

Statistics 2

Samples and hypothesis testing

Section 2: Contingency tables

Solutions to Exercise 3C

12. H_0 : subsequent conviction is independent of the amount of full-time education received
 H_1 : subsequent conviction is not independent of the amount of full-time education received

Observed frequencies

	≥ 15	< 15	TOTAL
Subsequent conviction	16	20	36
No subsequent conviction	6	18	24
TOTAL	22	38	60

Expected frequencies

	≥ 15	< 15	TOTAL
Subsequent conviction	13.2	22.8	36
No subsequent conviction	8.8	15.2	24
TOTAL	22	38	60

Contribution to χ^2

0.5939	0.3439
0.8909	0.5158

$$\text{so } \chi^2 = 2.345$$

Degrees of freedom $\nu = (2-1)(2-1) = 1$

For 5% significance level the critical value is 3.841

As $2.345 < 3.841$ the result is not significant, so accept H_0 , that is, subsequent conviction is independent of the amount of full-time education received.