William Gosset
(1876-1937)

The t Distribution

$$f(t) = \frac{\Gamma\left(\frac{v+1}{2}\right)}{\sqrt{v\pi}\ \Gamma\left(\frac{v}{2}\right)}\left(1+\frac{t^2}{v}\right)^{-(v+1)/2}$$

$-\infty < t < \infty$

T has t distribution with v degrees of freedom $(v > 2)$

$E(T) = 0$

$Var(T) = \dfrac{v}{v-2}$

— t 2 d.f. — t 5 d.f. — t 10 d.f. — t 25 d.f. — z
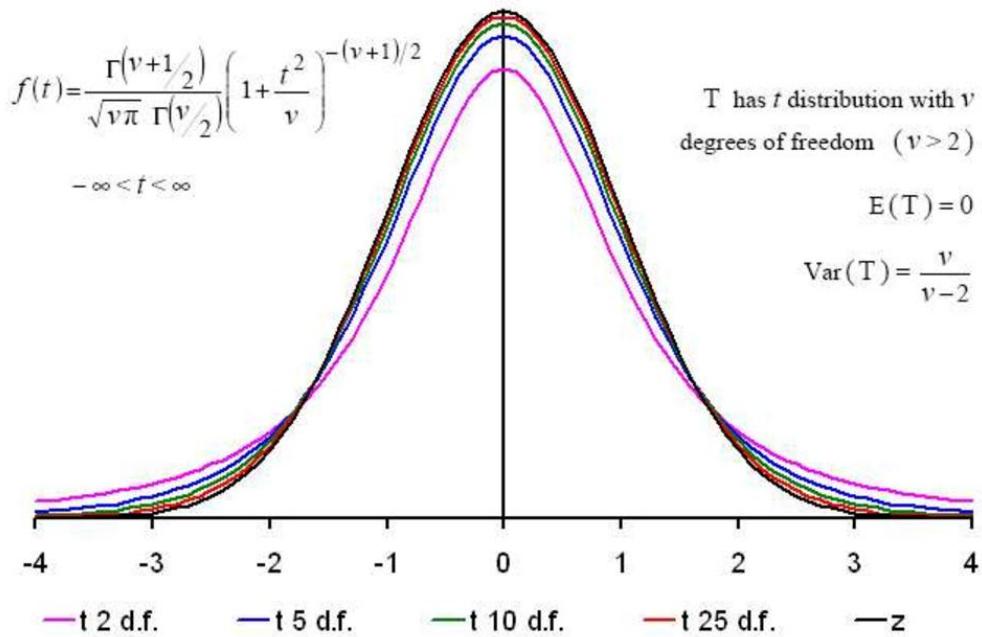
EXCEL:

$= \text{TINV}(\alpha, v)$ gives $t_{\alpha/2}$ for t distribution with v degrees of freedom

$= \text{TDIST}(t, v, 1)$ gives the upper tail probability for t distribution with v degrees of freedom, $P(T > t)$.

$= \text{TDIST}(t, v, 2)$ gives $2 \times P(T > t)$.