Lecture 5 – Inference for Numerical Data

**One-sample t-test**

t test has a thicker tail than the z test

The test statistic for inference on a small sample (n < 30) mean is the T statistic with df = n 􀀀 1:

Xbar (average) = point estimate

SE =

Confidence Intervals = point estimate ± ME, ME = t\* x SE

Using the t table the t\* value is at the intersection of the df row and two tail probability of .05

Summary

If σ is unknown and we do not have a reliable estimate, use the t-distribution with SE =

Conditions 1) Independence of observations 2) No extreme skew

**Paired t-test**

When two sets of observations have a special correspondence (not independent), they are said to be paired

To analyze paired data it is useful to look at the difference in outcomes of each pair of observations diff = x – y (difference in means)

Parameter of interest = average difference between population values µdiff

Point estimate = average difference between sampled values xbardiff

No different than before we just use the one sample which is the difference between the observations

**Two sample t-test**

Mean difference µgroup1- µgroup2

point estimate = (xbar1 – xbar2)

SE =

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