Stat 235

Lab 4

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Lab EL12

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November 8, 2018

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1

1.a

Keeping other parameters constant, changing the confidence level yields the folowing:

Confidence Level	Margin of Error
0.90	0.300308
0.95	0.357839
0.99	0.470280

Table 1: My caption

How does the margin of error change as the confidence interval increases? Explain briefly. As seen in Table 1 above, the Margin of Error increases as the Confidence Level is increased. This makes sense because.....

1.b

Confidence Level	Observed Fraction of Intervals That Failed to Cover the Hypothesized Population Mean
0.90	0.11
0.95	0.06
0.99	0.02

Table 2: My caption

Are the observed counts consistent with the values predicted by the theory? Explain briefly. looks like you got some learnin to do....

2

$$H_0 : \mu = 64 \quad vs. \quad H_A : \mu \neq 64$$

2.a

Level of Significance	Number of Samples That Led to the Rejection of H_0	Observed Fraction of Samples
0.10	XXXX	XXXX
0.05	XXXX	XXXX
0.01	XXXX	XXXX

Table 3: My caption

How does the number of samples change as the level of significance increases? Explain briefly.

2.b

Write your null hypothesis. (SHould have a solid understanding of p-values for this)

Compare the outcome of the test at the 5% level of significance with the 95% confidence intervals that failed to cover the mean of 64 for each sample. Repeat the exercise with the 1% level of significance and the 99% confidence intervals. What do you conclude about the relationship between confidence intervals and two-sided tests?

3

Alloy 1	
Mean	65.09
Standard Error	0.360980466
Median	64.6
Mode	63.8
Standard Deviation	1.977171438
Sample Variance	3.909206897
Kurtosis	0.042639157
Skewness	0.718164135
Range	8.2
Minimum	61.7
Maximum	69.9
Sum	1952.7
Count	30
Confidence Level(95.0%)	0.738287948

Table 4: My caption

Alloy 2	
Mean	65.27333333
Standard Error	0.167601973
Median	65
Mode	64.9
Standard Deviation	0.917993815
Sample Variance	0.842712644
Kurtosis	9.565960304
Skewness	2.914366915
Range	4.5
Minimum	64.5
Maximum	69
Sum	1958.2
Count	30
Confidence Level(95.0%)	0.342784524

Table 5: My caption

Alloy 2 + Treatment	
Mean	66.82333333
Standard Error	0.108350573
Median	66.75
Mode	66.9
Standard Deviation	0.593460531
Sample Variance	0.352195402
Kurtosis	7.169408133
Skewness	2.210176389
Range	3.1
Minimum	66
Maximum	69.1
Sum	2004.7
Count	30
Confidence Level(95.0%)	0.221601804

Table 6: My caption

3.a

3.b

4

4.a

4.b

5

5.a

5.b

6

6.a

6.b

6.c

6.d