BAYESREG OBJECT
crime3y051115b: regression procedure

Response:

Number of observations: 4753
Response Variable: INSEC
Family: negative binomial

Predictor:

$$\begin{aligned}\eta = {} & \gamma_{const}const + \gamma_{is2003}is2003 + \gamma_{is2004}is2004 + \gamma_{LOG\_MA\_A}LOG\_MA\_A + \\ & \gamma_{FGT\_2}FGT\_2 + \gamma_{MALELITR}MALELITR + \\ & f_{LOG\_LOAD}(LOG\_LOAD) + f_{rankFHHHRT}(rankFHHHRT) + \\ & f_{rankPOPDNS}(rankPOPDNS) + f_{rankLPOP9802}(rankLPOP9802) + \\ & f_{rankTOILET}(rankTOILET) + f_{WATALL}(WATALL) + \\ & f_{rankF614SL}(rankF614SL) + f_{KHUMCODE}(KHUMCODE) + \\ & f_{DIST\_COD}(DIST\_COD)\end{aligned}$$

Priors:

Fixed effects:
diffuse priors

$f_{LOG\_LOAD}(LOG\_LOAD)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{rankFHHHRT}(rankFHHHRT)$:
P-spline with second order random walk penalty

Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{rankPOPDNS}(rankPOPDNS)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{rankLPOP9802}(rankLPOP9802)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{rankTOILET}(rankTOILET)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{WATALL}(WATALL)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{rankF614SL}(rankF614SL)$:
P-spline with second order random walk penalty
Number of knots: 20
Knot choice: equidistant
Degree of Splines: 3
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{KHUMCODE}(KHUMCODE)$
Markov random field
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

$f_{DIST\_COD}(DIST\_COD)$
i.i.d. Gaussian random effects
Inverse gamma prior for variance component with hyperparameters a=0.001 and b=0.001

MCMC Options:

Levels for credible intervals:	
Level 1:	95
Level 2:	80
Number of Iterations:	102000
Burn in:	2000
Thinning Parameter:	10

Estimation results for the deviance:

Unstandardized deviance

Mean:	25394.132
Std. Dev:	73.553112
2.5% Quantile:	25252.478
10% Quantile:	25300.946

50% Quantile:	25392.937
90% Quantile:	25489.573
97.5% Quantile:	25540.137

Saturated deviance

Mean:	5303.3057
Std. Dev:	93.696103
2.5% Quantile:	5122.6889
10% Quantile:	5183.751
50% Quantile:	5301.8831
90% Quantile:	5425.4753
97.5% Quantile:	5487.4998

Estimation results for the DIC:

DIC based on the unstandardized deviance

deviance($\bar{\mu}$)	24263.98
pD	1130.1521
DIC	26524.284

DIC based on the saturated deviance

deviance($\bar{\mu}$)	4176.2309
pD	1127.0748
DIC	6430.3804

Estimation results for the scale parameter:

Mean	2.31141
Std. dev.:	0.0915824
2.5% Quantile:	2.13812
10% Quantile:	2.19566
50% Quantile:	2.30863
90% Quantile:	2.43186
97.5% Quantile:	2.50029

Fixed Effects:

Variable	Mean	STD	2.5%-Quant.	Median	97.5%-Quant.
const	-1.38077	0.160019	-1.68351	-1.38537	-1.0508
is2003	-0.234814	0.0307543	-0.295056	-0.234633	-0.174549
is2004	-0.259423	0.0322299	-0.323499	-0.260079	-0.196209
LOG_MA_A	0.0359001	0.0106501	0.0152783	0.0359425	0.0567639
FGT_2	0.624618	0.60134	-0.533019	0.626594	1.8232
MALELITR	0.219524	0.320572	-0.413816	0.221744	0.840534

Plots:

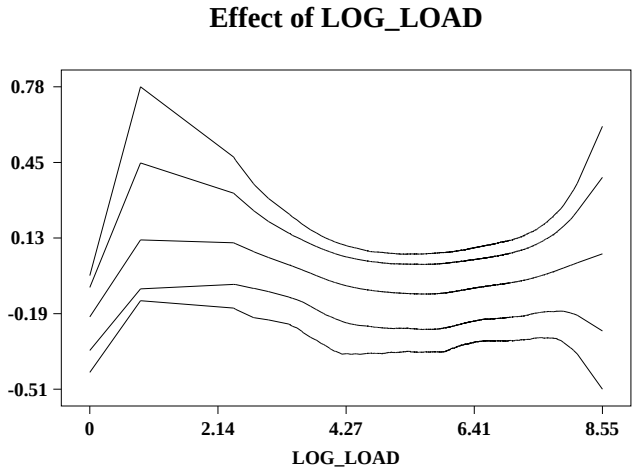

Figure 1: Non–linear Effect of 'LOG_LOAD'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

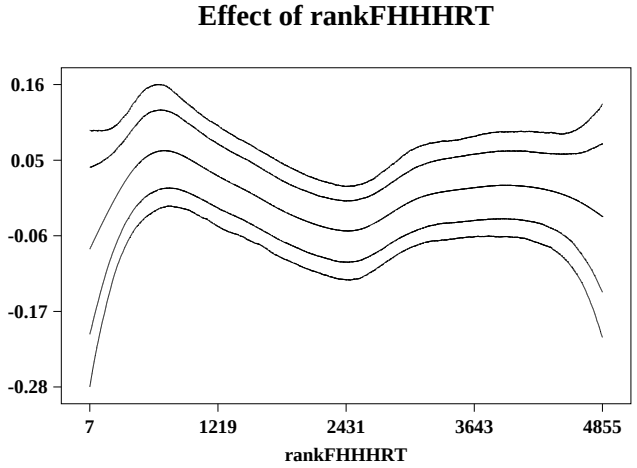

Figure 2: Non–linear Effect of 'rankFHHHRT'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

