

lab3_johnsonc

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# Lab 3
# Chris Johnson
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# This assignment will need the following dataset: "income.data.csv".

# First set the drive to where "income.data.csv" is saved.
setwd("G:/My Drive/CSC-587")

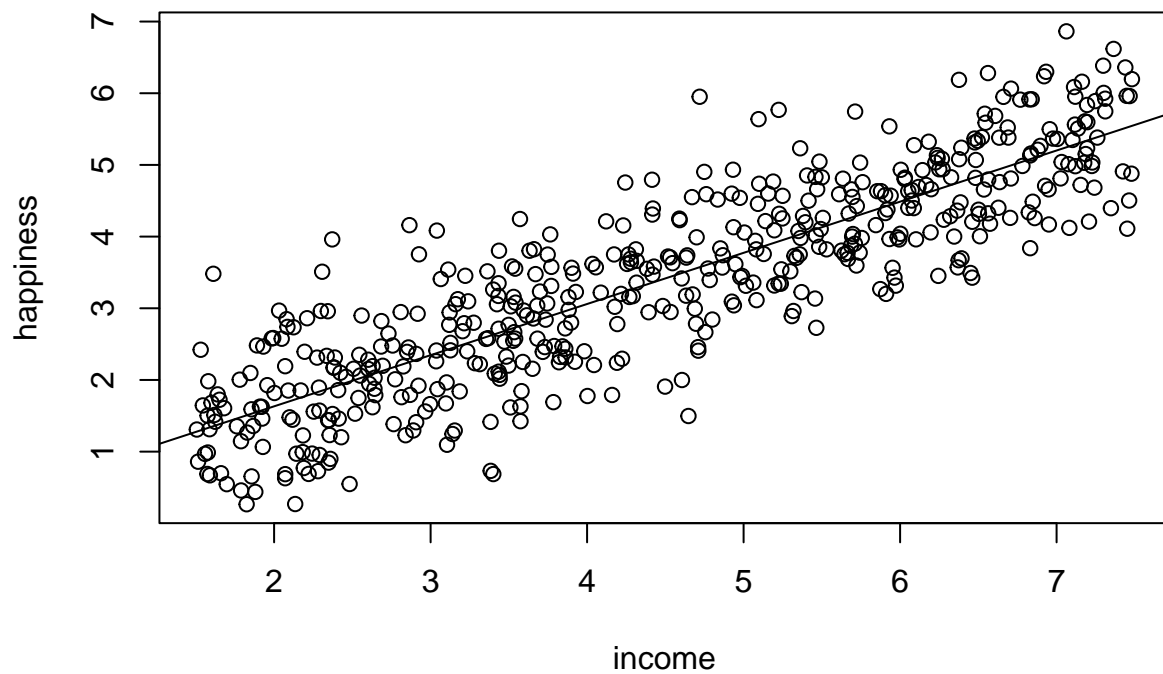
# Use read.csv() to read the file "income.data.csv".
data = read.csv("income.data.csv")

# Load the data and fit a linear regression model using Income as the independent
# variable and Happiness as the dependent variable:
modell = lm(happiness ~ income, data = data)

# Use the summary() function to view the results of the regression:
summary(modell)
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##
## Call:
## lm(formula = happiness ~ income, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -2.02479 -0.48526  0.04078  0.45898  2.37805
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  0.20427    0.08884   2.299   0.0219 *
## income       0.71383    0.01854  38.505  <2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.7181 on 496 degrees of freedom
## Multiple R-squared:  0.7493, Adjusted R-squared:  0.7488
## F-statistic: 1483 on 1 and 496 DF, p-value: < 2.2e-16
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# Plot the data points and the regression line:
with(data, plot(income, happiness))
abline(modell)
```



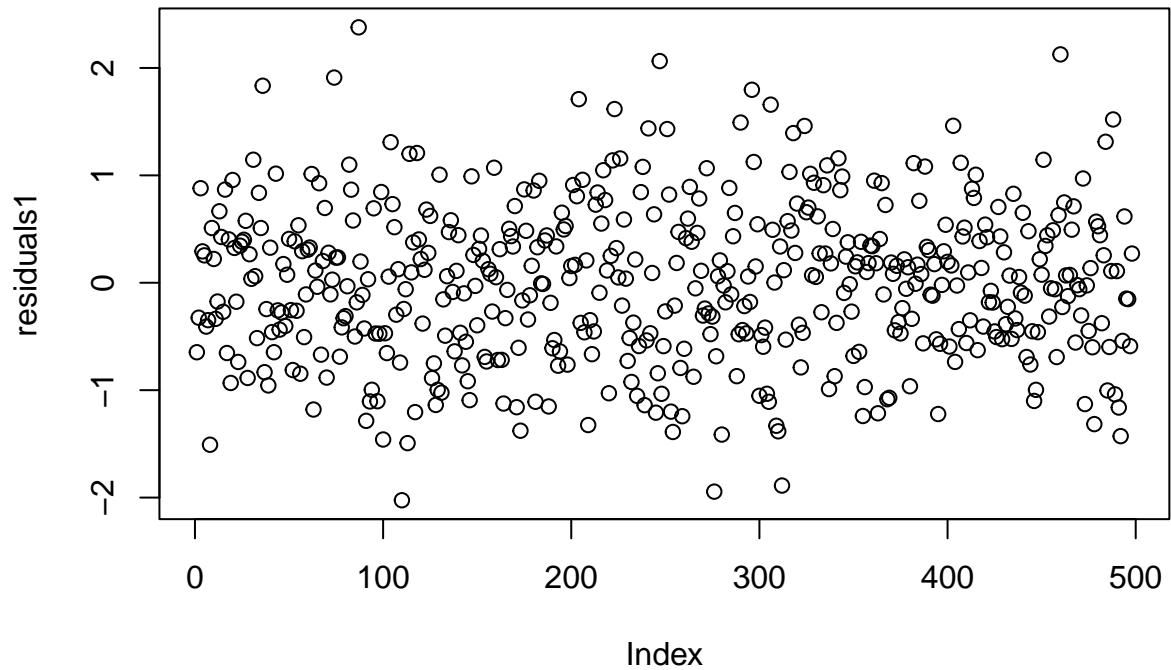
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coef(model1)
```

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## (Intercept)      income  
##    0.2042704    0.7138255
```

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# Calculate the residuals of the model  
residuals1 = residuals(model1)
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# Plot the residuals to check for homoscedasticity (constant variance of residuals):  
plot(residuals1, main = "Residuals of Simple Linear Regression")
```

Residuals of Simple Linear Regression



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# Calculate the residual sum of squares (RSS) for the model:  
RSS1 = sum(residuals1)
```

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# Result: RSS1 = 3.591e-16
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# Calculate the Mean Squared Error (MSE) for the model:  
MSE1 = mean(residuals1)
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# Result: MSE1 = 6.907e-19
```