4 — t-Tests continued

4.1 Standard Error

Definition 4.1 — Standard Error. The Standard error is the standard deviation of the sample means over all possible samples (of a given size) drawn from the population. It can be computed by:

$$SE = \frac{\sigma}{\sqrt{n}}$$

The standard error for two samples can be computed with:

$$SE = \sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}$$

Definition 4.2 — Pooled Variance. Pooled variance is a method for estimating variance given several different samples taken in different circumstances where the mean may vary between samples but the true variance is assumed to remain the same. The pooled variance is computed by using:

$$S_p^2 = \frac{SS_1 + SS_2}{df_1 + df_2}$$

R We can use pooled variance to compute standard error that is:

$$SE = \sqrt{\frac{S_p^2}{n_1} + \frac{S_P^2}{n_2}}$$