PSA and Cancer Volume

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

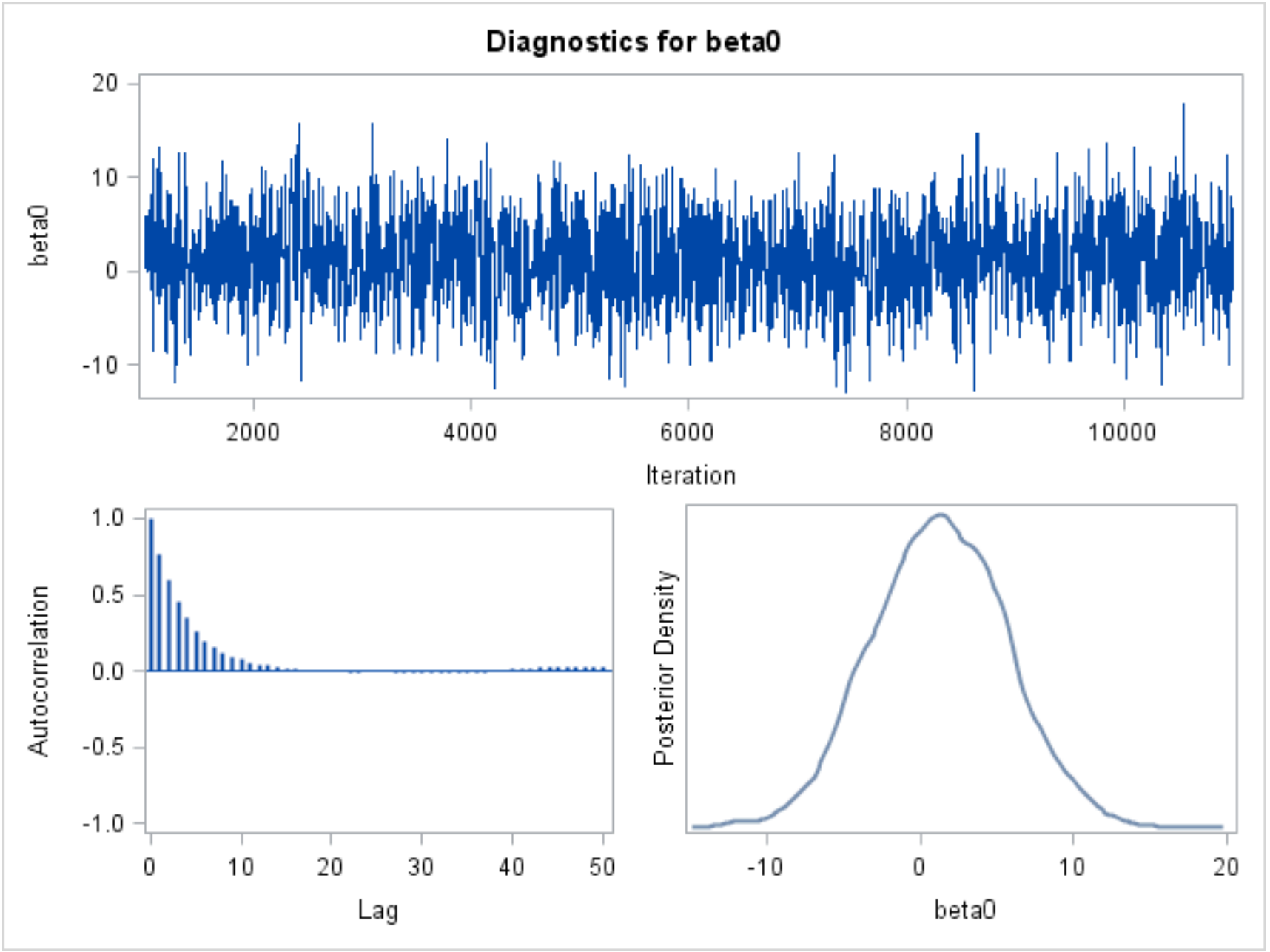
Posterior Summaries and Intervals

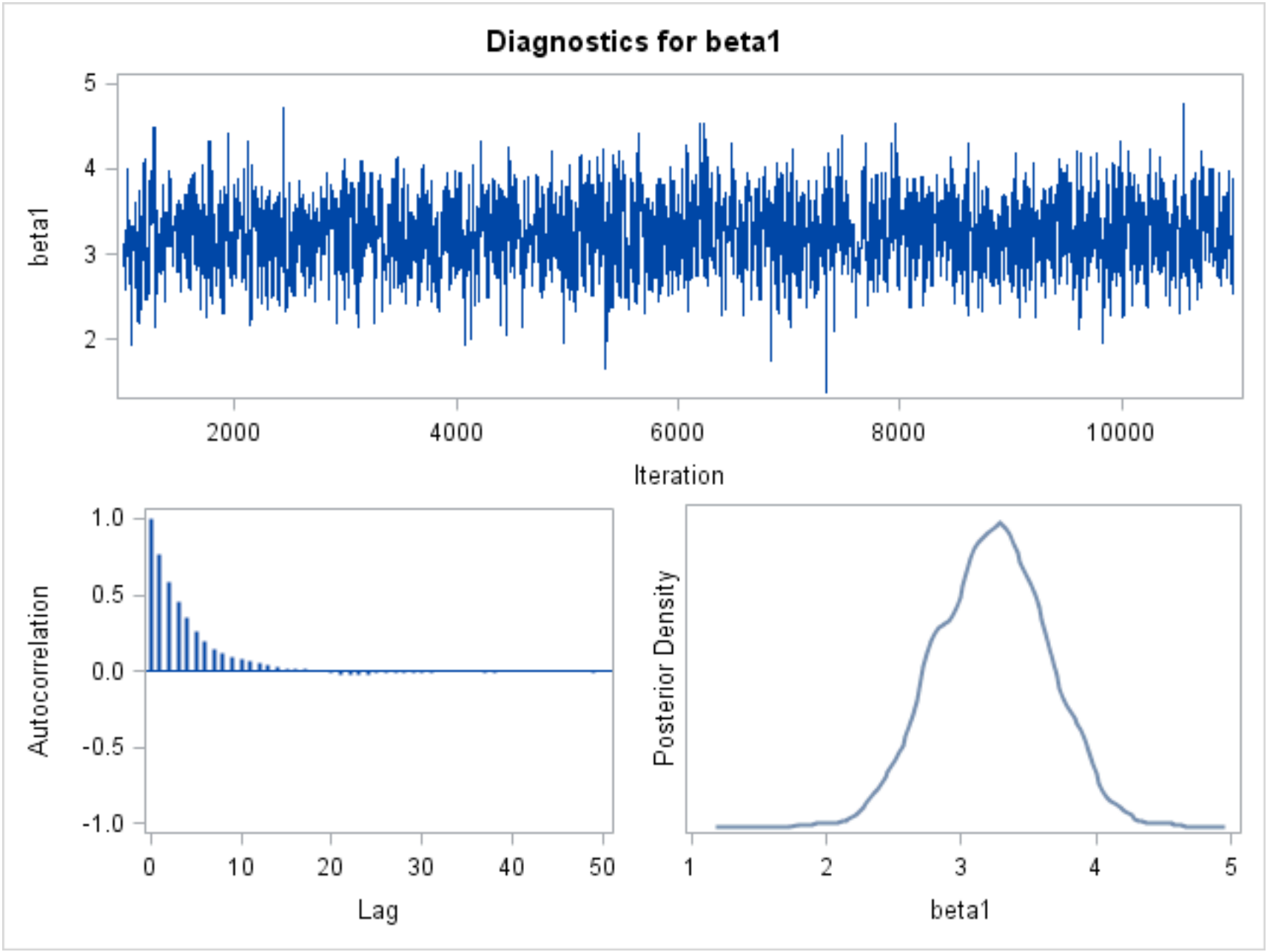
Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	1.2545	4.3345	-6.4524	10.3828
beta1	10000	3.2280	0.4101	2.4554	4.0138
sigma2	10000	1015.8	147.3	756.6	1316.9

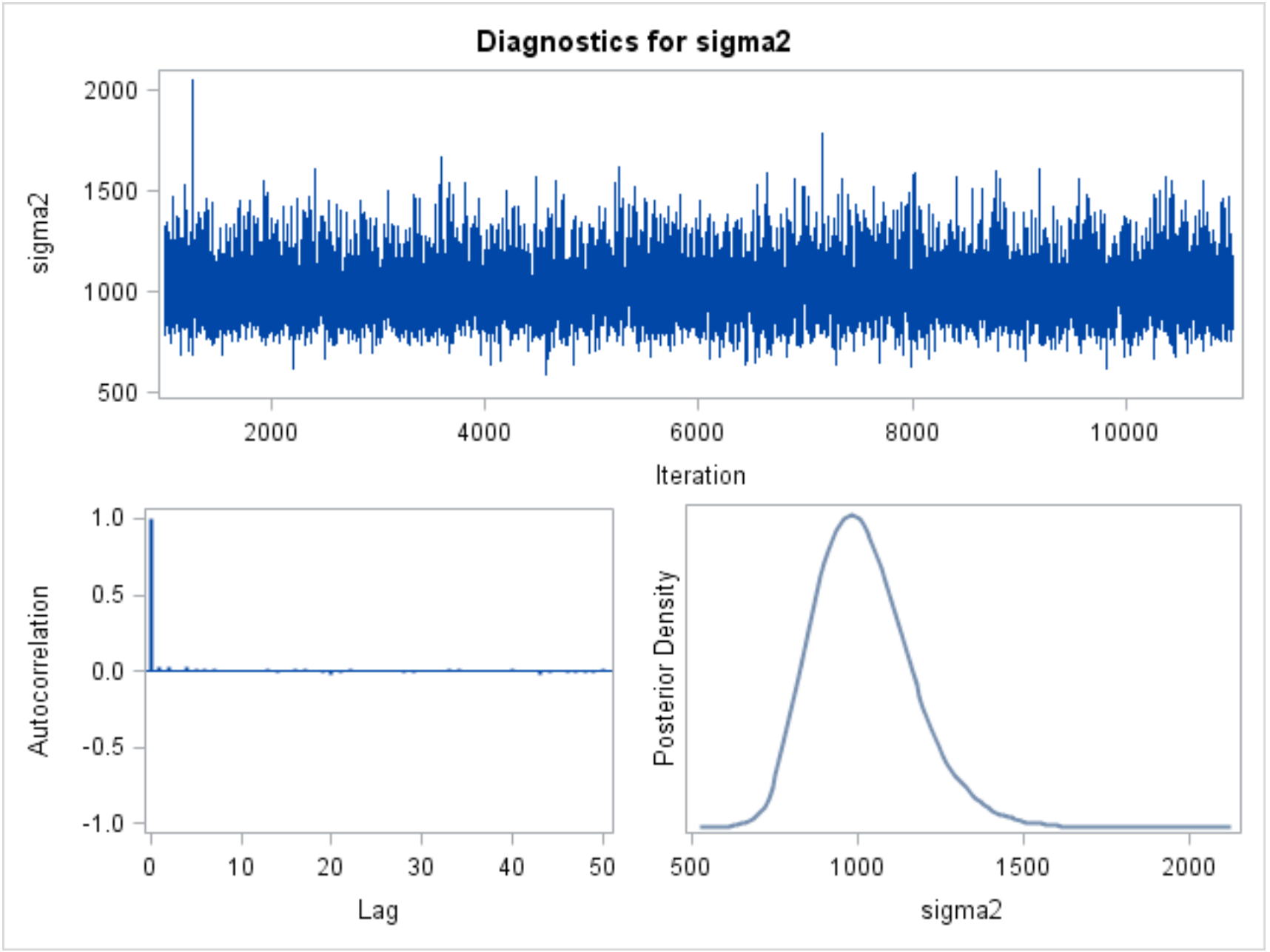
The MCMC Procedure

Effective Sample Sizes

Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1329.5	7.5217	0.1329
beta1	1324.0	7.5526	0.1324
sigma2	9092.7	1.0998	0.9093


Diagnostics for beta0
beta0
20
10
0
-10
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-10
0
10
20
beta0


Diagnostics for beta1
beta1
5
4
3
2
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1
2
3
4
5
beta1


Diagnostics for sigma2
sigma2
2000
1500
1000
500
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
500
1000
1500
2000
sigma2

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

PSA and weight

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	9.4770	9.0187	-8.6192	26.5793
beta1	10000	0.3465	0.1991	-0.0566	0.7197
sigma2	10000	1621.7	235.6	1187.8	2088.2

