ISI-BUDS
Lab for Generalized Linear Models

Babak Shahbaba, PhD
University of California at Irvine (UCI)

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use age).

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use `age`).
- Visualize your model.

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use `age`).
- Visualize your model.
- Examine the relationship between `education` on `lhippo`.

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use `age`).

- Visualize your model.

- Examine the relationship between `education` on `lhippo`.

- Visualize your model.

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use `age`).

- Visualize your model.

- Examine the relationship between `education` on `lhippo`.

- Visualize your model.

- Now consider the relationship between the left hippocampus volume and both age and education.

Linear Regression for Predicting Left Hippocampus Volume

- Examine how the left hippocampus volume `lhippo` changes as we get older (use `age`).

- Visualize your model.

- Examine the relationship between `education` on `lhippo`.

- Visualize your model.

- Now consider the relationship between the left hippocampus volume and both age and education.

- Interpret your estimates of the regression coefficients.

Linear Regression for Predicting Left Hippocampus Volume

- Divide the data into two equal subsets called "Training" and "Test".

Linear Regression for Predicting Left Hippocampus Volume

- Divide the data into two equal subsets called "Training" and "Test".

- Use the Training set to build a linear regression model with `naccmmsse` as the response and age, gender, and education as predictors.

Linear Regression for Predicting Left Hippocampus Volume

- Divide the data into two equal subsets called "Training" and "Test".

- Use the Training set to build a linear regression model with `naccmmsse` as the response and age, gender, and education as predictors.

- Use your model to predict the values of `naccmmsse` in the test set.

Linear Regression for Predicting Left Hippocampus Volume

- Divide the data into two equal subsets called "Training" and "Test".

- Use the Training set to build a linear regression model with `naccmmsse` as the response and age, gender, and education as predictors.

- Use your model to predict the values of `naccmmsse` in the test set.

- Compare your predictions with the true values.

Logistic Regression for *Alzheimer's diagnosis*

- Create a new variable called `disease.status` by transforming the variable `diagnosis` to a new feature with two categories: no symptoms (0) versus mild or strong symptoms (1).

Logistic Regression for *Alzheimer's diagnosis*

- Create a new variable called `disease.status` by transforming the variable `diagnosis` to a new feature with two categories: no symptoms (0) versus mild or strong symptoms (1).

- Next, we want to build a logistic regression model for disease status with `age`, `education`, `naccicv`, `female` as its predictors.

Logistic Regression for *Alzheimer's diagnosis*

- Create a new variable called `disease.status` by transforming the variable `diagnosis` to a new feature with two categories: no symptoms (0) versus mild or strong symptoms (1).

- Next, we want to build a logistic regression model for disease status with `age`, `education`, `naccicv`, `female` as its predictors.

- Interpret your estimates of the regression coefficients.

Logistic Regression for *Alzheimer's diagnosis*

- Create a new variable called `disease.status` by transforming the variable `diagnosis` to a new feature with two categories: no symptoms (0) versus mild or strong symptoms (1).

- Next, we want to build a logistic regression model for disease status with `age`, `education`, `naccicv`, `female` as its predictors.

- Interpret your estimates of the regression coefficients.

- As before, divide the dataset into two subsets, fit the above logistic regression model to one subset and use the resulting model to predict the disease status for the other subset. Evaluate the performance of your model.