Stat637 Homework 5 [1]

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1 Q1:

From Figure 1, the univariate trace plots of each of the three β's indicate that the convergence is likely to have occured. Each of the univariate plots of the posterior distributions look Normal. The credible intervals for $(\beta_0, \beta_1, \beta_2)$ are $(-1.86, .22)$, $(.01, .06)$, and $(-1.73, .05)$ respectively. The credible interval for the deviance is $(30.3, 37.1)$. The 95% (hpd) credible intervals computed for each of the parameters are the 95% most probable values for the parameters.

2 Q2:

The posterior distributions are approximately the same. This is what we would expect because the same priors were used. The method of obtaining posterior distributions should not cause the posterior distribution to change.

3 Q3:

From Figure 3, we see that the estimated probability that a patient with a tracheal tube and a surgery lasting 44 minutes will wake with a sore throat is 52%, with a 95% (hdp) credible interval of $(26.94\%, .7962\%)$.

4 Plots

[1] https://github.com/luiarthur/Fall2014/blob/master/Stat637/5

Figure 1: Posterior Distribution (Albert Chib)

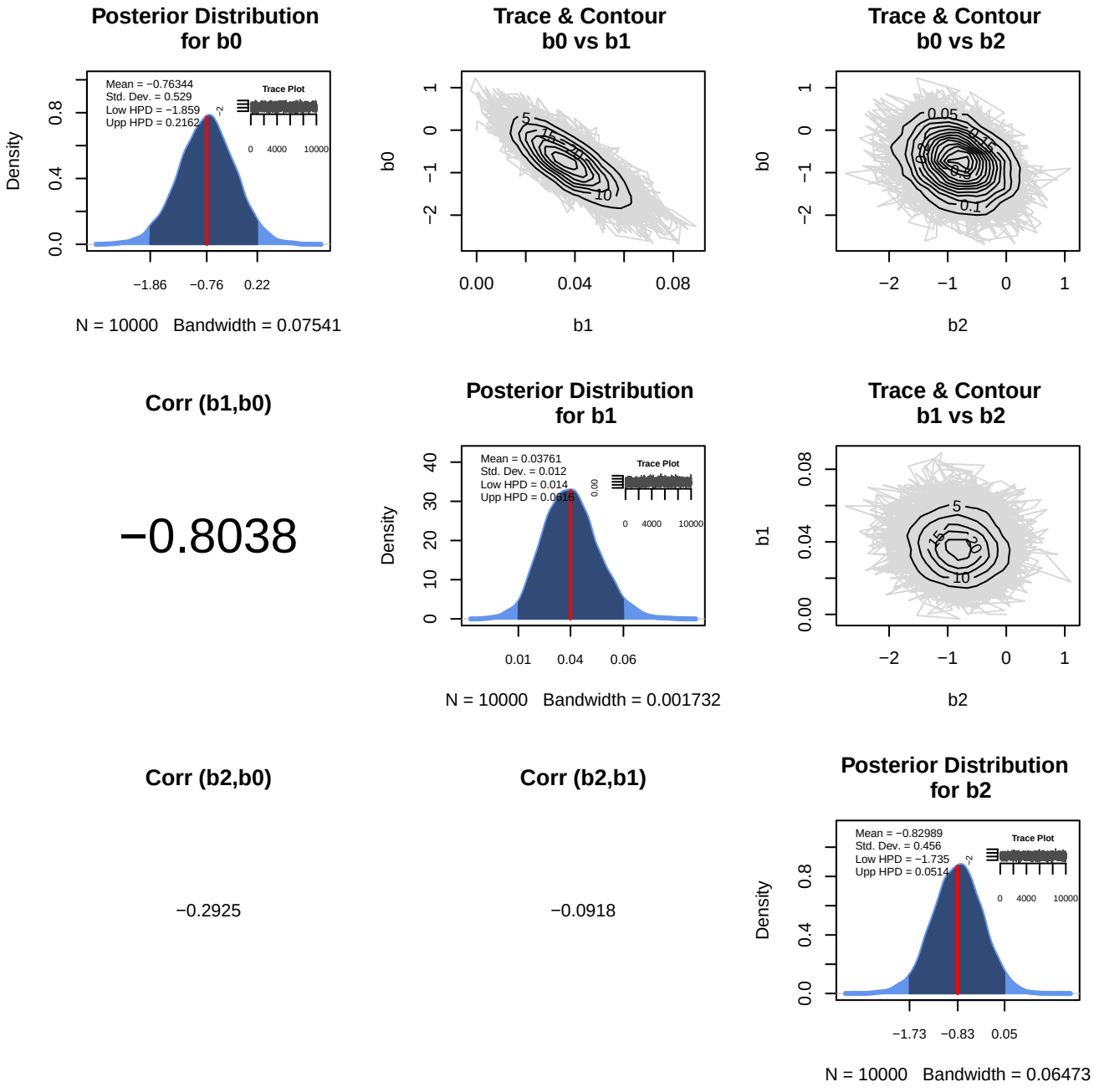

Figure 2: Posterior for Deviance (Albert Chib)

