

F-test - Practice

Example 1.:

Weight of rabbits has been observed in 2 farms (A,B). Weighing 10 randomly chosen rabbits from each farm the following weights have been found:

A: 2.7, 3.1, 2.8, 2.9, 3.3, 2.8, 2.7, 2.9, 3.0, 2.8 kg

B: 2.9, 2.6, 2.8, 3.2, 2.9, 3.3, 2.5, 2.7, 2.8, 2.8 kg

Does the weight variability in farm A differ from the one in farm B?

Example 2.:

In dairy cows stock the effect of a new veterinary preparation on glucose level in blood serum of dairy cows has been monitored. In 10 dairy cows (control), to which the preparation was not applied, the following values were measured (in mmol.l^{-1}):

3.9, 4.5, 3.2, 2.5, 2.6, 2.8, 3.0, 4.2, 3.1, 3.2

In 10 dairy cows (test), to which the preparation was applied, the following glucose levels in blood serum in mmol.l^{-1} have been found:

3.5, 3.1, 2.9, 3.0, 3.4, 2.8, 2.4, 3.9, 4.0, 3.8

Did the preparation influence variability of glucose level in dairy cows ? (= does the variance of glucose level in blood serum of dairy cows differ in 2 sets monitored?)

Example 3.:

In a dairy cows stock the effect of two veterinary preparations on the Mg level in blood serum of cows has been monitored. In 10 cows, to which the preparation No.1 was applied, the following Mg levels in blood serum have been found (in mmol.l^{-1}):

0.90, 0.78, 0.82, 0.84, 0.82, 0.93, 0.90, 0.87, 0.89, 0.93.

In other 10 cows, to which the preparation No.2 was applied, the following Mg levels in blood serum have been found (in mmol.l^{-1}):

0.89, 0.93, 1.24, 0.98, 0.87, 1.20, 0.97, 0.96, 0.99, 0.95.

Did preparations differ in their influence on the variability of Mg level in blood serum of dairy cows?

Put down into a protocol in Word (for each example):

- AVG, SD, and variance ($\text{SD}^2 = s^2$) of samples
- Degree of freedom (DF) of samples
- Calculated F-test statistic
- Critical value F_{crit} .
- Conclusion (answer)