Bayesian Mixed-Effects Logit Model

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$$Y_{ijt} \sim \text{bernoulli}(\pi_{ijt})$$

$$\text{logit}(\pi_{ijt}) = X_{ijt}\beta + U_i + f(W_{ijt})$$

$$U_i \sim N(0, \sigma_U^2)$$

$$W_{ij(t+1)} - W_{ij(t)} \sim N(0, \sigma_W^2) \quad (\text{RW1})$$

Table 1: Posterior mean and 2.5 and 97.5 percentiles for the odds ratio of deadly accident by model coefficients

|	mean	0.025quant	0.975quant
(Intercept)	0.115	0.078	0.168
visibilitybNot Clear	1.182	0.940	1.481
roadclassArterial	1.067	0.788	1.459
roadclassCollector	0.987	0.661	1.474
roadclassExpressway	1.737	1.023	2.934
trafficctrlPedestrian Crossing	0.871	0.447	1.619
trafficctrlTraffic Sign	0.557	0.422	0.730
trafficctrlTraffic Signal	0.538	0.462	0.628
persontypePedestrian not involved	0.638	0.542	0.752
totprecipmm	0.980	0.965	0.995
SD for weeknum	0.046	0.020	0.096
SD for weekiid	1.491	1.349	1.622
SD for hoodid	0.917	0.772	1.069

Date 2007–17
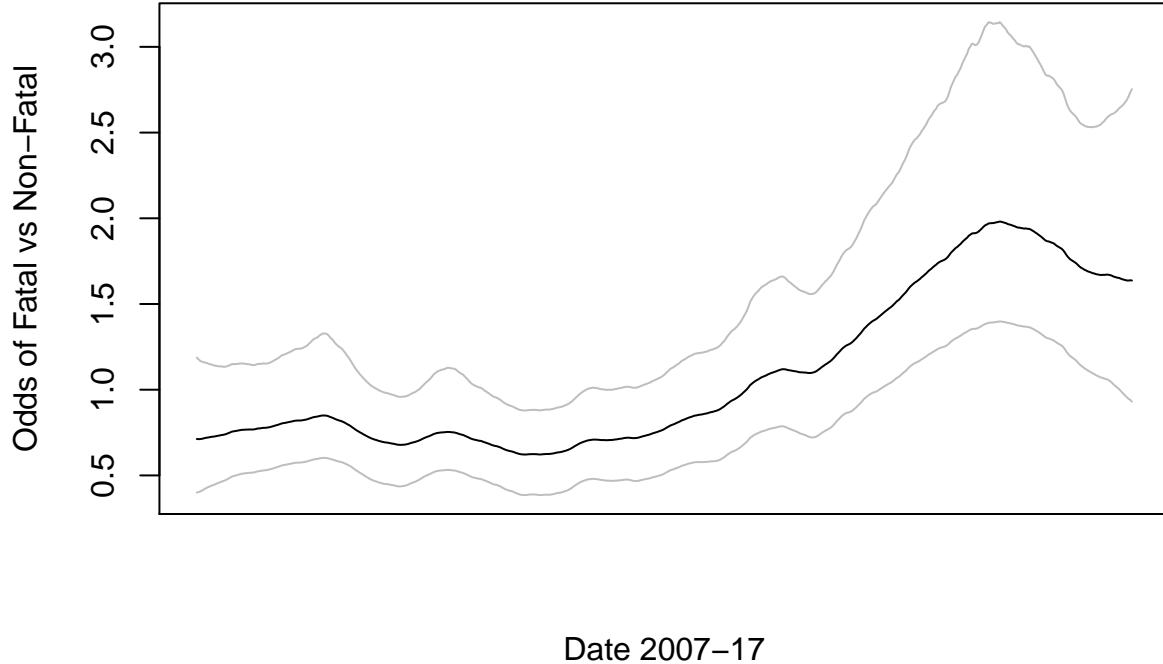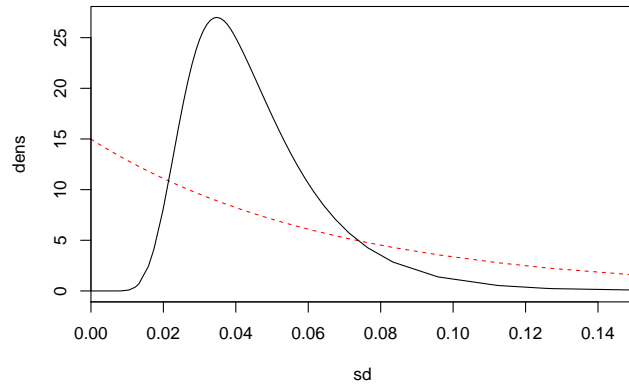
Figure 1: Plot of posteriors for distributions on random intercept (neighborhood) and random time components
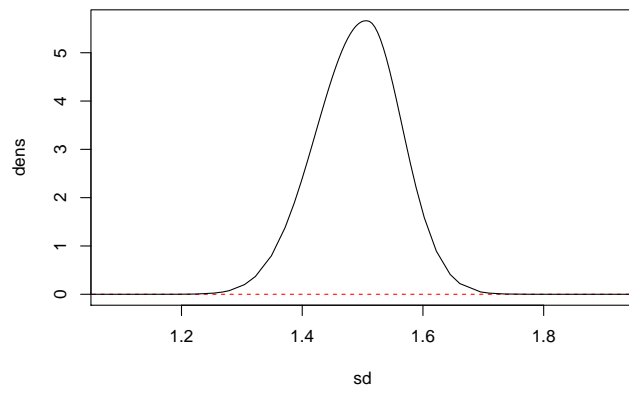

Figure 2: Plot of posteriors for distributions on random intercept (neighborhood) and random time components
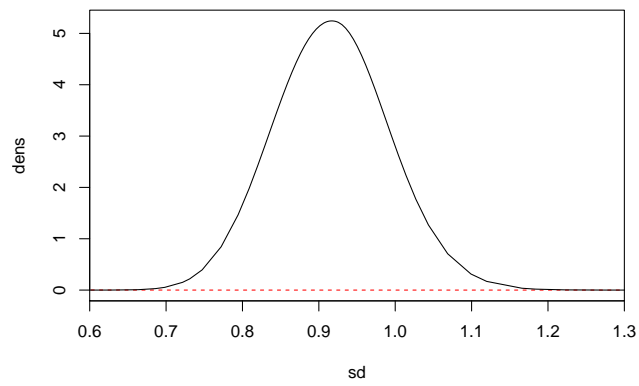

Figure 3: Plot of posteriors for distributions on random intercept (neighborhood) and random time components

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