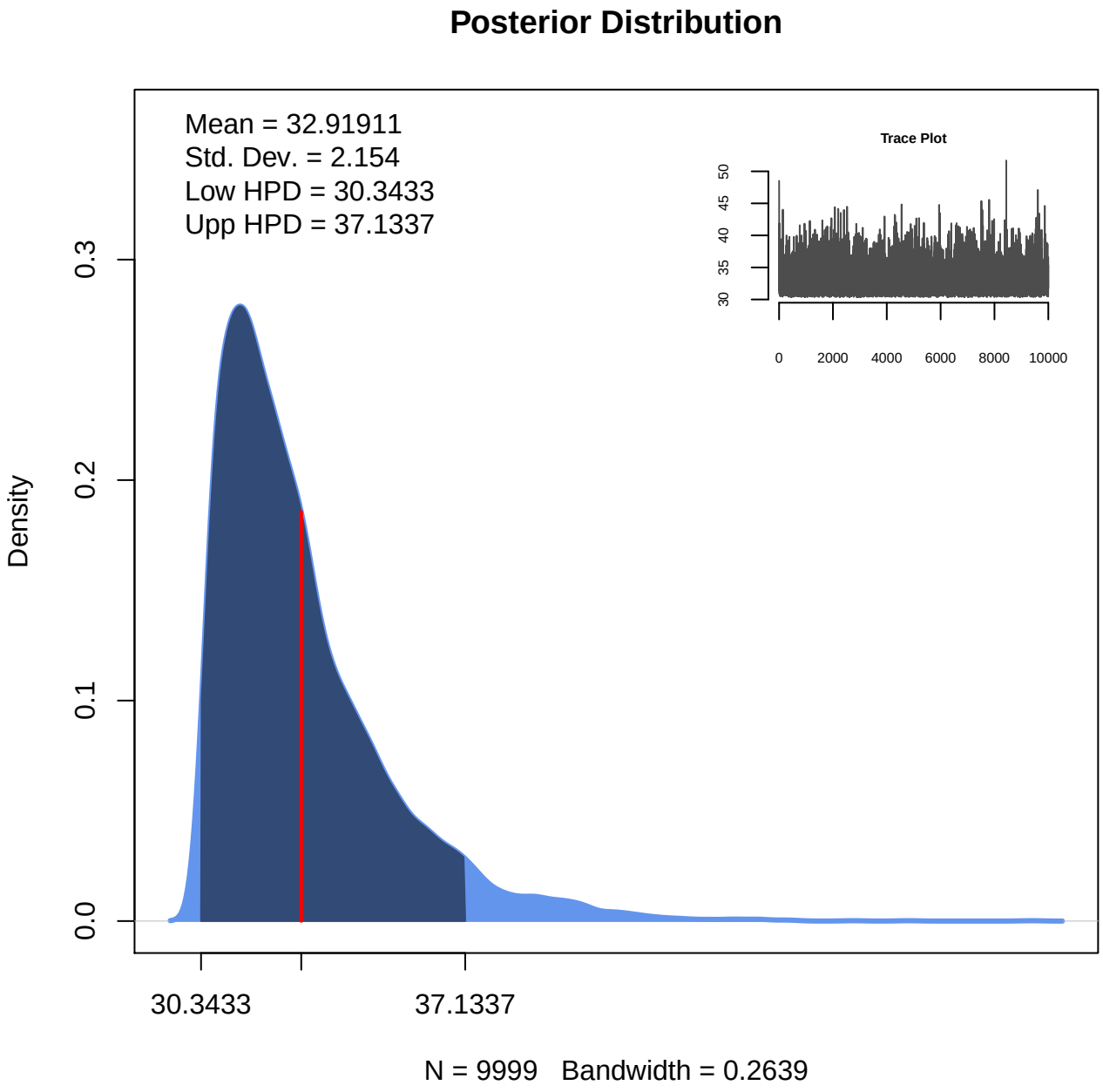

Figure 3: Posterior for $\hat{p}$ (Albert Chib)

