

Regresión logística

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Análisis de datos

```
head(Weekly)
```

```
##   Year  Lag1  Lag2  Lag3  Lag4  Lag5  Volume  Today Direction
## 1 1990  0.816  1.572 -3.936 -0.229 -3.484 0.1549760 -0.270      Down
## 2 1990 -0.270  0.816  1.572 -3.936 -0.229 0.1485740 -2.576      Down
## 3 1990 -2.576 -0.270  0.816  1.572 -3.936 0.1598375  3.514       Up
## 4 1990  3.514 -2.576 -0.270  0.816  1.572 0.1616300  0.712       Up
## 5 1990  0.712  3.514 -2.576 -0.270  0.816 0.1537280  1.178       Up
## 6 1990  1.178  0.712  3.514 -2.576 -0.270 0.1544440 -1.372      Down
```

```
glimpse(Weekly)
```

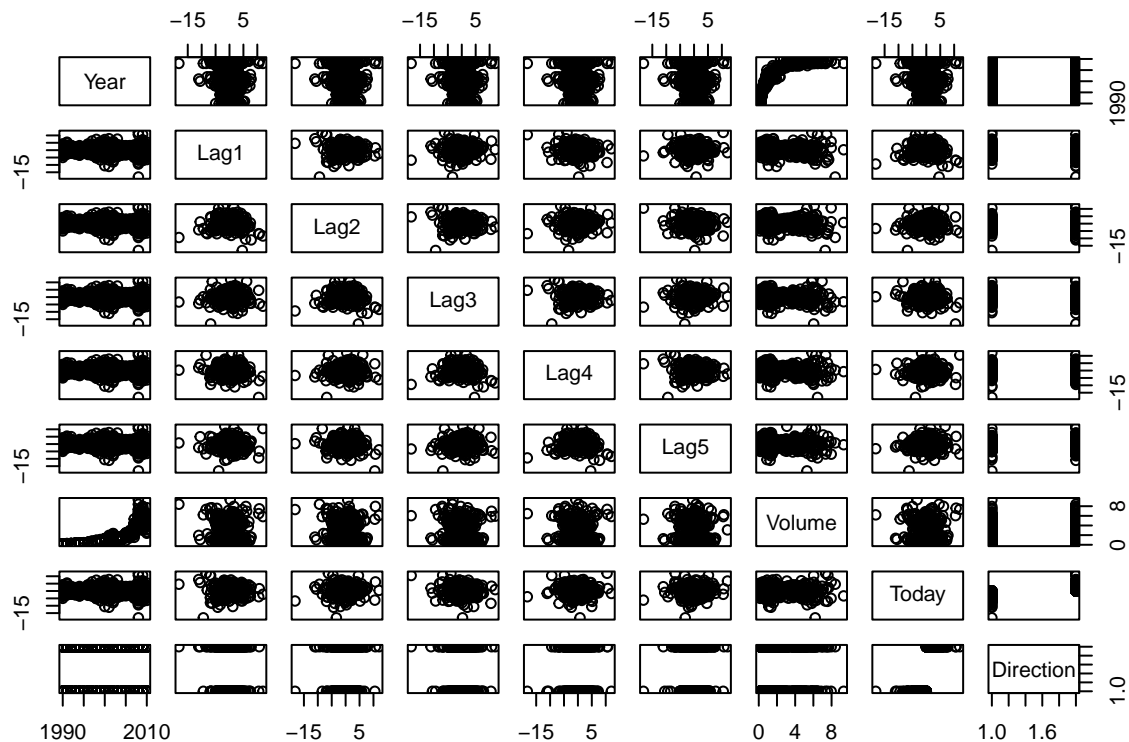
```
## Rows: 1,089
## Columns: 9
## $ Year      <dbl> 1990, 1990, 1990, 1990, 1990, 1990, 1990, 1990, 1990, 1990, ~
## $ Lag1      <dbl> 0.816, -0.270, -2.576, 3.514, 0.712, 1.178, -1.372, 0.807, 0~
## $ Lag2      <dbl> 1.572, 0.816, -0.270, -2.576, 3.514, 0.712, 1.178, -1.372, 0~
## $ Lag3      <dbl> -3.936, 1.572, 0.816, -0.270, -2.576, 3.514, 0.712, 1.178, --
## $ Lag4      <dbl> -0.229, -3.936, 1.572, 0.816, -0.270, -2.576, 3.514, 0.712, ~
## $ Lag5      <dbl> -3.484, -0.229, -3.936, 1.572, 0.816, -0.270, -2.576, 3.514,~
## $ Volume     <dbl> 0.1549760, 0.1485740, 0.1598375, 0.1616300, 0.1537280, 0.154~
## $ Today      <dbl> -0.270, -2.576, 3.514, 0.712, 1.178, -1.372, 0.807, 0.041, 1~
## $ Direction <fct> Down, Down, Up, Up, Up, Up, Down, Up, Up, Up, Down, Down, Up, Up~
```

```
summary(Weekly)
```

```
