Hypothesis Testing Applications

YOUR NAME

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Exercises

1. Repeat the analysis of the commercial length in the notes. This time use a different test statistic.

    1. State the null and alternative hypotheses.

    2. Compute a test statistic.

    3. Determine the p-value.

    4. Draw a conclusion.

2. Is yawning contagious?

An experiment conducted by the *MythBusters*, a science entertainment TV program on the Discovery Channel, tested if a person can be subconsciously influenced into yawning if another person near them yawns. 50 people were randomly assigned to two groups: 34 to a group where a person near them yawned (treatment) and 16 to a group where there wasn't a person yawning near them (control). The following table shows the results of this experiment.

		Group		
		Treatment	Control	Total
Result	Yawn	10	4	14
	Not Yawn	24	12	36
	Total	34	16	50

The data is in the file "yawn.csv".

a. What are the hypotheses?
b. Calculate the observed difference between the yawning rates under the two scenarios. Yes we are giving you the test statistic.
c. Estimate the p-value using randomization.
d. Plot the empirical sampling distribution.
e. Determine the conclusion of the hypothesis test.
f. The traditional belief is that yawning is contagious – one yawn can lead to another yawn, which might lead to another, and so on. In this exercise, there was the option of selecting a one-sided or two-sided test. Which would you recommend (or which did you choose)? Justify your answer in 1-3 sentences.
g. How did you select your level of significance? Explain in 1-3 sentences.