

Chapter 10

- 10-1. It appears that the design may have been a randomized block design with approximately 40 persons assigned to each surgery. For some reasons, there were withdrawals from some of the surgery levels. $X^2 = 3.421$, $df = 6$, $p = 0.7544$, we fail to reject the null hypothesis.
- 10-2. $X^2 = 3.316$, $df = 5$, $p = 0.651$, we fail to reject the null hypothesis, suggesting that the data could come from a Poisson distribution.
- 10-3. Note that there are 2 out of 10 cells with expected counts less than 5, but the smallest expected count (3.18) is greater than 1 ($= 5 \cdot (2/10)$) and the chi-square test is valid; $X^2 = 6.66$, $df = 4$, $p = 0.1423$, we fail to reject the null hypothesis at the 0.05 significance level; This is a test of independence because it appears that the subjects were selected at random, not by degree of infiltration. By assigning scores of -1, 0, 1, 2 and 3, we calculate $X^2 = 6.67$, $df = 1$, $p = 0.0098$; we reject the null hypothesis of no trend; by assigning scores of -1, 0, 0.5, 1 and 1.5, we calculate $X^2 = 6.36$, $df = 1$, $p = 0.0117$; we again reject the null hypothesis of no trend.
- 10-4. The use of the CMH statistic is questionable here. The rabbits which received the penicillin immediately fared better at the level of 1/4 and 1/2 but not at the level of 1. There is no difference at the other two levels.
- 10-5. $X^2 = 20.41$, $df = 1$, $p < 0.0001$, we reject H_0 ; the proportion of violation is nearly three times higher for the non-attendees (73.5%) than the attendees (24.3%). Without more information, we cannot draw any conclusion about the effect of attending the course. Our interpretation depends on whether the course was attended before or after the violation was found.
- 10-6. $X^2_{CMH} = 5.45$, $df = 1$, $p = 0.0196$, we reject the null hypothesis at the 0.05 significance level.