4.8:

Protestant – 221/661 = .334

Catholic – 45/295 = .1525

Jewish – 2/29 = .069

None – 15/221 = .068

Other – 20/80 = .25

(b) Yes, there is a relationship, because Jewish and None are far less likely to say that premarital sex is always wrong, whereas Protestants are far more likely (1 out of every 3) to say that it is always wrong.

4.18: (a) Drug 1 risk: 15%, Drug 2 risk: 5%

(b) RR = 15/5 = 3

(c) % inc. risk: 200%

(d) odds for Drug 1: 15%/85% = .1765, odds for Drug 2: 5%/95% = .0526

🡺 OR: .1765/.0526 = 3.353

4.34:

(a,b) > cbind(tax74/inc74,tax78/inc78)

[,1] [,2]

Bracket1 [1,] 0.05388664 0.03467460

Bracket2 [2,] 0.09321229 0.07178855

Bracket3 [3,] 0.11131723 0.09982518

Bracket4 [4,] 0.15965214 0.15936986

Bracket5 [5,] 0.38439574 0.38295126

Overall [6,] 0.14052855 0.15178033

(c,d) The rate went down in each bracket, but went up overall!!

(e) Because the one bracket (4) where they are the closest represents the largest difference between 74 and 78, and in only one other bracket was there an increase in income in the two years, Simpson’s paradox explains this.

4.40: (a) H\_0: There is no relationship between gender and risk of lower extremity injury

H\_A: There is a relationship between gender and risk of lower extremity injury

(b) Because the p-value is larger than 0.05, we do not have enough evidence to conclude that one gender is more likely to experience this type of injury.

(c) Female risk: 74/999 = .074, Male risk: 153/1667 = .092, so there is very little difference in the proportions of the different genders who have experienced this injury, which is consistent with H\_0.

4.64: (a) 29% (b) 41% (f) Because nonsmokers were almost 50% more likely to get pregnant after the first cycle, there does seem to be a relationship

(g) NO 🡪 we can not use observational data to prove cause-and-effect relationships. Only experimental data can do this.