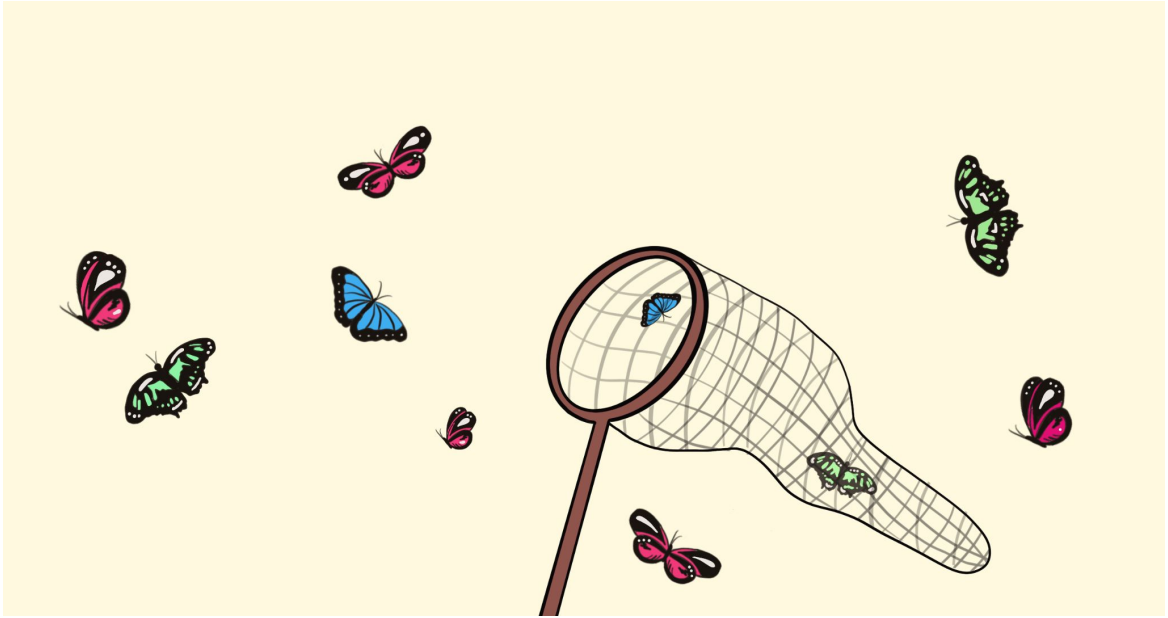
Week 2 Lecture 2:
Multiple regression

EDS 222: *Statistics for Environmental Data Science*



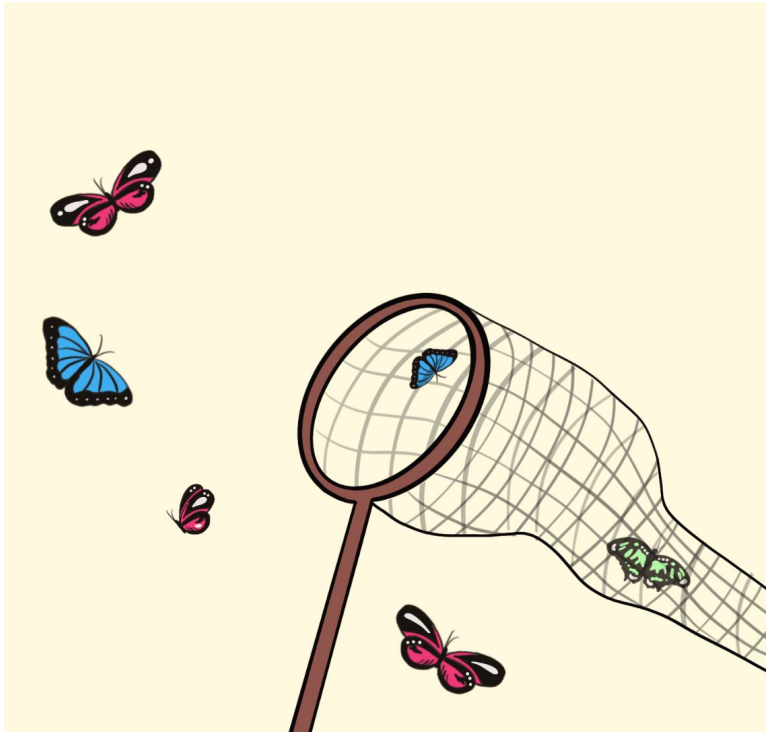
California live oak growth

Credit: Alder & Oak

Credit: Pixabay

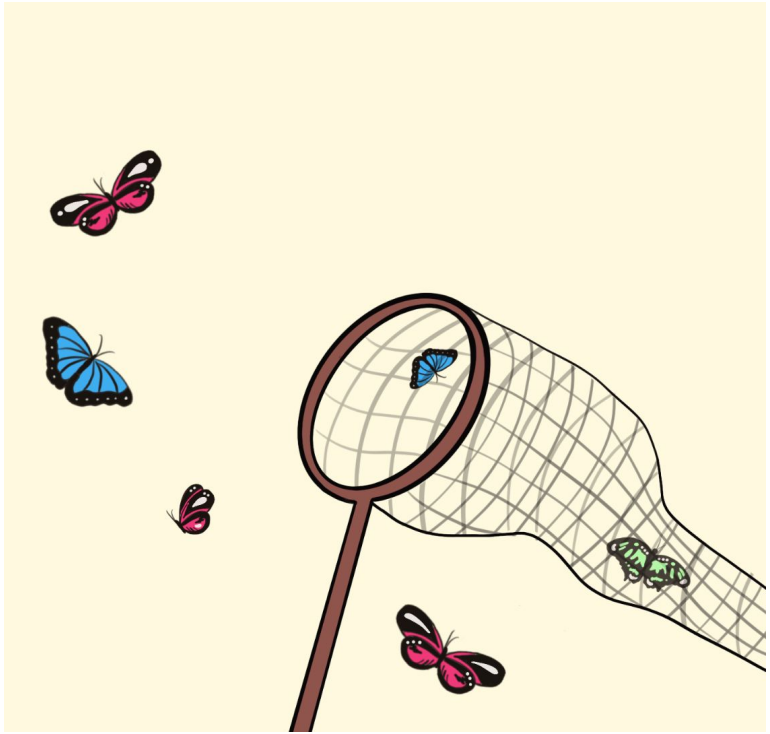
