

Number of Children - Partially Additive Model

February 8, 2012

For the following partially additive model the "children"-data from the package "catdata" are used.

```
> library(catdata)
> data(children)
```

Additive Models are fitted with the function "gam" from "mgcv".

```
> library(mgcv)
```

Here the model is fitted and the summary is printed.

```
> gamchild <- gam(child ~ s(age) + s(dur) + as.factor(nation) + as.factor(god) +
+ as.factor(univ), data=children, family=poisson(link=log))
> summary(gamchild)
```

```
Family: poisson
Link function: log
```

```
Formula:
child ~ s(age) + s(dur) + as.factor(nation) + as.factor(god) +
as.factor(univ)
```

Parametric coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.4229	0.0497	8.51	<2e-16 ***
as.factor(nation)1	0.0804	0.1388	0.58	0.5623
as.factor(god)2	-0.1082	0.0591	-1.83	0.0674 .
as.factor(god)3	-0.1432	0.0678	-2.11	0.0348 *
as.factor(god)4	-0.1314	0.0709	-1.85	0.0640 .
as.factor(god)5	-0.0490	0.0670	-0.73	0.4648
as.factor(god)6	-0.1064	0.0752	-1.42	0.1568
as.factor(univ)1	0.5565	0.1713	3.25	0.0012 **

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

Approximate significance of smooth terms:

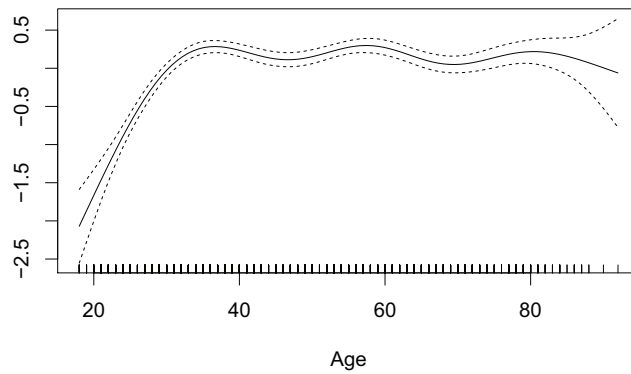
	edf	Ref.df	Chi.sq	p-value
s(age)	7.37	8.29	172.9	< 2e-16 ***
s(dur)	2.32	3.00	31.9	5.6e-07 ***

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

R-sq.(adj) = 0.153 Deviance explained = 18.2%
UBRE score = -0.019 Scale est. = 1 n = 1761

Now the smooth effects can be plotted, the option "select" determines which effect is plotted.

```
> par(cex=1.5)  
> plot(gamchild, select=1, ylab="", xlab="Age")
```



```
> par(cex=1.5)  
> plot(gamchild, select=2, ylab="", xlab="Duration")
```

