

```
In [36]: all <- read.table("housing.data")  
         sample <- all[, 14]
```

```
In [26]: plot(all$V14 ~ all$V5)
model <- lm(formula = V14 ~ V5,
             data = all)
model$coefficients
summary(model)
x <- seq(from = 0, to = 1, by = 0.01)
lines(x, model$coefficients[2] * x + model$coefficients[1],
      col = "red", lwd = 2)
```

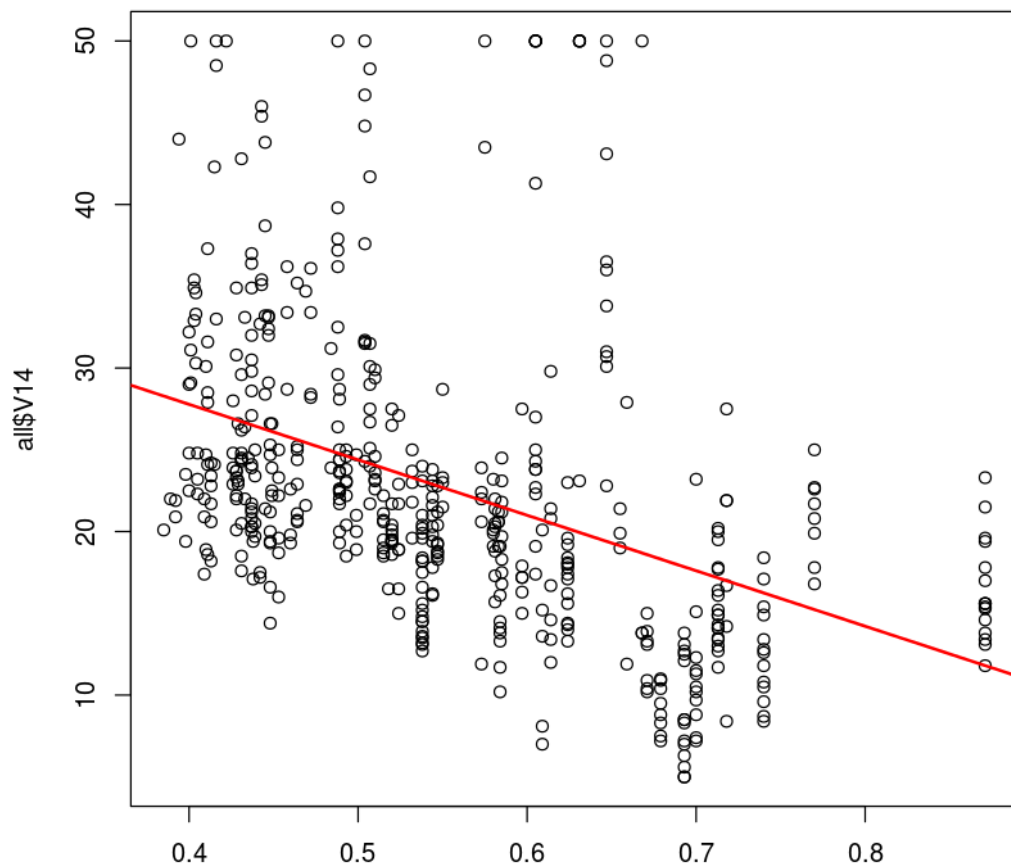
```
(Intercept) 41.3458744679732
V5          -33.9160550086611
```

```
Call:
lm(formula = V14 ~ V5, data = all)
```