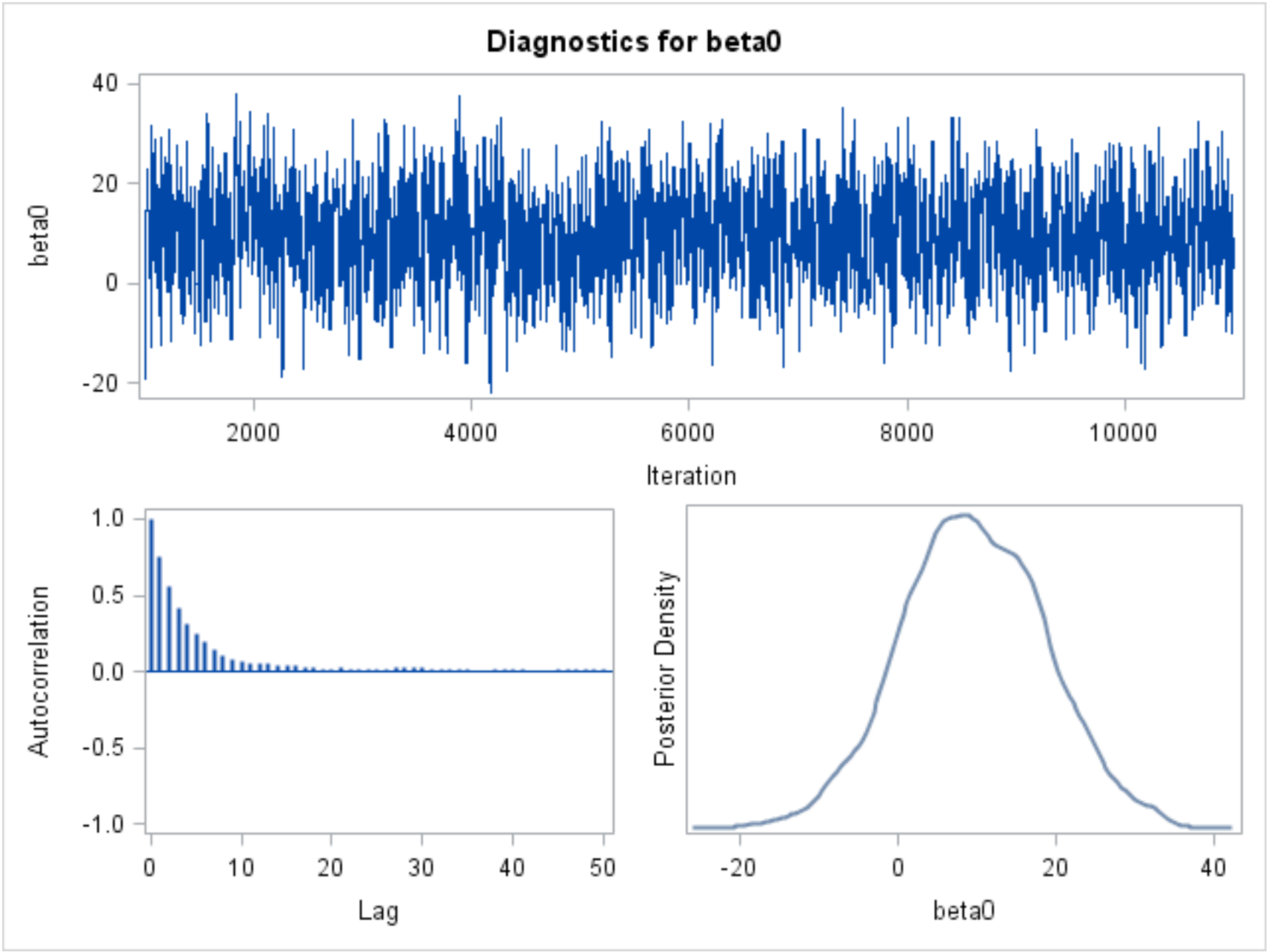
The MCMC Procedure

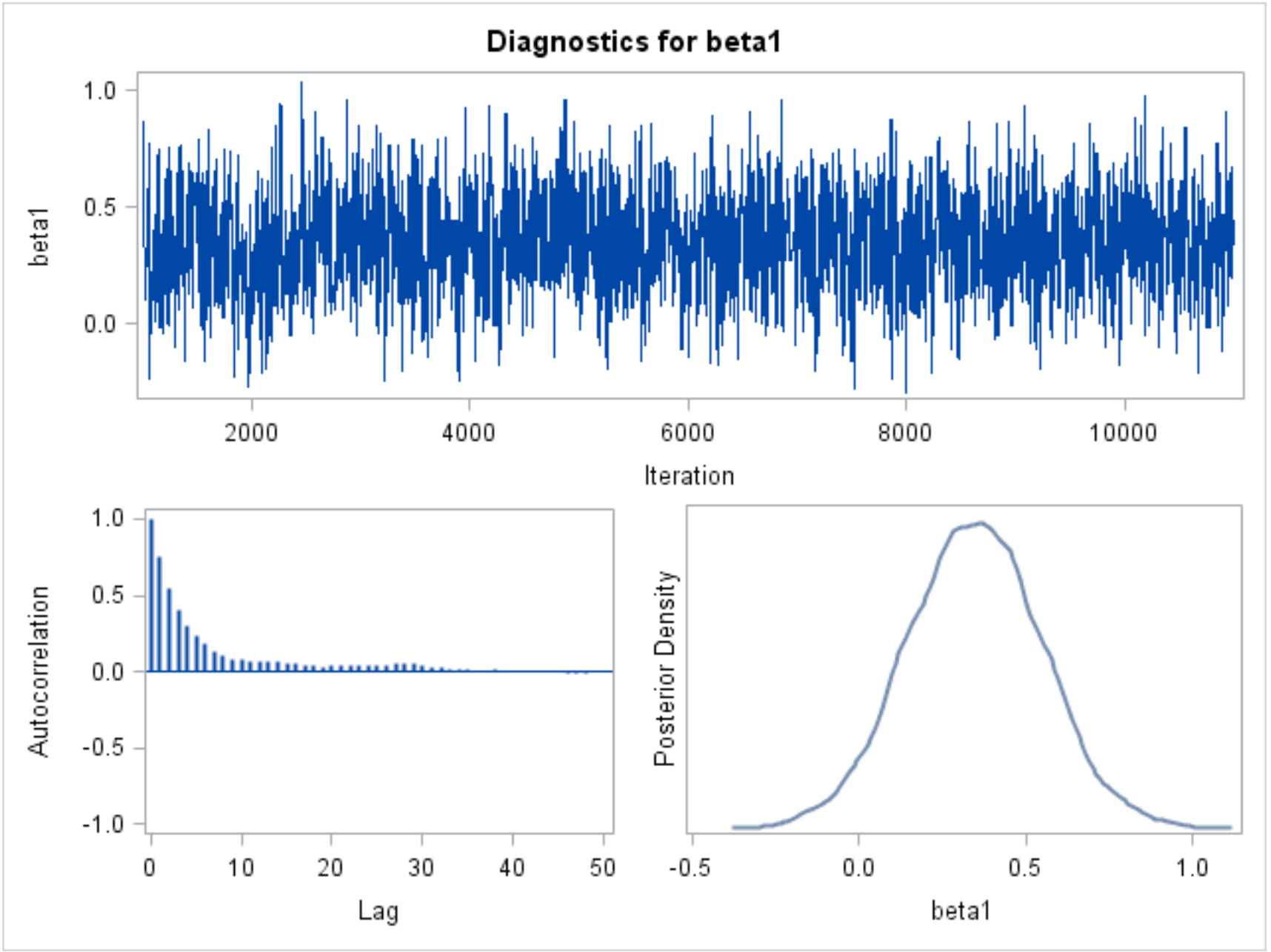
Effective Sample Sizes

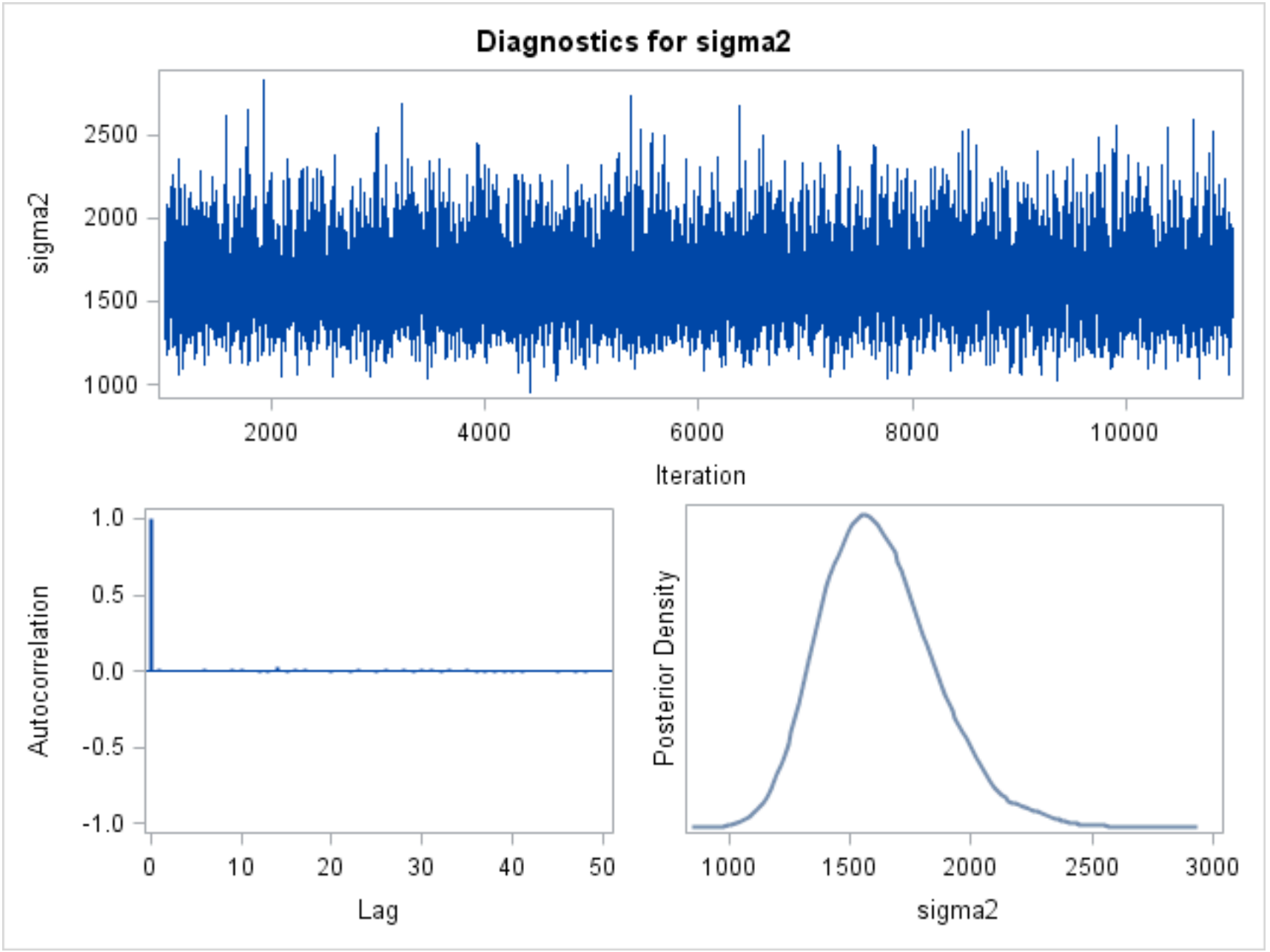
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1238.5	8.0741	0.1239
beta1	1147.0	8.7182	0.1147
sigma2	9704.3	1.0305	0.9704

PSA and weight

The MCMC Procedure


Diagnostics for beta0
beta0
40
20
0
-20
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-20
0
20
40
beta0


Diagnostics for beta1
beta1
1.0
0.5
0.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-0.5
0.0
0.5
1.0
beta1


Diagnostics for sigma2
sigma2
2500
2000
1500
1000
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1000
1500
2000
2500
3000
sigma2

PSA and age

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

PSA and age

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	7.1829	23.2294	-37.9375	52.0465
beta1	10000	0.2610	0.3629	-0.4225	0.9682
sigma2	10000	1654.5	241.4	1211.6	2142.0

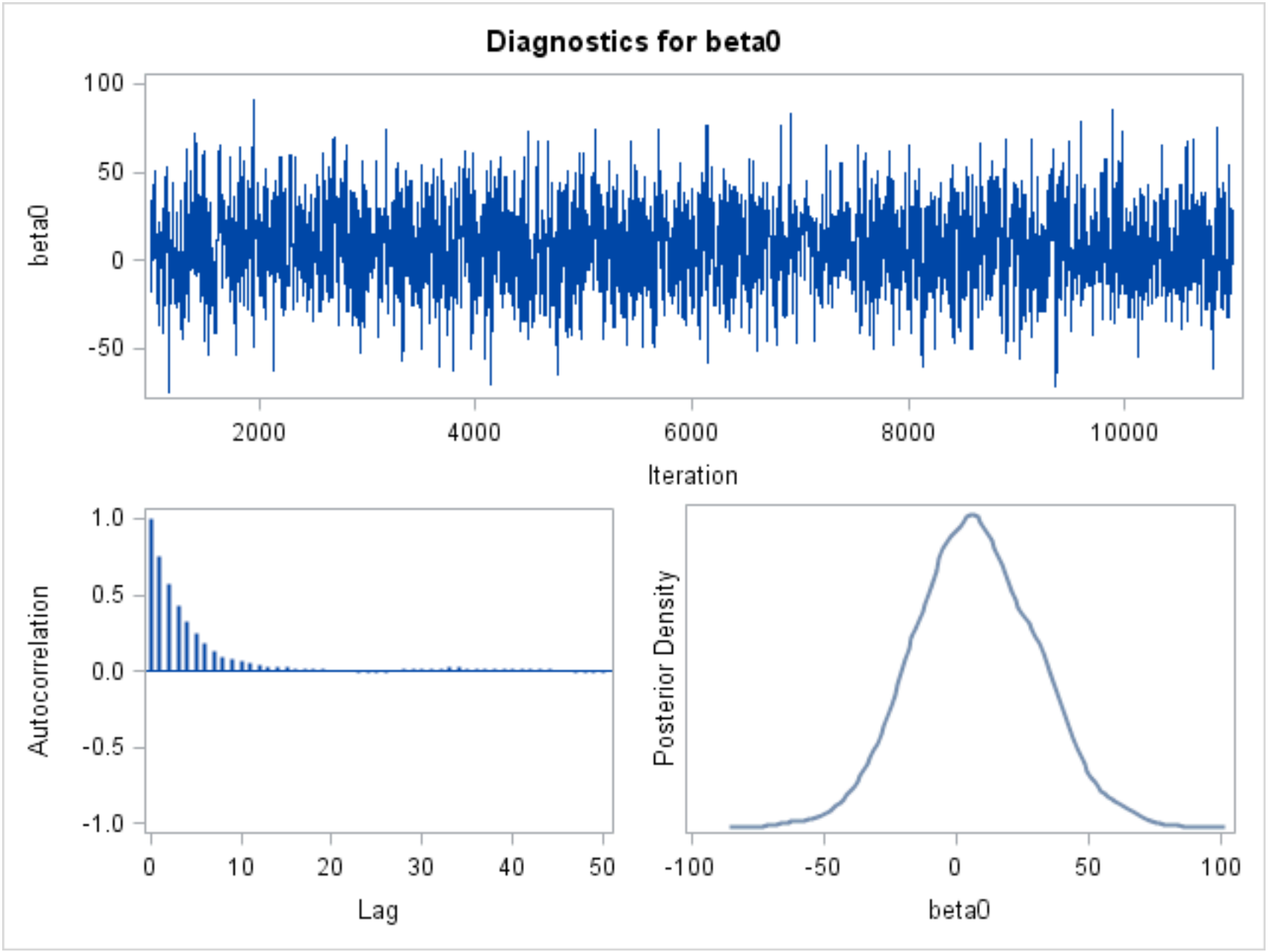
The MCMC Procedure

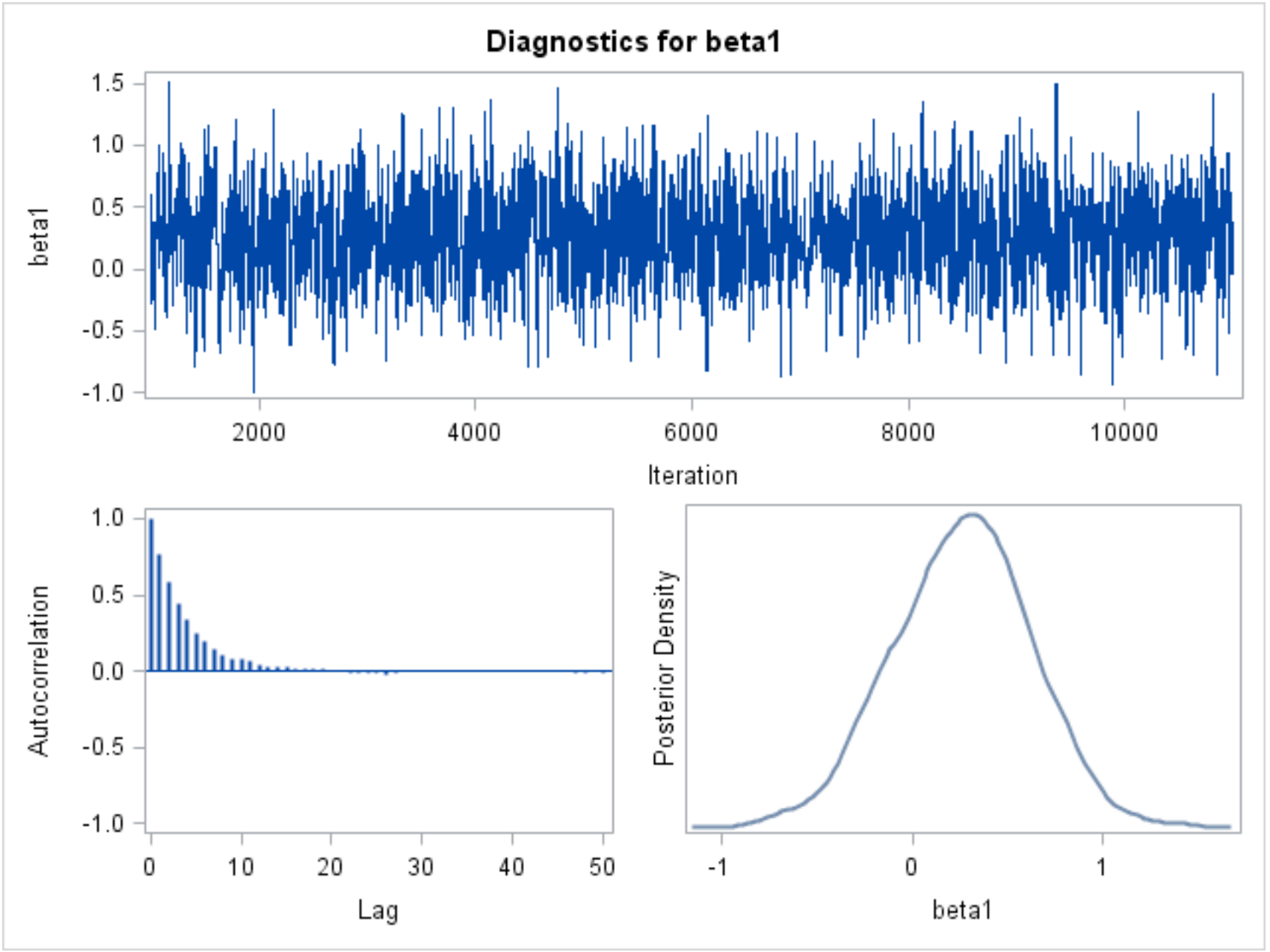
Effective Sample Sizes

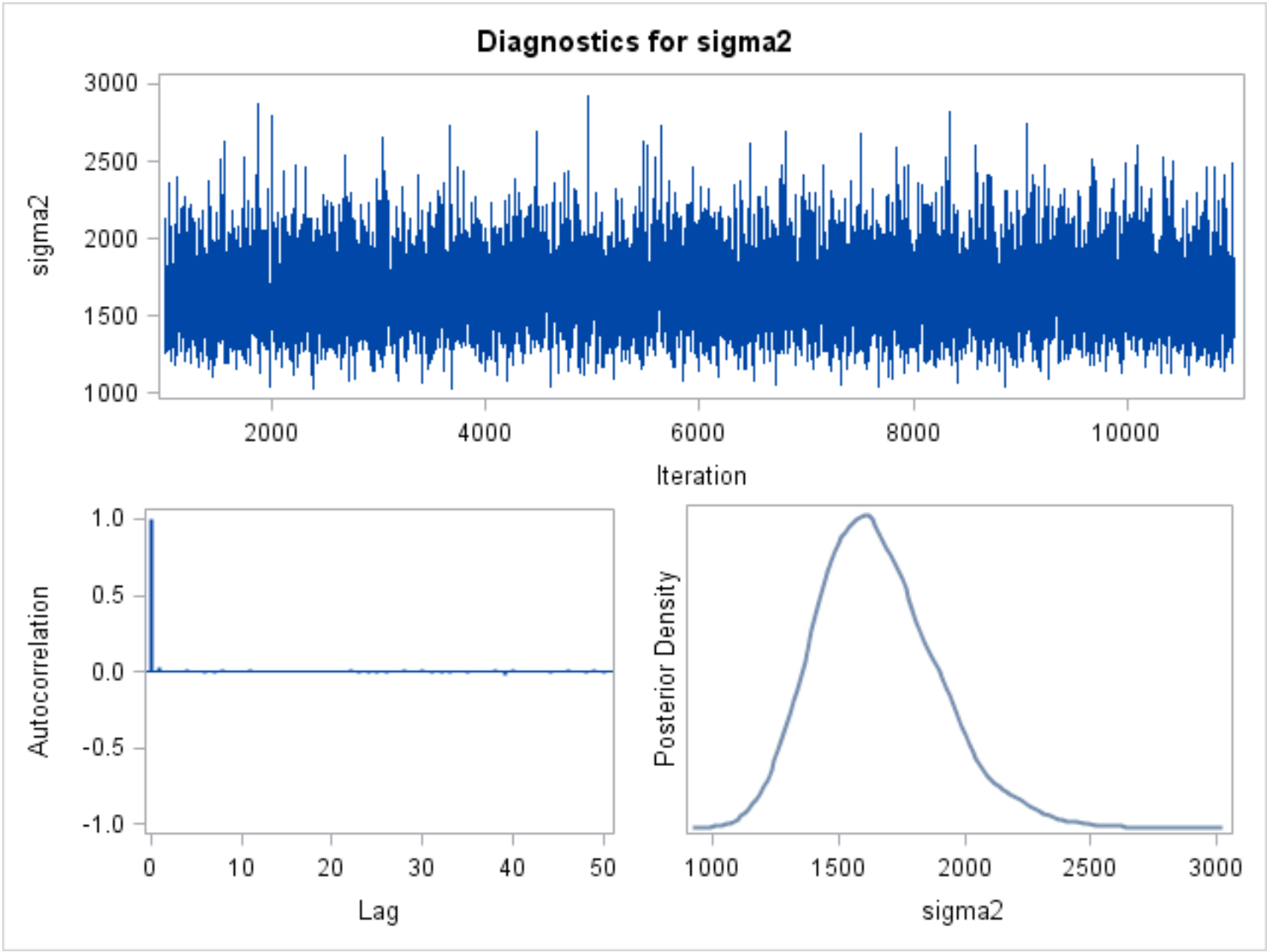
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1376.7	7.2639	0.1377
beta1	1355.6	7.3771	0.1356
sigma2	9505.4	1.0520	0.9505

PSA and age

The MCMC Procedure


Diagnostics for beta0
beta0
100
50
0
-50
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-100
-50
0
50
100
beta0


Diagnostics for beta1
beta1
1.5
1.0
0.5
0.0
-0.5
-1.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-1
0
1
beta1


Diagnostics for sigma2
sigma2
3000
2500
2000
1500
1000
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1000
1500
2000
2500
3000
sigma2

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	23.3706	5.3466	13.1688	34.0418
beta1	10000	0.0502	1.3217	-2.4923	2.7004
sigma2	10000	1659.6	243.3	1219.2	2153.1

