The mean upper jaw length of female Ruffe is less than 11 mm

1. A=0.05
2. Ho: u=11mm vs Ha :< 11. U is the mean jaw length of female Ruffe.
3. A one sample test is required because (i) a quantitative variable is (jaw length) is measured, (ii) individuals from one population were sampled (Ruffe from Lake Superior) and (iii) **σ** is unknown.
4. The data appears to be from an observational study and there was some randomization (Ruffe were collected from different locations from around Lake Superior).
5. (i) N=42>40 and (ii) **σ** is unknown.
6. X bar=9.45(Table 1)
7. T=-5.986 with 41 degrees of freedom (Table 1).
8. P=2.265e-07(Table 1).
9. Ho is rejected because P-value>a.
10. It appears that the mean jaw length of female Ruffe is less than 11mm.
11. I am 95% confident that the mean jaw length of all female Ruffe 9.887 or smaller (Table 1).

Table 1-results from 1 sample t-test for mean jaw length of female Ruffe

One Sample t-test with RMF$ujl

t = -5.986, df = 41, p-value = 2.265e-07

alternative hypothesis: true mean is less than 11

95 percent confidence interval:

-Inf 9.887475

sample estimates:

mean of x

9.452381

R code

RMF<-filterD(RM,sex=="f")

t.test(RMF$ujl,mu=11,alt="less",conf.level=0.95)