

Homework Assignment 5
(Due Monday, March 8, 2010)

1. Two drugs, zidovudine (Z) and didanosine (D), were tested for their effectiveness in preventing progression of HIV disease in children. In a double-blind clinical trial, 276 children with HIV were given Z, 281 were given D, and 274 were given both Z and D. The following table shows the survival data for the three groups.

Treatment	Died	Survived	Total
Z	17	259	276
D	7	274	281
Z+D	10	264	274

We want to test whether survival and treatment are independent.

- (a) Calculate the chi-square test statistic and the likelihood ratio test statistic.
 (b) Are your results significant, borderline significant, or not significant? Explain.
2. Below are measurements for patients receiving three different treatments (4 patients per treatment).

	Treatment		
	A	B	C
	47	39	47
	48	44	49
	51	38	41
	54	39	43

We are interested whether or not there are treatment differences in truth. Verify the sums of squares, and complete the ANOVA table below. What do you conclude?

Source	SS	DF	MS	F
Between treatment	200	_____	_____	_____
Within treatment	92	_____	_____	
Total	292	_____		

3. A researcher is interested in the co-infection of subjects with Hepatitis C and HIV. In 150 study subjects randomly chosen from a high risk population, he observed 10 subjects Hepatitis C and HIV, 14 with HIV only, 25 with Hepatitis C only, and 101 subjects infected with neither.
- (a) Is there evidence that the infections are not independent of each other? (Use a contingency table).
 (b) Is there evidence against the assumption that the prevalences of Hepatitis C and HIV are the same in this population? (Use McNemar's test).