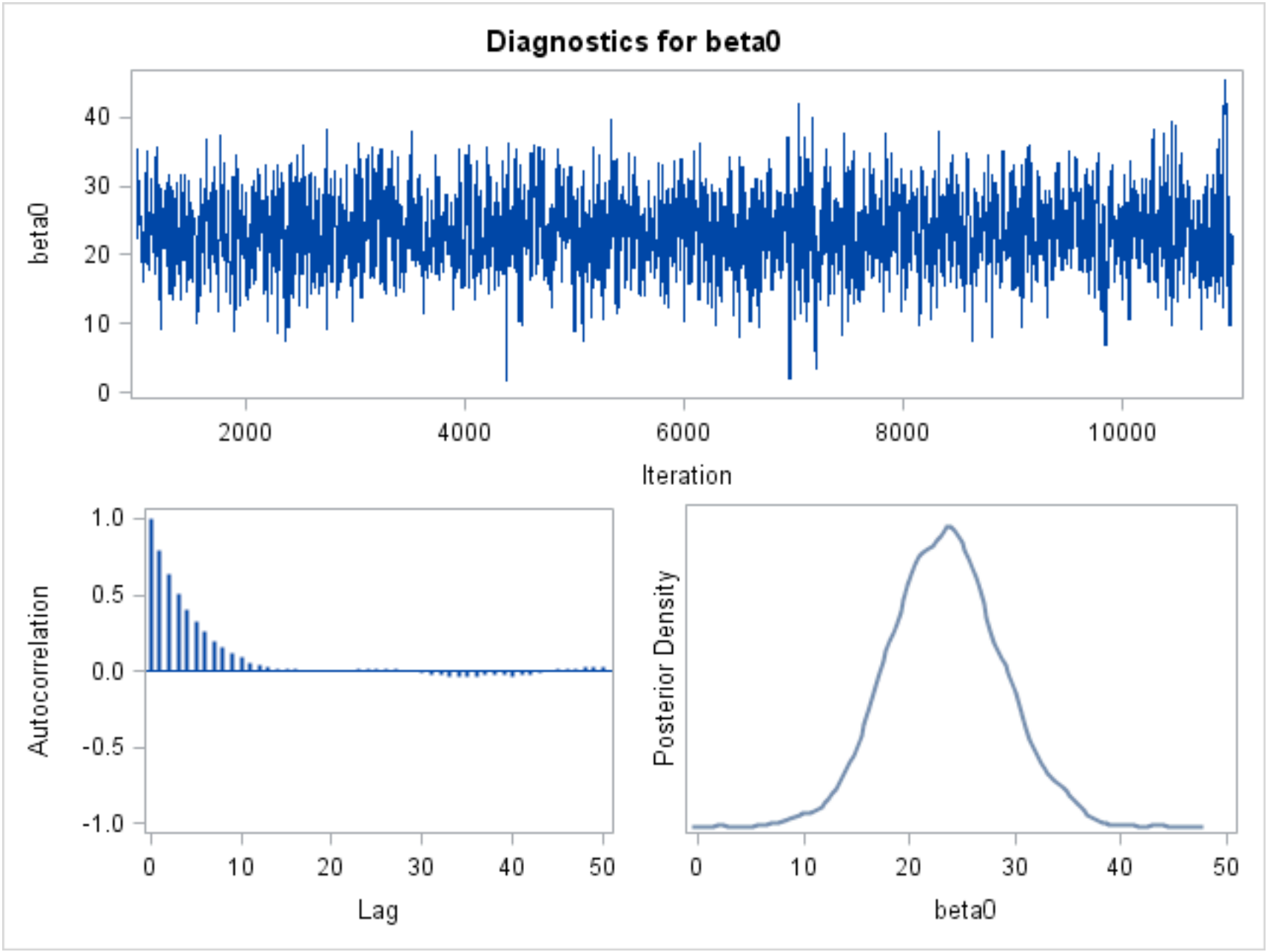
The MCMC Procedure

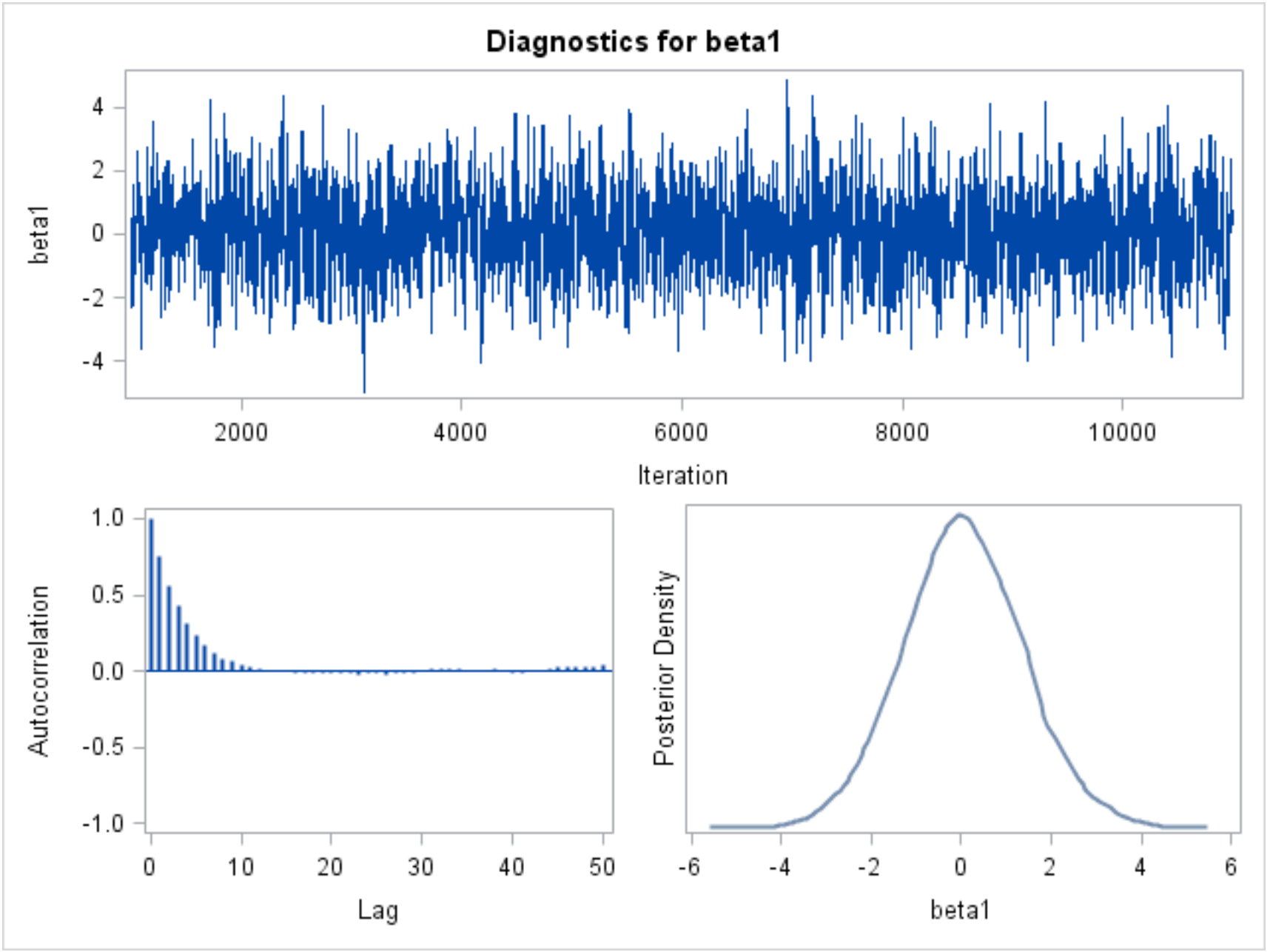
Effective Sample Sizes

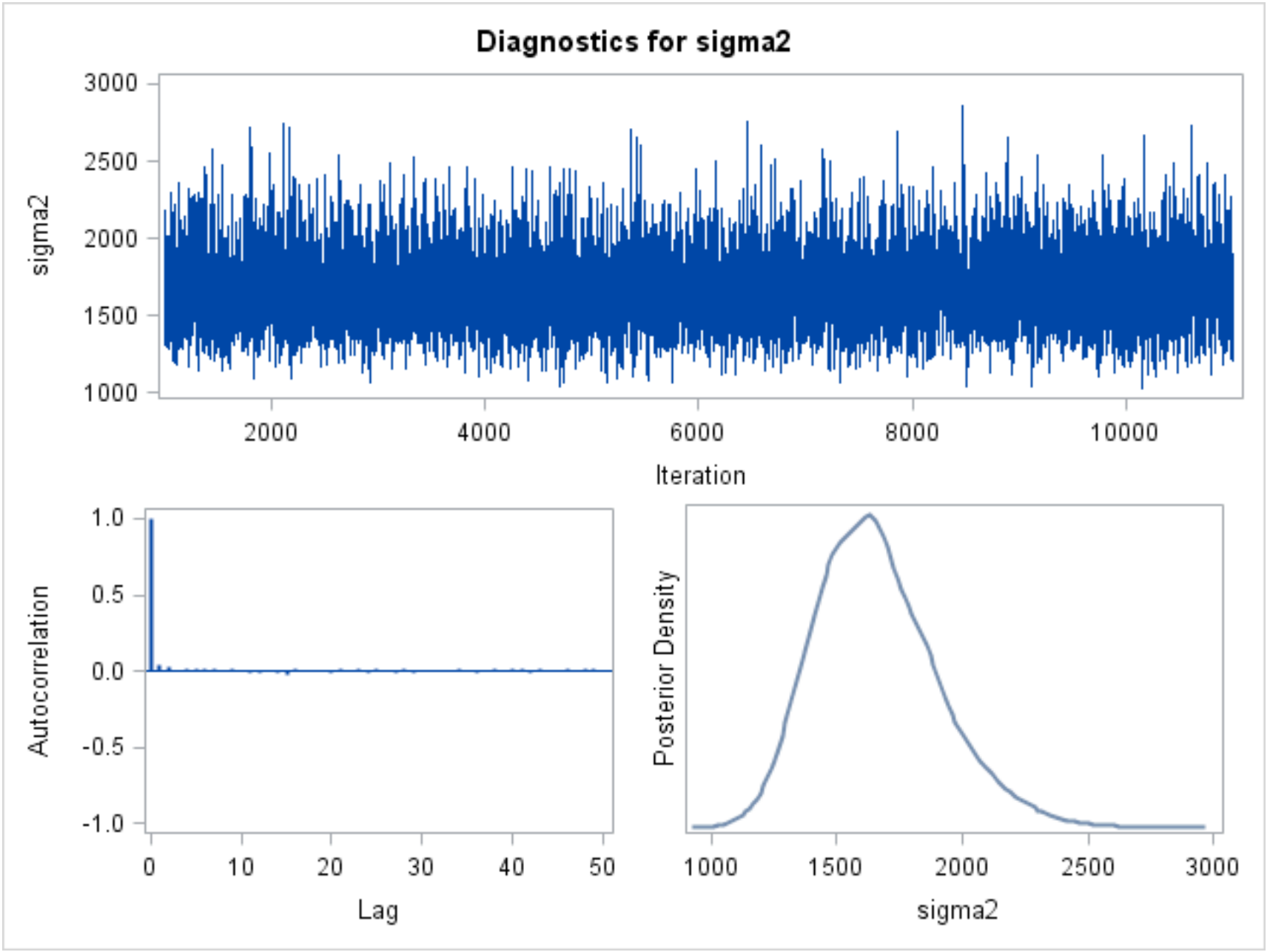
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1200.4	8.3307	0.1200
beta1	1505.3	6.6432	0.1505
sigma2	8787.5	1.1380	0.8787

PSA and hyperplasia

The MCMC Procedure


Diagnostics for beta0
beta0
40
30
20
10
0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0
10
20
30
40
50
beta0


Diagnostics for beta1
beta1
4
2
0
-2
-4
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-6
-4
-2
0
2
4
6
beta1


Diagnostics for sigma2
sigma2
3000
2500
2000
1500
1000
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1000
1500
2000
2500
3000
sigma2

PSA and capsular penetration

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	10.3710	4.0526	1.9388	17.8484
beta1	10000	5.9263	0.9056	4.2444	7.8151
sigma2	10000	1158.8	168.8	853.8	1501.8

PSA and capsular penetration

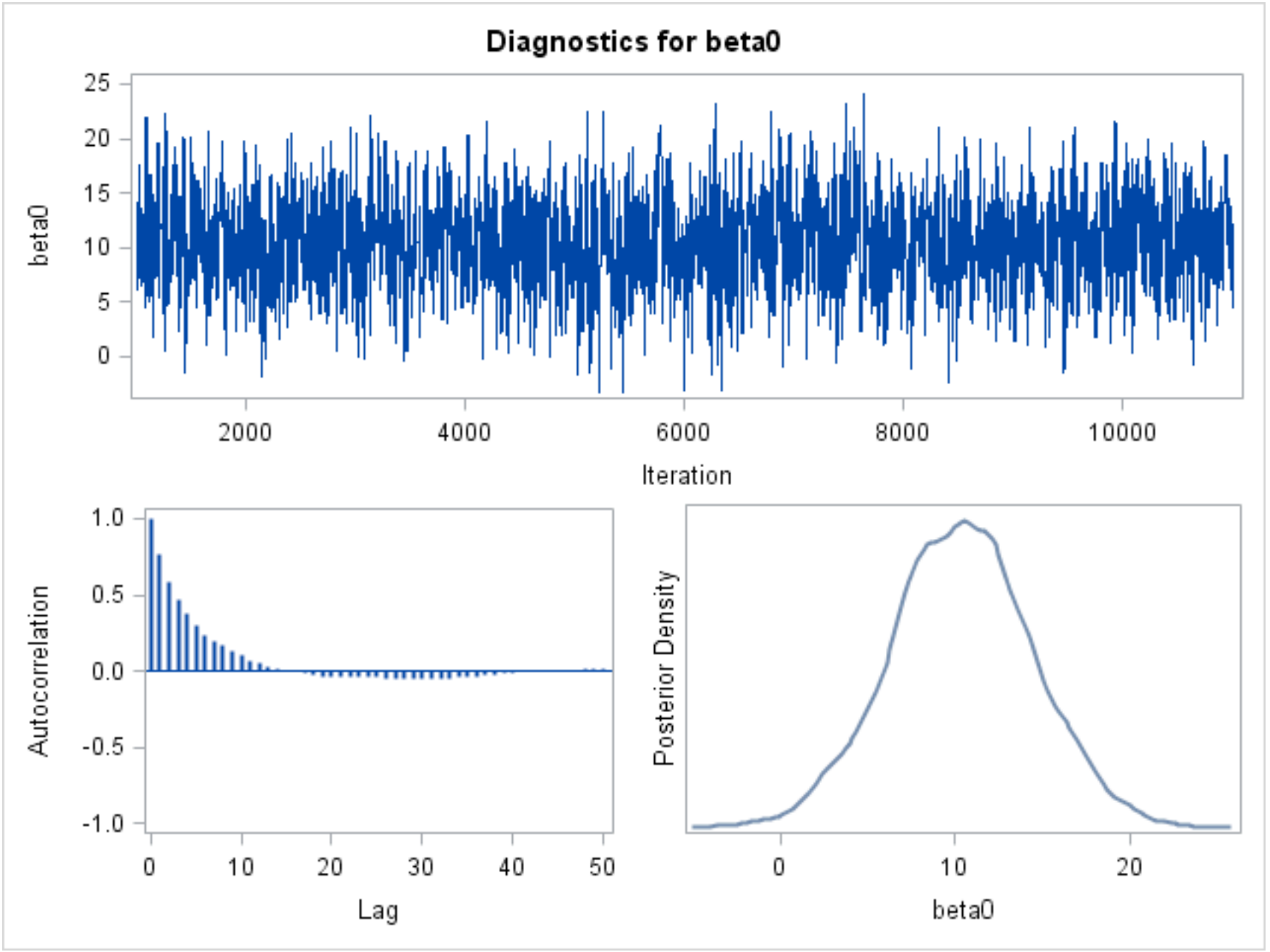
The MCMC Procedure

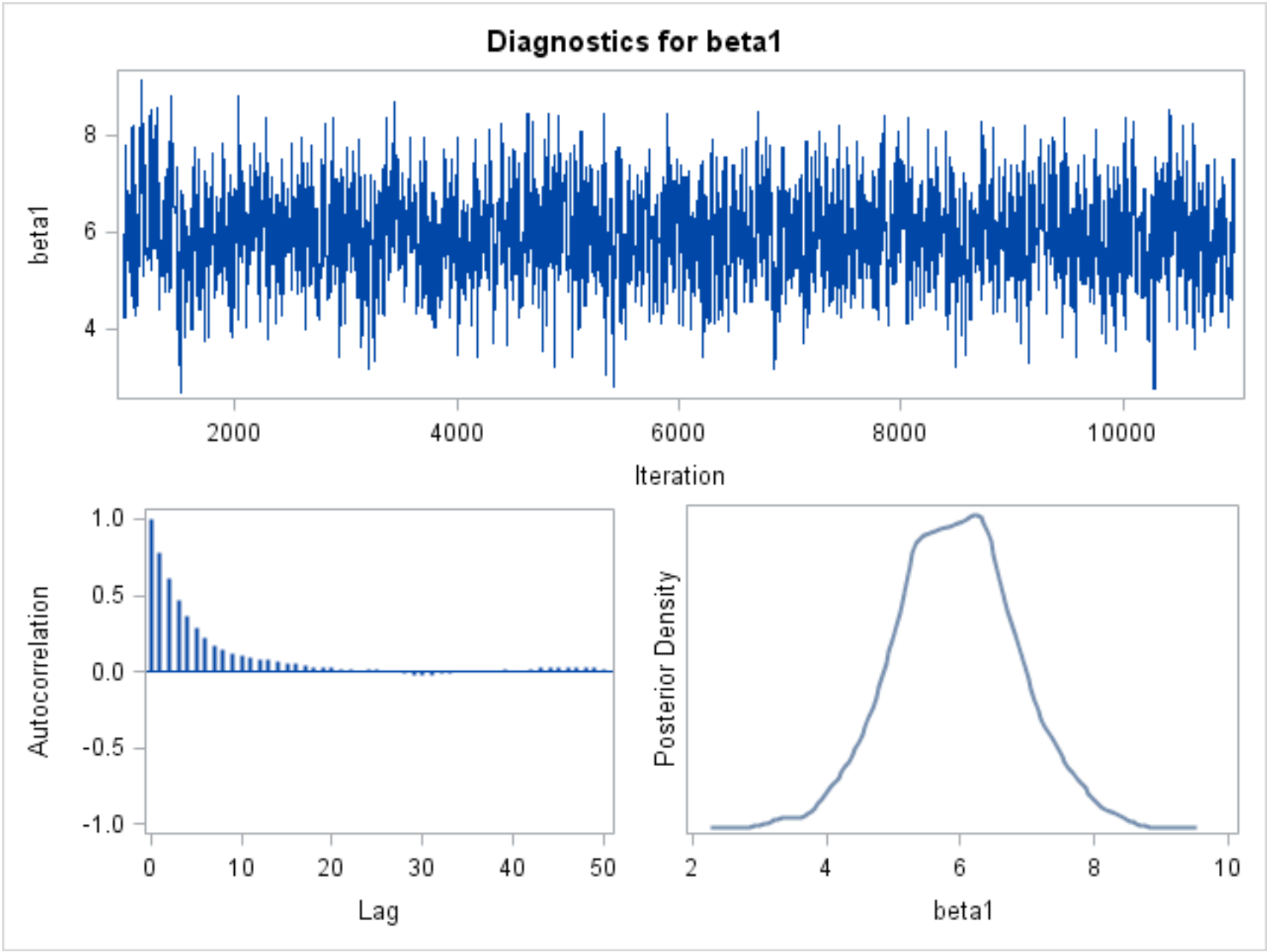
Effective Sample Sizes

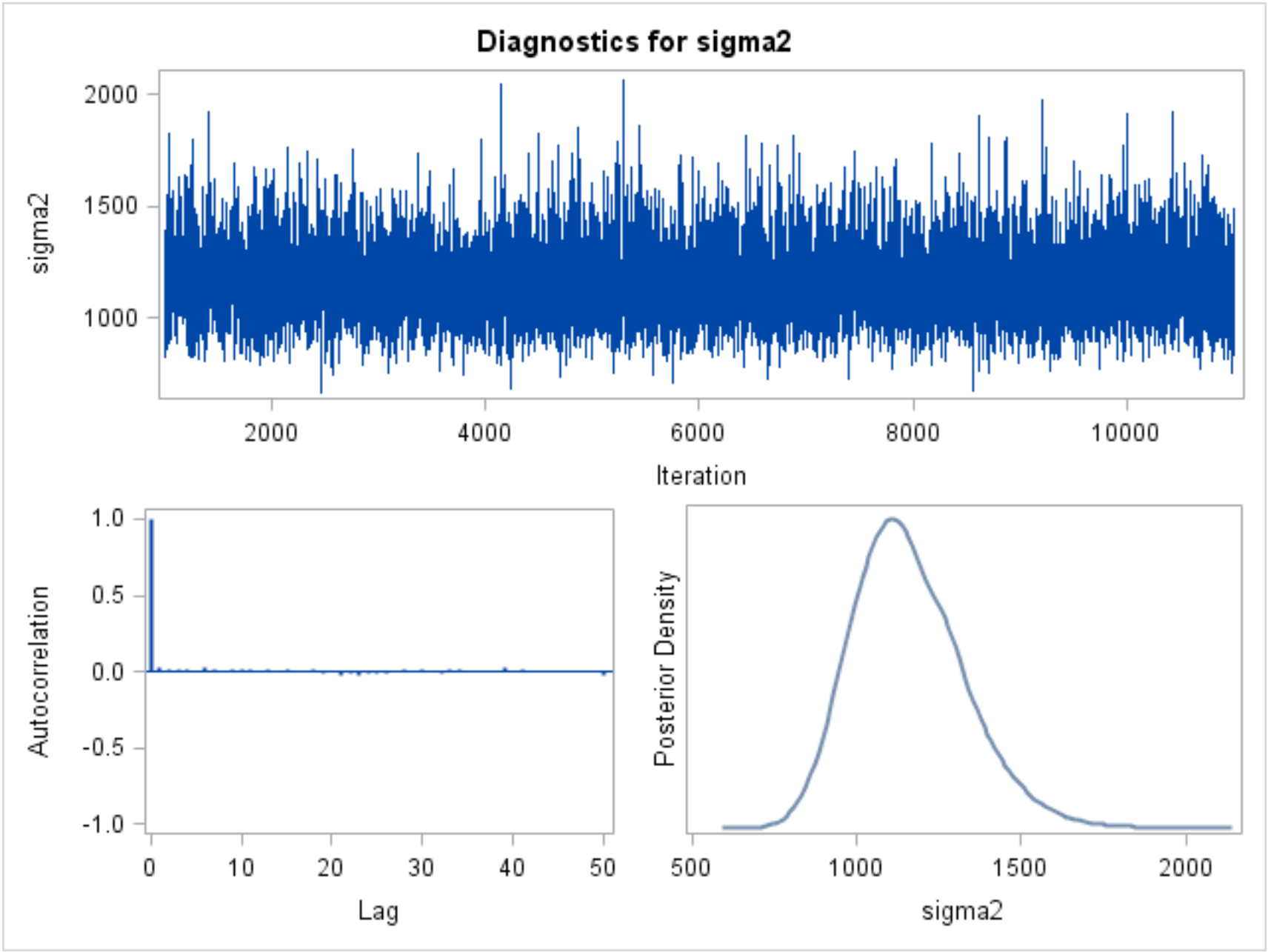
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1255.9	7.9623	0.1256
beta1	1155.5	8.6541	0.1156
sigma2	8891.7	1.1246	0.8892

PSA and capsular penetration

The MCMC Procedure


Diagnostics for beta0
beta0
25
20
15
10
5
0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0
10
20
beta0


Diagnostics for beta1
beta1
8
6
4
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
2
4
6
8
10
beta1


Diagnostics for sigma2
sigma2
2000
1500
1000
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
500
1000
1500
2000
sigma2

PSA and seminal vesical invasion (yes=1)

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

PSA and seminal vesical invasion (yes=1)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	13.0211	4.0007	4.6104	20.8787
beta1	10000	48.7043	8.6333	31.8729	66.0891
sigma2	10000	1198.8	173.9	884.5	1549.7

