

Reading

- BPS Chapter 25

Exercises

BPS - Check your skills

Chapter 25 # 19-29 (answers: a,b,a,b,a,c,a,b,b,c,b)

You do not need to turn these in.

BPS Chapter 25 # 31, 32*, 33, 38*, 39, 40, 41, 44, 46

* For #32, the data set distributed by our book is corrupt. There is a repaired version available on our web page.

* For #38: Perform the chi-square test in part (c) and report the value of the test statistic χ^2 and the P-value. R can perform an exact version of the chi-square test using simulation, which does not require the minimum cell counts. Use the option `simulate.p.value=TRUE` to the `chisq.test` function to try this. Compare the test statistic and P-value for the two methods.

Heart Attack Patients

This set of data is all of the hospital discharges in New York State with an admitting diagnosis of an Acute Myocardial Infarction (AMI), also called a heart attack, who did not have surgery, in the year 1993. There are 12,844 cases. Data provided by Health Process Management of Doylestown, PA.

- AGE gives age in years
 - SEX is coded M for males F for females
 - DIAGNOSIS is in the form of an International Classification of Diseases, 9th Edition, Clinical Modification code. These tell which part of the heart was affected.
 - DRG is the Diagnosis Related Group. It groups together patients with similar management. In this data set there are just three different DRGs:
 - 121 for AMIs with cardiovascular complications who did not die.
 - 122 for AMIs without cardiovascular complications who did not die.
 - 123 for AMIs where the patient died.
 - LOS gives the hospital length of stay in days.
 - DIED has a 1 for patients who died in hospital and a 0 otherwise.
 - CHARGES gives the total hospital charges in dollars.
1. Mortality and gender. Make a 2x2 table of SEX and DIED, and use this to make a mosaic plot comparing the death rates by gender. Print your plot. Which gender is more likely to die? Is the difference statistically significant? State hypothesis and carry out a chi-square test.
 2. Diagnosis group and gender. Make a table of SEX and DRG, and use this to make a barplot with side-by-side M/F bars in each of the DRG categories. Print your plot. Describe the differences between diagnosis group for male and female patients. Are the differences statistically significant?
 3. Mortality and diagnosis. Which diagnosis is the most common? Which diagnosis has the highest mortality?