Last week: Correlation coefficient

This week: Linear regression

Pearson correlation coefficient, R

- *cor(x, y, method = "pearson")*
- *cor.test(x, y, method = "pearson")*

Coefficient of determination, R^2

- *cor.test(x, y, method = "pearson")$estimate ^ 2*

Spearman's correlation coefficient, ρ

- *cor(x, y, method = "pearson")*
- *cor.test(x, y, method = "pearson")*

Linear regression

- *lm(y ~ x, data = data)*
- *summary(model)*
- *anova(model)*

Testing assumptions

- *Residual plot – residuals of model vs X*
- *mean(residuals) = 0*
- *plot(model)*

Calculating model

Plotting results

Exercise 1: Does body size affect nectar returns?

Data: Bees were captured at night time to uniquely tag individual workers and measure their body size, intertegular span (mm) and body weight (g). During the day, tagged bees were captured upon returning to the colony. Pollen was collected and bees were weighed. Nectar weights (g) were calculated by the change in weight from day to night time.

Instructions:

1. Run a linear regression to investigate whether body size affects the nectar returns of worker bumble bees.

2. Create a residual plot.

3. Test other assumptions.

4. Assess model fit, and write out equation using coefficients.

5. Write summary statement.