PSA and seminal vesical invasion (yes=1)

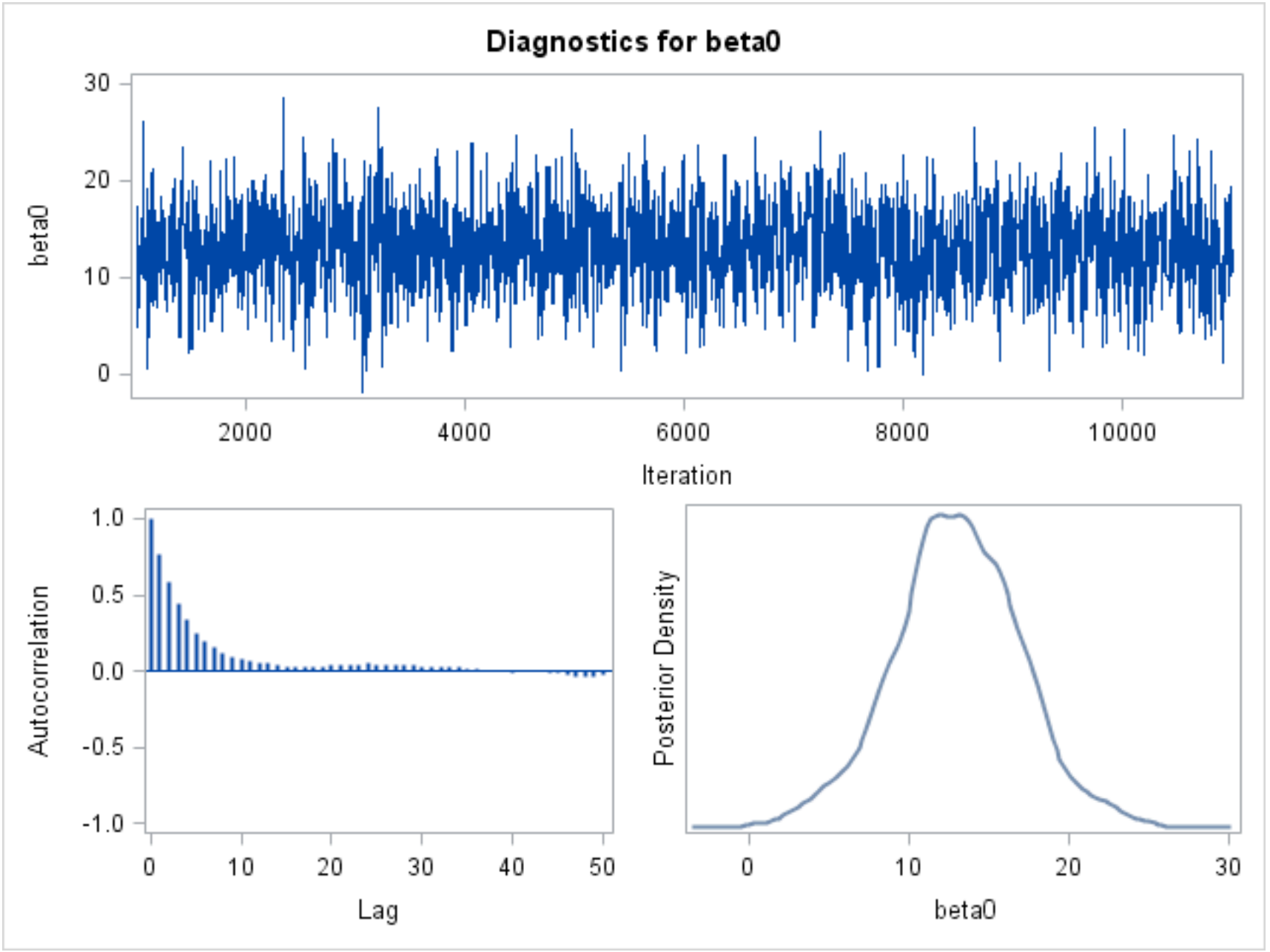
The MCMC Procedure

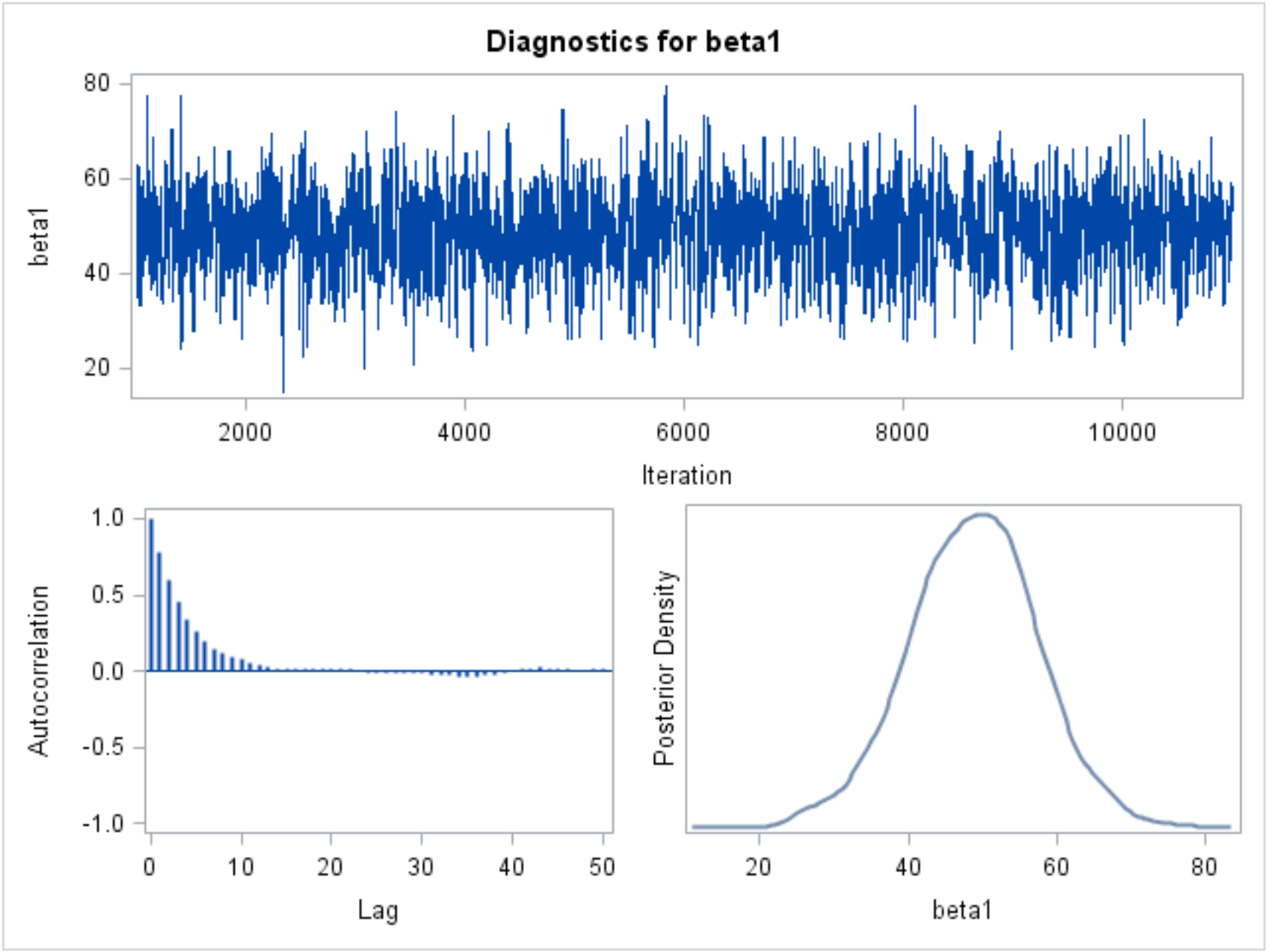
Effective Sample Sizes

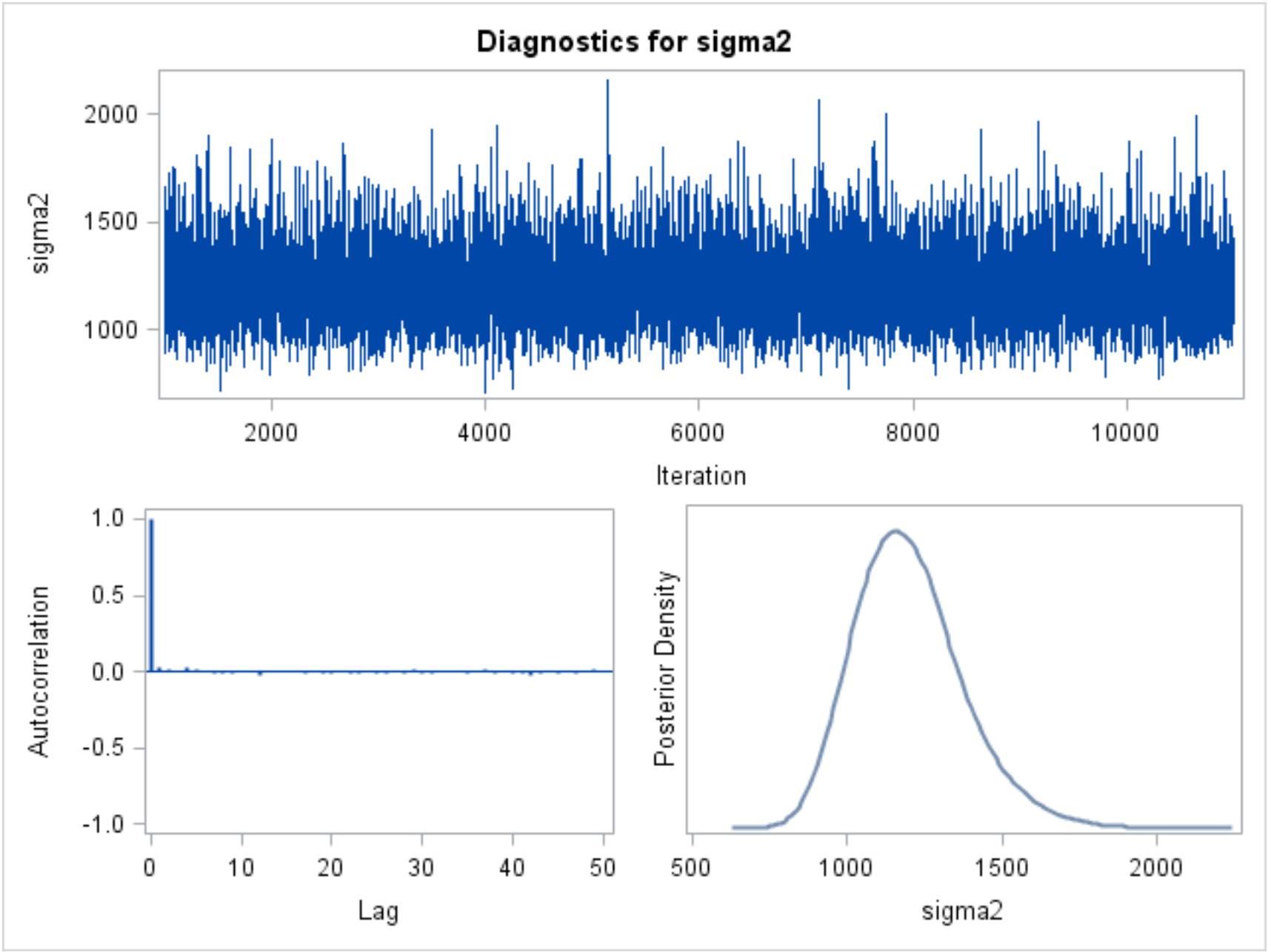
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1114.8	8.9703	0.1115
beta1	1351.7	7.3980	0.1352
sigma2	9282.5	1.0773	0.9282

PSA and seminal vesical invasion (yes=1)

The MCMC Procedure


Diagnostics for beta0
beta0
30
20
10
0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0
10
20
30
beta0


Diagnostics for beta1
beta1
80
60
40
20
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
20
40
60
80
beta1


Diagnostics for sigma2
sigma2
2000
1500
1000
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
500
1000
1500
2000
sigma2

PSA and gleason score

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
	beta2		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

PSA and gleason score

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	53.9910	7.3997	39.4733	68.1298
beta1	10000	-42.0018	9.6145	-60.6761	-23.7999
beta2	10000	-37.6856	9.2436	-55.6327	-19.4307
sigma2	10000	1274.1	189.5	933.8	1655.2

