R Code for Examples in the book
"Statistics: The Art and Science of Learning from Data"
by Agresti, Franklin and Klingenberg, 5th edition

Chapter 3

Example 14: Education and Murder – Influential Outliers

Reading in the data

```
crime <-
read.csv(file='https://raw.githubusercontent.com/artofstat/data/master/Chapter3/us_statewide_crime.csv')
attach(crime) # so we can refer to variable names
```
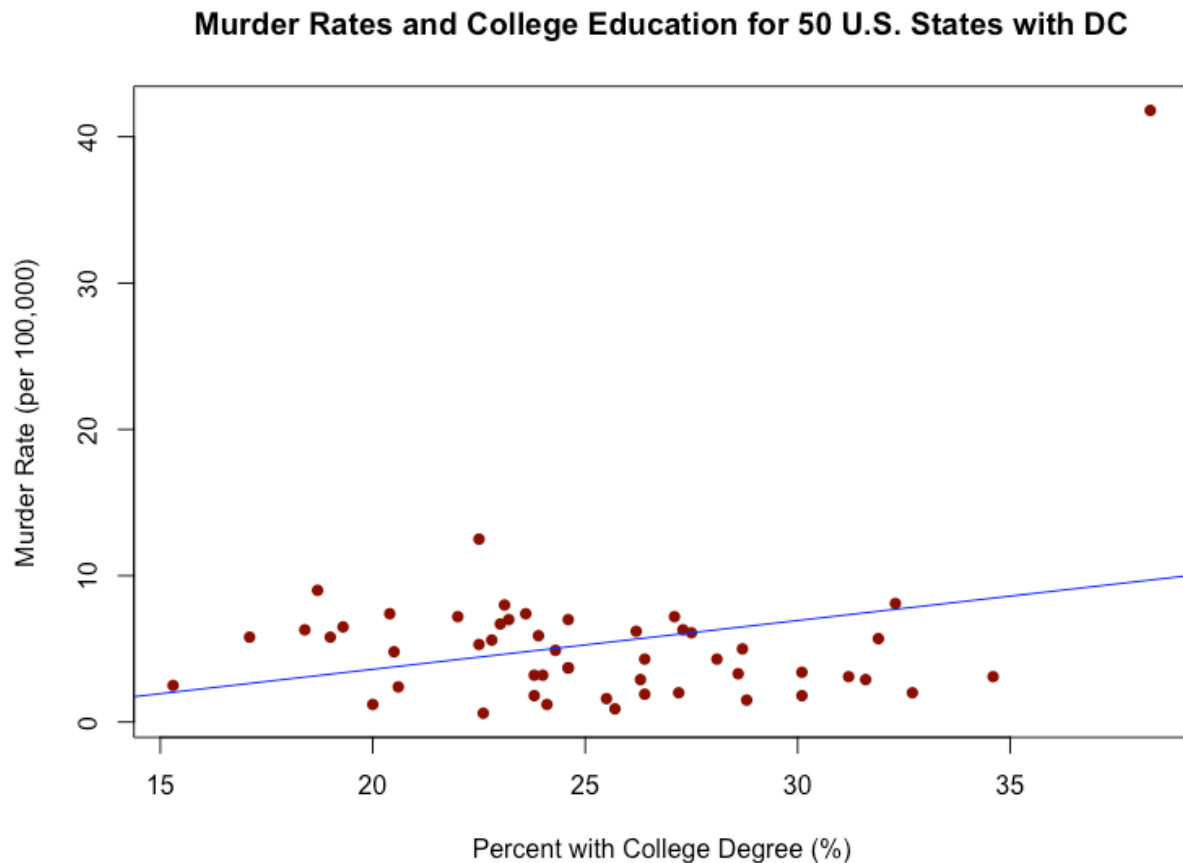
Basic scatterplot

```
plot(x = college, y = murder.rate, pch = 16, col = 'darkred',
     main = 'Murder Rates and College Education for 50 U.S. States with DC',
     xlab = 'Percent with College Degree (%)',
     ylab = 'Murder Rate (per 100,000)')
```