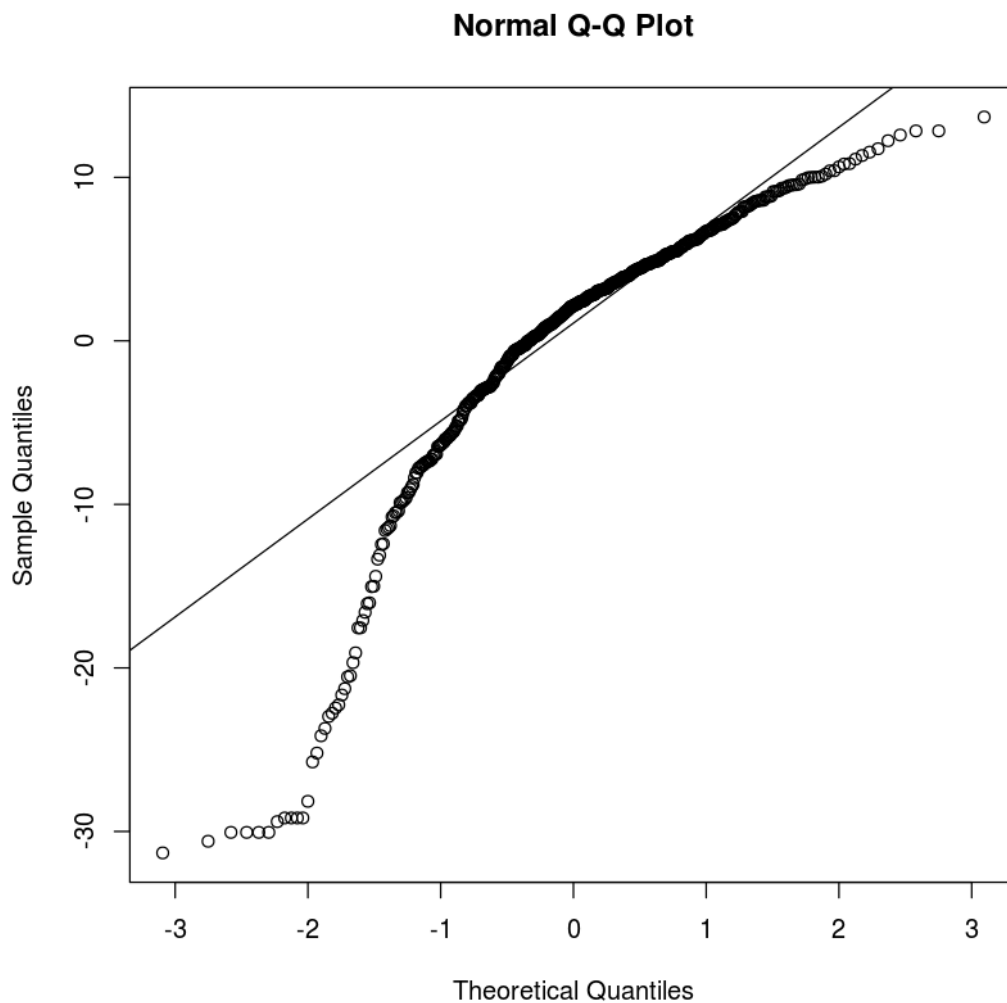
```
Residuals:
    Min       1Q   Median       3Q      Max
-13.691  -5.121  -2.161   2.959  31.310
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   41.346      1.811   22.83  <2e-16 ***
V5           -33.916      3.196  -10.61  <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 8.323 on 504 degrees of freedom
Multiple R-squared:  0.1826,    Adjusted R-squared:  0.181
F-statistic: 112.6 on 1 and 504 DF, p-value: < 2.2e-16
```



```
In [29]: rest <- model$coefficients[2] * all$V5 + model$coefficients[1] - all$V14  
qqnorm(rest)  
qqline(rest)
```



Нет, это не похоже на нормальное распределение, больше похоже на Коши

```
In [31]: plot(all$V14 ~ all$V11)
model <- lm(formula = V14 ~ V11,
             data = all)
model$coefficients
summary(model)
x <- seq(from = 10, to = 22, by = 0.01)
lines(x, model$coefficients[2] * x + model$coefficients[1],
      col = "red", lwd = 2)
```