Today’s agenda

- ➔ Categorical predictors
- ➔ Categorical + continuous predictors
- ➔ Visualization techniques

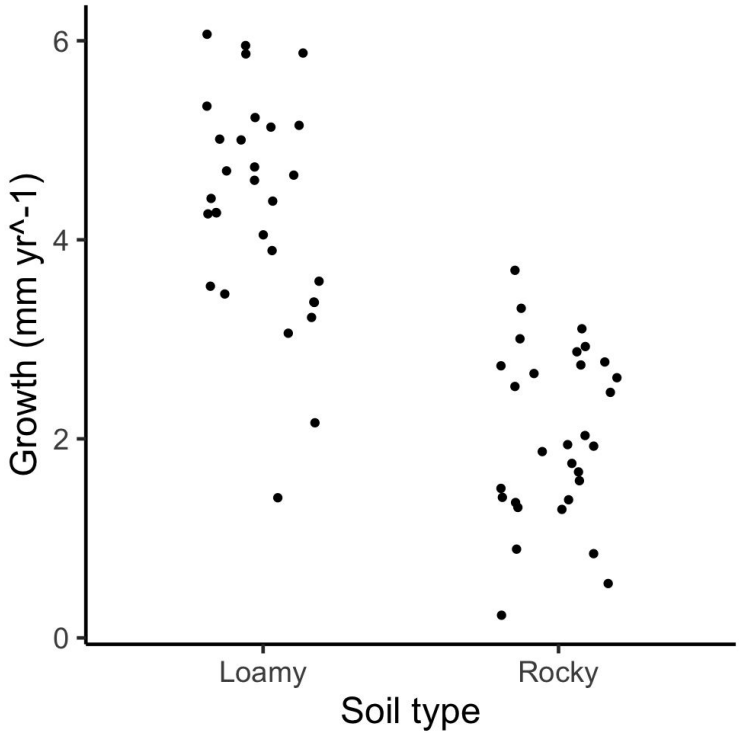


Today’s agenda

- ➔ **Categorical predictors**
- ➔ Categorical + continuous predictors
- ➔ Visualization techniques



