Problem Set 3

On Analysing Three Way Tables

Perform the following task: **(Take seed =987654321)**

Generate $X_1, X_2, .., X_n$ from Bernoulli distribution with probability of success **0.5.** Generate $Y_1, Y_2, .., Y_n$ from Bernoulli distribution with probability of success **0.4.** Note that X corresponds to income (high and low) while Y corresponds to gender (Male and Female). Prepare a 2x2 contingency table based on the generated values of X and Y. Compute the odds ratio and comment.

Next suppose that there is another variable Z indicating the type of job (blue collar job: 1, not blue collar job:0) which is associated with both X and Y. Conditional on Z=1, generate X from Bernoulli (0.6) and Y from Bernoulli (0.7); while conditional on Z=0, generate X from Bernoulli (0.05) and Y from Bernoulli (0.10).

Do the task for sample size **n=100**. Prepare the three way table. Construct the partial and marginal tables from it. Compute the conditional and marginal odds ratio and comment on your findings.