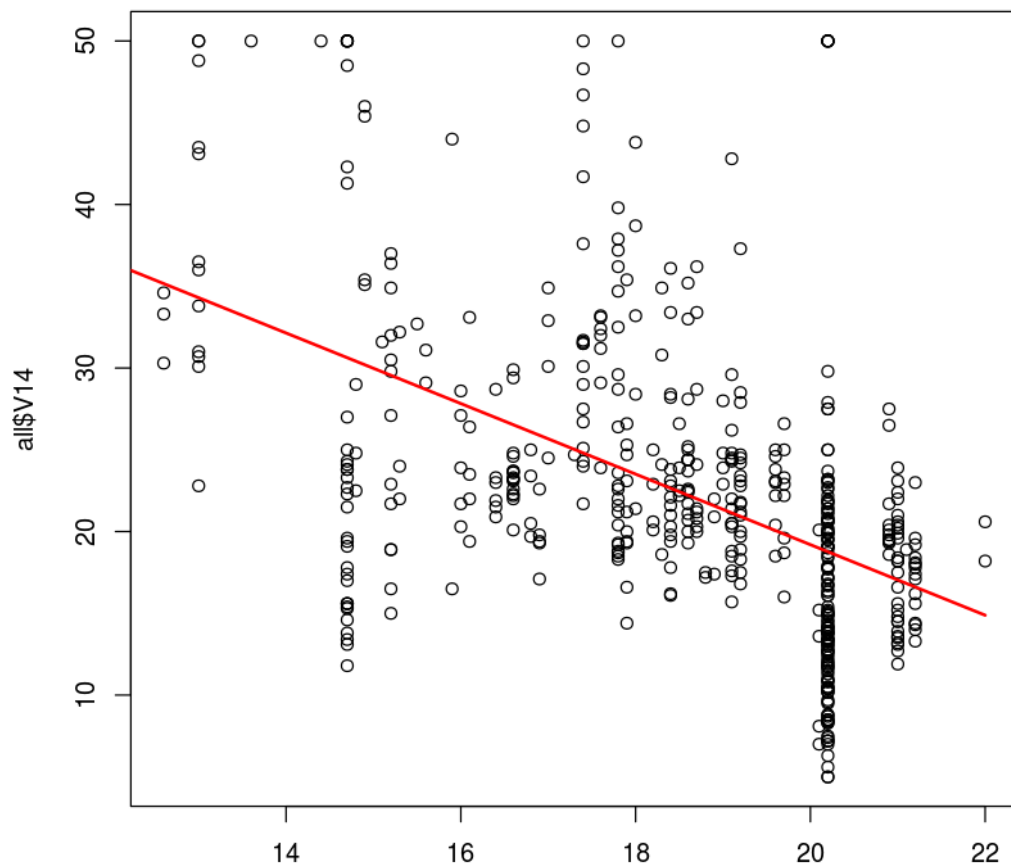
```
(Intercept) 62.3446274748332
V11         -2.15717529606098
```

```
Call:
lm(formula = V14 ~ V11, data = all)
```

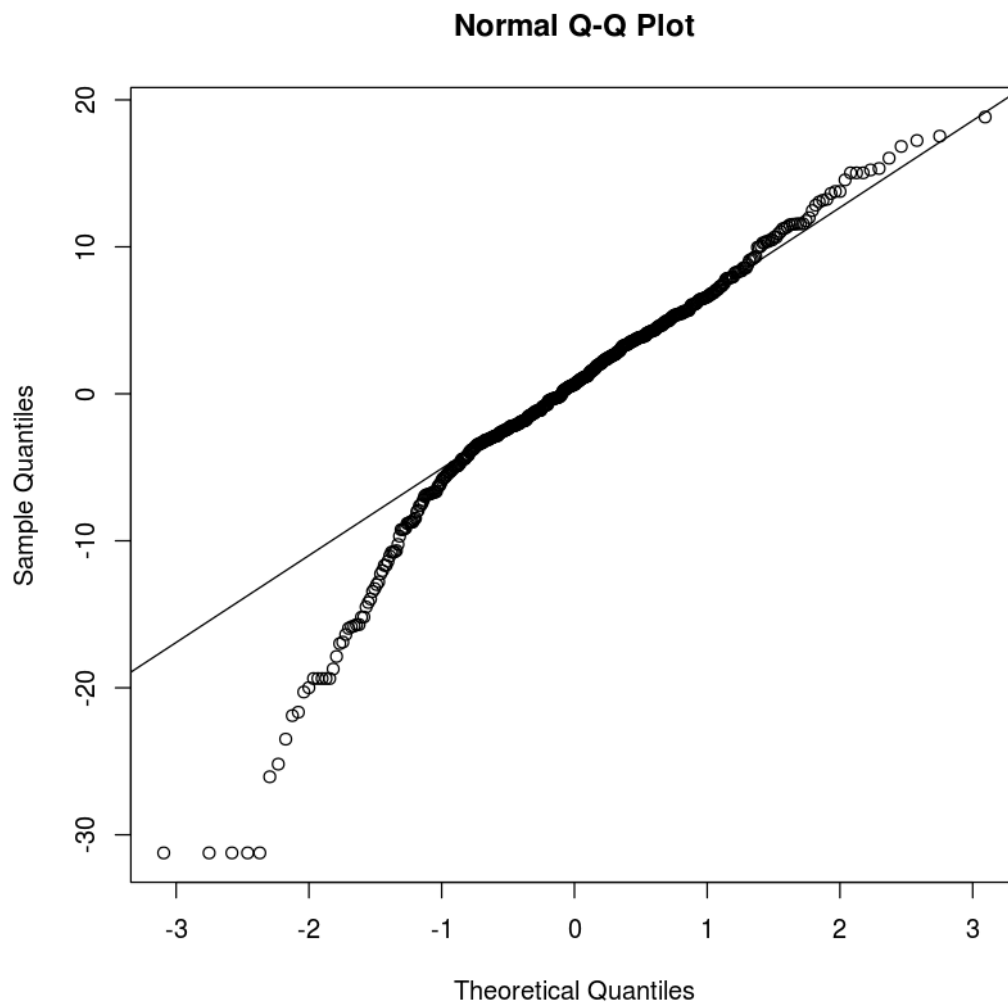
```
Residuals:
    Min       1Q   Median       3Q      Max
-18.8342  -4.8262  -0.6426   3.1571  31.2303
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept)   62.345      3.029   20.58  <2e-16 ***
V11           -2.157      0.163  -13.23  <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 7.931 on 504 degrees of freedom
Multiple R-squared:  0.2578,    Adjusted R-squared:  0.2564
F-statistic: 175.1 on 1 and 504 DF, p-value: < 2.2e-16
```



```
In [32]: rest <- model$coefficients[2] * all$V11 + model$coefficients[1] - all$V14  
qqnorm(rest)  
qqline(rest)
```



