

Final Lab Quiz Fall 1999

NAME: YOU MUST RETURN YOUR COPY OF THIS EXAM WITH YOUR NAME ON IT. (Points are shown in parentheses.)

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⚡ Long-term data show that 70% of excessive sugar users who attempt to quit eating sugar relapse. Another way to say this is that the $\text{Prob}(\text{Relapse}) = .7$ for people attempting to quit eating excessive sugar. Suppose that a scientist develops a new treatment for helping people quit the sugar addiction. Her scientific hypothesis is that the new treatment, Sugar Stop (SS), will reduce the relapse rate. She samples 20 volunteers who want to quit smoking and provides them SS. Her DV is an indicator variable X . $X = 0$ if the volunteer does not relapse in 6 months; $X = 1$ if the volunteer does relapse in 6 months. Her Test Statistic (TS) = $\sum X$.

A) (6) What is the scientific hypothesis? Is it directional or non-directional? What is the skeptical hypothesis?

B) (8) Following the procedure in class and homework, state H_0 and H_1 . Is H_1 one- or two-tailed?

C) (8) In simple words, what does the TS tell you? Why is this a sensible thing to measure in this study?

D) (6) Use StatCenter's binomial tool to find the sampling distribution of TS. Sketch it clearly.

E) (10) Explain in simple words why it makes sense to use the binomial distribution to find the probability distribution of TS. I'm looking for a simple, easy answer.

F) (6) What is the range of your TS?

G) (6) Where would put your critical value(s) to get α near .05? If it's a hard choice choose the smaller alpha level.

2. (50) Go into StatCenter's Virtual Lab. Choose the book labeled "Bot Research Volume 2: Brain State." Read the puzzle piece labeled "Tracking Brain State." Go to the lab, do the research, analyze the data, and form a conclusion. Print your conclusion on a printable html worksheet. Fill out all the relevant spaces on the worksheet and hand it in.