Growth model

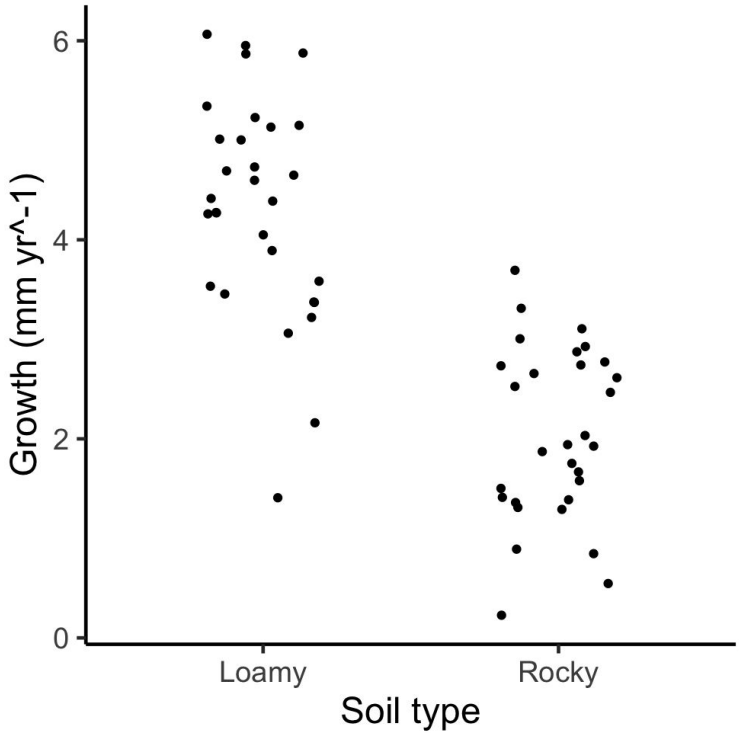


What's the predictor?

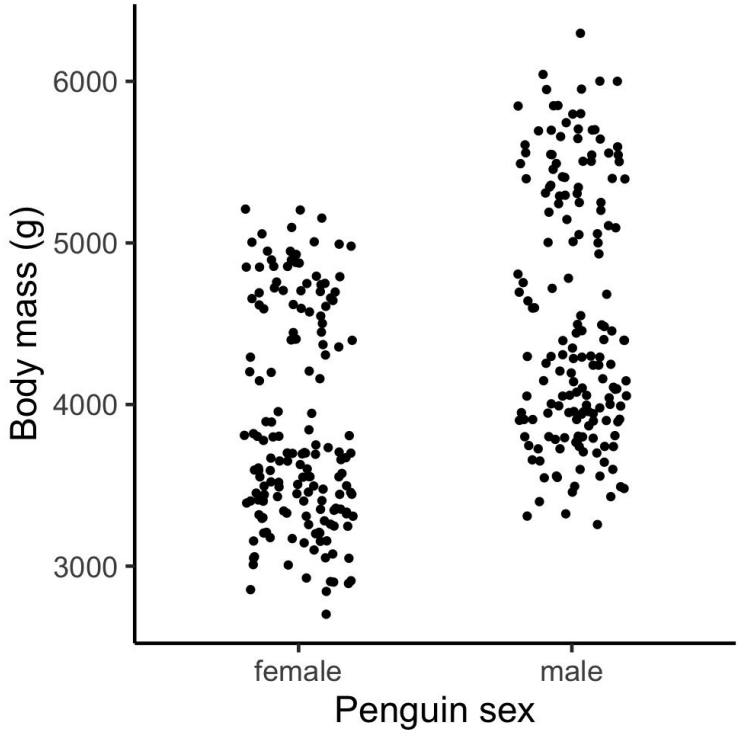
What's the response?

How would you describe the model in statistical notation?

