

Data Set. (observed frequency)

	Car	bus	bicycle	(row Total)
male	20	10	15	45
female	15	25	15	55
Total column	35	35	30	100

Expected frequency

$$E_f = \frac{(\text{Total row}) \times (\text{Total column})}{\text{Total}}$$

male Car

$$= \frac{45 \times 35}{100} = \frac{1575}{100} = 15.75$$

male bus

$$= \frac{45 \times 35}{100} = 15.75$$

male bicycle

$$= \frac{45 \times 30}{100} = \frac{1350}{100} = 13.5$$

female Car

$$= \frac{55 \times 35}{100} = \frac{1925}{100} = 19.25$$

female bus

$$= \frac{55 \times 35}{100} = 19.25$$

$$\text{female w/cyob} = \frac{85 \times 30}{100} = \frac{1650}{100} = 16.5$$

chi square

$$\chi^2 = \frac{\sum (O - E)^2}{E}$$

$$= \frac{(20 - 15.75)^2}{15.75} + \frac{(10 - 15.75)^2}{15.75} + \frac{(15 - 13.5)^2}{13.5} +$$

$$\frac{(18 - 19.25)^2}{19.25} + \frac{(25 - 19.25)^2}{19.25} + \frac{(15 - 16.5)^2}{16.5}$$

$$= \frac{18.0625}{15.75} + \frac{33.0625}{15.75} + \frac{2.25}{13} + \frac{18.0625}{19.25} +$$

$$\frac{33.0625}{19.25} + \frac{2.25}{16.5}$$

$$= 1.1468 + 2.099 + 0.1667 + 0.9387 + 1.7174 + 0.13636$$

$$= 6.20596$$

degree of freedom.

$$= (\text{row} - 1) (\text{column} - 1)$$

$$= (2 - 1) (3 - 1)$$

$$= (1) (2)$$

$$= 2$$

Significance level $0.05 = 5.991$.

$$6.20596 > 5.991$$