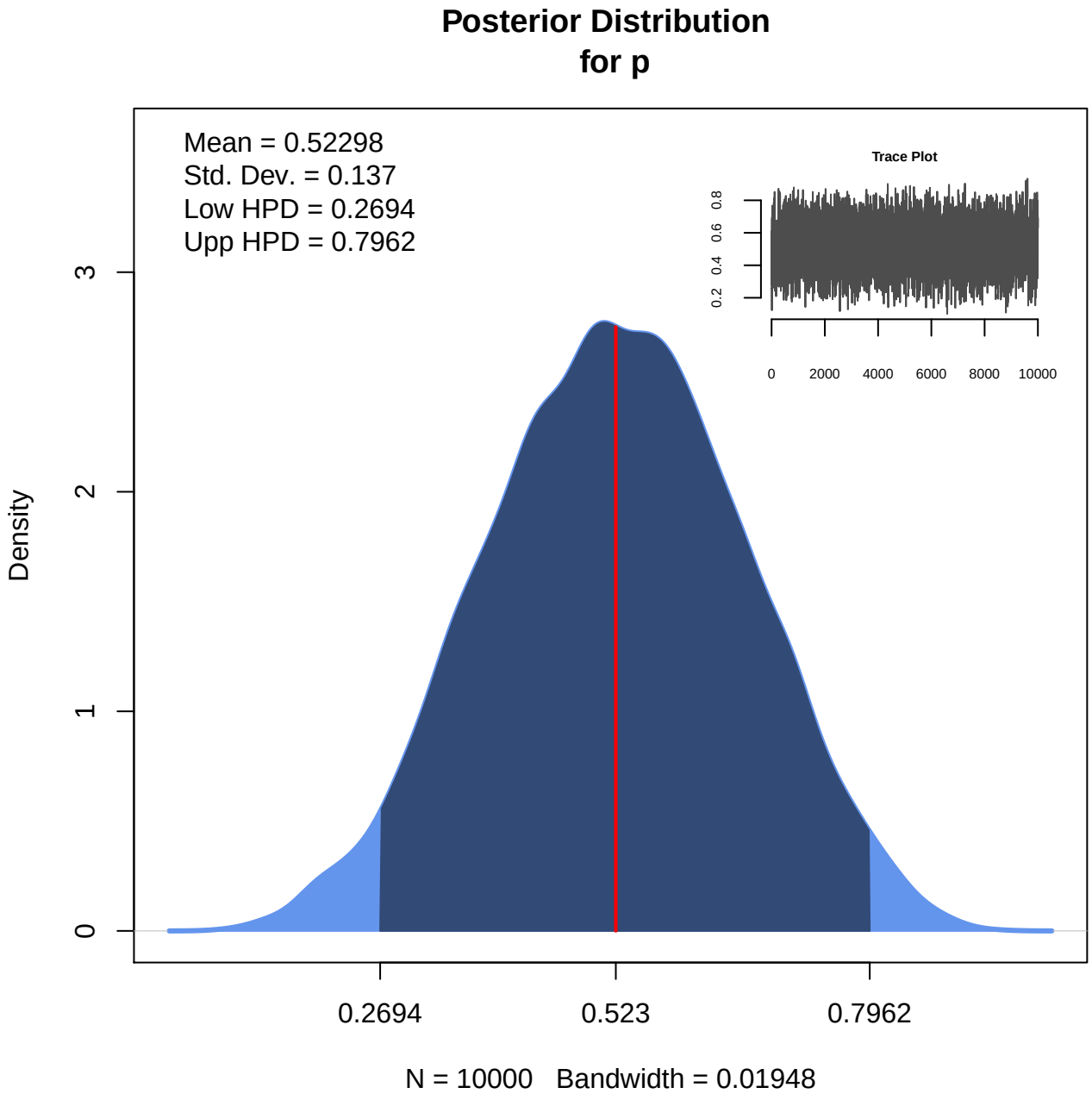

Figure 4: Posterior Distribution (Metropolis)

