

# Biometry - Clex 7 - Solutions

① Binomial  $n = 12$ ,  $p = 0.74$

$$P(6) = {}_{12}C_6 (0.74)^6 (0.26)^6 = 0.047 < 0.05$$

Yes the event is statistically significant, but not highly statistically significant.

②  $\mu = (2.3) \frac{200}{100} = 4.6$ ,  $P(6) = \frac{e^{-4.6} (4.6)^6}{6!} = 0.132$

The event is not statistically significant.

③  $\bar{x} = \frac{1(0) + 3(1) + 4(2) + 2(3) + 2(4)}{12} = \frac{25}{12} = 2.083$

X	≤ 1	2	≥ 3
obs. freq.	4	4	4
P(X)	0.3839	0.2702	0.3459
pred. freq.	4.61	3.24	4.15

$$P(0) = 0.1245$$

$$P(1) = 0.2594$$

$$P(2) = 0.2702$$

$$P(\geq 3) = 0.3459$$

$$\chi^2 = \frac{(4-4.61)^2}{4.61} + \frac{(4-3.24)^2}{3.24} + \frac{(4-4.15)^2}{4.15} = 0.2644$$

Degrees of freedom:  $3 - 1 - 1 = 1$ ,  $p\text{-value} = 0.6671$

Poisson is good model.

$$P(5) = \frac{e^{-2.083} (2.083)^5}{5!} = 0.041$$

This result is statistically significant. Seems the groundhog visits this quadrat less.