PSA and gleason score

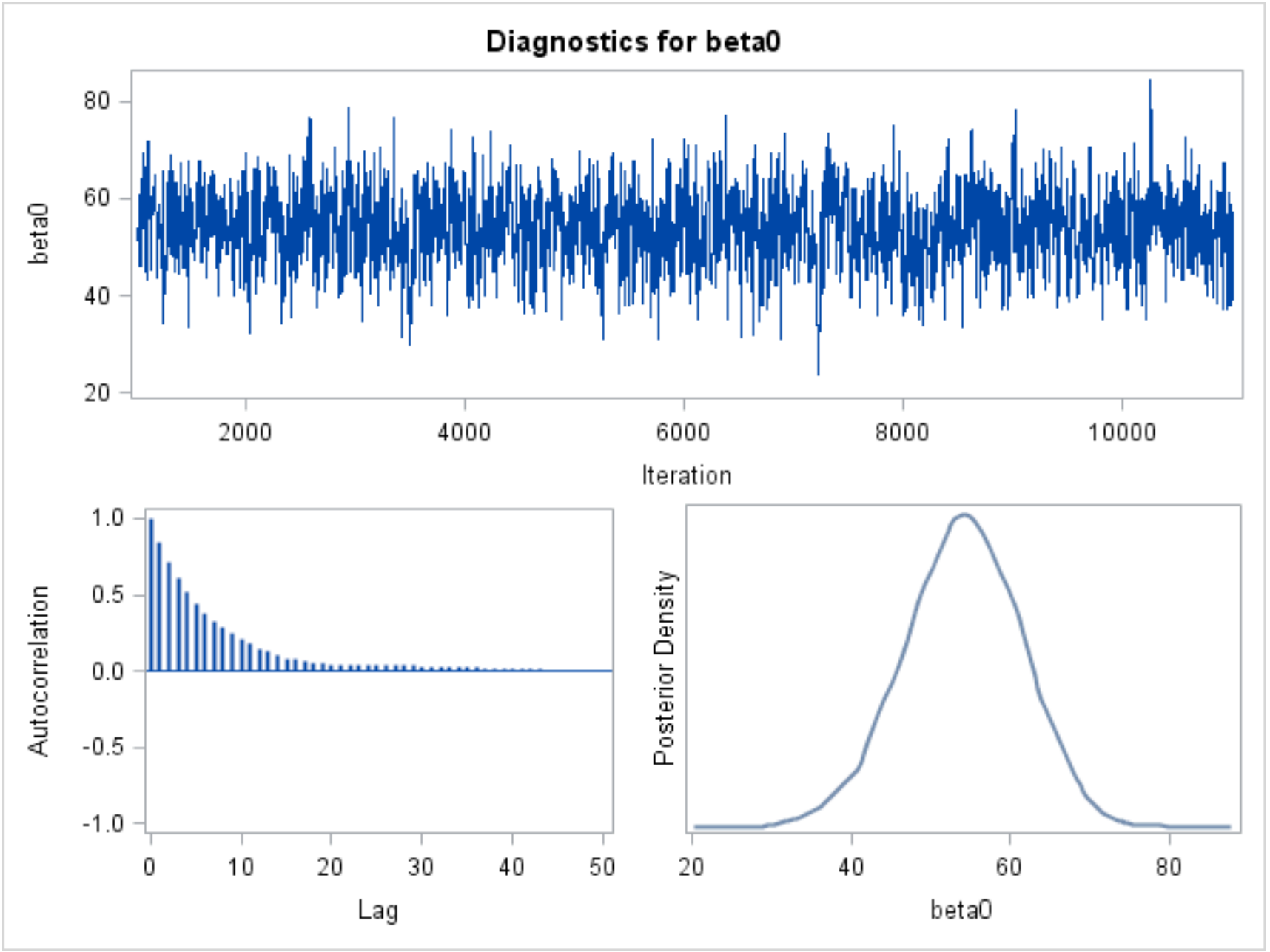
The MCMC Procedure

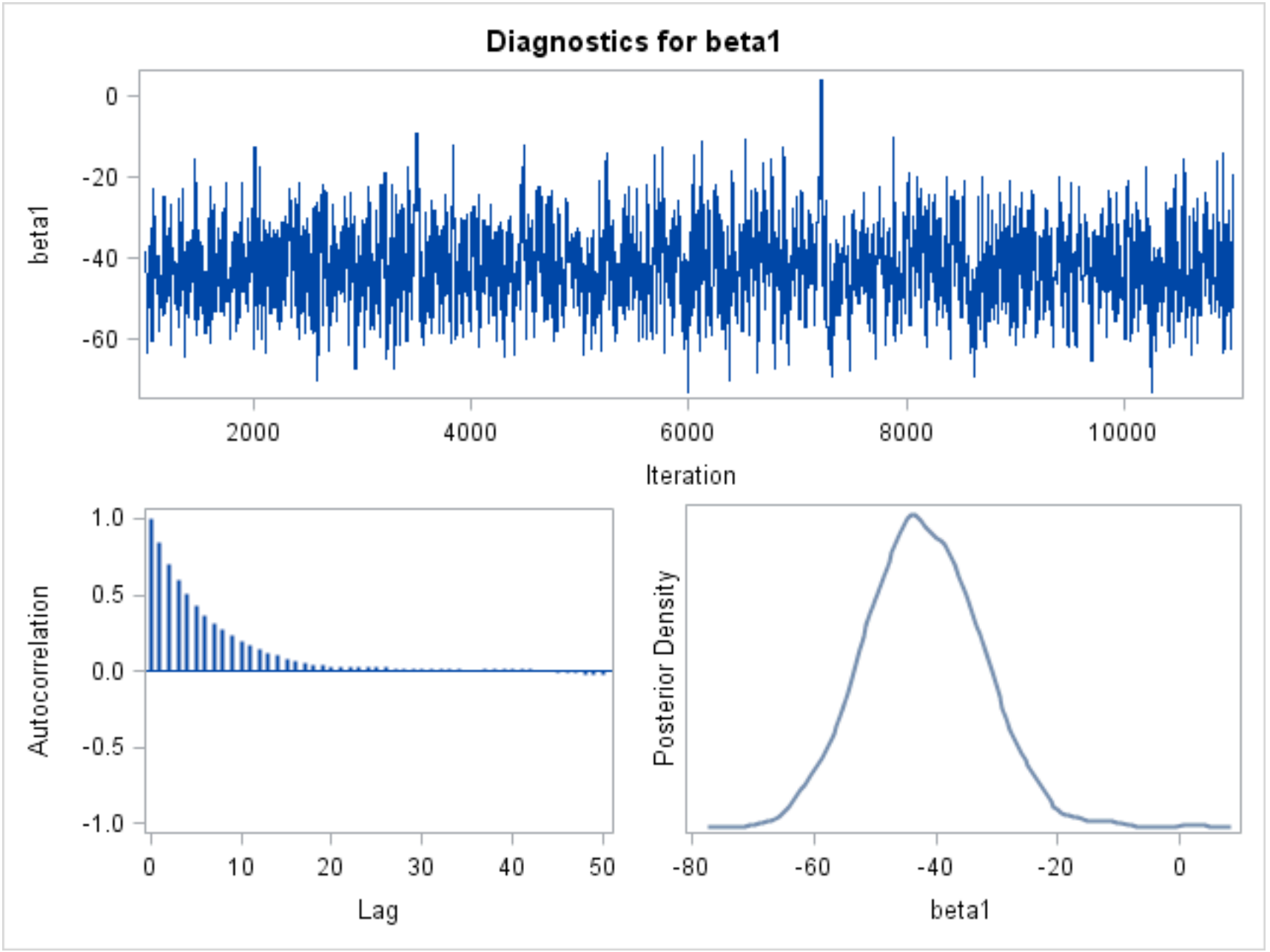
Effective Sample Sizes

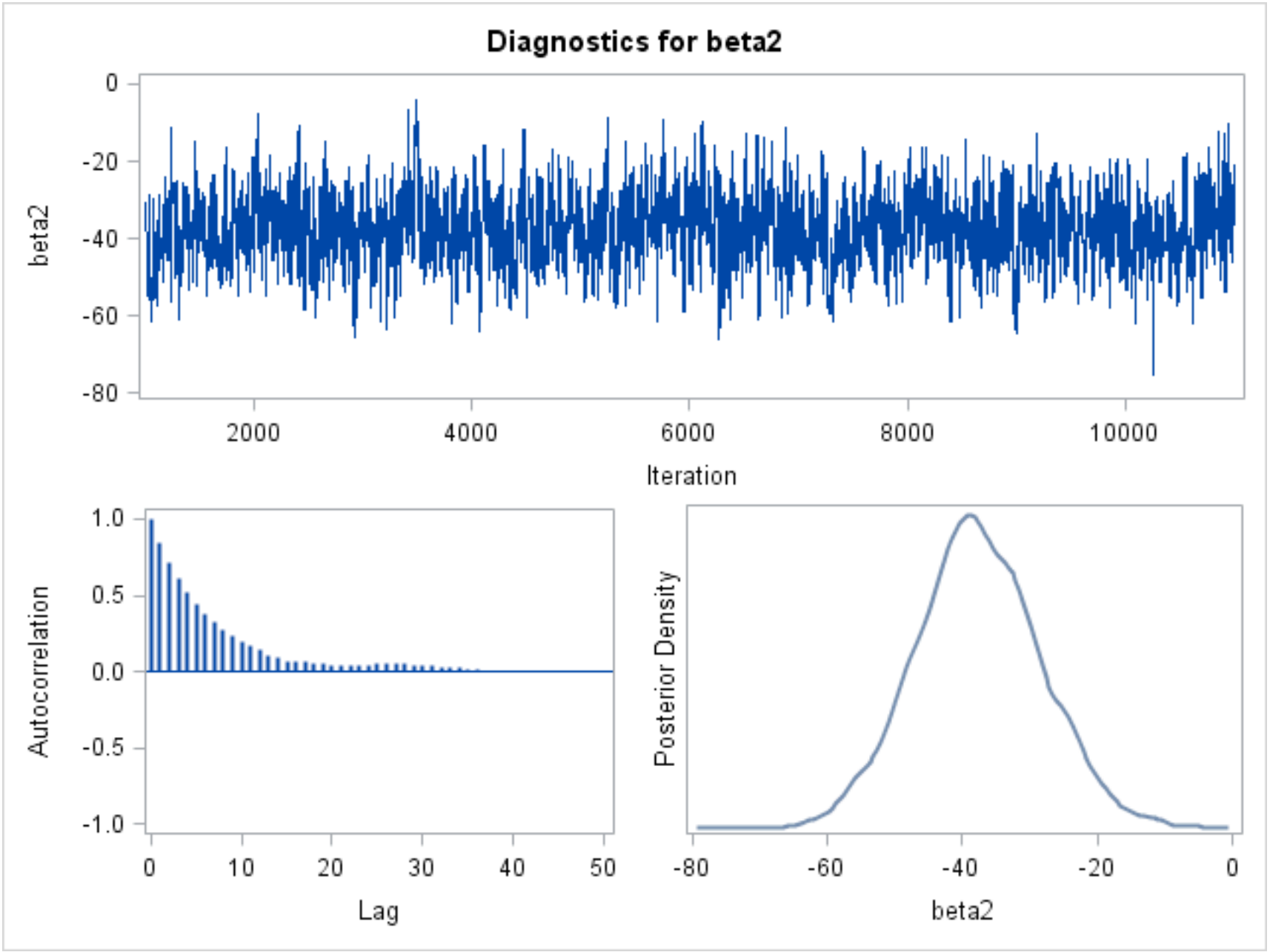
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	750.8	13.3194	0.0751
beta1	829.1	12.0619	0.0829
beta2	768.9	13.0057	0.0769
sigma2	5894.2	1.6966	0.5894

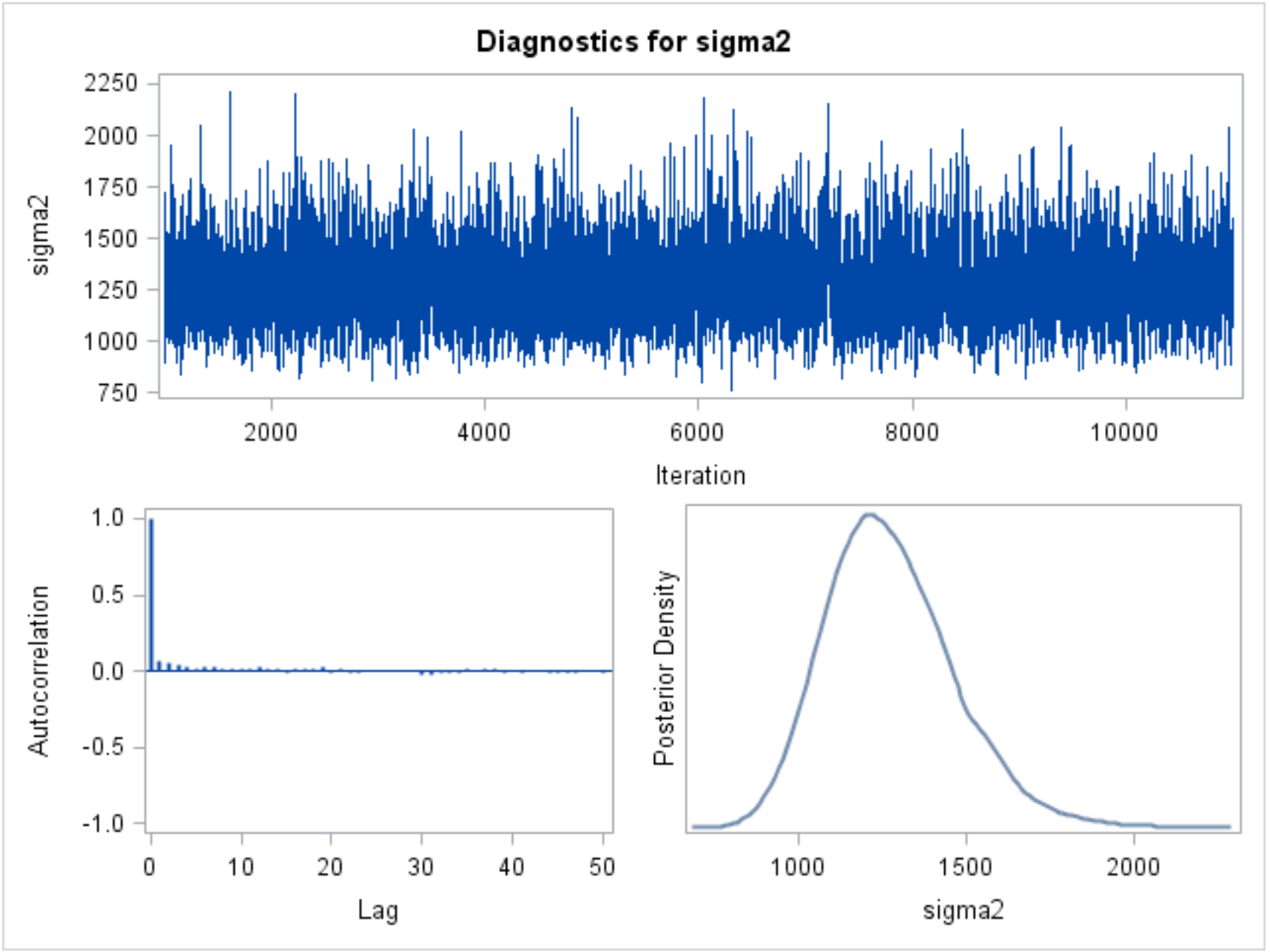
PSA and gleason score

The MCMC Procedure


Diagnostics for beta0
beta0
80
60
40
20
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
20
40
60
80
beta0


Diagnostics for beta1
beta1
0
-20
-40
-60
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-80
-60
-40
-20
0
beta1


Diagnostics for beta2
beta2
0
-20
-40
-60
-80
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-80
-60
-40
-20
0
beta2


Diagnostics for sigma2
sigma2
2250
2000
1750
1500
1250
1000
750
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1000
1500
2000
sigma2

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	1.8024	0.1191	1.5740	2.0351
beta1	10000	0.0962	0.0116	0.0723	0.1173
sigma2	10000	0.7767	0.1139	0.5726	1.0080

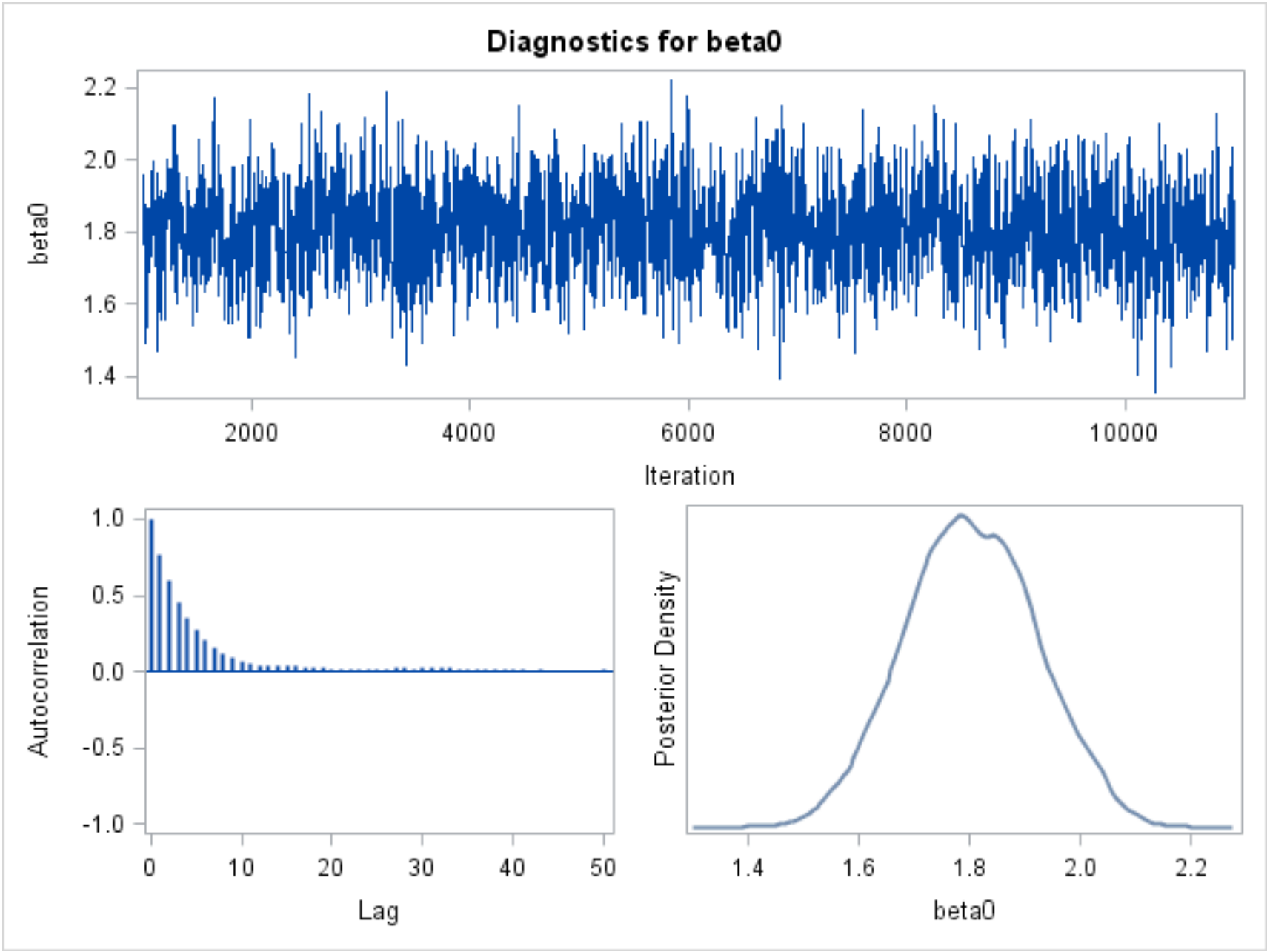
The MCMC Procedure

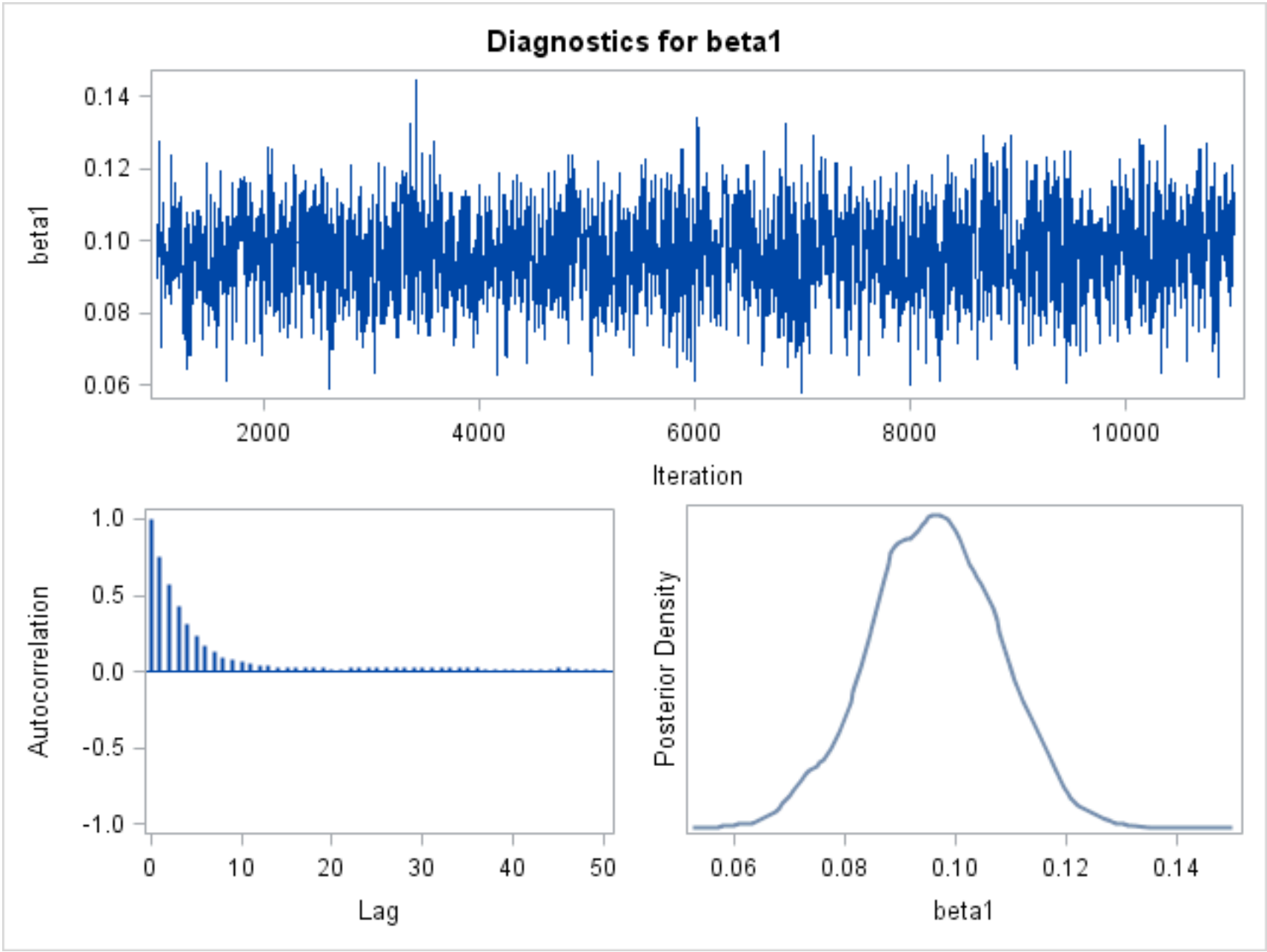
Effective Sample Sizes

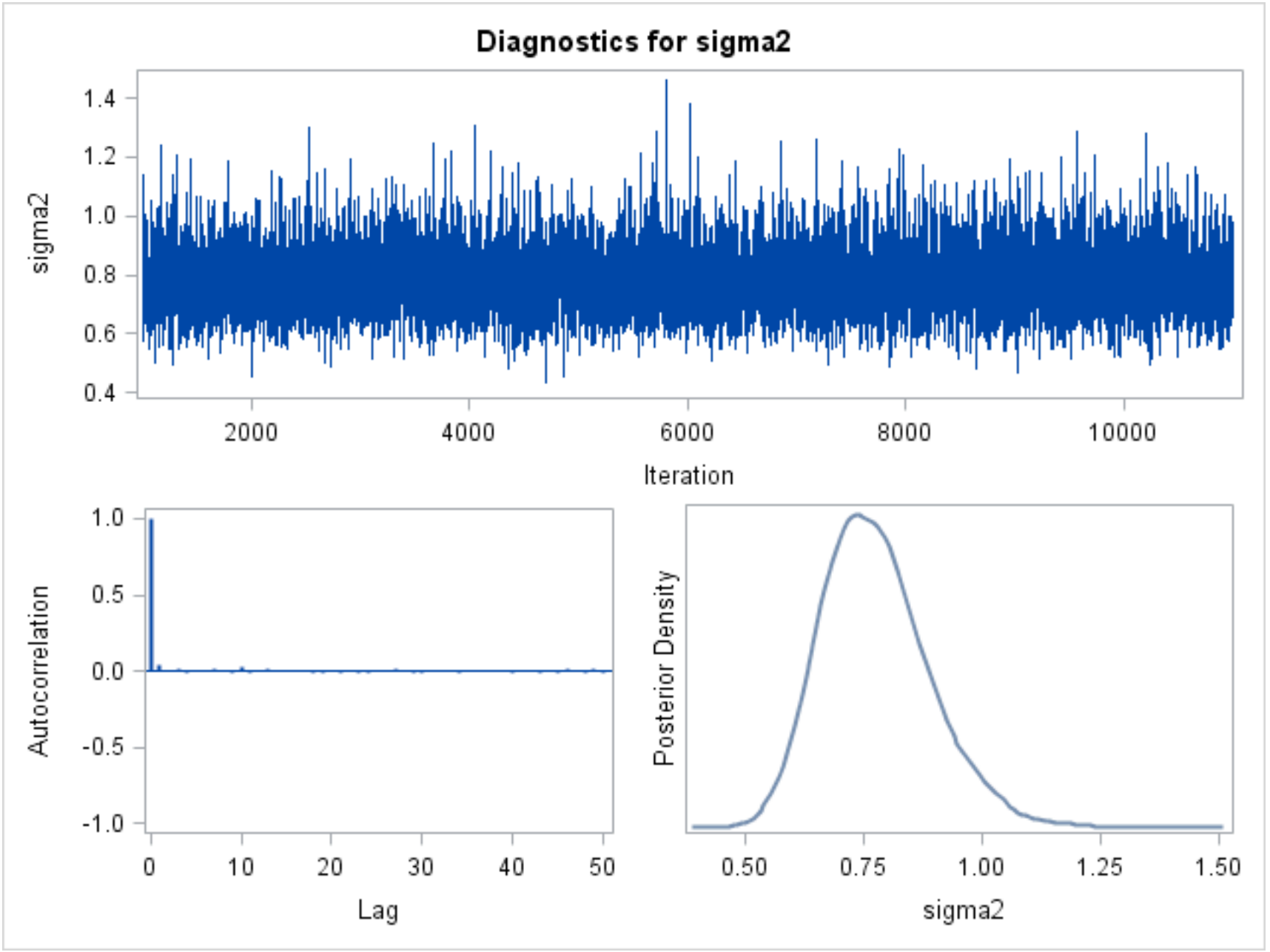
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1167.2	8.5675	0.1167
beta1	1132.3	8.8317	0.1132
sigma2	9288.5	1.0766	0.9288

Log PSA and Cancer Volume

The MCMC Procedure


Diagnostics for beta0
beta0
2.2
2.0
1.8
1.6
1.4
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.4
1.6
1.8
2.0
2.2
beta0


Diagnostics for beta1
beta1
0.14
0.12
0.10
0.08
0.06
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.06
0.08
0.10
0.12
0.14
beta1


Diagnostics for sigma2
sigma2
1.4
1.2
1.0
0.8
0.6
0.4
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.50
0.75
1.00
1.25
1.50
sigma2

