**PRACTICE TEST #4**

1. Suppose we want to test the theory that “if you are an only child you are more likely to have a cholesterol level higher than the national average of 170. We sample 100 “only children” and find that their mean cholesterol level is 198. If we suppose that we know the standard deviation of the population is 15, do we have enough evidence to suggest that “only children” have a higher cholesterol level then the national average?

1-Sample Z-Test

Mean = 198

S.D = 15

Hypothesized Mean = 170

Null is: Mu = 170

Alternative is: Mu is Greater Than 170

1. 50 smokers were questioned about the number of hours they sleep each day. We want to test the hypothesis that the smokers need less sleep than the general public which needs an average of 7.7 hours of sleep. If the sample mean is 7.5 hours and the sample standard deviation is .3 hours is there sufficient evidence that suggests smokers do need less sleep then non-smokers? (Use a significance level of .01)

1-Sample t-Test

Mean = 7.5

S.D = .3

Hypothesized Mean = 7.7

Null is: Mu = 7.7

Alternative is: Mu is Less Than 7.7

1. A group of transfer bound students wondered if they will spend the same average amount on texts and supplies each year at their four-year university as they have at their community college. They conducted a random survey of 54 students at their community college and 66 students at their local four-year university. The sample means were $947 and $1011, respectively. The sample standard deviations are $154 and $67, respectively. Conduct a hypothesis test to determine if the averages are statistically the same.

2-Sample t -test

Mean (1) = 947

Mean (2) = 1011

S.D (1) = 154

S.D (2) = 67

Null is: Mu (1) = Mu (2)

Alternative is: Mu (1) not equal to Mu (2)

1. Joan recently claimed that the proportion of college–age males with at least one pierced ear is as high as the proportion of college–age females. She conducted a survey in her classes. Out of 107 males, 20 had at least one pierced ear. Out of 92 females, 47 had at least one pierced ear. Do you believe that the proportion of males has reached the proportion of females?

(Use a significance level of .10)

2-Proportion Test

Number of Events (1) = 20

Number of Trials (1) = 107

Number of Events (2) = 47

Number of Trials (2) = 92

Null is: P (1) = P (2)

Alternative is: P (1) < P (2)

1. A survey of 4000 people in the US finds that 2856 of them believe that daily weather reports are totally useless because meteorology is not really a science. Given this data perform a 95 percent hypothesis test to see if more than half of the people in the US believe that weather reports are useless.

1-Proportion Test

Number of Events = 2856

Number of Trials = 4000

Null is: P = .5 or P < or equal to .5

Alternative is: P > .5