

Psyc 3101, Homework 6

Name: _____

TA: _____

The deer in Chautauqua spend each morning in one of three groves, but there doesn't seem to be any pattern to where they'll be each day. When I take my dog out in the morning, he races into the trees, hoping to find deer. I wonder whether Rufus is guessing randomly which grove to run to, or whether he can smell or hear them from across the field. So, I write down whether he finds deer each day:

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day12	Day 13	Day 14
Yes	Yes	No	Yes	No	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes

Use these data to do a binomial test of whether Rufus can smell the deer or is just guessing.

1. What parameter are we trying to make a conclusion about? (Write the *meaning* of the parameter, not its mathematical symbol.)
2. Write a sentence stating the null hypothesis at a conceptual level.
3. Write the null hypothesis mathematically (i.e., as an equation).
4. Write a sentence stating the alternative hypothesis at a conceptual level.
5. Write the alternative hypothesis mathematically.
6. What test statistic will you use to decide between the hypotheses?
7. What is the value of this statistic for the sample I recorded?

Here's the distribution for the test statistic you should have written for Question 6, according to the null hypothesis. This is a binomial distribution based on $n = 14$ and q equal to what you should have written above.

Frequency:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Probability:	.00	.02	.08	.16	.21	.21	.16	.09	.04	.01	.00	.00	.00	.00	.00

8. What is the critical value, assuming $\alpha = 5\%$?
9. Which hypothesis do the data support?
10. Why?
11. Write a sentence summarizing your conclusion. This should be a sentence about Rufus, not about statistics.