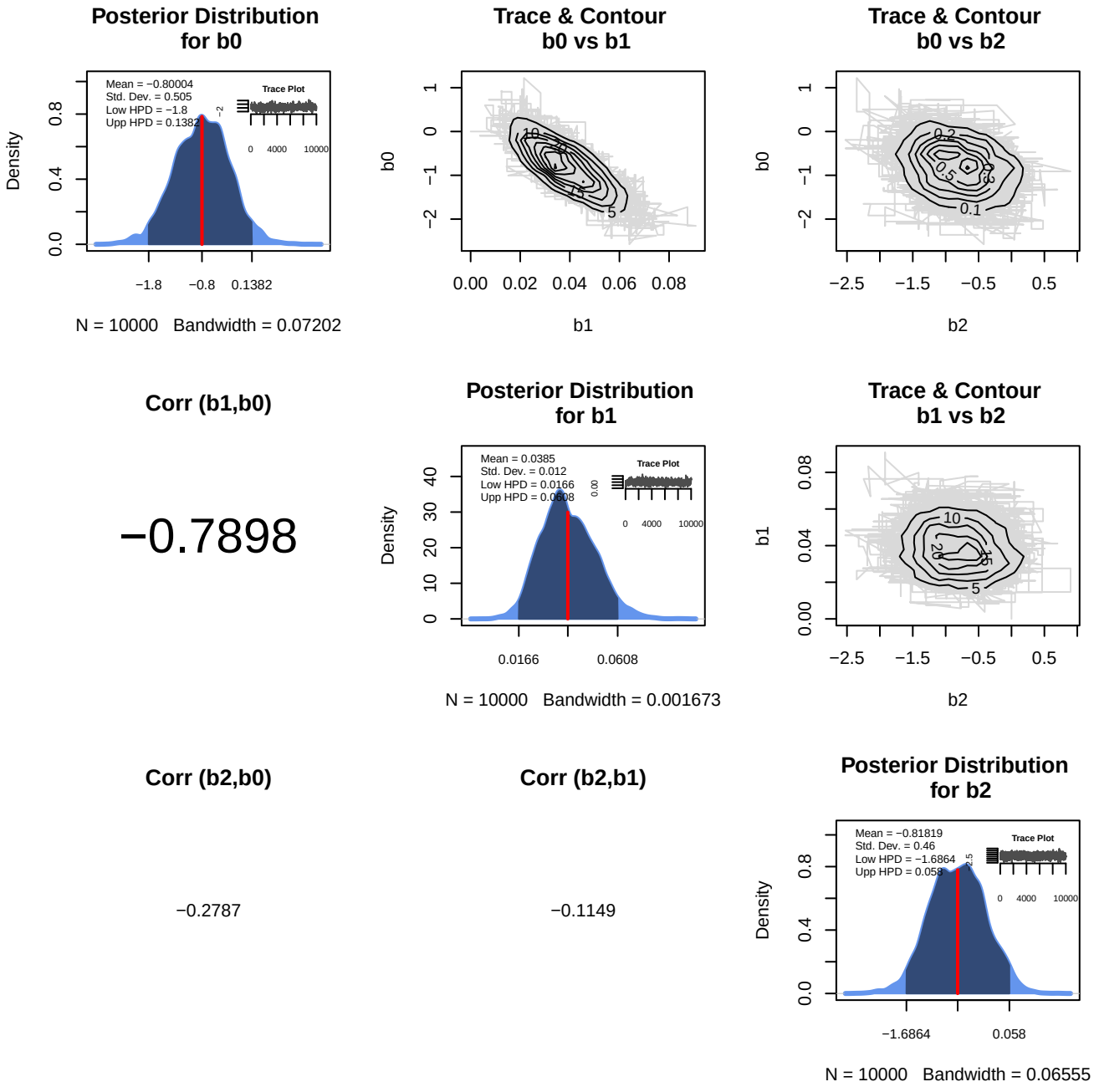

Figure 5: Posterior for Deviance (Metropolis)

