October 17, 2008

This is a page of output from the WinBUGS model analyzing the Connecticut Collaboration for Fall Prevention. Because the analysis only compared a sample of 20 ZCTAs from each study arm, they differ from published results. They are provided for expositional purposes only.

ZAS model of all Falls with 65+ income, institutionalized, and non-inst. with physical disability (non-dichotomized) BLFR[zcta – Gbar], post-Milford data correction on falls and covariates. Gbar = global average baseline rate

- **Rates calculated with all Fixed Effects and All Random Effects !**
- **Rates calc. directly for UCarm and IVarm at each period with std errors !**
- **Rate ratios for Eval Period directly calculated for Credibility Interval**
- **The model terms are defined in the corresponding WinBUGS program and dataset**

Pre-convergence burn in:

node		mean	sd	MC error	2.5%	median	97.5%	start	sample
Interc	alpha[1]	-1.55	0.3639	0.02098	-1.755	-1.605	-0.6468	1	30000
BLFR	alpha[2]	10.78	1.649	0.08532	8.95	10.59	14.02	1	30000
Age	alpha[3]	0.4305	0.01753	7.488E-4	0.4158	0.4312	0.4467	1	30000
Sex	alpha[4]	0.3347	0.02872	0.001108	0.2993	0.3358	0.3709	1	30000
Treatmt	alpha[5]	0.04571	0.05944	0.002797	-0.025	0.04781	0.1257	1	30000
Time	alpha[6]	0.1303	0.06765	0.003085	0.03617	0.1331	0.2258	1	30000
trtXtime	alpha[7]	-0.1216	0.0754	0.003283	-0.2354	-0.1252	-0.005	1	30000
PRlt15k	alpha[8]	0.4038	1.568	0.08982	-2.636	0.624	1.257	1	30000
PRgt75k	alpha[9]	0.06344	0.2395	0.01232	-0.6261	0.08489	0.3852	1	30000
PRinst	alpha[10]	0.1456	0.1545	0.003486	-0.1645	0.1475	0.4414	1	30000
PRphDis	alpha[11]	-0.2041	0.1774	0.008036	-0.5928	-0.1976	0.1093	1	30000
PRnonW	alpha[12]	-0.06479	0.1503	0.003483	-0.3503	-0.06742	0.2405	1	30000

The following plots are the Gelman-Rubin statistic as modified by Brooks that show convergence when the red line converges to the value of 1. Alphs[8] is the slowest of all 12 effects to converge but does so within 10000 iterations.
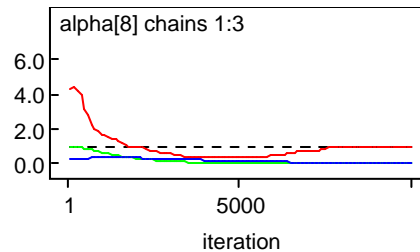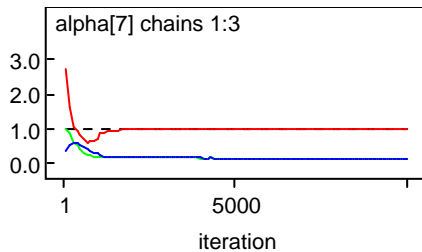
The following graphs of kernel densities, which are nicely normal, further indicate that things have converged nicely.
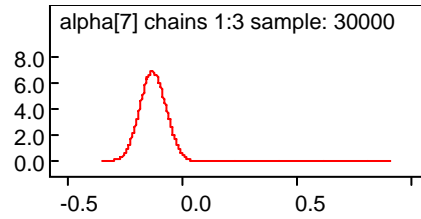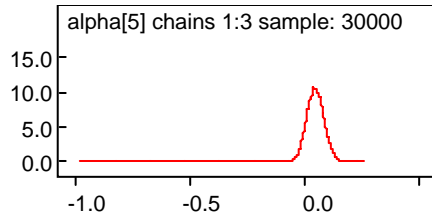
Having demonstrated successful convergence above, you now run a few thousand iterations across all the Markov chains to generate your final results. I usually choose to run and calculate the DIC statistic for model comparison available under the Inference menu.

Posterior Sample

node		mean	sd	2.5%	median	97.5%	sample
Interc	alpha[1]	-1.589	0.08257	-1.743	-1.593	-1.438	7500
BLFR	alpha[2]	10.57	0.7773	9.112	10.58	12.12	7500
Age	alpha[3]	0.4308	0.007884	0.411	0.4299	0.4514	7500
Sex	alpha[4]	0.3345	0.01771	0.2984	0.3343	0.3724	7500
Treatmt	alpha[5]	0.04823	0.03724	-0.03127	0.05	0.1191	7500
Time	alpha[6]	0.1275	0.04577	0.03486	0.1288	0.2151	7500
trtXtime	alpha[7]	-0.121	0.05692	-0.2348	-0.1196	-0.01293	7500
PRlt15k	alpha[8]	0.5911	0.3309	-0.03885	0.6286	1.134	7500
PRgt75k	alpha[9]	0.09155	0.1333	-0.1625	0.09006	0.3515	7500
PRinst	alpha[10]	0.1454	0.1479	-0.1381	0.1456	0.433	7500
PRphDis	alpha[11]	-0.2016	0.1566	-0.4934	-0.2067	0.1088	7500
PRnonW	alpha[12]	-0.06706	0.1448	-0.3522	-0.06707	0.2165	7500

DIC

Dbar = post.mean of -2logL; Dhat = -2LogL at post.mean of stochastic nodes

	Dbar	Dhat	pD	DIC
f	13345.800	12194.400	1151.470	14497.300
total	13345.800	12194.400	1151.470	14497.300

node	mean	sd	2.5%	median	97.5%	sample
RateRatioEval	1.072	0.03164	1.01	1.072	1.139	2400

Conclusion:
Even from this small dataset of 20 ZCTAs from each study arm, the intervention is associated with a significantly lower rate of fall-related utilization after adjustment for important covariates.