Murder Rates and College Education for 50 U.S. States with DC
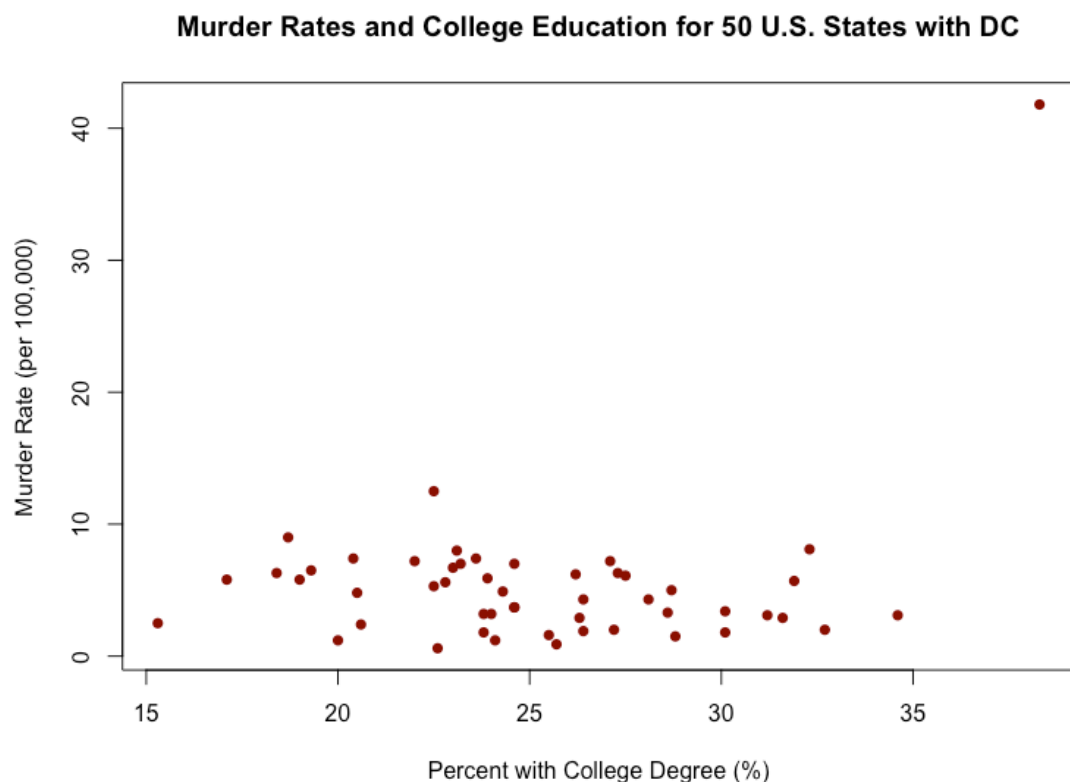
Fitting in regression model

```
lin.reg <- lm(murder.rate ~ college)
plot(x = college, y = murder.rate, pch = 16, col = 'darkred',
     main = 'Murder Rates and College Education for 50 U.S. States with DC',
     xlab = 'Percent with College Degree (%)',
     ylab = 'Murder Rate (per 100,000)')
abline(lin.reg, col = 'blue')
```

