

# houses

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houses

references:

- Cannon, et al., Stat2, chapter 03, example 3.14

Import the data.

```
data <- read.csv("Houses.csv", header=TRUE)
head(data)
```

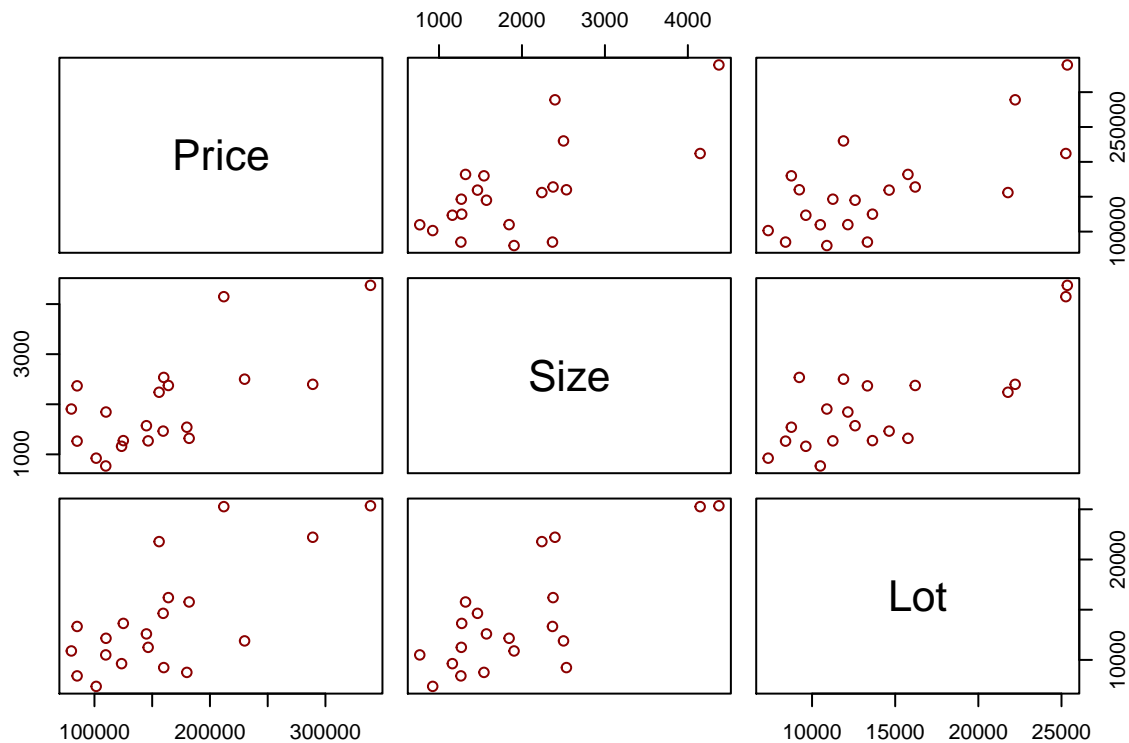
```
##   Price Size  Lot
## 1 212000 4148 25264
## 2 230000 2501 11891
## 3 339000 4374 25351
## 4 289000 2398 22215
## 5 160000 2536  9234
## 6  85000 2368 13329
```

```
dim(data)
```

```
## [1] 20  3
```

Scatterplot matrix.

```
pairs(~ Price + Size + Lot, data=data, col="darkred")
```



Simple linear models.

```
options(show.signif.stars=FALSE)
houses.lm1 <- lm(Price ~ Size, data=data)
summary(houses.lm1)
```

```
##
## Call:
## lm(formula = Price ~ Size, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -93690 -30210   1014  28568 108864
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 64553.68   26267.76   2.458 0.024362
## Size         48.20     12.09    3.987 0.000864
##
## Residual standard error: 50440 on 18 degrees of freedom
## Multiple R-squared:  0.469, Adjusted R-squared:  0.4395
## F-statistic: 15.9 on 1 and 18 DF, p-value: 0.0008643
```

```
houses.lm2 <- lm(Price ~ Lot, data=data)
summary(houses.lm2)
```

```
##
## Call:
## lm(formula = Price ~ Lot, data = data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -70866 -31082  -3130  19579  89682
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 36247.480   30262.135   1.198 0.246537
## Lot           8.752     2.013    4.348 0.000388
##
## Residual standard error: 48340 on 18 degrees of freedom
## Multiple R-squared:  0.5122, Adjusted R-squared:  0.4851
## F-statistic: 18.9 on 1 and 18 DF, p-value: 0.0003878
```

Multiple linear model.

```
houses.lm3 <- lm(Price ~ Size + Lot, data=data)
summary(houses.lm3)
```

```
##
## Call:
## lm(formula = Price ~ Size + Lot, data = data)
##
```

```
## Residuals:
##   Min      1Q  Median      3Q      Max
## -79532 -28464   3713  21450  73507
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) 34121.649  29716.458   1.148  0.2668
## Size         23.232    17.700   1.313  0.2068
## Lot           5.657     3.075   1.839  0.0834
##
## Residual standard error: 47400 on 17 degrees of freedom
## Multiple R-squared:  0.5571, Adjusted R-squared:  0.505
## F-statistic: 10.69 on 2 and 17 DF,  p-value: 0.000985
```

```
with(data,
      cor(cbind(Size, Lot)))
```

```
##           Size      Lot
## Size 1.0000000 0.7668722
## Lot  0.7668722 1.0000000
```