Log PSA and weight

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

Log PSA and weight

The MCMC Procedure

Posterior Summaries and Intervals

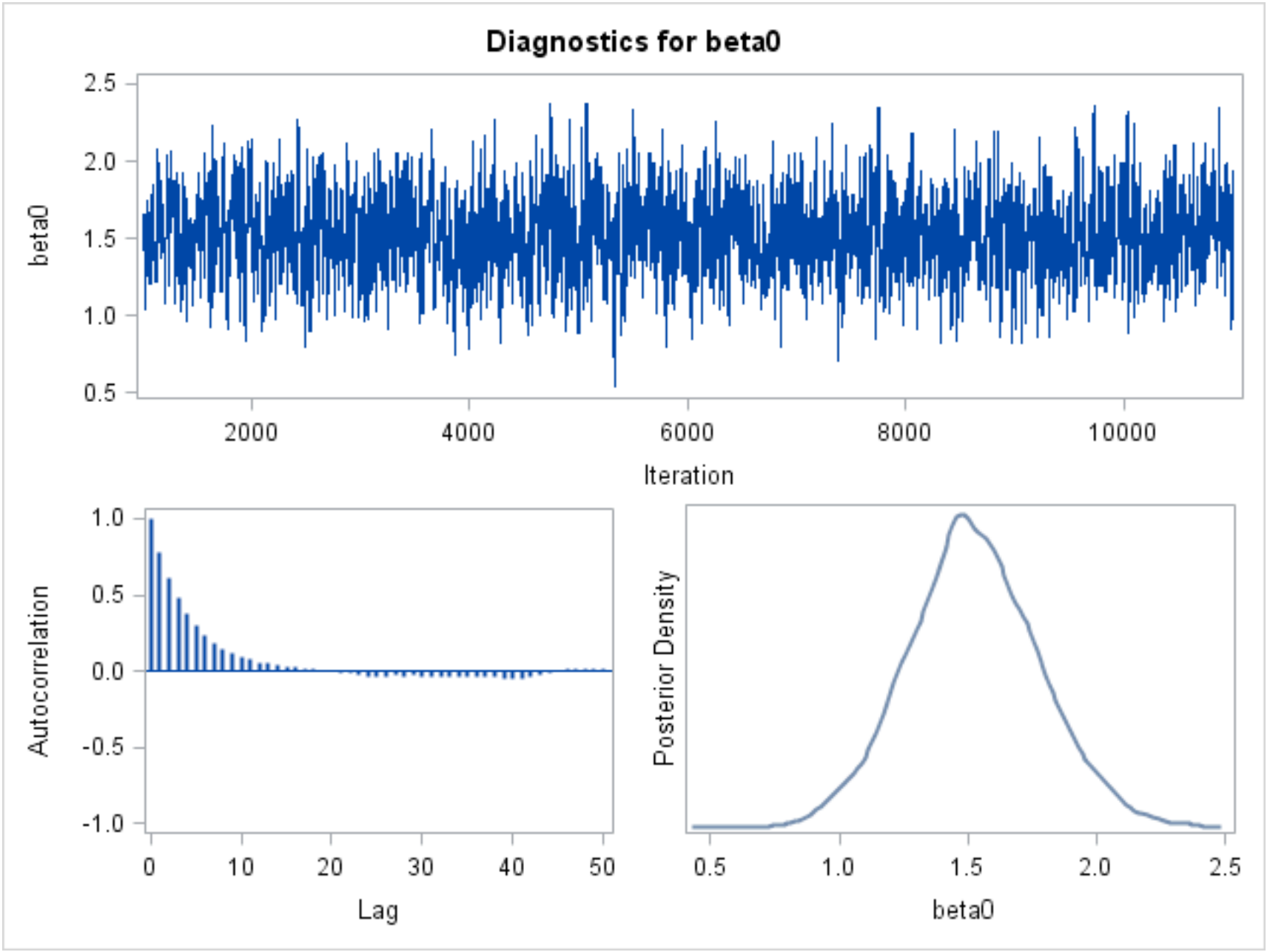
Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	1.5241	0.2543	1.0006	2.0092
beta1	10000	0.0233	0.00558	0.0122	0.0341
sigma2	10000	1.1539	0.1692	0.8284	1.4764

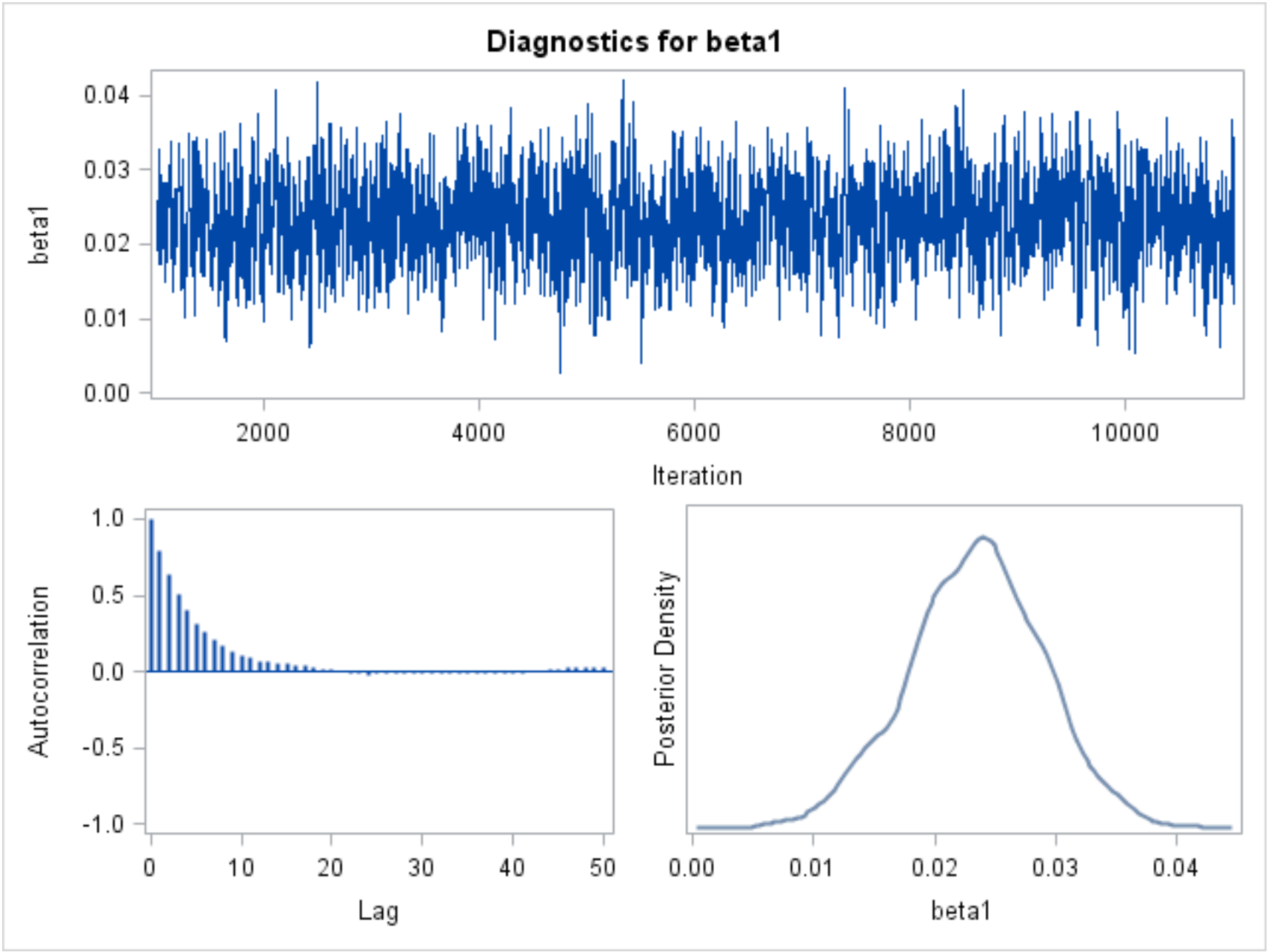
The MCMC Procedure

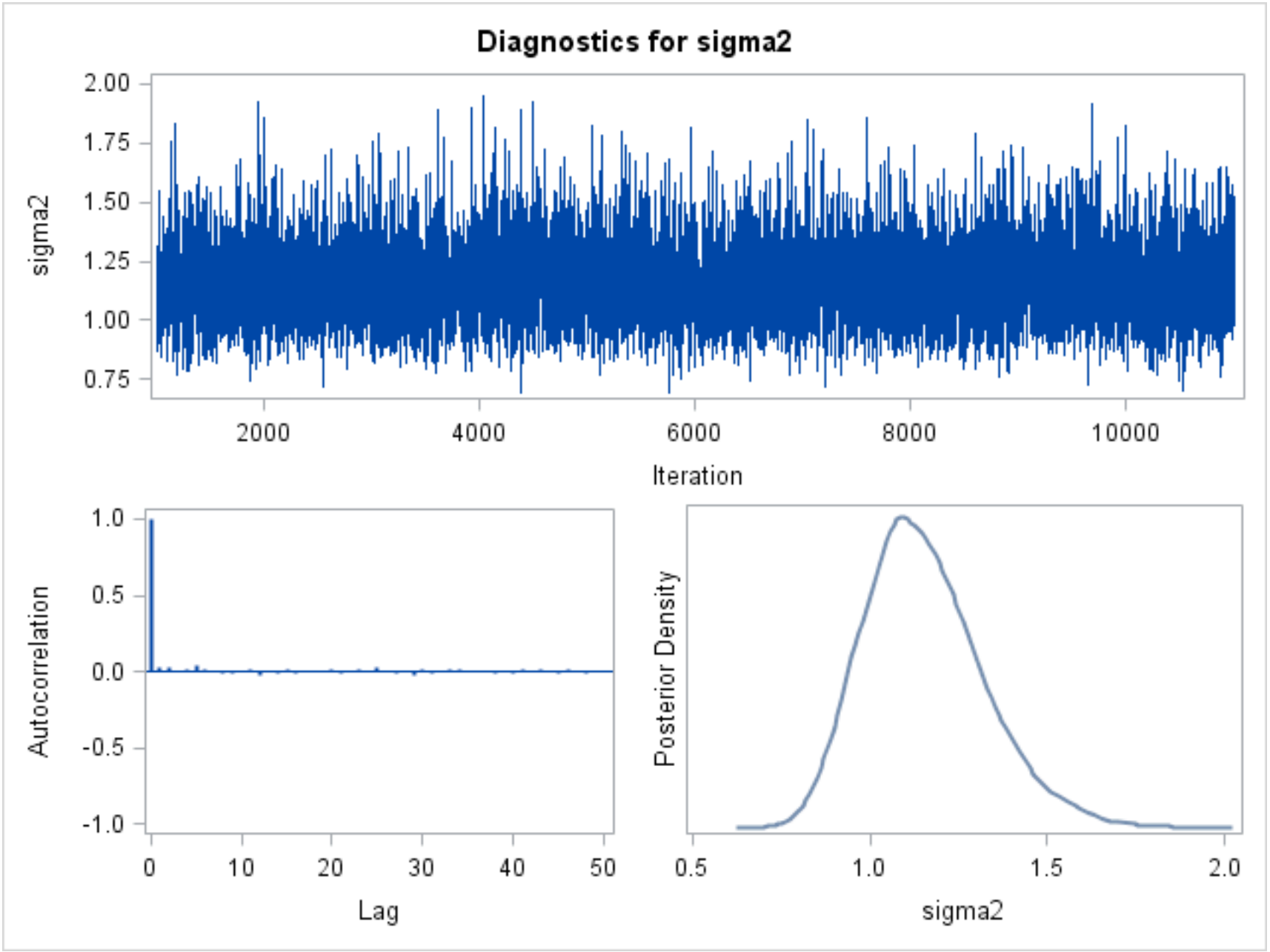
Effective Sample Sizes

Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1212.0	8.2507	0.1212
beta1	1118.8	8.9383	0.1119
sigma2	9134.5	1.0948	0.9134

Log PSA and weight


Diagnostics for beta0
beta0
2.5
2.0
1.5
1.0
0.5
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.5
1.0
1.5
2.0
2.5
beta0


Diagnostics for beta1
beta1
0.04
0.03
0.02
0.01
0.00
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.00
0.01
0.02
0.03
0.04
beta1


Diagnostics for sigma2
sigma2
2.00
1.75
1.50
1.25
1.00
0.75
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.5
1.0
1.5
2.0
sigma2

Log PSA and age

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

Log PSA and age

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	0.7720	1.0220	-1.2918	2.6199
beta1	10000	0.0269	0.0159	-0.00288	0.0580
sigma2	10000	1.3137	0.1918	0.9763	1.7087

