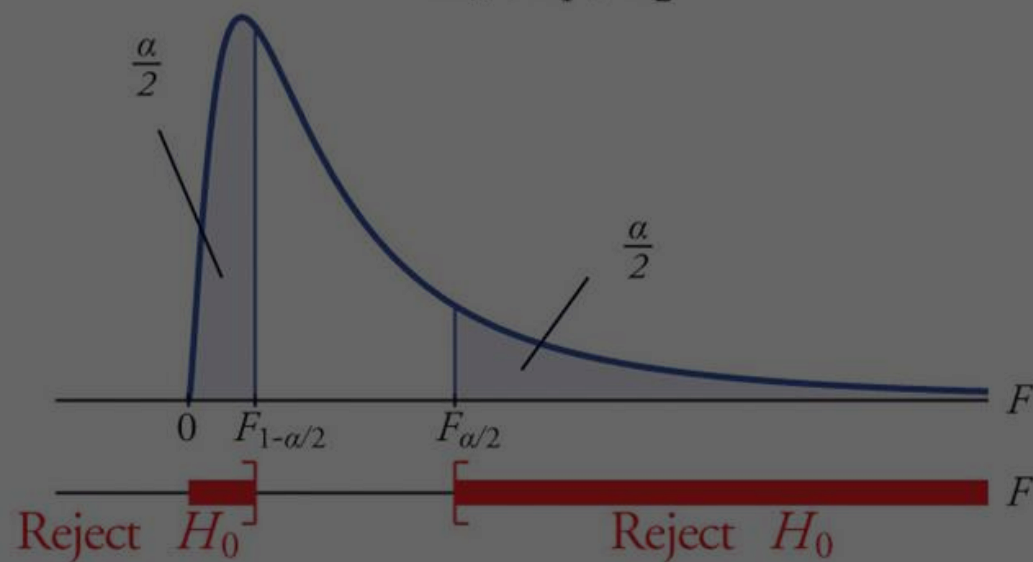
(b)



F-TEST

$$H_a : \sigma_1^2 \neq \sigma_2^2$$

(c)



EXAMPLES

Compare mean salaries between male and female population.

Compare mean quantity packed by two different machines

DIFFERENCE IN MEAN

Description	Mathematical symbol
Sample size of population 1	n_1
Sample size of population 2	n_2
Sample mean of population 1	\bar{x}_1
Sample mean of population 2	\bar{x}_2
Sample standard deviation of population 1	σ_1
Sample standard deviation of population 2	σ_2
Standard error for population 1	$\sigma_{\bar{x}_1} = \frac{\sigma_1}{\sqrt{n_1}}$
Standard error for population 2	$\sigma_{\bar{x}_2} = \frac{\sigma_2}{\sqrt{n_2}}$
Point estimator of mean difference	$\bar{x}_1 - \bar{x}_2$
Standard error of mean difference	$\sigma_{\bar{x}_1 - \bar{x}_2} = \sqrt{\sigma_{\bar{x}_1}^2 + \sigma_{\bar{x}_2}^2} = \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$

EXAMPLE



DIFFERENCE IN POPULATION PORTION

Description	Mathematical symbol
Sample size of population 1	n_1
Sample size of population 2	n_2
Population portion of population 1	\bar{p}_1
Population portion of population 2	\bar{p}_2
Standard error for population 1	$\sigma_{\bar{p}_1} = \sqrt{\frac{\bar{p}_1(1 - \bar{p}_1)}{n_1}}$
Standard error for population 2	$\sigma_{\bar{p}_2} = \sqrt{\frac{\bar{p}_2(1 - \bar{p}_2)}{n_2}}$
Point estimator of population portion difference	$\bar{p}_1 - \bar{p}_2$
Standard error	$\sigma_{\bar{p}_1 - \bar{p}_2} = \sqrt{\sigma_{\bar{p}_1}^2 + \sigma_{\bar{p}_2}^2} = \sqrt{\frac{\bar{p}_1(1 - \bar{p}_1)}{n_1} + \frac{\bar{p}_2(1 - \bar{p}_2)}{n_2}}$



EXAMPLE

**THANK
YOU**

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