Это больше похоже на нормальное распределение, но всё равно без дополнительных исследований даже близко нельзя предполагать, что остатки распределены нормально

```
In [34]: plot(all$V14 ~ all$V1)
model <- lm(formula = V14 ~ V1,
             data = all)
model$coefficients
summary(model)
x <- seq(from = 0, to = 100, by = 0.01)
lines(x, model$coefficients[2] * x + model$coefficients[1],
      col = "red", lwd = 2)
```

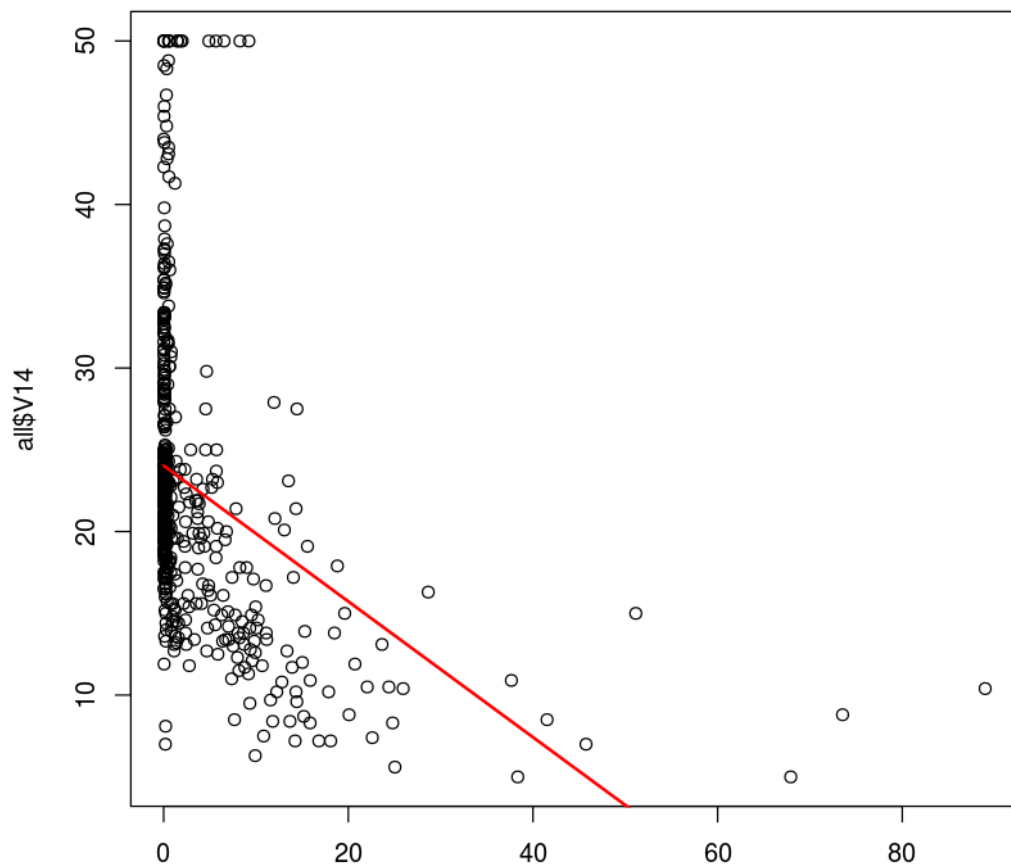
```
(Intercept) 24.0331061741239
V1          -0.41519027791509
```

```
Call:
lm(formula = V14 ~ V1, data = all)
```

