

**STAT 475/675: Applied Discrete Data Analysis
(January 3 - April 10, 2018)**

Lecture Tue 10:30-11:20 AQ3005; Thu 9:30-11:20 AQ3005

Instructor: X. Joan Hu, SSC K10555, 778-782-6714, joanh@stat.sfu.ca

Office Hours: Tue 16:30-17:20 and Thu 16:30-17:20, or by appointment; SSC K10555

Tutorial (starting from the week of Jan 8 2018)

Schedule: (AQ3148.2 for all tutorials in Jan)

STAT 475-D101: We 9:30AM - 10:20AM, AQ4125;

STAT 475-D102: We 3:30PM - 4:20PM, AQ5028;

STAT 475-D103: We 4:30PM - 5:20PM, AQ5038;

STAT 475-D104: We 5:30PM - 6:20PM, AQ5015

Teaching Assistant: Zhiyang Zhou (zhiyang_zhou@sfu.ca) for tutorials;

Yuping Yang (yupingy@sfu.ca) for marking

Textbook

- “*Analysis of Categorical Data with R*”, by Christopher R. Bilder and Thomas M. Loughin. Publisher: CRC Press

Homework Assignment 4 (Due on Thursday, Mar 1 by 17:30)

- **Part A.** The table below relates political ideology to political party affiliation. Political ideology has a five-point ordinal scalek ranging from very liberal to very conservative: X =political party; Y =political ideology; Z =gender. The data are used by Q14 of Exercises for Chapter 3 in Homework 4.

Political Ideology by Gender and Political Party

| gender | political party | political ideology | | | | |
|--------|-----------------|--------------------|------------------|----------|-----------------------|-------------------|
| | | Very Liberal | Slightly Liberal | Moderate | Slightly Conservative | Very Conservative |
| Female | Democratic | 44 | 47 | 118 | 23 | 32 |
| | Republican | 18 | 28 | 86 | 39 | 48 |
| Male | Democratic | 36 | 34 | 53 | 18 | 23 |
| | Republican | 12 | 18 | 62 | 45 | 51 |

Source: General Social Survey

1. Calculate the sample marginal odds ratios of Democratic vs Republican between females and males, and intepret it.
2. Calculate the sample conditional odds ratios of Democratic vs Republican between females and males with political ideology fixed at each of the five levels, and intepret them.

3. Conduct the Cochran-Mantel-Haenszel test for $X \perp Z$ given Y , the independence of gender and political party affiliation conditional on political ideology. Comment on test outcome.
4. Conduct the Breslow-Day test for the homogeneity of the odds ratios $X - Z$ conditional on Y . Comment on the test outcome.

- **Part B.** Q14 and Q15 in Exercises for Chapter 3, Pages 187-194 of the *Textbook*

(Please use the drop-box marked with “STAT 475/675” outside the statistics workshop to turn in the assignments.)