

F-distribution (Fisher-Snedecor dist)

→ The f-distribution is a probability distribution that is useful in context of comparing variances of two or more samples.

→ It is right skewed and takes only non negative values.

$$pdf(f; d_1, d_2) =$$

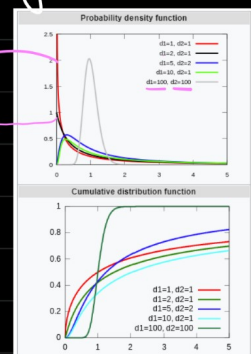
$$f(x; d_1, d_2) = \frac{\sqrt{\frac{(d_1 x)^{d_1} d_1^{d_1}}{(d_1 x + d_2)^{d_1 + d_2}}}}{x B\left(\frac{d_1}{2}, \frac{d_2}{2}\right)}$$

↑↑
Beta fn

$$B(m, n) = \frac{(m-1)!(n-1)!}{(m+n-1)!} = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$$

$d_1 = d_2 = 1$

$d_1 = 2, d_2 = 1$



The F distⁿ with d_1 & d_2 degree of freedom is the distribution of $X = \frac{S_1/d_1}{S_2/d_2}$ where S_1 & S_2 are

independent random variables with chi-square d_1 and degree of freedom d_1 & d_2 respectively.

$$F_{\text{statistic}} = \frac{S_1^2}{S_2^2} \quad \left\{ \begin{array}{l} \text{(variance ratio test)} \end{array} \right.$$

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

σ — populat stg
 s — sample stg