# Simple linear regression

Simple linear regression is the least squares estimator of a linear regression model with a single explanatory variable. In other words, simple linear regression fits a straight line through the set of n points in such a way that makes the sum of squared residuals of the model (that is, vertical distances between the points of the data set and the fitted line) as small as possible.

## Fit model, view summary and generate prediction

```
Call:
lm(formula = Sold.units ~ Cost.per.unit, data = forecast)

Residuals:
     Min       1Q   Median       3Q      Max
-1465.00  -800.81    28.61   738.08  1602.96

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   -191.645    233.914  -0.819    0.415
Cost.per.unit  102.037      2.911  35.053   <2e-16 ***
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 906.5 on 79 degrees of freedom
Multiple R-squared:  0.9396,    Adjusted R-squared:  0.9388
F-statistic:  1229 on 1 and 79 DF,  p-value: < 2.2e-16
```

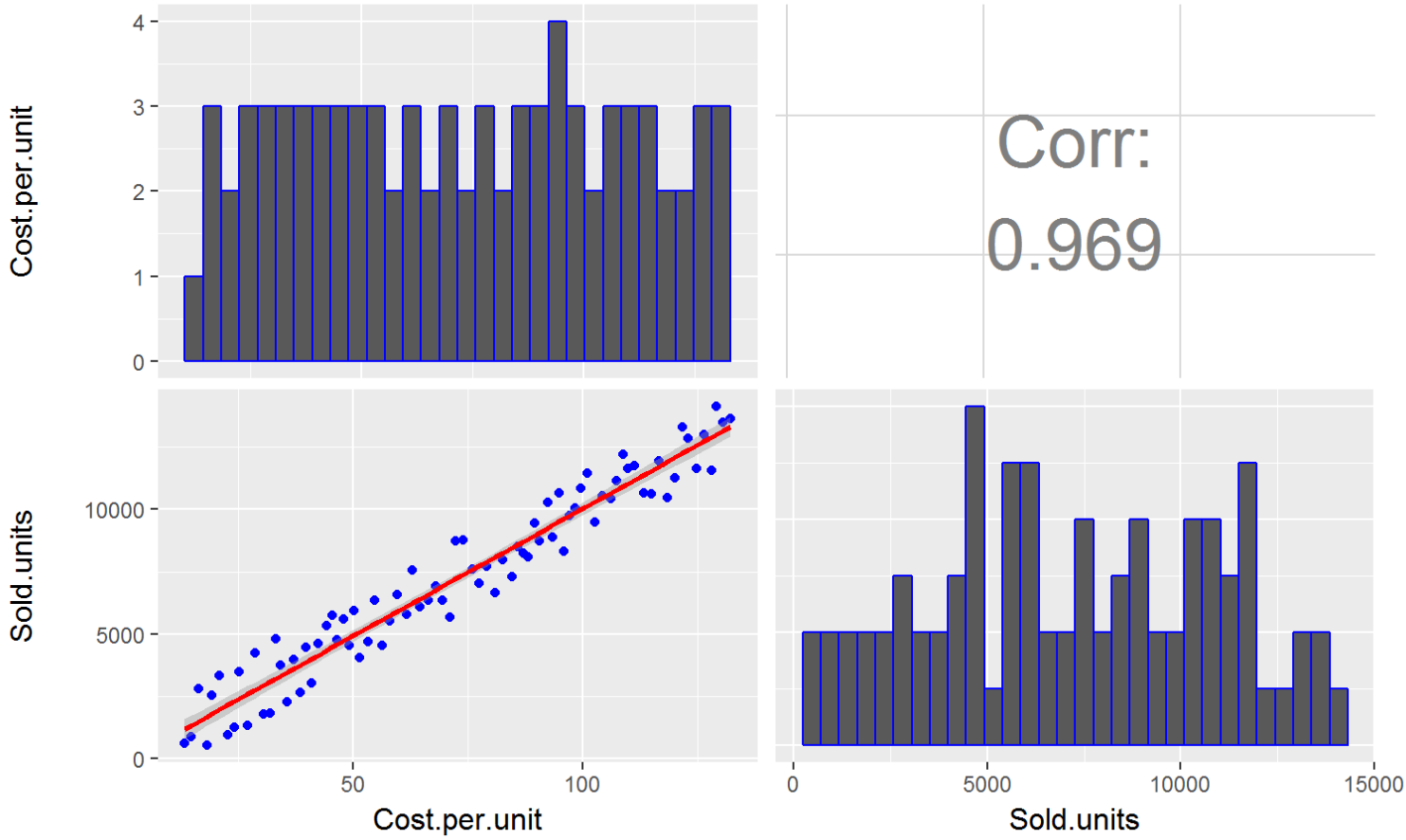
```
  (Intercept) Cost.per.unit
    -191.6451       102.0375
```

```
[1] 0.9395897
```

