10.8: Chapter Review

10.2 Comparing Two Independent Population Means

Two population means from independent samples where the population standard deviations are not known

- Random Variable: $\bar{X}_1 - \bar{X}_2 =$ the difference of the sampling means
- Distribution: Student's t-distribution with degrees of freedom (variances not pooled)

10.3 Cohen's Standards for Small, Medium, and Large Effect Sizes

Cohen's d is a measure of "effect size" based on the differences between two means.

It is important to note that Cohen's d does not provide a level of confidence as to the magnitude of the size of the effect comparable to the other tests of hypothesis we have studied. The sizes of the effects are simply indicative.

10.4 Test for Differences in Means: Assuming Equal Population Variances

In situations when we do not know the population variances but assume the variances are the same, the pooled sample variance will be smaller than the individual sample variances.

This will give more precise estimates and reduce the probability of discarding a good null.

10.5 Comparing Two Independent Population Proportions

Test of two population proportions from independent samples.

- Random variable: $\mathrm{p'}_A - \mathrm{p'}_B =$ difference between the two estimated proportions
- Distribution: normal distribution

10.6 Two Population Means with Known Standard Deviations

A hypothesis test of two population means from independent samples where the population standard deviations are known will have these characteristics:

- Random variable: $\bar{X}_1 - \bar{X}_2 =$ the difference of the means
- Distribution: normal distribution

10.7 Matched or Paired Samples

A hypothesis test for matched or paired samples (t-test) has these characteristics:

- Test the differences by subtracting one measurement from the other measurement
- Random Variable: $\bar{x}_d =$ mean of the differences
- Distribution: Student's-t distribution with $n - 1$ degrees of freedom
- If the number of differences is small (less than 30), the differences must follow a normal distribution.
- Two samples are drawn from the same set of objects.
- Samples are dependent.