##      Year      Lag1      Lag2      Lag3
## Min.   :1990   Min.   :-18.1950 Min.   :-18.1950 Min.   :-18.1950
## 1st Qu.:1995   1st Qu.: -1.1540 1st Qu.: -1.1540 1st Qu.: -1.1580
## Median :2000   Median :  0.2410 Median :  0.2410 Median :  0.2410
## Mean   :2000   Mean   :  0.1506 Mean   :  0.1511 Mean   :  0.1472
## 3rd Qu.:2005   3rd Qu.:  1.4050 3rd Qu.:  1.4090 3rd Qu.:  1.4090
## Max.   :2010   Max.   : 12.0260 Max.   : 12.0260 Max.   : 12.0260
##      Lag4      Lag5      Volume      Today
## Min.   :-18.1950 Min.   :-18.1950 Min.   :0.08747 Min.   :-18.1950
## 1st Qu.: -1.1580 1st Qu.: -1.1660 1st Qu.:0.33202 1st Qu.: -1.1540
## Median :  0.2380 Median :  0.2340 Median :1.00268 Median :  0.2410
## Mean   :  0.1458 Mean   :  0.1399 Mean   :1.57462 Mean   :  0.1499
## 3rd Qu.:  1.4090 3rd Qu.:  1.4050 3rd Qu.:2.05373 3rd Qu.:  1.4050
## Max.   : 12.0260 Max.   : 12.0260 Max.   :9.32821 Max.   : 12.0260
## Direction
```

```
## Down:484
## Up :605
##
##
##
##
```

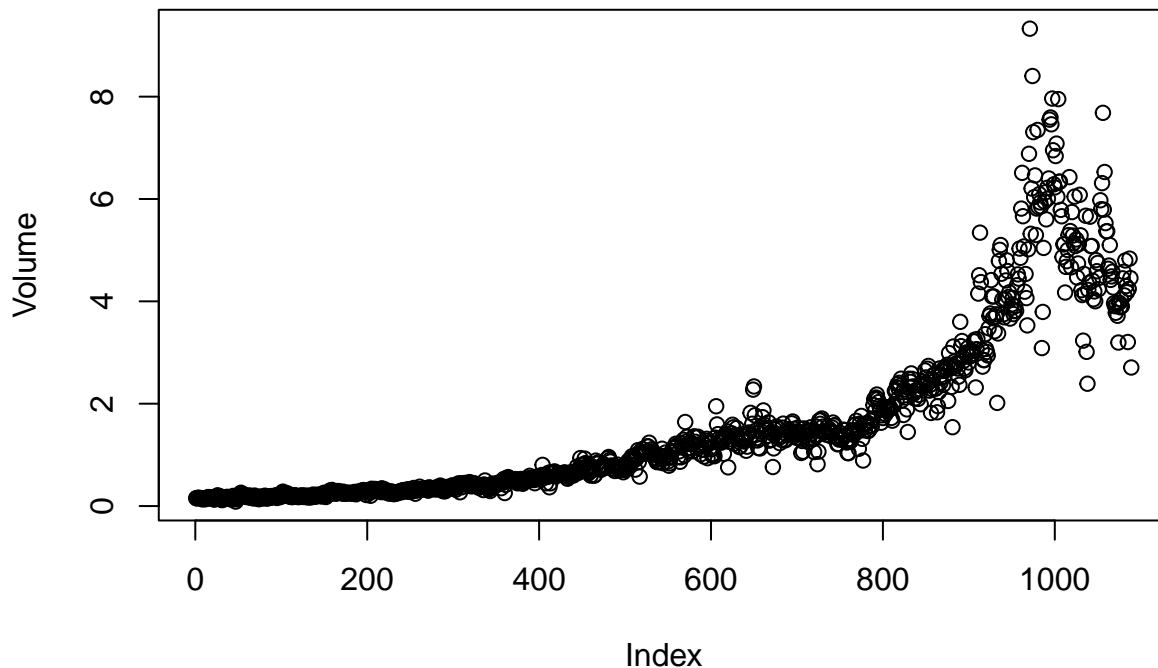
```
pairs(Weekly)
```



```
cor(Weekly[, -9])
```

```
##          Year      Lag1      Lag2      Lag3      Lag4
## Year  1.00000000 -0.032289274 -0.03339001 -0.03000649 -0.031127923
## Lag1 -0.03228927  1.000000000 -0.07485305  0.05863568 -0.071273876
## Lag2 -0.03339001 -0.074853051  1.00000000 -0.07572091  0.058381535
## Lag3 -0.03000649  0.058635682 -0.07572091  1.00000000 -0.075395865
## Lag4 -0.03112792 -0.071273876  0.05838153 -0.07539587  1.000000000
## Lag5 -0.03051910 -0.008183096 -0.07249948  0.06065717 -0.075675027
## Volume 0.84194162 -0.064951313 -0.08551314 -0.06928771 -0.061074617
## Today -0.03245989 -0.075031842  0.05916672 -0.07124364 -0.007825873
##          Lag5      Volume      Today
## Year -0.030519101  0.84194162 -0.032459894
## Lag1 -0.008183096 -0.06495131 -0.075031842
## Lag2 -0.072499482 -0.08551314  0.059166717
## Lag3  0.060657175 -0.06928771 -0.071243639
## Lag4 -0.075675027 -0.06107462 -0.007825873
## Lag5  1.000000000 -0.05851741  0.011012698
## Volume -0.058517414  1.00000000 -0.033077783
## Today  0.011012698 -0.03307778  1.000000000
```