Encoding categorical variables



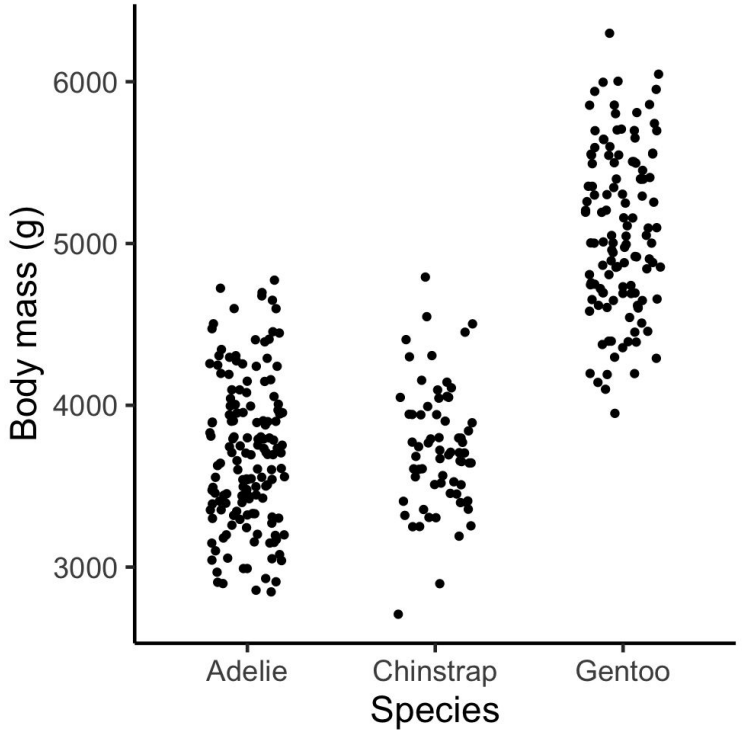
Encoding categorical variables



Write the model

Eyeball estimates for coefficients

Encoding categorical variables



Write the model

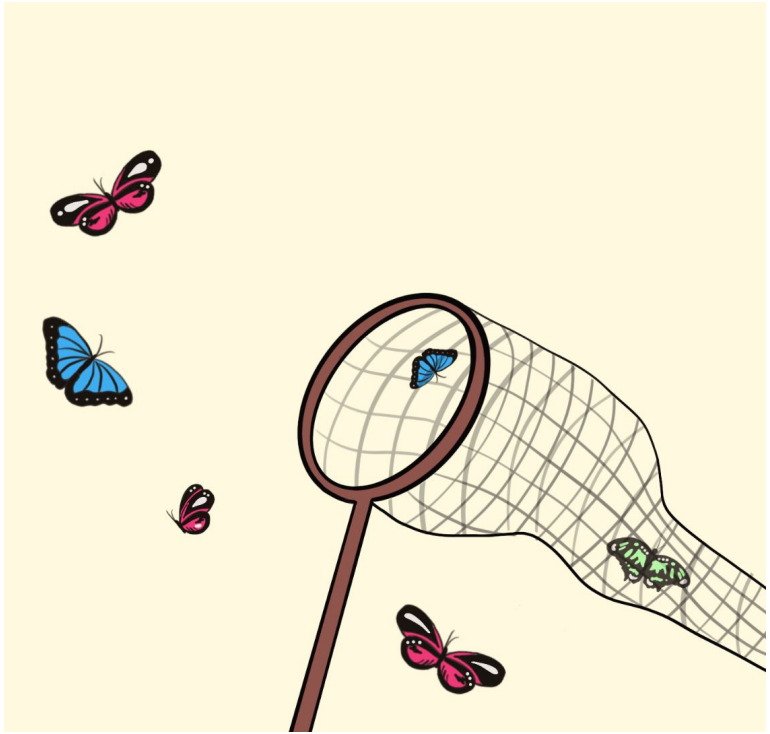
Eyeball estimates for coefficients

More than two categories

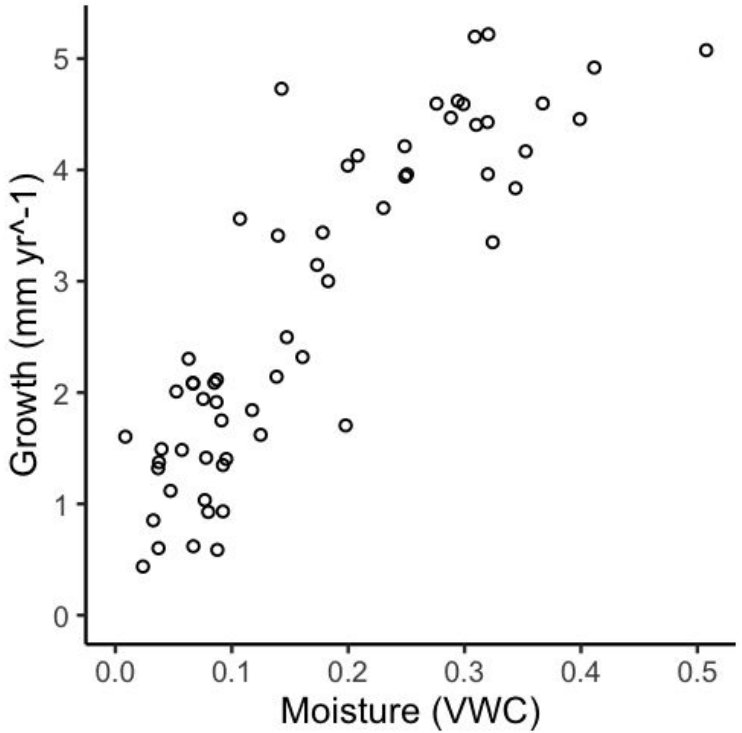
Categorical predictors

Today’s agenda

- ➔ Categorical predictors
- ➔ **Categorical + continuous predictors**
- ➔ Visualization techniques