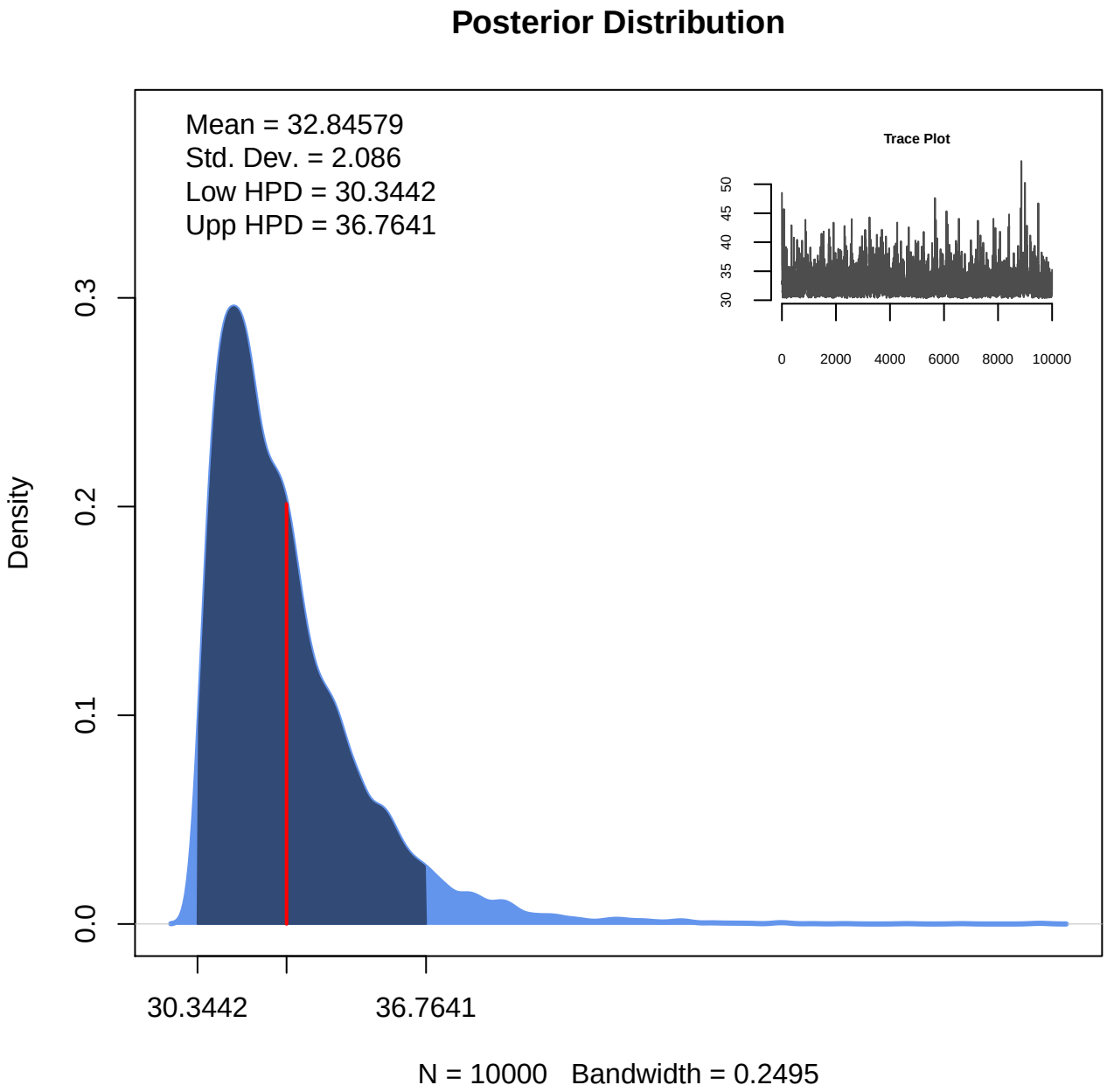
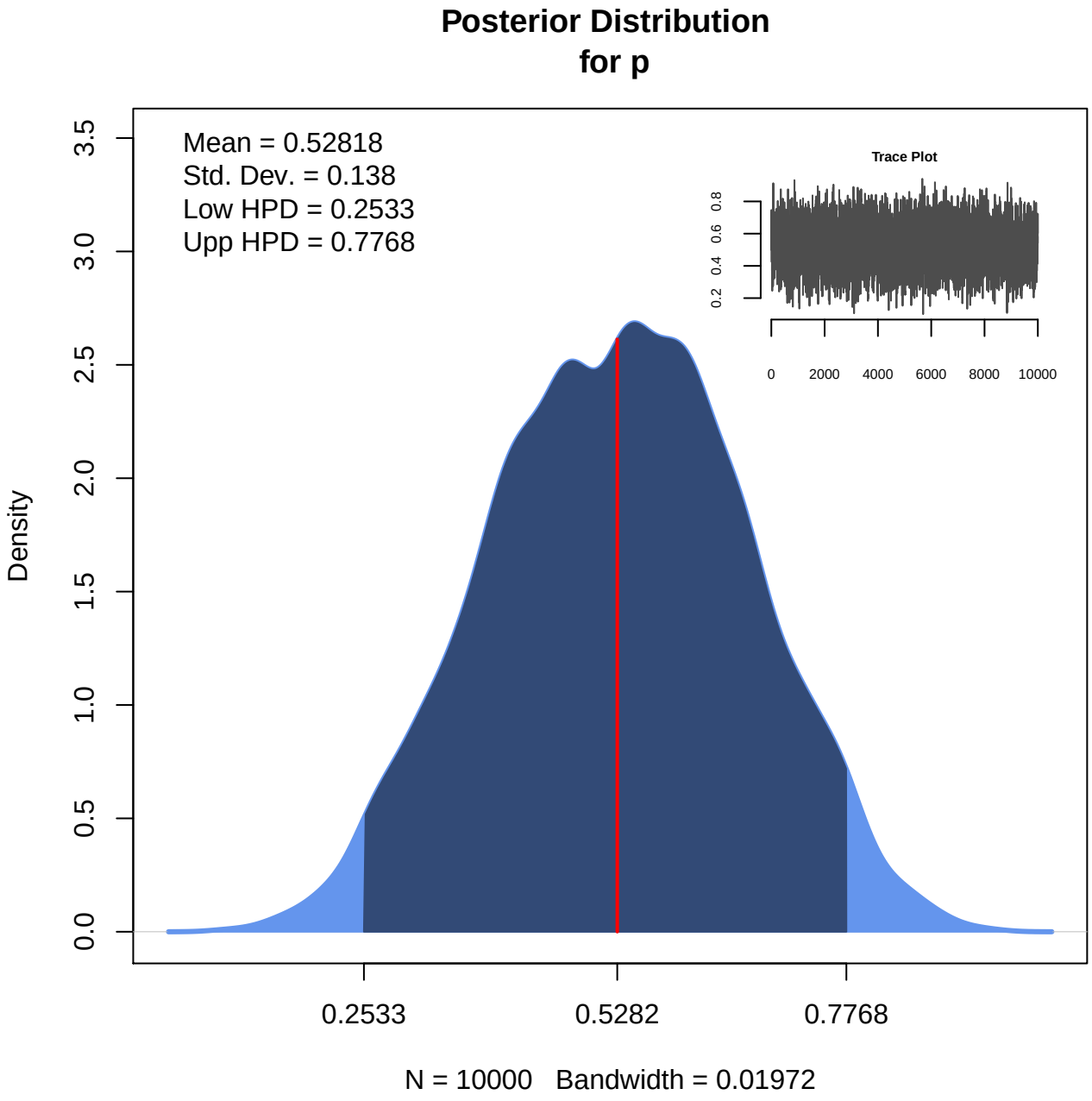
Figure 6: Posterior for $\hat{p}$ (Metropolis)