Log PSA and age

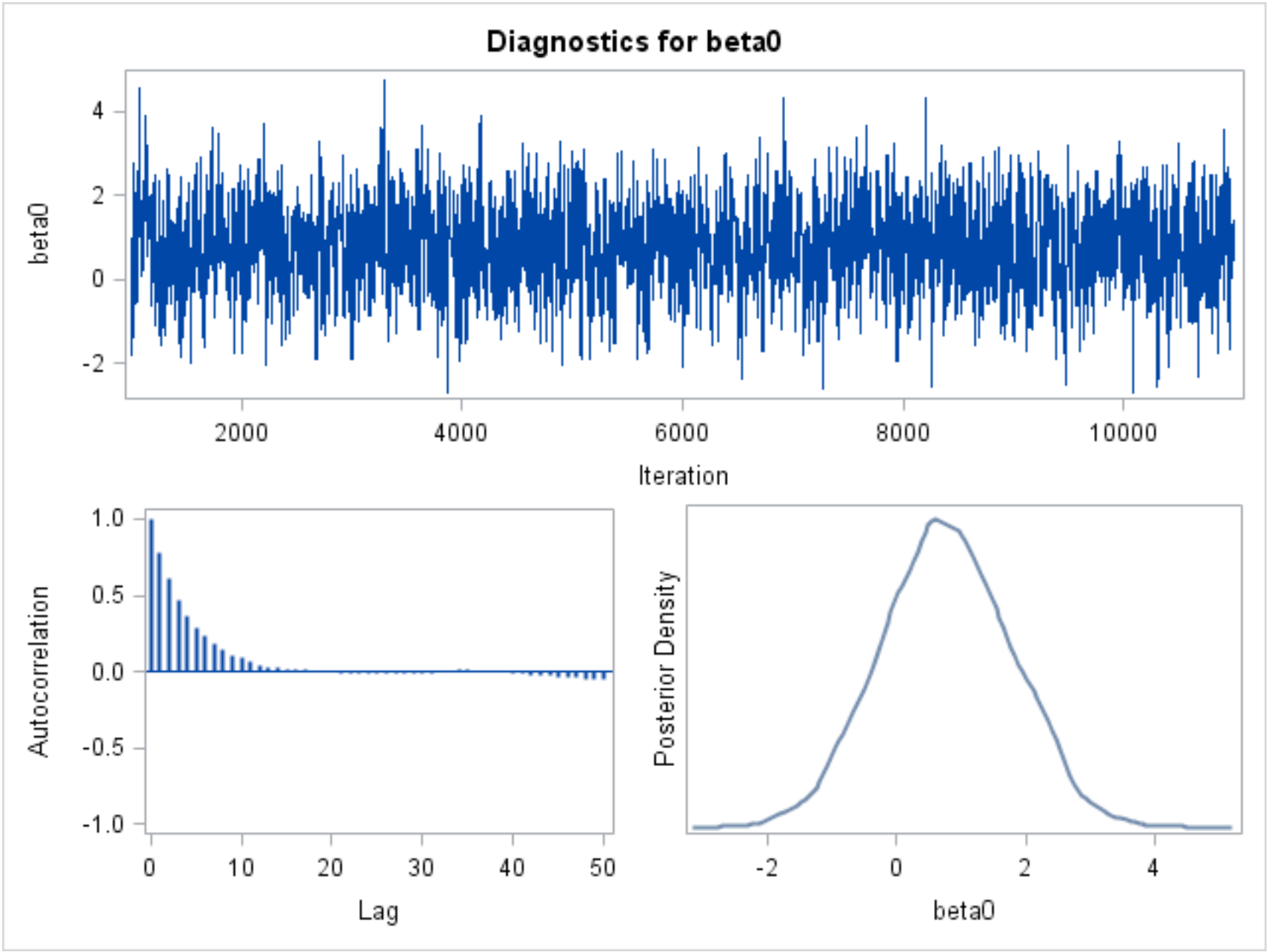
The MCMC Procedure

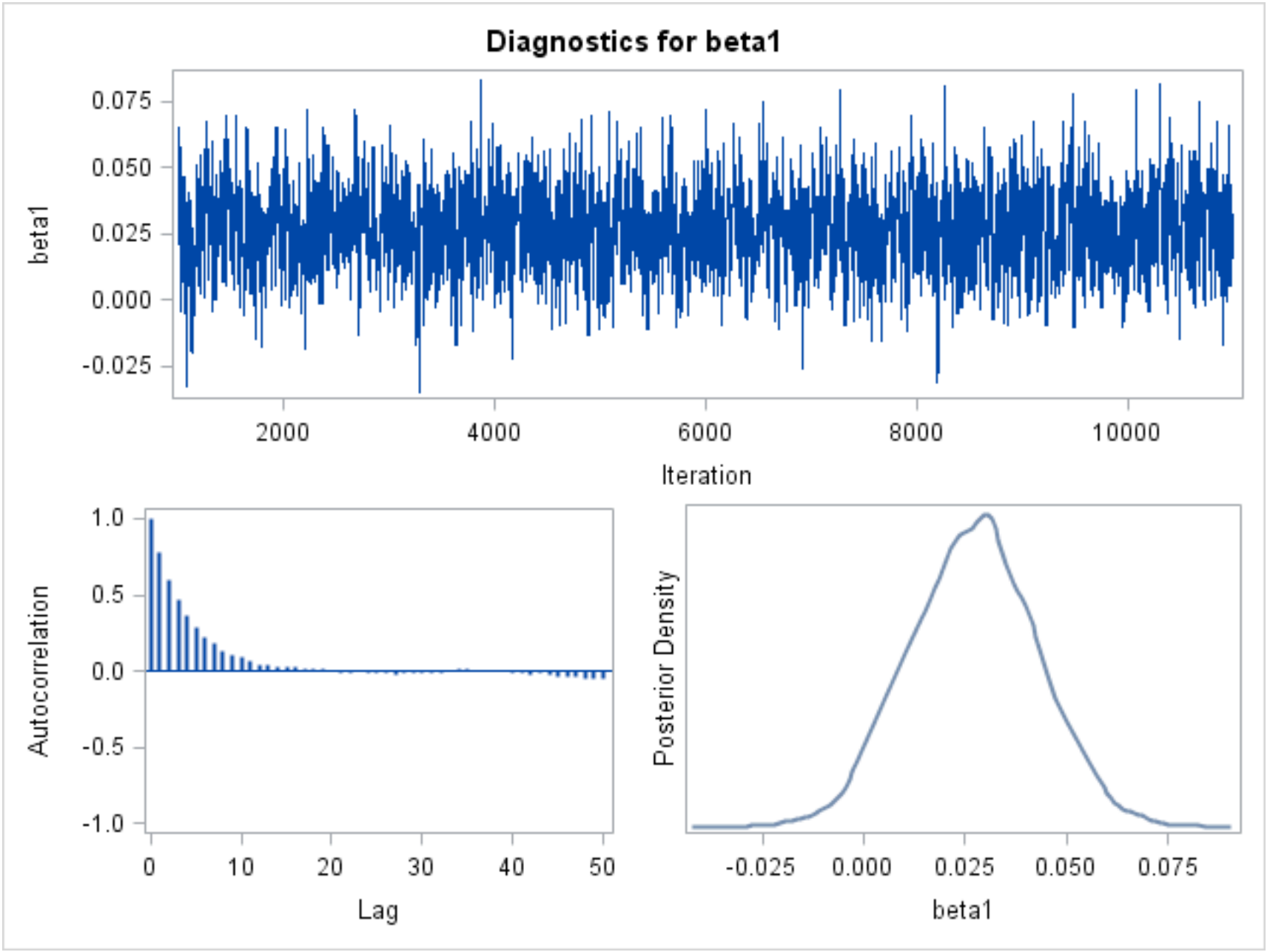
Effective Sample Sizes

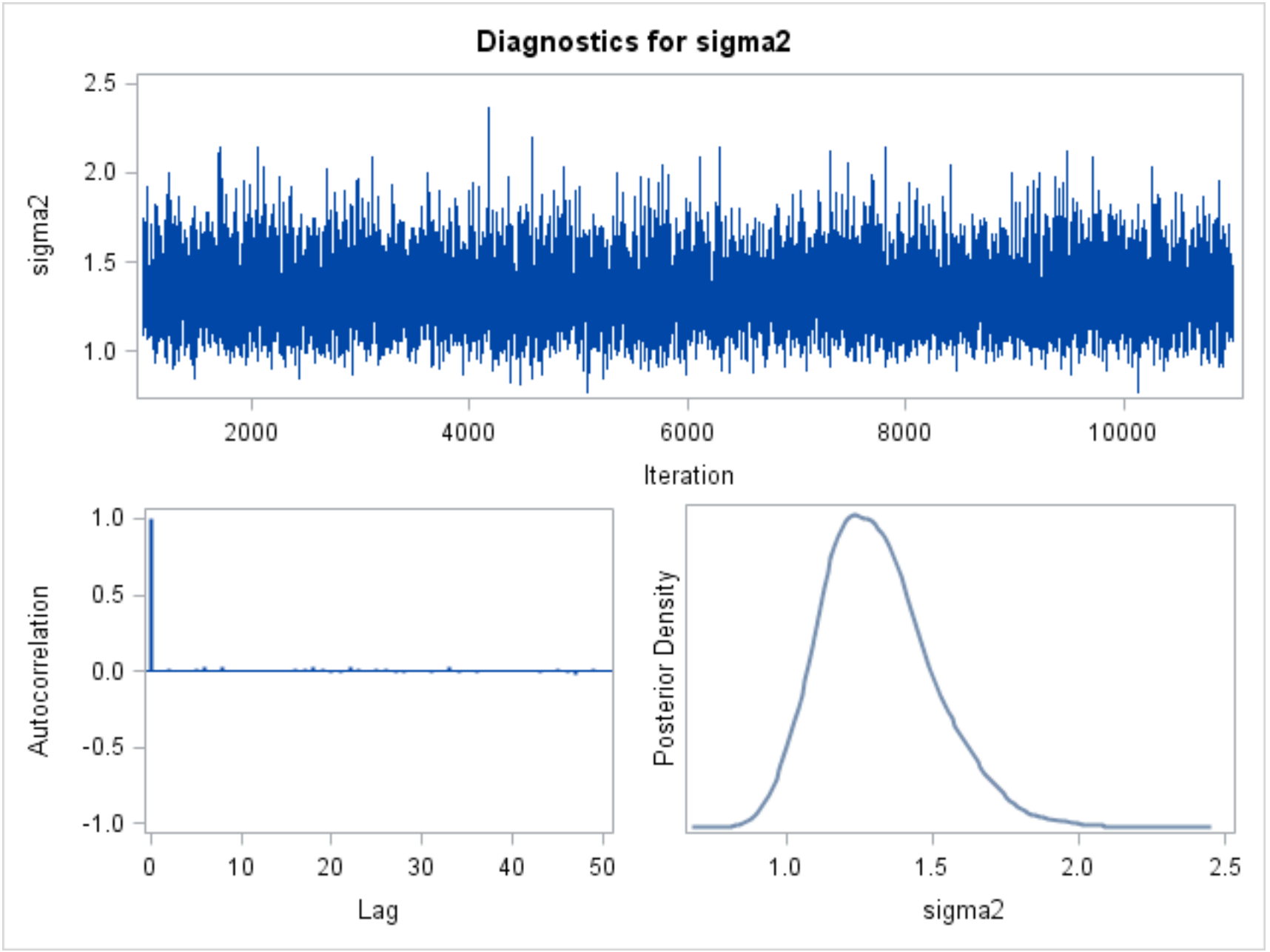
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1256.6	7.9577	0.1257
beta1	1254.0	7.9748	0.1254
sigma2	10000.0	1.0000	1.0000

Log PSA and age

The MCMC Procedure


Diagnostics for beta0
beta0
4
2
0
-2
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-2
0
2
4
beta0


Diagnostics for beta1
beta1
0.075
0.050
0.025
0.000
-0.025
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-0.025
0.000
0.025
0.050
0.075
beta1


Diagnostics for sigma2
sigma2
2.5
2.0
1.5
1.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.0
1.5
2.0
2.5
sigma2

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	2.3332	0.1519	2.0528	2.6361
beta1	10000	0.0597	0.0382	-0.0172	0.1319
sigma2	10000	1.3143	0.1903	0.9626	1.6981

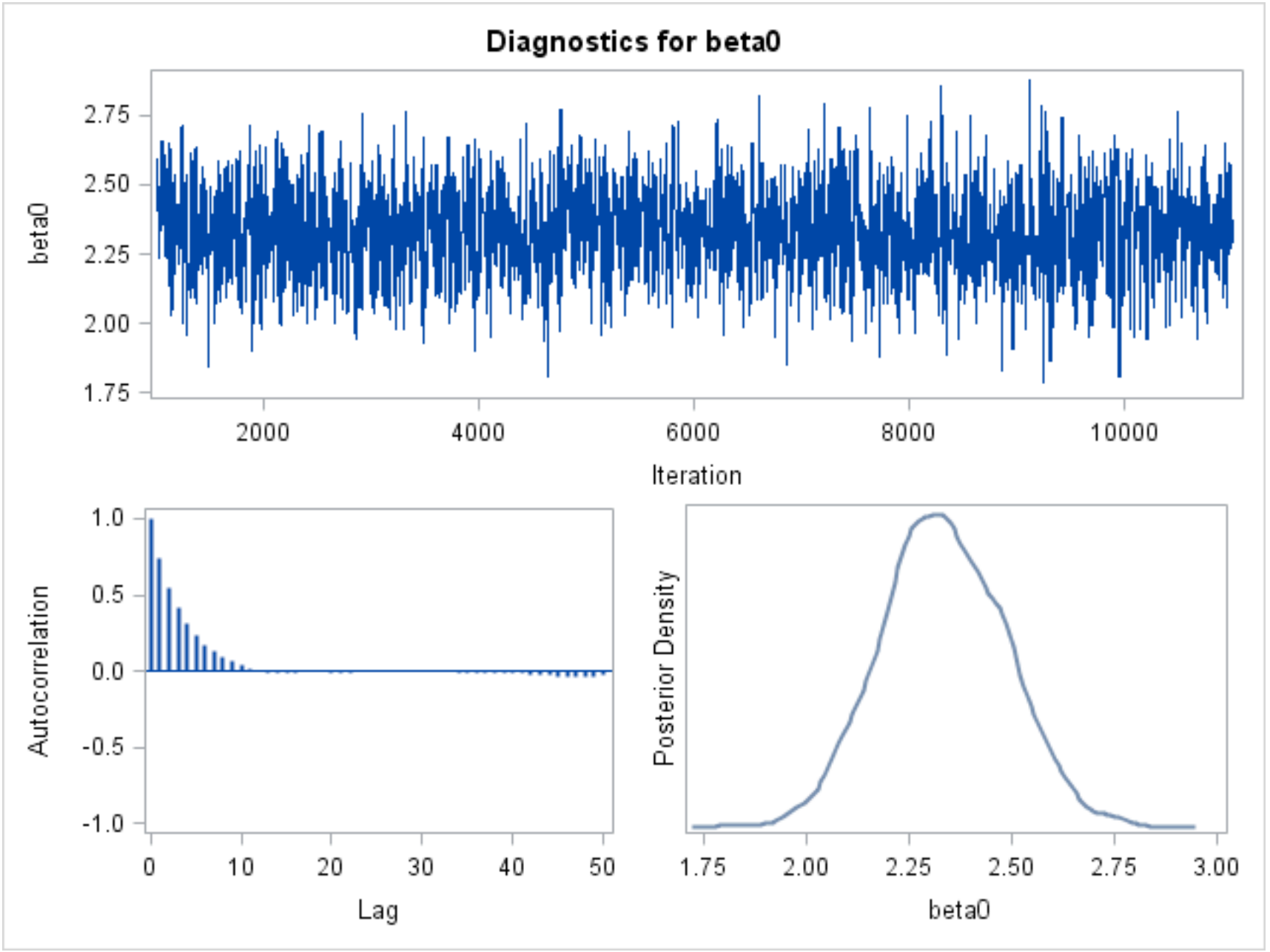
The MCMC Procedure

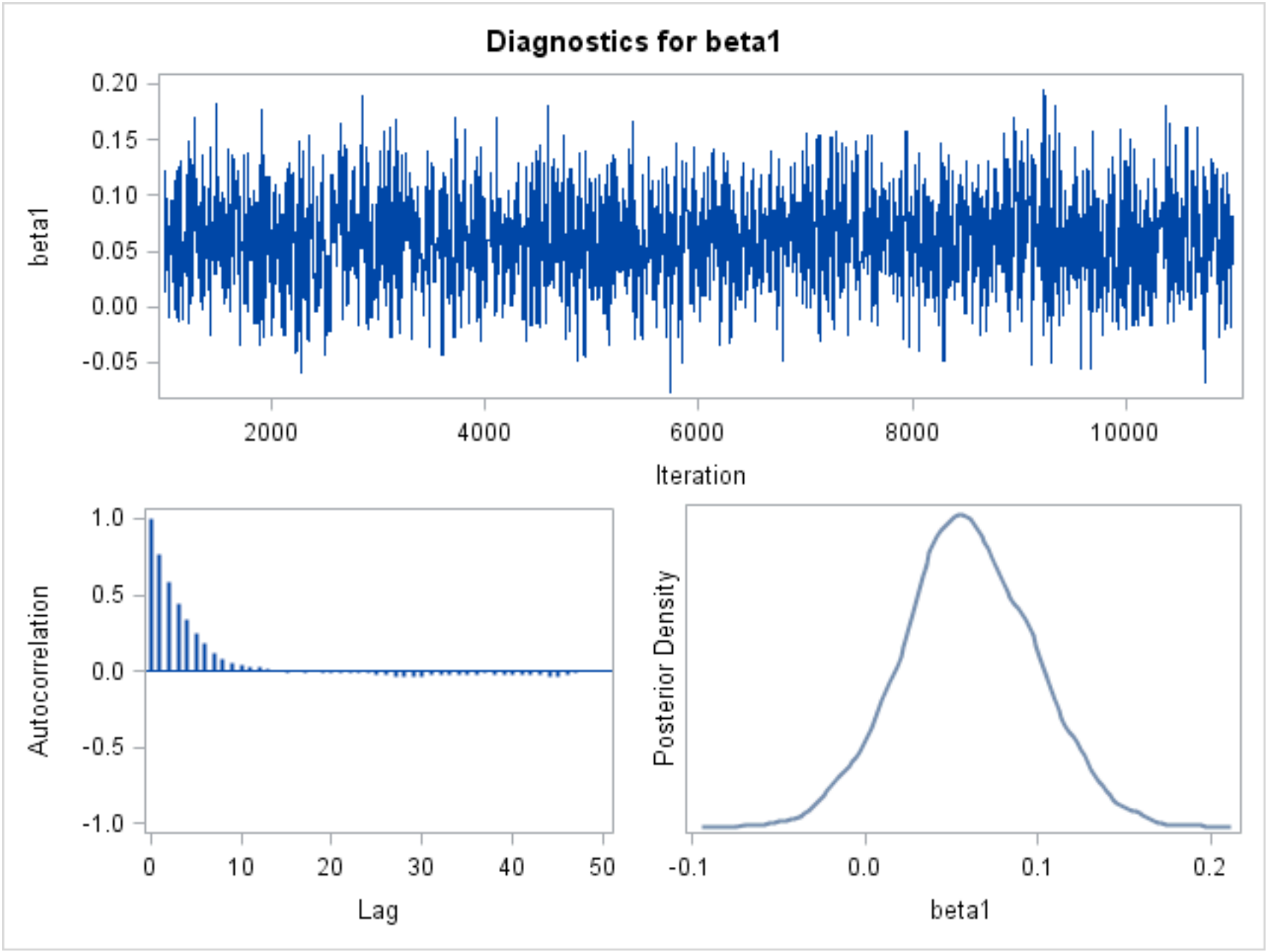
Effective Sample Sizes

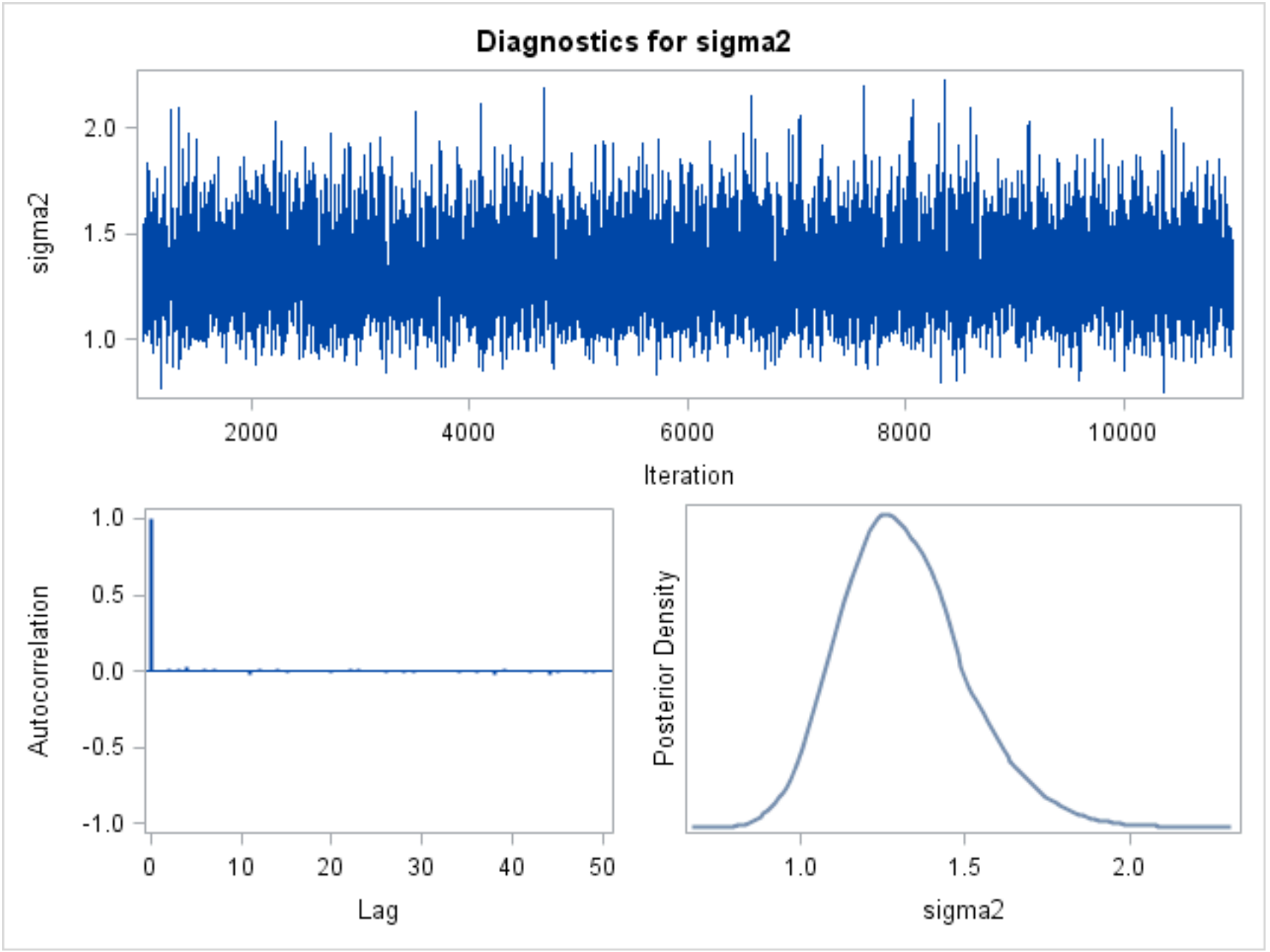
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1521.4	6.5729	0.1521
beta1	1454.7	6.8742	0.1455
sigma2	10000.0	1.0000	1.0000

Log PSA and hyperplasia

The MCMC Procedure


Diagnostics for beta0
beta0
2.75
2.50
2.25
2.00
1.75
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.75
2.00
2.25
2.50
2.75
3.00
beta0


Diagnostics for beta1
beta1
0.20
0.15
0.10
0.05
0.00
-0.05
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-0.1
0.0
0.1
0.2
beta1


Diagnostics for sigma2
sigma2
2.0
1.5
1.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.0
1.5
2.0
sigma2

Log PSA and capsular penetration

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

The MCMC Procedure

Posterior Summaries and Intervals

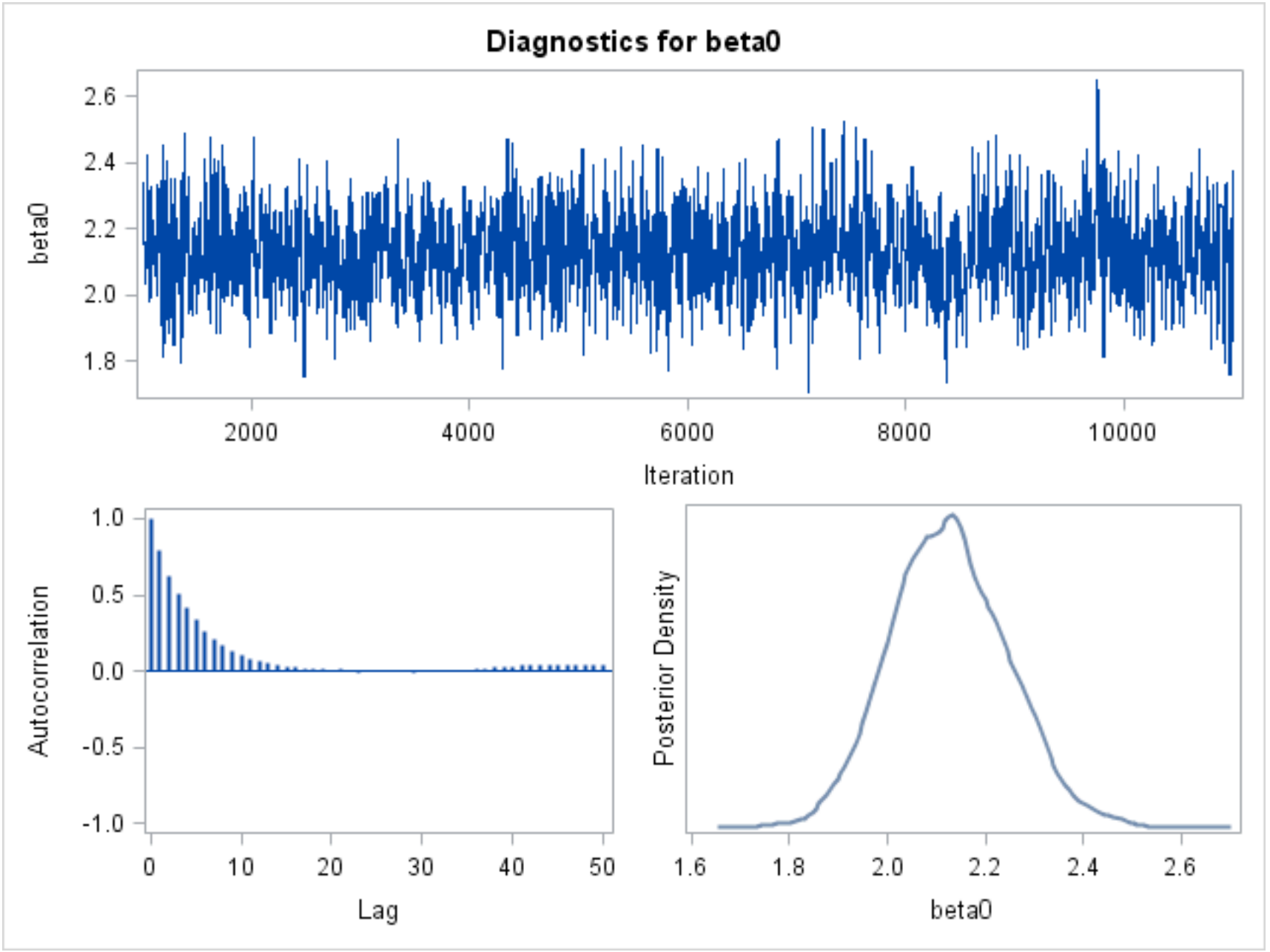
Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	2.1263	0.1192	1.8852	2.3476
beta1	10000	0.1583	0.0265	0.1031	0.2058
sigma2	10000	0.9929	0.1437	0.7115	1.2671