Continuous predictor

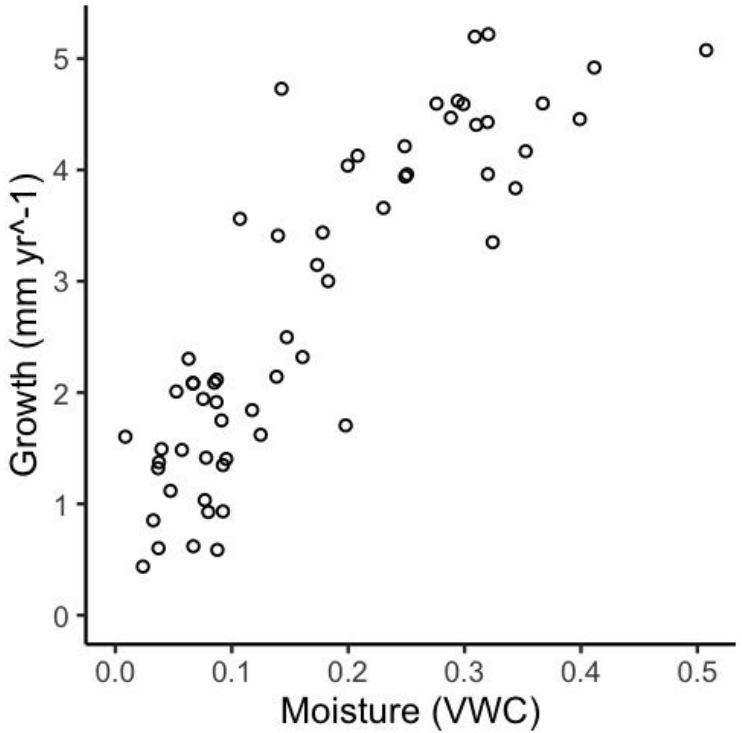


Eyeball the best fit line

Write the model

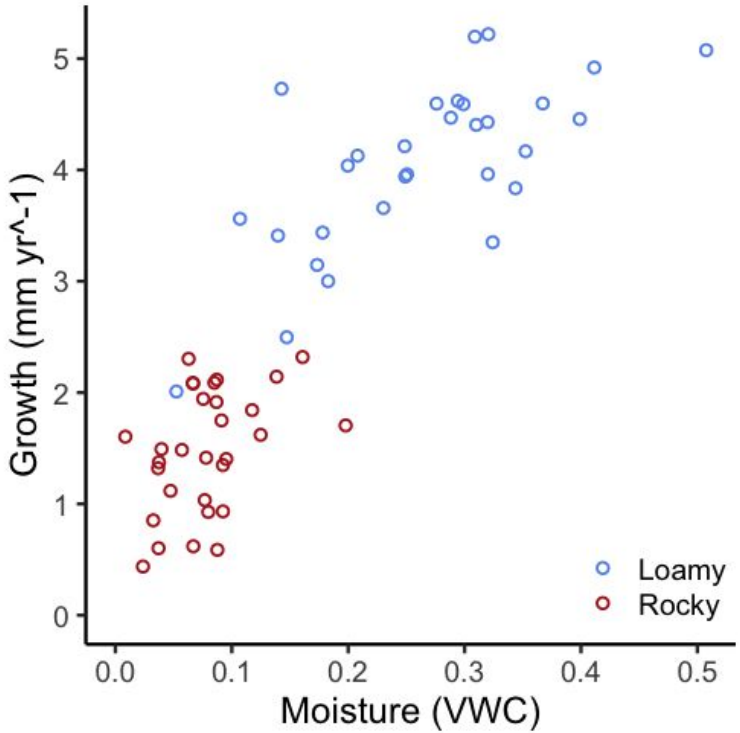
Eyeball estimates for coefficients

Continuous predictor



You manage a nature reserve. A climate model predicts the average soil moisture