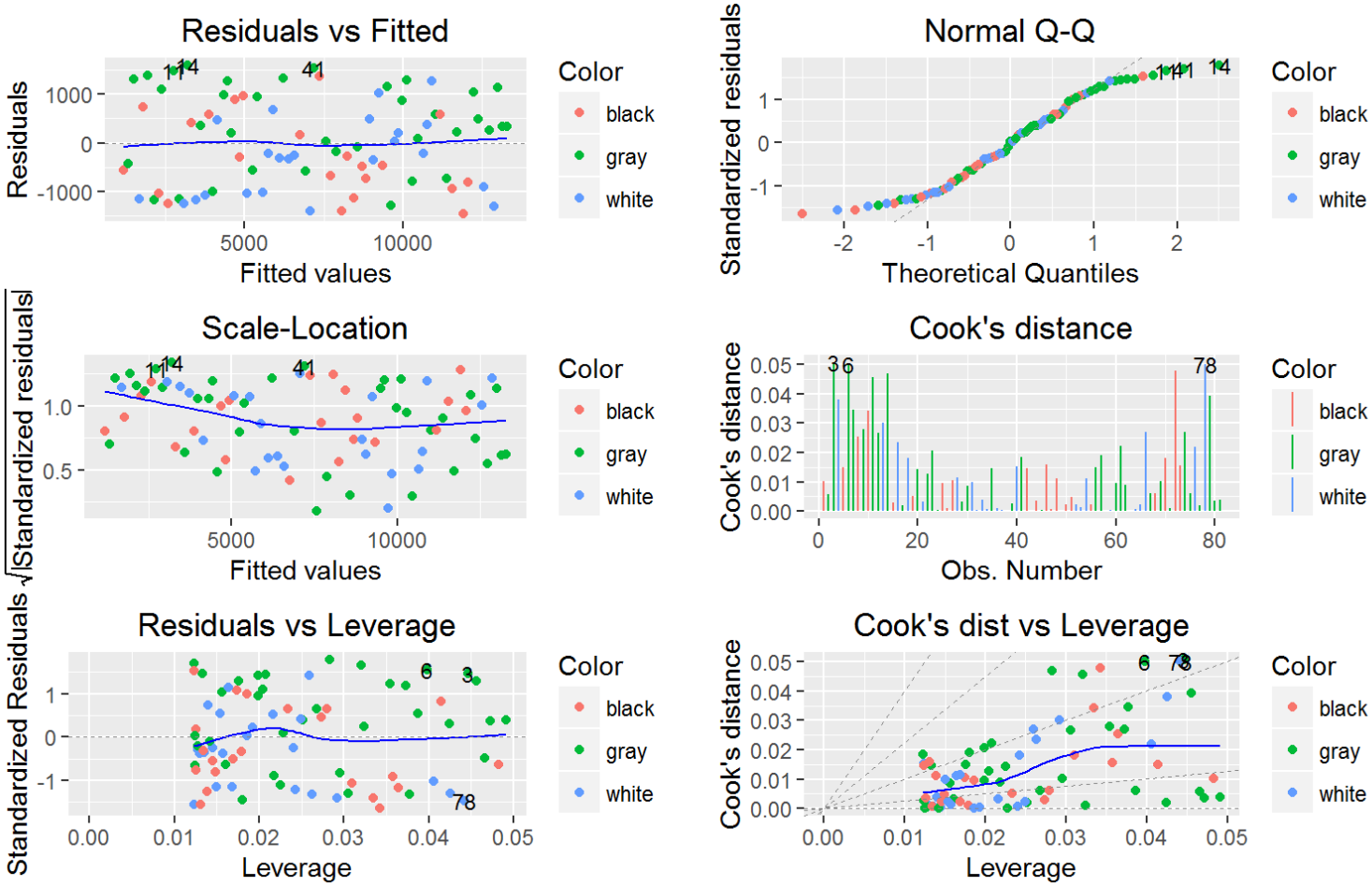
```
                  2.5 %    97.5 %
(Intercept)   -657.23850 273.9483
Cost.per.unit   96.24339 107.8315
```

```
      1       2       3       4       5       6
1187.901 1326.672 1501.156 1686.865 1789.922 1943.999
```

