

Exercise 6C

Q4)	Dogs	0	1	2	3	4	5	25	TOT
Observed	45	19	11	8	7	7	6	4	100
Expected	55	20	10	7	4	4	3	1	100

Degrees of Freedom

$$= 5 \text{ cells} - \text{Total fixed}$$

$$= 5 - 1 = 4$$

H_0 : Observed fits Expected

H_1 : It does not

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} = \sum \frac{O_i^2}{E_i} - N$$

$$\sum \frac{O_i^2}{E_i} - N$$

$$= \frac{45^2}{55} + \frac{19^2}{20} + \frac{11^2}{10} + \frac{8^2}{7} + \frac{17^2}{8} - 100$$

$$= 12.236$$

5% test $\nu = 4$

$$CV = 9.488$$

$$12.236 > 9.488$$

Reject H_0 and accept H_1 .

Observed data does not fit expected data.

Exercise 6D

Q5

Factory	A	B	C	D	E
Employees (1000s)	4	3	5	1	2
O_i Accidents	22	14	25	8	12
E_i Expect Acc	21.6	16.2	27	5.4	10.8

81 accidents in total of 15000 employees

$$\text{Acc/thousand} = \frac{81}{15} = 5.4$$

$$\chi^2 = \sum \frac{O_i^2}{E_i} - n$$

$$= \frac{22^2}{21.6} + \frac{14^2}{16.2} + \frac{25^2}{27} + \frac{8^2}{5.4} + \frac{12^2}{10.8} - 81$$

$$= 1.8395$$

0.05 sig level

$$v = 5 - 1 - 1 = 3$$

$$CV = 12.838$$

$$1.8395 < 12.838$$

\therefore accept H_0 mean accidents per 1000 is constant.

Hwk Ex 6D Q 9, Q10