Lindsey Wingate

Dakota Krout

Thomas Devine

Statistics 321

**Minitab Assignment #2**

1.

Test of μ = 360 vs > 360

Variable N Mean StDev SE Mean 95% Lower Bound T P

Escape 26 370.69 24.36 4.78 362.53 2.24 0.017

****

Our hypothesis is that meu is 360 seconds, or 6 minutes, and our alternate hypothesis is that meu is greater than 360 seconds.

Unusual features include: two gaps in the histogram, indicating there were two intervals with no sample data and no single concentration of data. We have strong evidence that the mean escape time is greater than 360 seconds.

2.

1-Sample Z Test

Testing mean = null (versus > null)

Calculating power for mean = null + difference

α = 0.05 Assumed standard deviation = 0.33

Sample

Difference Size Power

0 80 0.05

If we take a sample size of 80, the power to detect a population mean of 1.6 would be 0.856682.

If we desire a power of .99 to detect a population mean of 1.6 ppb we should collect a sample size of 172. We got this 172 from Minitab using .99 as the power and .1 as the difference.

3.   
Two-sample T for Paint A vs Paint B

N Mean StDev SE Mean

Paint A 75 0.2318 0.0702 0.0081

Paint B 82 0.2009 0.0801 0.0089

Difference = μ (Paint A) - μ (Paint B)

Estimate for difference: 0.0309

95% CI for difference: (0.0072, 0.0546)

T-Test of difference = 0 (vs ≠): T-Value = 2.57 P-Value = 0.011 DF = 154



Our null hypothesis is that mu1-mu2 = 0.

Our alternate hypothesis is that mu1-mu2 is not equal to 0.

Yes, with the P-value at 0.011 there is sufficient evidence to conclude the difference is not equal to zero, therefore we reject.

4.

Two-sample T for Extensibility

Quality N Mean StDev SE Mean

H 24 1.508 0.444 0.091

P 8 1.588 0.530 0.19

Difference = μ (H) - μ (P)

Estimate for difference: -0.079

90% CI for difference: (-0.457, 0.298)

T-Test of difference = 0 (vs ≠): T-Value = -0.38 P-Value = 0.712 DF = 10

The null hypothesis is mu\_1-mu\_2=0; the alternative hypothesis is mu\_1-mu\_2=/=0. The test statistic is -.38. The p-value is .712; given the p-value of .712 we do not reject the null hypothesis because there is insufficient evidence to conclude that there is a significant difference between mu\_1 and mu\_2.

5.

Paired T for LabA - LabB

N Mean StDev SE Mean

LabA 18 2174 458 108

LabB 18 2172 391 92

Difference 18 2.2 147.8 34.8

95% CI for mean difference: (-71.3, 75.7)

T-Test of mean difference = 0 (vs ≠ 0): T-Value = 0.06 P-Value = 0.950

Null hypothesis is when the mean difference = 0.

The alternate hypothesis is when the mean difference =/= 0.

The p-value is 0.950 and the confidence interval is (-71.3, 75.7).

We fail to reject because we do not have sufficient evidence to conclude that the laboratories systematically differ in their dating.

 