

§10.2: Comparing Two Means

Skills

- See the theory behind the sampling distribution for the difference of two means
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First One, Now Two

Let's do the same thing we did with two sample proportions!
(i.e., subtract to make a single statistic)

The Two Sample t distribution

Mean $\mu_{\bar{x}_1 - \bar{x}_2} = \mu_{x_1} - \mu_{x_2}$

Standard Error $SE_{\bar{x}_1 - \bar{x}_2} = \sqrt{\frac{S_{x_1}^2}{n_1} + \frac{S_{x_2}^2}{n_2}}$

Shape: *complicated*

DF = *uh-oh.*

Degrees of Freedom

...so it turns out that the difference between two samples doesn't *exactly* give a t distribution

Once again, quitting and/or crying are not options

Old Method: use the smaller sample size, minus one

DON'T DO THAT!

New Method: The Satterthwaite Approximation

Conditions

- Random Samples or Assignment
 - 10% condition
 - Either both samples should be large, or both samples should be free from strong skew and outliers
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