

Q₁

$$(a) \log(\lambda) = 1.7719 + 1.6350X_1 + 1.0897X_2 - 4.1656X_3$$

λ : expected count of Y

$$(b) R^2 = 1 - \frac{\text{Residual deviance}}{\text{Null deviance}} = 1 - \frac{190.89}{269.75}$$

$$(c) e^{\wedge} (1.7719 + 1.6350x + 1.0897x - 4.1656x)$$

(d) overdispersion (residual deviance > df)

(e) 1. Use a different family distribution

2. Include random effect

(f) $p > 1$ widens confidence intervals, reduces significance
increase standard errors

Q₂

(a) ① residual tends to \uparrow as fitted value \uparrow
Variance of residual \uparrow — — — —

② point 14 & 17 might be outliers. 19 must be outliers

(b) delete point 17 and do the regression again
and 19

(c)