Testing differences between two samples variances

Testing the difference between two variances

This can be tested with a variance ratio test:

$$F = \frac{s_1^2}{s_2^2} = \frac{s_2^2}{s_1^2}$$

The largest value is placed in the numerator. This test is compared to the F distribution for a significance decision.
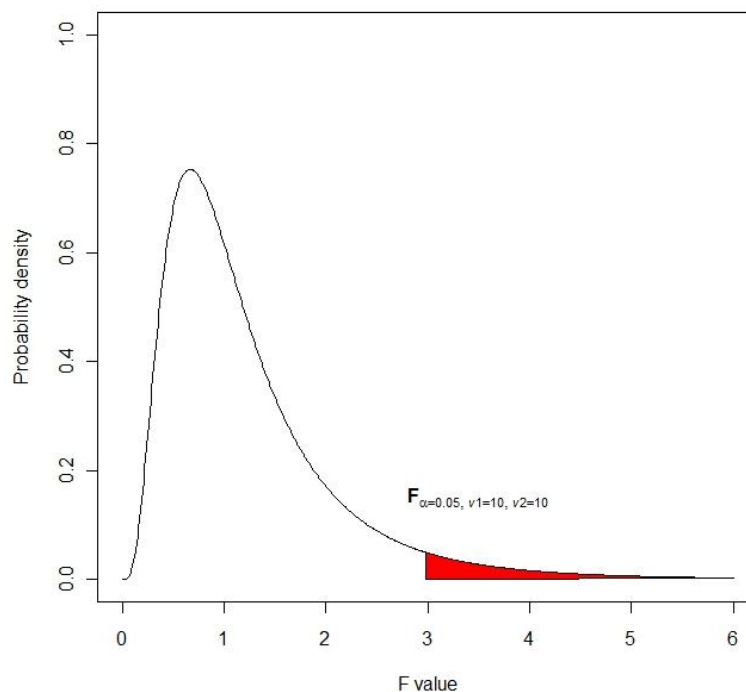

Figure 1. Example of an F distribution illustrating the critical value for an a = 0.05, v1 = 10, v2 = 10.

To evaluate the results of a test if the value from the formula above is between 0 and the critical value (the white area under the curve) the two variance values are not significantly different at the specified a level. If the value of the formula is greater than the critical value (the

red area under the curve) the two variance values are significantly different at the specified a level.

For table of <u>F critical values at the a = 0.05 level</u>.

Also See:

Chapter 9 - Significance of a Difference between Two Means pages 108-124 in:

Phillips, J. L. 2000. How to think about statistics. W. H. Freeman and Co. New York. 202 pp. ISBN 0-7167-3654-3

Chapter 9 - Two-Sample Hypotheses pages 126-130 in:

Zar, J. H. 2007. Biostatistical Analysis. Prentice-Hall, Inc. Englewood Cliffs, New Jersey. 718 pp.