Report for the paper …

# Statistical Analysis

Continuous data are presented as mean±standard deviation while categorical variables as counts and percentages. Differences between groups were analyzed by the unpaired Student’s t tests for continuous variables while…. To investigate the association between weight with sex, age and BMI, a linear regression was performed… A p-value <0.05 was considered statistically significant.

library(lattice)  
library(knitr)

## Warning: package 'knitr' was built under R version 3.4.4

set.seed(2015+5)  
patient <- c(1:200)  
height <- rnorm(200, 1.70, 0.1)  
weight <- height + rnorm(200, 60, 10)  
age <- rnorm(200, 60, 10)  
sex <- sample(1:2, 200, replace = T)  
sex <- factor(sex, levels = 1:2, labels = c("male", "female"))  
  
dat <- data.frame(patient, height, weight, sex, age)  
dat$BMI <- dat$weight/(dat$height^2)  
  
fm1 <- lm(weight ~ sex + BMI + age, data = dat)  
   
tab <- summary(fm1)$coefficients

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Estimate | Std. Error | t value | Pr(>|t|) |
| (Intercept) | 27.2101 | 3.6779 | 7.3982 | 0.0000 |
| sexfemale | -0.3549 | 0.9332 | -0.3803 | 0.7041 |
| BMI | 1.7446 | 0.0939 | 18.5889 | 0.0000 |
| age | -0.0574 | 0.0499 | -1.1494 | 0.2518 |

## Predict weight for 2 male patients with min and max BMI at different ages

newdata <- with(dat, data.frame(  
 sex = rep(1, each = 40),  
 age = rep(seq(min(dat$age), max(dat$age), length = 20), each = 2),  
 BMI = rep(c(min(dat$BMI), max(dat$BMI)), 20)  
))  
  
X <- model.matrix(~ sex + BMI + age, data = newdata)  
  
betas <- summary(fm1)$coefficients[, 1]  
newdata$pred <- c(X %\*% betas)  
  
newdata$BMI <- factor(newdata$BMI, labels = c("min BMI","max BMI"))