will drop from 0.4 to 0.2. How much would you expect the average oak growth rate to change by?

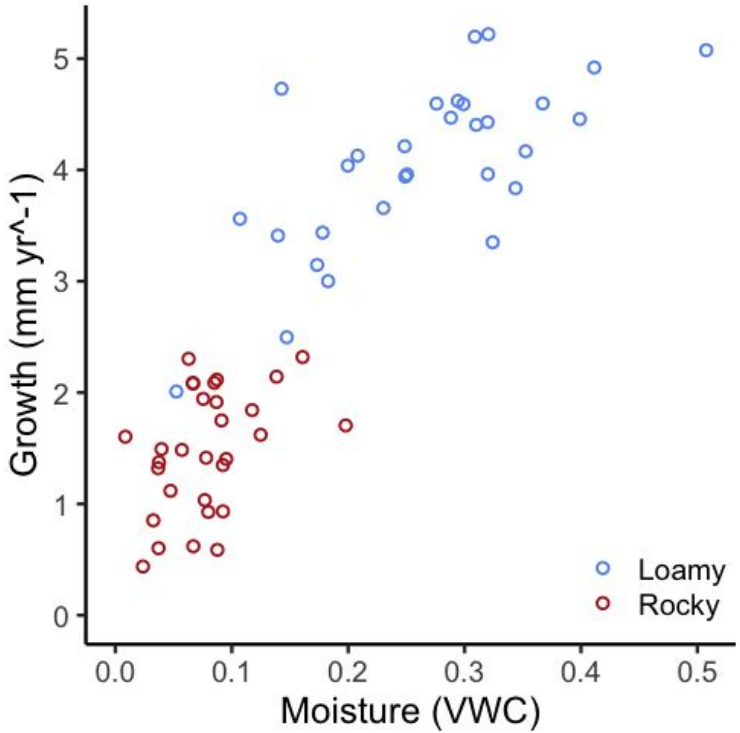
Reveal a categorical predictor



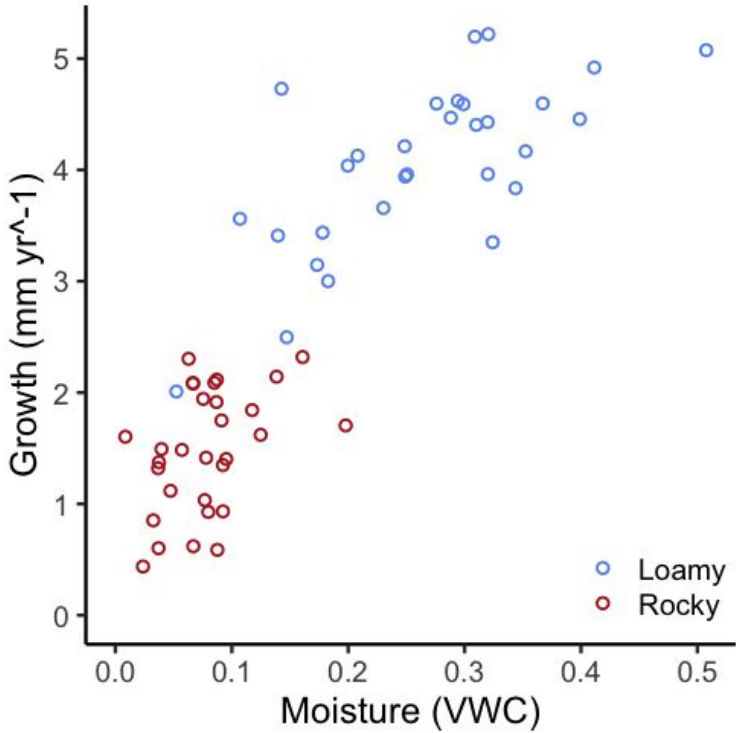
Eyeball *two* best fit lines

What do your lines imply about your assumptions?

