44. Magical Numbers from Ch1 problems

Think of a number satisfying these conditions:

- The number has two digits.

- Both digits are odd.

- The two digits are different from each other.

(a) Report the number that you think of.

Binomial Test Handout Steps 1-2

Step 1: Observational units?

Step 2: Variable? Type of Variable?

Steps 3-5: A magician on television claimed that the number 37 is somehow special and so people pick tend to pick it more or less often then is expected by chance.

Step 3: Parameter of Interest?

Step 4: Verify 4 criteria of a Binomial Random Process?.

Step 5: write the null and alternative hypotheses

Hint: how many numbers satisfying the conditions?

- The number has two digits.
- Both digits are odd.
- The two digits are different from each other.

Steps 6 and 7

Step 6: collect data

Step 7: descriptive statistics (graph and a number)

Perform the Exact Binomial Test (steps 8-10) using a rejection region

Step 8: rejection region (assume level of significance of 0.1)

Step 9: interpret region rejection

Step 10: decision about the null

Perform the Exact Binomial Test (steps 8-10) using a p-value

Step 8: p-value

Step 9: interpret p-value

Step 10: decision about the null (assume level of significance of 0.1)

Step 11: conclusion in context

45: Magical Numbers (cont'd)

Previous studies have investigated the question of whether people tend to think of an odd number when they are asked to think of a single-digit number (0 through 9). Combining results from several studies, Kubovy and Psotka (1976) used a sample size of 1770 people, of whom 741 thought of an even number and 1029 thought of an odd number

Perform a one proportion z test by hand, using a level of significance of 0.05. Carry out all steps of the one proportion z test handout.

Study tips

- Memorize the definitions of the **statistical terms**. Review the **learning objectives** stated near the beginning of each lecture.

- Read the **Binomial** and **one proportion z test** handouts. Try solving problems in the Ch1 practice problems in Blackboard until you are comfortable with each step. Check your work with the solutions file.

- Try solving problems related to **Type I, Type II and power** from the Ch1. problems in Blackboard. Check your work with the solutions file.

- Try taking **last year's exam** (in Blackboard)