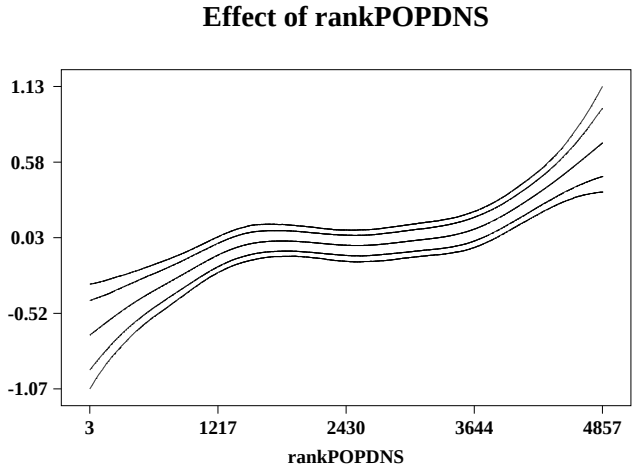

Figure 3: Non–linear Effect of 'rankPOPDNS'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

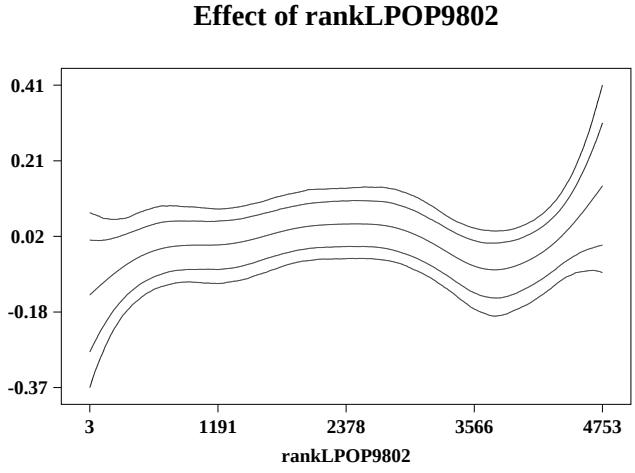

Figure 4: Non–linear Effect of 'rankLPOP9802'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

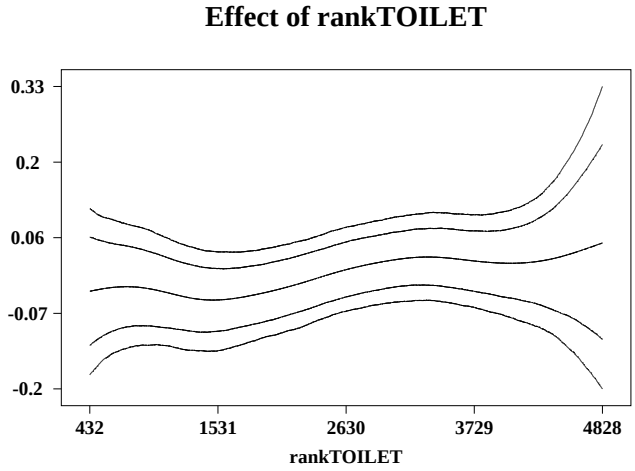

Figure 5: Non–linear Effect of 'rankTOILET'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

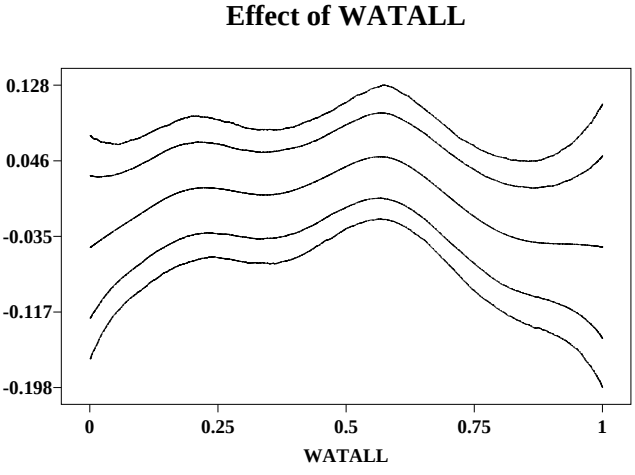

Figure 6: Non–linear Effect of 'WATALL'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.

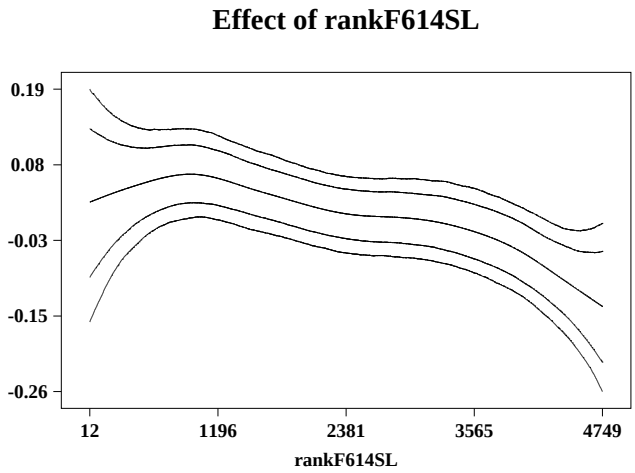

Figure 7: Non–linear Effect of 'rankF614SL'. Shown are the posterior means together with 95% and 80% pointwise credible intervals.