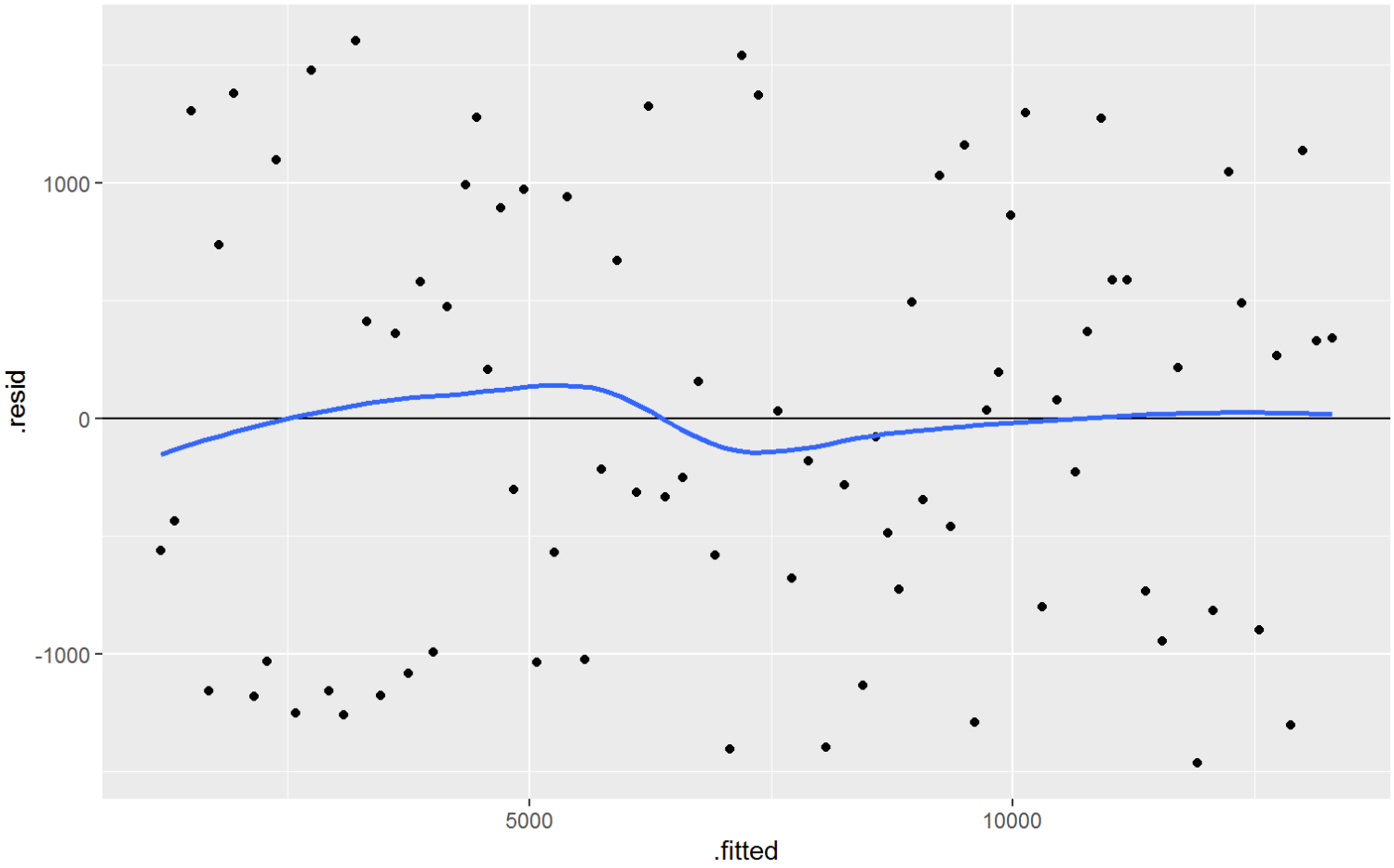
## View correlation between variables




## Diagnostic plots for Linear Models (LM)




## Plot fitted vs residuals




## Plot predicion linear regression model