House sparrows

Response modeled with **explanatory variables**.

1. Tarus length continuous
   - Hatch island factor, 5 levels
   - Sex factor, 2 levels
   - NAO covariate
2. Dispersal, categorical, binary
   - Hatch island factor, 5 levels
   - Sex factor, 2 levels
   - NAO covariate
   - Wing length covariate
3. Number of off-spring categorical, counts
   - Dispersal factor, 2 levels
   - Hatch island factor, 5 levels
   - Body mass covariate

Your own data

- We recommend binary data with at least one continuous and one nominal/ordinal explanatory variable.
- But any data / model that fit the course is OK.
- Discuss with Ingelin and Alessandro!

Find a friend and start today!

Example: Chronically medical conditions

- Women in rural area see GP less then women in urban area.
- Why? Less sick or less accessible?

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Data

Group 1: No. of chronically conditions for 26 town women with ≤ 3 GP visits.

Group 2: No. of chronically conditions for 23 town women with ≤ 3 GP visits.

Do women in the two groups with the same number of visits have the same need?

Model and hypothesis

y_{jk}: Woman j from group k.

H_0 Same need: $Y_{jk} \sim Po(\theta)$

H_1 Different needs: $Y_{jk} \sim Po(\theta_k)$

Standardized residuals

Normal model: $E(Y_i) = \mu_i,\ Y_i = N(\mu_i, \sigma^2)$

Poisson model: $E(Y_i) = \theta_i,\ Y_i \sim Po(\theta_i)$

- $r_i = \frac{y_i - \hat{\mu}_i}{\hat{\sigma}}$
- $r_i = \frac{y_i - \hat{\theta}}{\sqrt{\hat{\theta}}}$

If model is correct: Approximately: $r_i \sim N(0,1)$

Plots for r_i

- qq-plot
- against each explanatory variable
- other potential explanatory variables
- plot r_i vs $\hat{y}_i$ (check assumption of constant variance / homoscedasity)
- plot r_i in order y_i was measured.

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