

Table Number: _____

Group Name: _____

Group Members: _____

HYPOTHESIS TESTING VS CONFIDENCE INTERVALS

The Pew Research Center took a random sample of 2928 adults in the United States in September 2008. In this sample, 53% of 2928 people believed that reducing the spread of acquired immune sample deficiency disease (AIDS) and other infectious diseases was an important policy goal for the U.S. government.

1. What are the three conditions for the Central Limit Theorem (CLT)? Check if the CLT is applied in this situation.
2. Find a 95% confidence interval for the percentage of all Americans who believe that reducing the spread of AIDS and other infectious diseases was an important policy goal for the government.
3. How would interpret this confidence interval? Please use a complete sentence.
4. Some one claimed that more than half (50%) of all Americans who believe that reducing the spread of AIDS and other infectious diseases was an important policy goal for the government. If we are constructing a hypothesis test to test the claim, what are the null hypothesis (H_0) and the alternative hypothesis (H_a)? State the hypotheses both in words and in symbols.

H_0 :

H_a :

5. Use this following formula to calculate the Z-statistic. $z = \frac{p - p_o}{SE}$ where $SE = \sqrt{\frac{p_o(1-p_o)}{n}}$. Please show your work.
6. Is the hypothesis test we are constructing a two-tailed hypothesis test or a one-tailed hypothesis test? Using technology and the Z-statistic you found in the previous question to find a p-value.
ONE TAIL? TWO TAIL? P-VALUE =
7. If the significance level $\alpha=0.05$, should we reject or fail to reject the null hypothesis? How would you interpret your results of hypothesis testing? REJECT H_0 DO NOT REJECT H_0
INTERPRET:
8. Based on the above questions, what is the difference between confidence interval and hypothesis testing? When should we use confidence interval and when should we use hypothesis testing?

For each of the following hypothesis tests, state the conclusion **in context** in a full sentence given the result.

9. H_o : The proportion of those who report dreaming in color in the population is the same as it has historically been 0.29
 H_a : The proportion of those who report dreaming in color has increased.

The null hypothesis is **rejected**. CONCLUSION IN A FULL SENTENCE:

10. H_o : People have the same sense of smell when they are sitting up or lying down.
 H_a : People have a different sense of smell when they are sitting up or lying down.

The null hypothesis is **rejected**. CONCLUSION IN A FULL SENTENCE:

11. H_o : People on the Weight Watchers diet do not tend to lose weight.
 H_a : People on the Weight Watchers diet tend to lose weight.

The null hypothesis is **not rejected**. CONCLUSION IN A FULL SENTENCE:

12. H_o : The mean Calcium levels for men and women are the same.
 H_a : The mean Calcium levels for men and women are not the same.

The null hypothesis is **rejected**. CONCLUSION IN A FULL SENTENCE:

13. H_o : The standard deviation in the pressure required to open a certain valve is not change.
 H_a : The standard deviation in the pressure required to open a certain value is reduced.

The null hypothesis is **not rejected**. CONCLUSION IN A FULL SENTENCE:

14. H_o : The average grade of a standard test for a specific college course is not changed.
 H_a : The average grade of a standard test for a specific college course is increased.

The null hypothesis is **not rejected**. CONCLUSION IN A FULL SENTENCE: