Number of offspring

For life time or per year?
Explanatory variables:

- bill length
- island

British doctors' smoking and coronary deaths

- 1951: All British doctors send questionnaire about smoking habits.
- Since then: Information about their deaths collected
- Data: No. of deaths of coronary heart disease among males, age group and smoking as in 1951.

1. Is the death rate higher for smokers then for non-smokers?
2. If so, how much?
3. Is the different effect related to age?

Goodness of fit

Pearson chi-square residuals:

$$r_i = \frac{o_i - e_i}{\sqrt{e_i}}$$

Chi-square statistic: $X^2 = \sum_{i=1}^{N} r_i^2 \approx \chi^2(N - p)$

Deviance: $D = 2(l(b_{max}) - l(b)) \approx \chi^2(N - p)$

Likelihood ration chi-square statistic $C = 2(l(b) - l(b_{min})) \approx \chi^2(p - 1)$

AIC: $AIC = -2l(\hat{\pi}; y) + 2p$