For multinomial models that include category-specific as well as global effects the function "mlogit" from the library "mlogit" can be used.

```r
library(mlogit)

The "Travel Mode"-data are stored in the "Edcat"-package and can be loaded by the following command.

```r
data(ModeChoice, package="Ecdat")
```

For the use of the function "mlogit" an appropriate data set has to be built. This is done by use of the function "mlogit.data".

```r
cleaned.data <- mlogit.data(ModeChoice, choice="mode", shape="long", alt.levels=

1, "air", "train", "bus", "car")
```

Now the model can be fitted. In the formula first the category-specific effects and then, separated by "—", the global effects are specified.

```r
travel.kat.id <- mlogit(mode ~ invt + gc|hinc, data=travel.long) summary(travel.kat.id)
```

Now the same model is fitted with the package "VGAM".

```r
library(VGAM)

At first the data need to be prepared adequately to be ready for use with the function "vglm".

```r
cleaned.data <- matrix(ModeChoice$mode, byrow = T, ncol = 4) colnames(cleaned.data) <- c("air", "train", "bus", "car")
cleaned.hinc <- matrix(ModeChoice$hinc, byrow = T, ncol = 4) cleaned.hinc <- cleaned.hinc[,1]
cleaned.invt <- matrix(ModeChoice$invt, byrow = T, ncol = 4) colnames(cleaned.invt) <- c("invtair", "invttrain", "invtbus", "invtcar")
cleaned.gc <- matrix(ModeChoice$gc, byrow = T, ncol = 4) colnames(cleaned.gc) <- c("gcair", "gctrain", "gcbus", "gccar")
```
travelinvt <- sweep(travelinvt[,1], 1, travelinvt[,1])
travelgc <- sweep(travelgc[,1], 1, travelgc[,1])

Invt <- travelinvt[,1]
Gc <- travelgc[,1]

traveldat <- cbind(travelhinc, travelinvt, Invt, travelgc, Gc)
traveldat <- as.data.frame(traveldat)

Now the model can be fitted.

fit <- vglm(travelmode ~ Invt + Gc + travelhinc,
multinomial(parallel = FALSE ~ travelhinc, refLevel = 1),
xij = list(Invt ~ invttrain + invtbus + invtcar,
Gc ~ gctrain + gcbus + gccar),
form2 = ~ Invt + invttrain + invtbus + invtcar +
Gc + gctrain + gcbus + gccar + travelhinc,
data = traveldat, trace = TRUE)

summary(fit)
summary(travel.kat.id)

At last we compare the coefficients of the two fitted models.

summary(travel.kat.id)$CoefTable
summary(fit)$coef3