Murder Rates and College Education for 50 U.S. States with DC
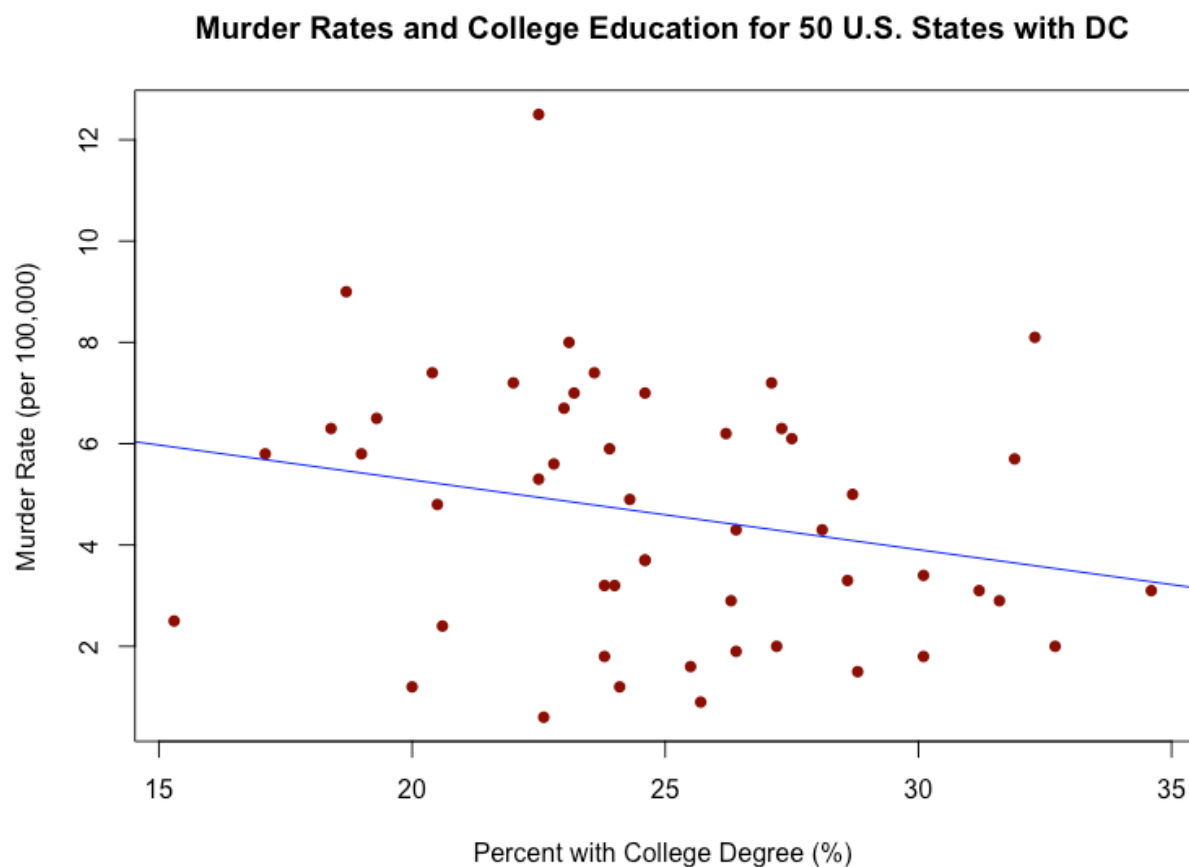


```
lin.reg

##
## Call:
## lm(formula = murder.rate ~ college)
##
## Coefficients:
## (Intercept)        college
##     -3.0581         0.3331

detach(crime)
```

Excluding the observation for DC

```
crime <- subset(crime, State != 'District of Columbia')
```

Fitting in new regression model

```
attach(crime)
lin.reg <- lm(murder.rate ~ college)
plot(x = college, y = murder.rate, pch = 16, col = 'darkred',
     main = 'Murder Rates and College Education for 50 U.S. States with DC',
     xlab = 'Percent with College Degree (%)',
     ylab = 'Murder Rate (per 100,000)')
abline(lin.reg, col = 'blue')
```


Murder Rates and College Education for 50 U.S. States with DC

```
lin.reg
```

```
##
## Call:
## lm(formula = murder.rate ~ college)
##
## Coefficients:
## (Intercept)       college
##      8.0416       -0.1379
```