

Week 9 Friday

More practice

Make sure you know your neighbors' names, and then discuss:

What's a topic that we've discussed this quarter you think you need more practice with? What do you plan on doing to practice it?

Reminders

Midterm 2 regrade requests close tonight, corrections due Wednesday night

Final exam logistical information is [online](#)

Chi-square test of independence

1. Researchers study the relationship between coffee consumption and clinical depression among college students. They survey a simple random sample of 500 college students about their coffee consumption and about whether or not they have been clinically diagnosed with depression, and find the following:

	Cups Per Week			
	0	1-6	7-13	14+
Depressed	15	35	45	50
Not Depressed	100	90	80	85

If coffee consumption and clinical depression are independent, what would be the expected number of college students in the sample who drink no coffee and are depressed?

2. Researchers study the relationship between coffee consumption and clinical depression among college students. They survey a simple random sample of 500 college students about their coffee consumption and about whether or not they have have been clinically diagnosed with depression, and find the following:

	Cups Per Week			
	0	1-6	7-13	14+
Depressed	15	35	45	50
Not Depressed	100	90	80	85

Under the hypothesis that coffee consumption and clinical depression are independent, they find $\chi^2 = 21.5$ and a p-value of 8×10^{-5} .

- (a) How did they calculate this p-value using χ^2 ?
- (b) What concerns do you have, if any, about the statement that “increased coffee consumption causes depression”?

3. Researchers compare the efficacy of three different 2-year drug regimens at clearing a parasite infection. They assign one of the three drug regimens to each person in a simple random sample of 300 people infected with this parasite, and after 2 years, then check to see if the drug regimen was successful at clearing the infection. Here's the data they collect:

	Regimen 1	Regimen 2	Regimen 3	Total
Successful	85	75	90	250
Unsuccessful	15	25	10	50
Total	100	100	100	300

Compute a p-value for the data under the hypothesis that the three drug regimens are equally effective at clearing this parasite infection.