Statistical significance is not the same as material significance (importance). Explain in your own words why this may be the case in some circumstances. Give an example when statistical significance is important, and an example when it isn’t. Explain your reasoning. Here is a short handout that discusses statistical versus practical significance.

Statistical significance is not the same as material significance in that the statistical significance depends on several factors versus material significance depends on opinion. As in previous weeks, I’d like to take a basketball example. If an NBA player averages 23 points per game throughout his career and another averages 22.5 points per game, this fact alone can be viewed as statistically insignificant. However, if you look at the number of points total, it can be viewed as significant if it results in one player ending his career as the 20th all-time leading scorer versus someone who would end their career 27th all-time leading scorer. In this instance one stat is insignificant, a 0.5 PPG difference. However, ending your career with 34,000 points vs 33000 points.

This could be a significant if the difference of the players holding records in between them are separated by slim margins. However, with that, there also comes some material significance. Is this ranking relevant? Depends on who you ask.

Material significance plays a role with statistical significance. I believe that the best explanation of the two is that it depends on what you’re looking for. Sometimes they may be the same thing. If you think believe that averaging 0.5 PPG fewer than your peer if significant based on what you are assessing, then that’ll be your assessment. For example, if your goal is to catch your peer on an all-time scoring list, then averaging 0.5 PPG fewer is a big deal. If your goal is to just get into the hall of fame, then this difference is not significant. In conclusion, I would say statistical significance may show that there is a probability of a relationship. On the other end, material significance implies a relationship.

For this week I tried to solve question 9.60 at the end of chapter 9. I’m not sure if this is correct so looking for some feedback here.

Ho = u = 12

Ha = u != 12

Population variance = 16

n = 22

df = 21

sample mean = 13.4

s = 6

s2 = 36

alpha = 0.05

This is two tailed so you’ll need to divide 0.05/2 = 0.025

chi square value at X2 .025, 21 = 35.4789

chi square value at X2 .975, 21 = 10.28291

This means that for the null hypothesis to be true the observed value must be in between 10.29 and 35.48.

Observed Value = X2  = (21 \* 36) / 16 = 47.25

The value is much larger than our range therefore falling into the rejection region. We will reject Ho