

Vaso Constriction - Logistic Regression

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First the dataset vaso is loaded.

```
> library(catdata)
> data(vaso)
> attach(vaso)
```

For the fitting of a logit model, the response is 0-1 coded. (data set contains 1 2). Moreover, the covariates vol and rate are log-transformed.

```
> y <- vaso$vaso
> y[vaso$vaso==2] <- 0
```

Fit of a logit-model with log-transformed covariates.

```
> vaso1 <- glm(y ~ vol + rate, family=binomial)
> summary(vaso1)
```

Call:

```
glm(formula = y ~ vol + rate, family = binomial)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.4527	-0.6110	0.1001	0.6181	2.2775

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	-2.875	1.321	-2.177	0.02946 *
vol	5.179	1.865	2.778	0.00547 **
rate	4.562	1.838	2.482	0.01306 *

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

Null deviance: 54.040 on 38 degrees of freedom
Residual deviance: 29.227 on 36 degrees of freedom
AIC: 35.227

Number of Fisher Scoring iterations: 6

Next, a logit-model with original covariates is fitted.

```

> vaso2 <- glm(y ~ I(exp(vol)) + I(exp(rate)), family=binomial)
> summary(vaso2)

Call:
glm(formula = y ~ I(exp(vol)) + I(exp(rate)), family = binomial)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.50657  -0.73464   0.03997   0.48854   2.32935

Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   -9.5296     3.2332  -2.947  0.00320 **
I(exp(vol))    3.8822     1.4286   2.717  0.00658 **
I(exp(rate))   2.6491     0.9142   2.898  0.00376 **
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for binomial family taken to be 1)

    Null deviance: 54.040  on 38  degrees of freedom
Residual deviance: 29.772  on 36  degrees of freedom
AIC: 35.772

Number of Fisher Scoring iterations: 6

```