Lab 11

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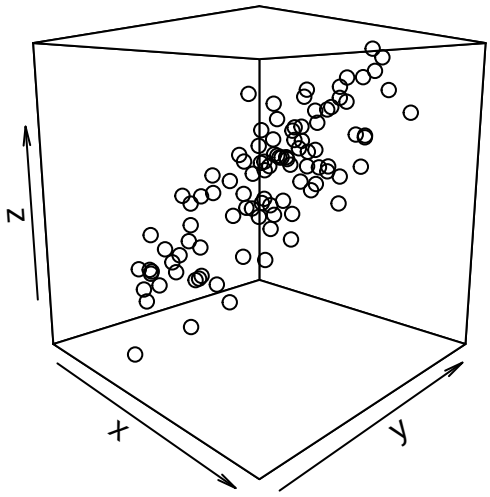
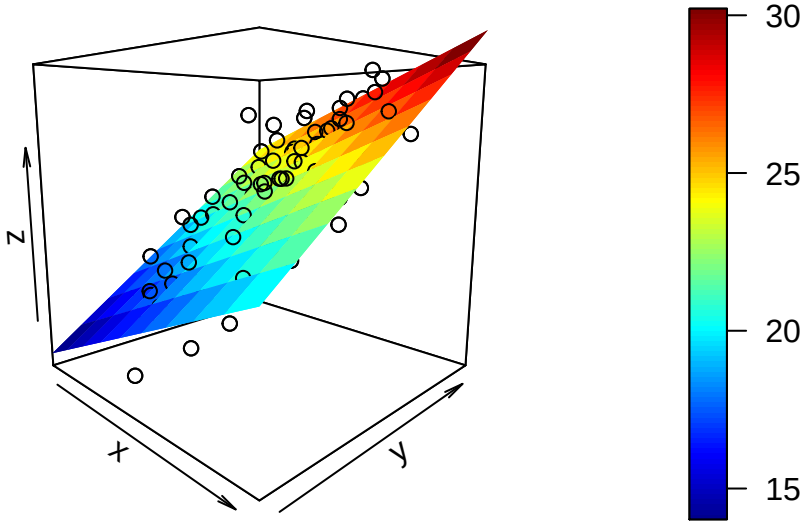
Linear regression with multiple predictors

