

Hypothesis Testing Applications

YOUR NAME

14 July, 2020

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.

		<i>Group</i>		Total
		Treatment	Control	
<i>Result</i>	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.