

Predicted T2 bounds for normal data with T of 1 through 4

We will use the following recursive formula to compute the T th standard deviation (σ_T) for data that is truncated by the T2 algorithm paired with the 3sd method. Note that the denominator re-normalizes the probability distribution in the numerator so that the area under the curve remains one despite existing over successively smaller domains.

$$\sigma_{T+1} = \sqrt{\frac{\int_{-b_T}^{b_T} x^2 N(x, 1) dx}{\int_{-b_T}^{b_T} N(x, 1) dx}}$$
$$b_T = 3\sigma_T \quad \forall \quad T > 0$$
$$b_0 = \infty$$

for values of T ranging from 1 to 4, we get the corresponding theoretical values of σ_T (rounded to 5 decimal places) for normal data that is truncated by T iterations the T2 algorithm:

$$\{a = 3, \sigma_1 = 0.98658, \sigma_2 = 0.98505, \sigma_3 = 0.98487, \sigma_4 = 0.98485\}$$