```
attach(Weekly)
plot(Volume)
```



```
modelo.log.m <- glm(Direction ~ . - Today, data = Weekly, family = binomial)
summary(modelo.log.m)
```

```
##
## Call:
## glm(formula = Direction ~ . - Today, family = binomial, data = Weekly)
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept) 17.225822  37.890522   0.455  0.6494
## Year        -0.008500   0.018991  -0.448  0.6545
## Lag1        -0.040688   0.026447  -1.538  0.1239
## Lag2         0.059449   0.026970   2.204  0.0275 *
## Lag3        -0.015478   0.026703  -0.580  0.5622
## Lag4        -0.027316   0.026485  -1.031  0.3024
## Lag5        -0.014022   0.026409  -0.531  0.5955
## Volume       0.003256   0.068836   0.047  0.9623
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 1496.2  on 1088  degrees of freedom
## Residual deviance: 1486.2  on 1081  degrees of freedom
## AIC: 1502.2
##
## Number of Fisher Scoring iterations: 4
```

```
contrasts(Direction)
```

```
##      Up
## Down  0
## Up    1
```

```
confint(object = modelo.log.m, level = 0.95)
```

```
## Waiting for profiling to be done...
```

```
##              2.5 %      97.5 %  
## (Intercept) -56.985558236 91.66680901  
## Year        -0.045809580  0.02869546  
## Lag1        -0.092972584  0.01093101  
## Lag2         0.007001418  0.11291264  
## Lag3        -0.068140141  0.03671410  
## Lag4        -0.079519582  0.02453326  
## Lag5        -0.066090145  0.03762099  
## Volume      -0.131576309  0.13884038
```