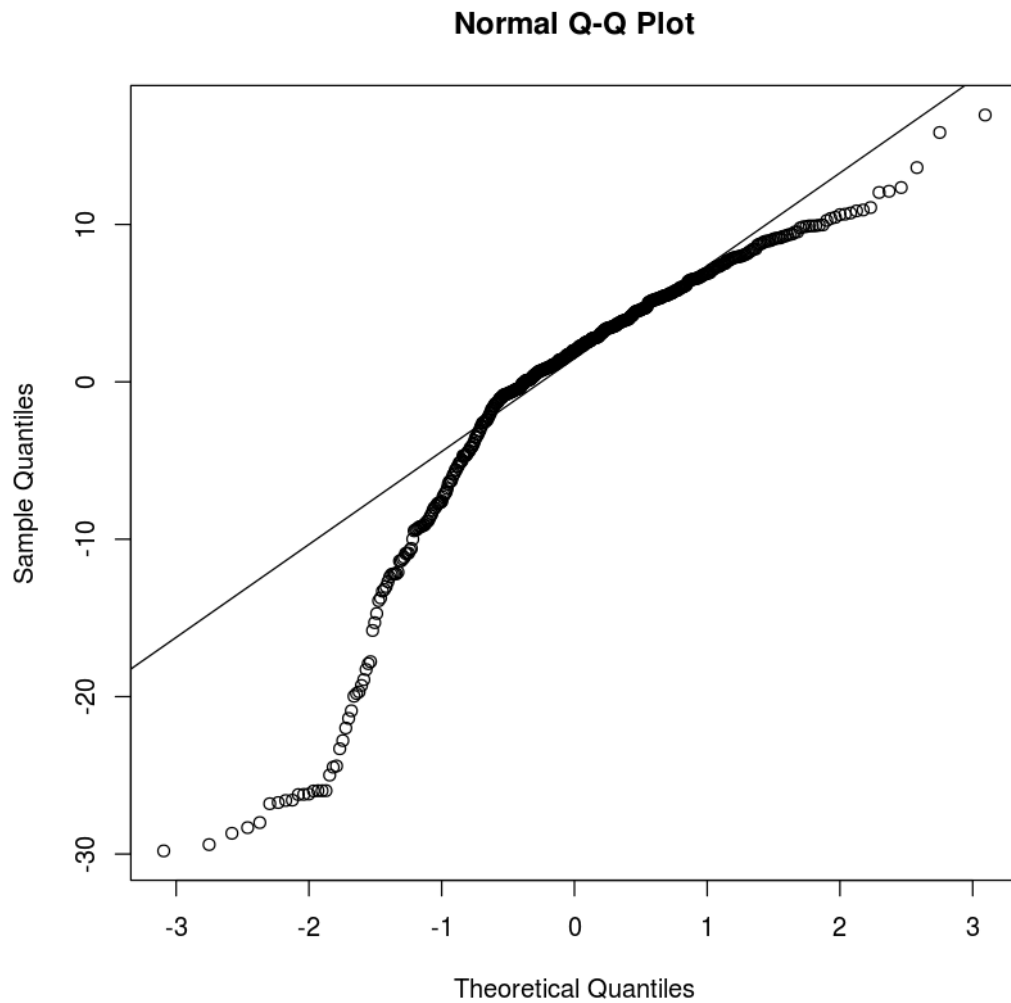
```
Residuals:
    Min       1Q   Median       3Q      Max
-16.957  -5.449  -2.007   2.512  29.800
```

```
Coefficients:
              Estimate Std. Error t value Pr(>|t|)
(Intercept) 24.03311    0.40914   58.74  <2e-16 ***
V1          -0.41519    0.04389   -9.46  <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

```
Residual standard error: 8.484 on 504 degrees of freedom
Multiple R-squared:  0.1508,    Adjusted R-squared:  0.1491
F-statistic: 89.49 on 1 and 504 DF,  p-value: < 2.2e-16
```



```
In [35]: rest <- model$coefficients[2] * all$V1 + model$coefficients[1] - all$V14  
qqnorm(rest)  
qqline(rest)
```



Абсолютно аналогичная 1му случаю ситуация. Нет, не нормальное