

# Linear model

## Backward Elimination

```
##
## Call:
## lm(formula = PP ~ TA + B5_A + B5_C + SA_B + SA_E + RW + SP +
##      tOut + fOut, data = Data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.22482 -0.12528 -0.00431  0.04509  0.42155
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -1.669e+00  5.192e-01  -3.214 0.003126 **
## TA           1.249e-02  5.952e-03   2.099 0.044369 *
## B5_A         -1.176e-02  8.785e-03  -1.339 0.190706
## B5_C          2.003e-02  6.514e-03   3.075 0.004457 **
## SA_B         -7.984e-03  4.727e-03  -1.689 0.101554
## SA_E          6.889e-03  4.659e-03   1.479 0.149683
## RW           7.503e-03  2.523e-03   2.974 0.005757 **
## SP           3.245e-02  9.282e-03   3.496 0.001491 **
## tOut         1.867e-04  9.889e-05   1.888 0.068730 .
## fOut         5.425e-01  1.358e-01   3.995 0.000387 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1812 on 30 degrees of freedom
## Multiple R-squared:  0.5793, Adjusted R-squared:  0.4531
## F-statistic:  4.59 on 9 and 30 DF,  p-value: 0.0007259

## [1] -12.62818
```

## Forward Selection

```
##
## Call:
## lm(formula = PP ~ fOut + RW + SP, data = Data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.42079 -0.12971 -0.01872  0.06475  0.44506
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.652651   0.195006  -3.347  0.00192 **
## fOut         0.562842   0.121556   4.630 4.62e-05 ***
## RW           0.006261   0.002022   3.096  0.00379 **
## SP           0.021031   0.008162   2.577  0.01422 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1947 on 36 degrees of freedom
## Multiple R-squared:  0.4176, Adjusted R-squared:  0.369
## F-statistic: 8.604 on 3 and 36 DF,  p-value: 0.0001945

## [1] -11.61479
```

## Step-Wise method

```
##
## Call:
## lm(formula = PP ~ fOut + RW + SP, data = Data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.42079 -0.12971 -0.01872  0.06475  0.44506
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.652651   0.195006  -3.347  0.00192 **
## fOut         0.562842   0.121556   4.630 4.62e-05 ***
## RW           0.006261   0.002022   3.096  0.00379 **
## SP           0.021031   0.008162   2.577  0.01422 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1947 on 36 degrees of freedom
## Multiple R-squared:  0.4176, Adjusted R-squared:  0.369
## F-statistic: 8.604 on 3 and 36 DF,  p-value: 0.0001945

## [1] -11.61479
```

## Final Model

```
##
## Call:
## lm(formula = PP ~ fOut + RW + R * SP, data = Data)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.42252 -0.05785 -0.01530  0.05269  0.38371
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept) -0.435369   0.186167  -2.339 0.026211 *
## fOut         0.468098   0.114721   4.080 0.000306 ***
## RW           0.004467   0.002046   2.184 0.036944 *
## R2          -0.140286   0.122466  -1.146 0.261053
## R3          -0.016715   0.091579  -0.183 0.856404
## R4          -0.112573   0.091886  -1.225 0.230058
## SP           0.004212   0.010364   0.406 0.687327
## R2:SP         0.027247   0.018986   1.435 0.161592
## R3:SP        -0.029303   0.047067  -0.623 0.538259
## R4:SP         0.097776   0.025925   3.772 0.000713 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.1689 on 30 degrees of freedom
## Multiple R-squared:  0.6345, Adjusted R-squared:  0.5249
## F-statistic: 5.787 on 9 and 30 DF,  p-value: 0.000117
```