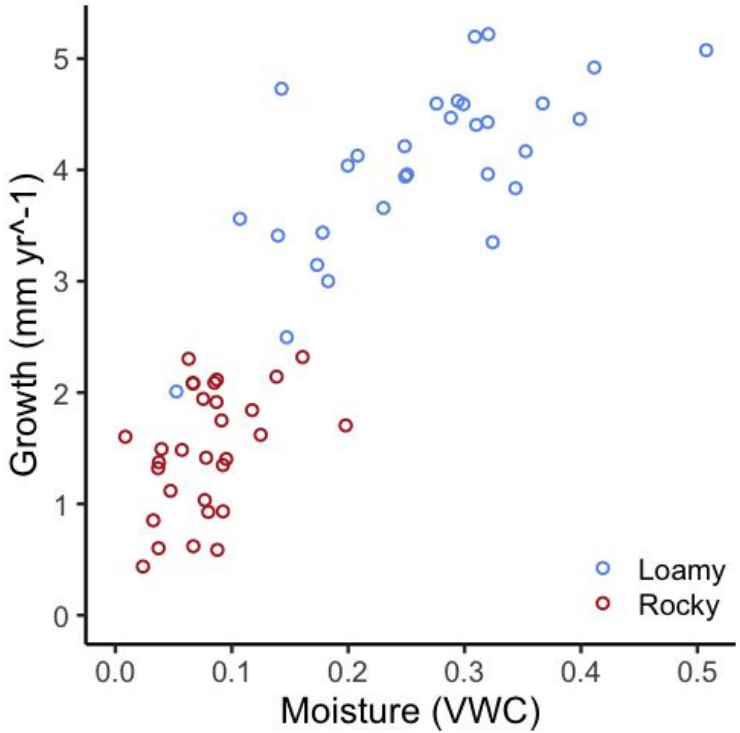
Modeling categorical with continuous



Modeling categorical with continuous



Confounding variables



How does adding soil type affect the coefficient for moisture?

Categorical + continuous predictors

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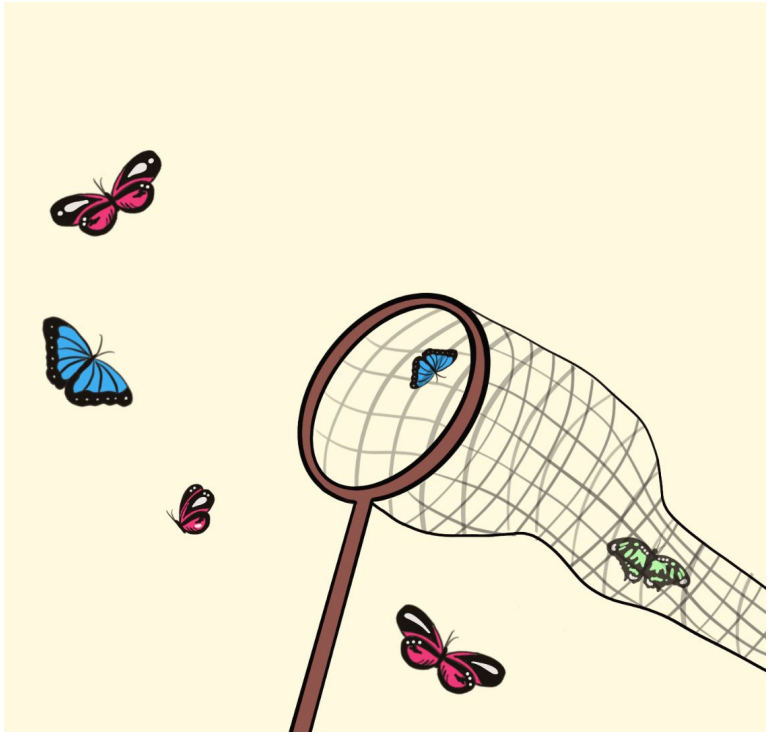

Multiple categories

Categorical with continuous

Adding best fit lines

Visualization techniques

Recap

Categorical predictors

Categorical + continuous predictors

Visualization techniques