

## Prac 10 :- Logistic Regression

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R Console

> mtcars

      mpg  cyl  disp  hp  drat    wt    qsec vs  am  gear  carb
Mazda RX4           21.0   6  160.0  110  3.90  2.620  16.46  0   1    4     4
Mazda RX4 Wag       21.0   6  160.0  110  3.90  2.875  17.02  0   1    4     4
Datsun 710          22.8   4  108.0   93  3.85  2.320  18.61  1   1    4     1
Hornet 4 Drive      21.4   6  258.0  110  3.08  3.215  19.44  1   0    3     1
Hornet Sportabout   18.7   8  360.0  175  3.15  3.440  17.02  0   0    3     2
Valiant            18.1   6  225.0  105  2.76  3.460  20.22  1   0    3     1
Duster 360         14.3   8  360.0  245  3.21  3.570  15.84  0   0    3     4
Merc 240D           24.4   4  146.7   62  3.69  3.190  20.00  1   0    4     2
Merc 230            22.8   4  140.8   95  3.92  3.150  22.90  1   0    4     2
Merc 280            19.2   6  167.6  123  3.92  3.440  18.30  1   0    4     4
Merc 280C           17.8   6  167.6  123  3.92  3.440  18.90  1   0    4     4
Merc 450SE          16.4   8  275.8  180  3.07  4.070  17.40  0   0    3     3
Merc 450SL          17.3   8  275.8  180  3.07  3.730  17.60  0   0    3     3
Merc 450SLC         15.2   8  275.8  180  3.07  3.780  18.00  0   0    3     3
Cadillac Fleetwood  10.4   8  472.0  205  2.93  5.250  17.98  0   0    3     4
Lincoln Continental 10.4   8  460.0  215  3.00  5.424  17.82  0   0    3     4
Chrysler Imperial  14.7   8  440.0  230  3.23  5.345  17.42  0   0    3     4
Fiat 128            32.4   4   78.7   66  4.08  2.200  19.47  1   1    4     1
Honda Civic         30.4   4   75.7   52  4.93  1.615  18.52  1   1    4     2
Toyota Corolla      33.9   4   71.1   65  4.22  1.835  19.90  1   1    4     1
Toyota Corona       21.5   4  120.1   97  3.70  2.465  20.01  1   0    3     1
Dodge Challenger    15.5   8  318.0  150  2.76  3.520  16.87  0   0    3     2
AMC Javelin         15.2   8  304.0  150  3.15  3.435  17.30  0   0    3     2
Camaro Z28          13.3   8  350.0  245  3.73  3.840  15.41  0   0    3     4
Pontiac Firebird    19.2   8  400.0  175  3.08  3.845  17.05  0   0    3     2
Fiat X1-9           27.3   4   79.0   66  4.08  1.935  18.90  1   1    4     1
Porsche 914-2       26.0   4  120.3   91  4.43  2.140  16.70  0   1    5     2
Lotus Europa        30.4   4   95.1  113  3.77  1.513  16.90  1   1    5     2
Ford Pantera L      15.8   8  351.0  264  4.22  3.170  14.50  0   1    5     4
Ferrari Dino        19.7   6  145.0  175  3.62  2.770  15.50  0   1    5     6
Maserati Bora       15.0   8  301.0  335  3.54  3.570  14.60  0   1    5     8
Volvo 142E          21.4   4  121.0  109  4.11  2.780  18.60  1   1    4     2

> input<-mtcars[,c("am", "cyl", "hp", "wt")]
> print(head(input))
      am  cyl  hp    wt
Mazda RX4           1   6  110  2.620
Mazda RX4 Wag       1   6  110  2.875
Datsun 710           1   4   93  2.320
Hornet 4 Drive      0   6  110  3.215
Hornet Sportabout   0   8  175  3.440
Valiant             0   6  105  3.460

> input<-mtcars[,c("am", "cyl", "hp", "wt")]
> am.data = glm(formula = am ~ cyl + hp + wt, data = input, family = binomial)
> print(summary(am.data))

Call:
glm(formula = am ~ cyl + hp + wt, family = binomial, data = input)

Coefficients:
            Estimate Std. Error z value Pr(>|z|)
(Intercept)  19.70288    8.11637   2.428  0.0152 *
cyl           0.48760    1.07162   0.455  0.6491
hp            0.03259    0.01886   1.728  0.0840 .
wt           -9.14947    4.15332  -2.203  0.0276 *
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 43.2297  on 31  degrees of freedom
Residual deviance:  9.8415  on 28  degrees of freedom
AIC: 17.841

Number of Fisher Scoring iterations: 8

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