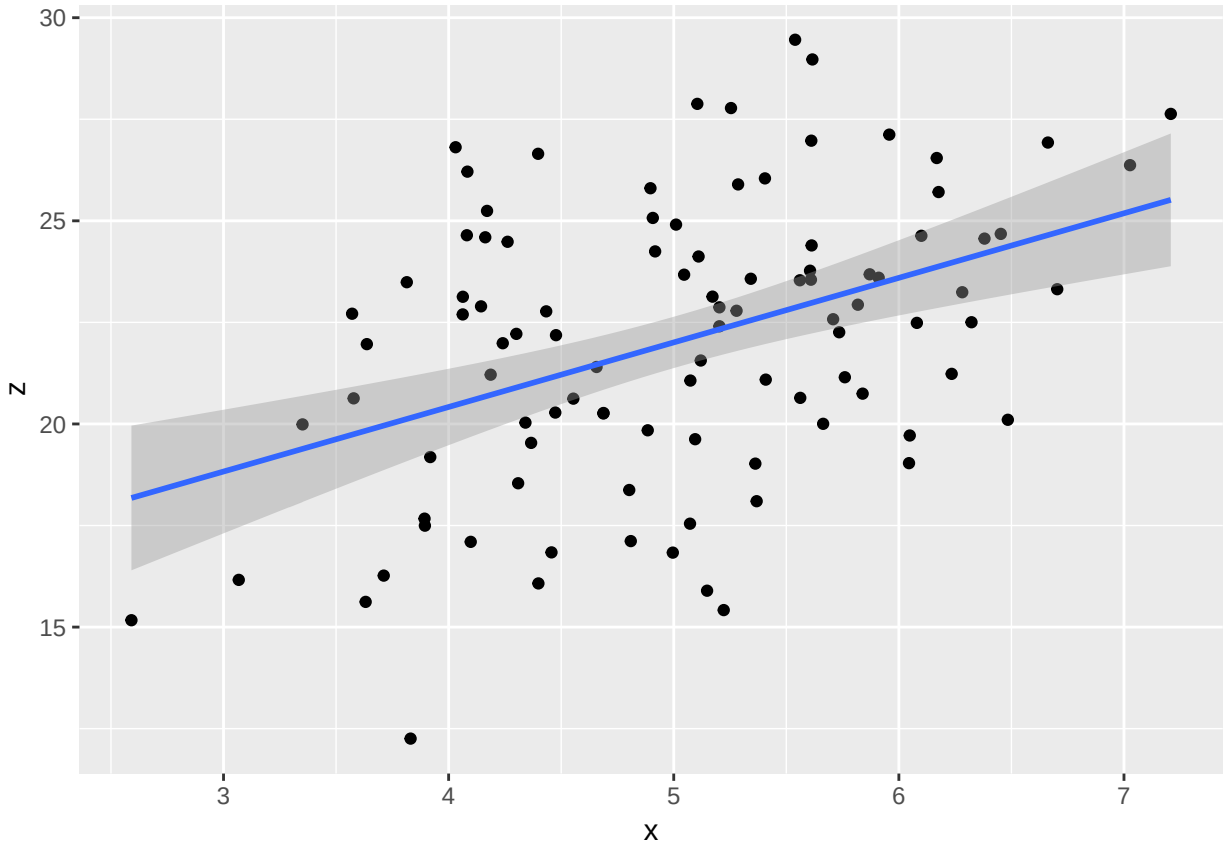
Working with many dimensions



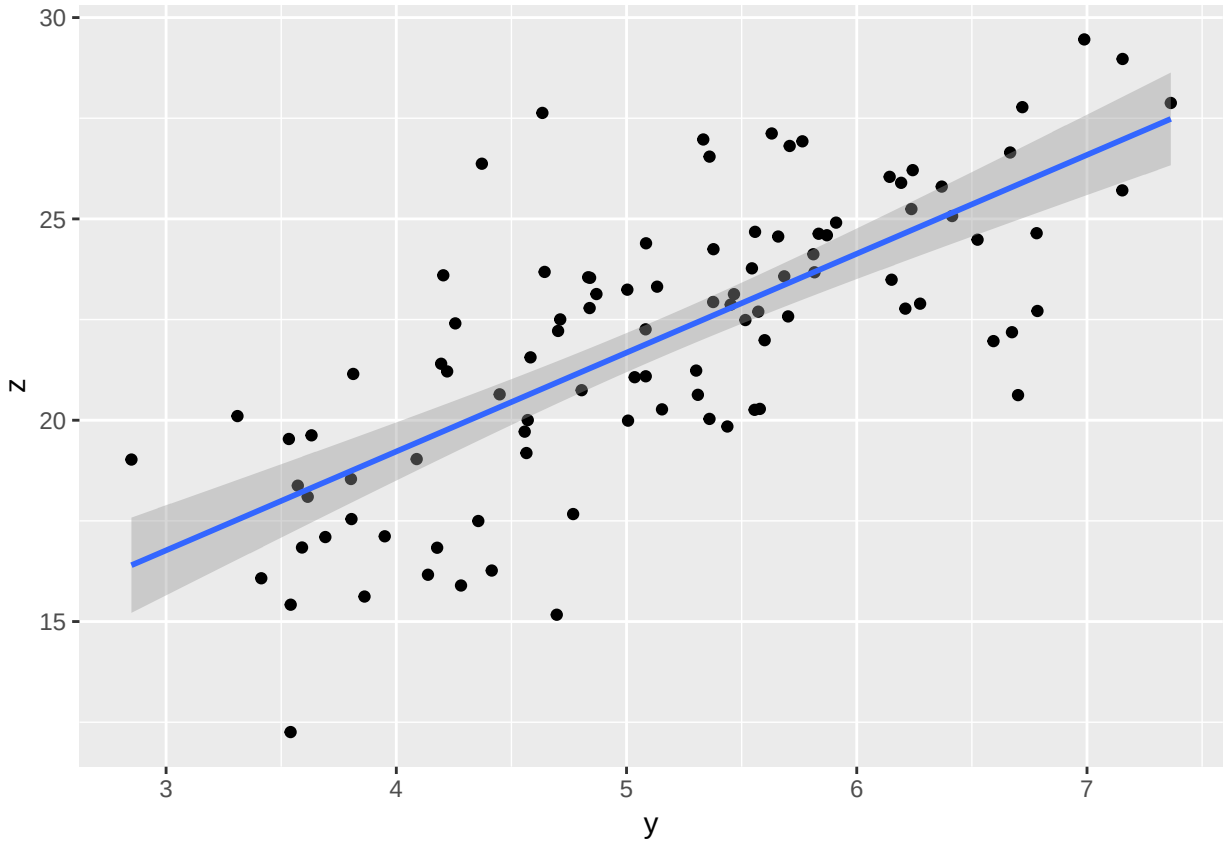
Working with many dimesions



Working with many dimesions



Working with many dimensions



Bayesian linear model

- $y \sim \mathcal{N}(\mu, \sigma^2)$
- $\mu = \beta_0 + \sum_k \beta_k * x_k$
- in other words y is distributed according to Normal distribution with mean μ and variance σ^2
- note that μ changes (is conditional) on the value of x_k
- where x_k is the kth predictor

Interactions

- $\mu = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_1 x_2$
- $\mu = (\beta_0 + \beta_1 x_1) + (\beta_2 + \beta_3 x_1) x_2$
- $\mu = (\beta_0 + \beta_2 x_2) + (\beta_1 + \beta_3 x_2) x_1$
- in other words with interaction term $x_1 x_2$ slope of x_2 can be represented as conditional on the values of x_1
- similarly slope of x_1 can be represented as conditional on the values of x_2