Preference for Political Parties - Multinomial Logit Model

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The dataset "partydat" is built by reading the data as a matrix given in "partypref".

```
> partypref <- matrix(data=c(114, 10, 53,224,134,9,42,226,114,8,23,174,339,30,13,
+ 414,42,5,44,161,88,10, 60,171,90,8,31,168,413,23,14,375), nrow=8, byrow=TRUE)
> partydat<-data.frame(
+ party=c(rep("CDU",sum(partypref[,1])),rep("SPD",sum(partypref[,4])),
+ rep("The Liberals",sum(partypref[,2])),rep("The Greens",sum(partypref[,3]))),
+ sex=c(rep(0,sum(partypref[1:4,1])),rep(1,sum(partypref[5:8,1])),
+ rep(0,sum(partypref[1:4,4])),rep(1,sum(partypref[5:8,4])),
+ rep(0,sum(partypref[1:4,2])),rep(1,sum(partypref[5:8,2])),
+ rep(0,sum(partypref[1:4,3])),rep(1,sum(partypref[5:8,3]))),
+ age=c(rep(c(1:4,1:4), partypref[,1]),rep(c(1:4,1:4), partypref[,4]),
+ rep(c(1:4,1:4), partypref[,2]),rep(c(1:4,1:4), partypref[,3])))
>
```

For the fitting of a multinomial logit model the function "multinom" from the "nnet"–package is used.

```
> library(nnet)
```

The reference category for the multinomial logit model is taken alphabetically so in this case "CDU" is the reference category.

```
> datmat<-as.matrix(table(partydat$sex,partydat$party))
> tparty<-data.frame("CDU"=datmat[,1],"SPD"=datmat[,2],"Green"=datmat[,3],
+ "Liberals"=datmat[,4],"sex"=0:1)
> tparty
> logitParty <- multinom(cbind(CDU,SPD,Green,Liberals)~sex, data=tparty)
> summary(logitParty)
> exp(coef(logitParty))
```

From the model with "CDU" as reference category the corresponding parameters for "SPD" are easily derived:

```
> coefSPD <- matrix(data = c(-coefficients(logitParty)[3,1],
+ coefficients(logitParty)[1,1] - coefficients(logitParty)[3,1],
+ coefficients(logitParty)[2,1] - coefficients(logitParty)[3,1],
```

```
+   -coefficients(logitParty)[3,2],
+   coefficients(logitParty)[1,2] - coefficients(logitParty)[3,2],
+   coefficients(logitParty)[2,2] - coefficients(logitParty)[3,2]),
+   nrow=3, ncol=2)
>   coefSPD
>   exp(coefSPD)
```