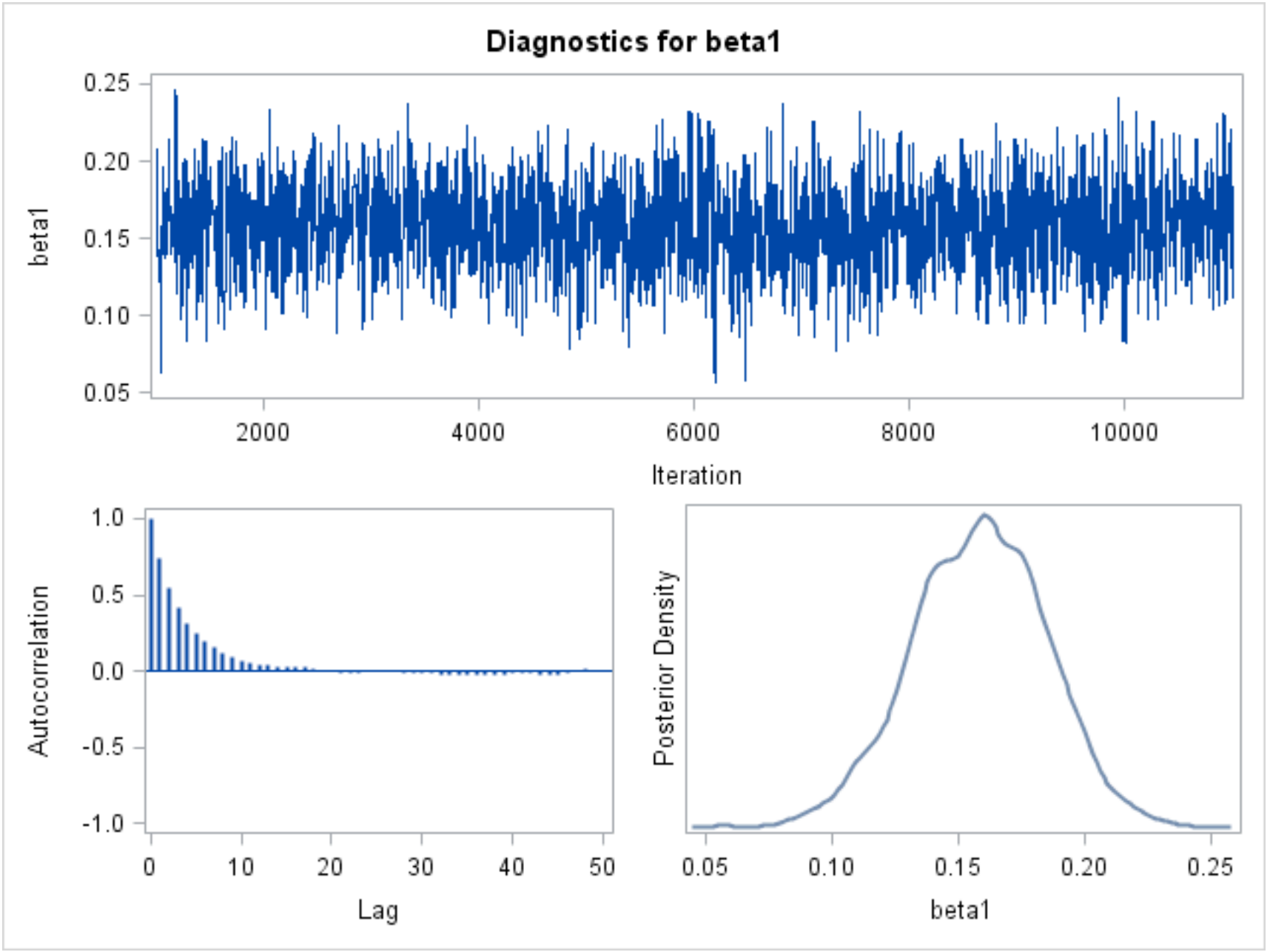
The MCMC Procedure

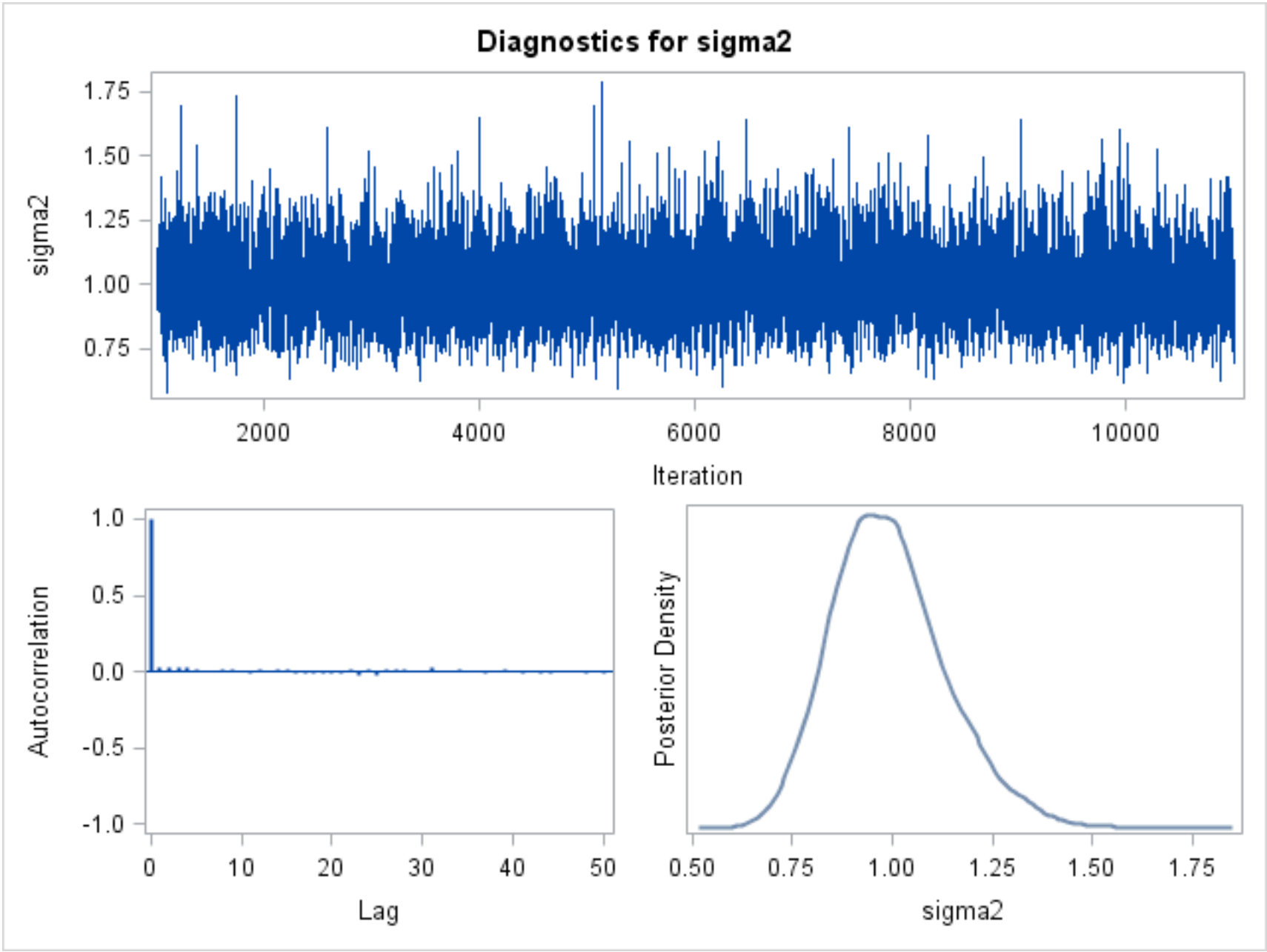
Effective Sample Sizes

Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1141.4	8.7608	0.1141
beta1	1365.2	7.3248	0.1365
sigma2	8459.5	1.1821	0.8459

Log PSA and capsular penetration


Diagnostics for beta0
beta0
2.6
2.4
2.2
2.0
1.8
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.6
1.8
2.0
2.2
2.4
2.6
beta0


Diagnostics for beta1
beta1
0.25
0.20
0.15
0.10
0.05
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.05
0.10
0.15
0.20
0.25
beta1


Diagnostics for sigma2
sigma2
1.75
1.50
1.25
1.00
0.75
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.50
0.75
1.00
1.25
1.50
1.75
sigma2

Log PSA and seminal vesical invasion (yes=1)

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

Log PSA and seminal vesical invasion (yes=1)

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	2.1426	0.1183	1.9083	2.3758
beta1	10000	1.5837	0.2398	1.1172	2.0464
sigma2	10000	0.9269	0.1353	0.6903	1.2118

Log PSA and seminal vesical invasion (yes=1)

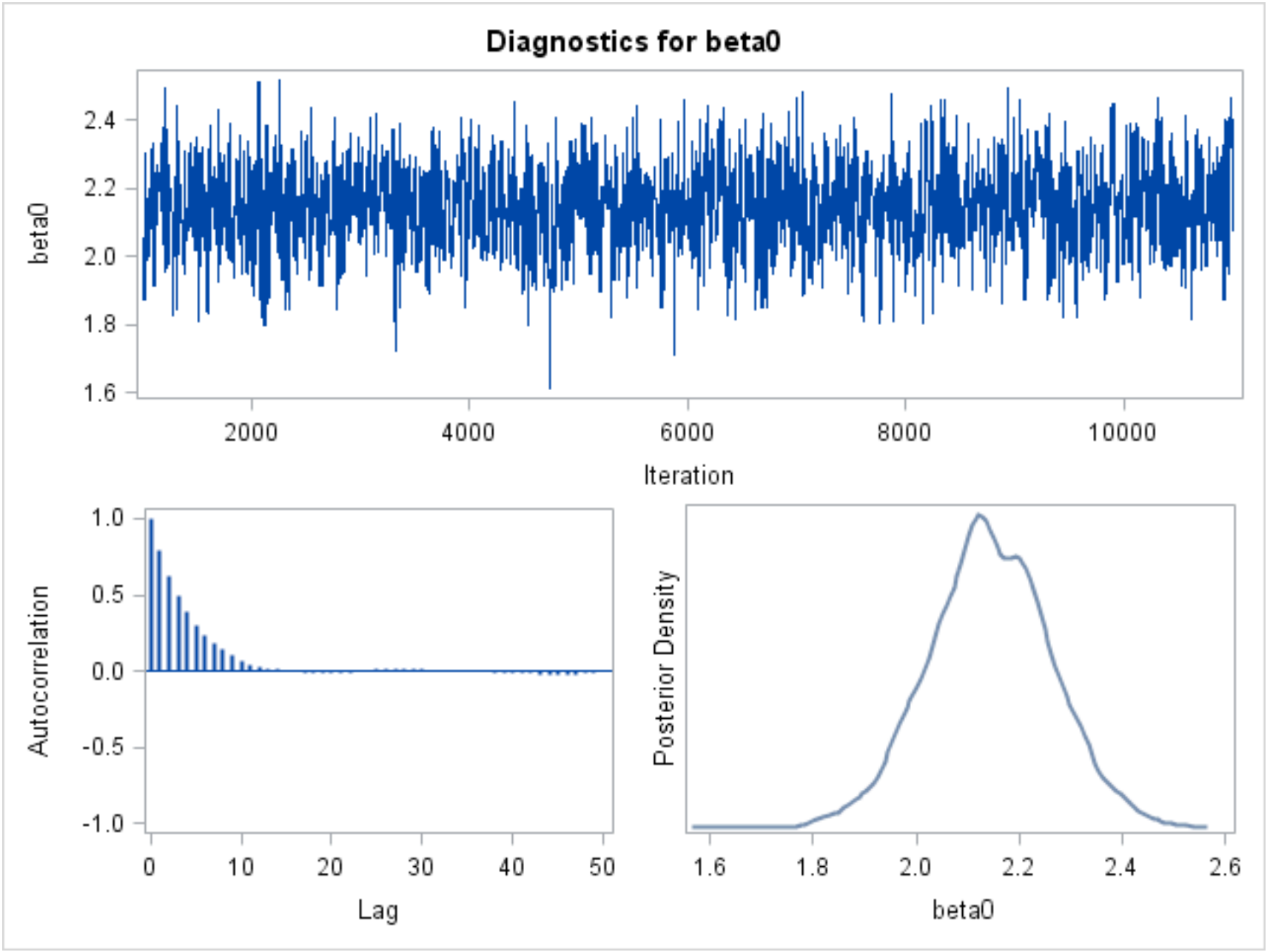
The MCMC Procedure

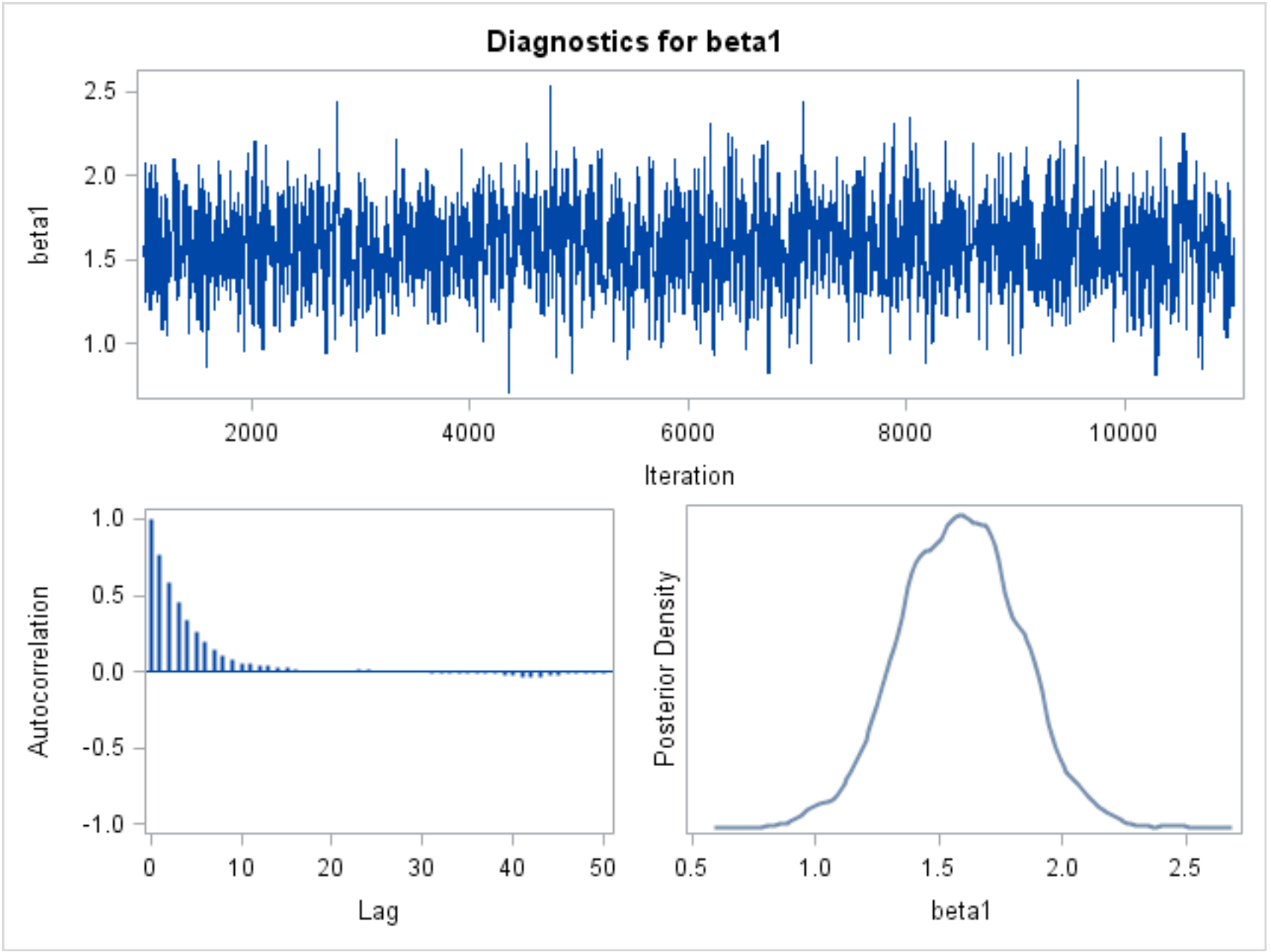
Effective Sample Sizes

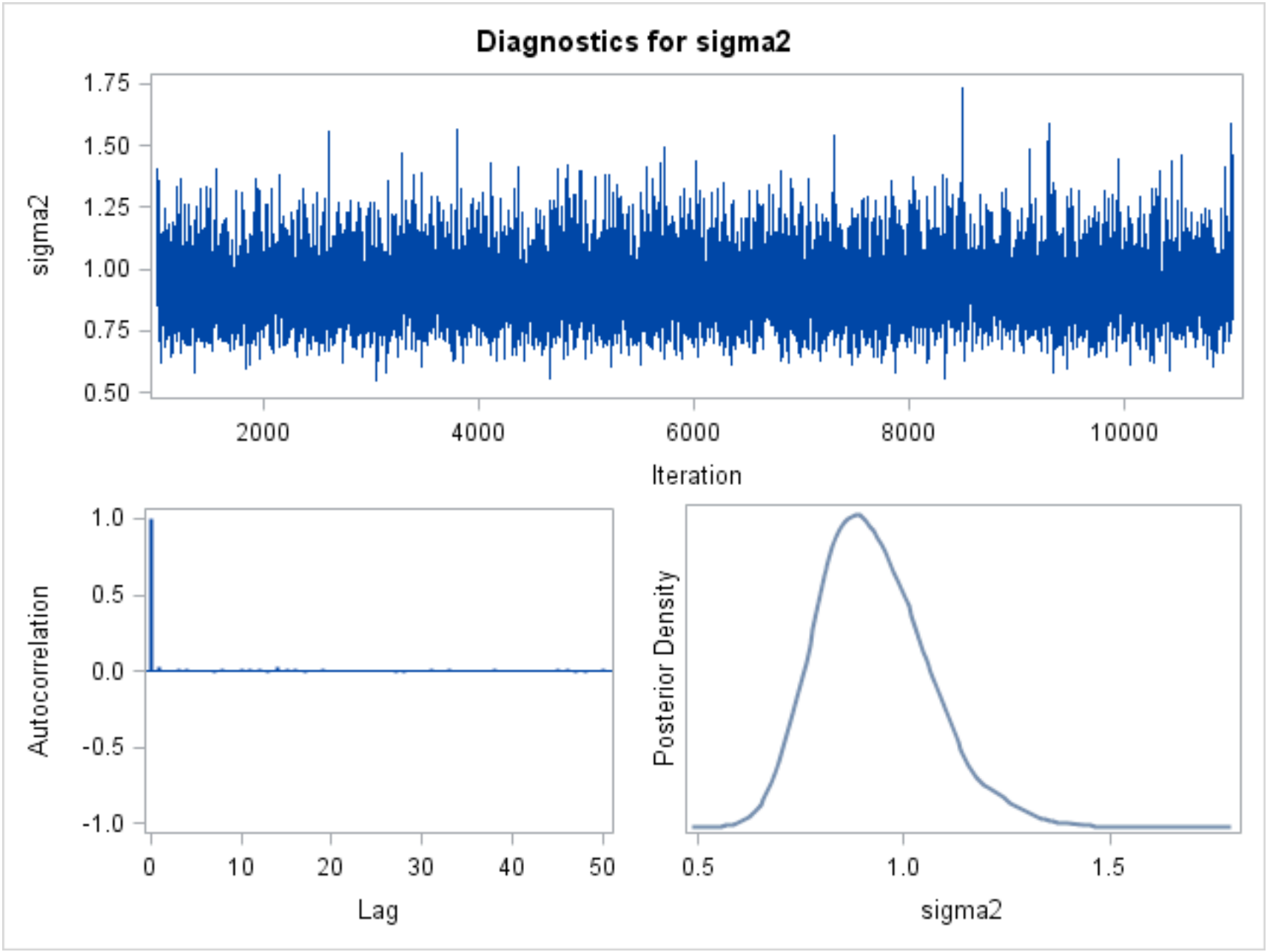
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1277.4	7.8283	0.1277
beta1	1352.2	7.3951	0.1352
sigma2	9409.5	1.0628	0.9409

Log PSA and seminal vesical invasion (yes=1)

The MCMC Procedure


Diagnostics for beta0
beta0
2.4
2.2
2.0
1.8
1.6
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
1.6
1.8
2.0
2.2
2.4
2.6
beta0


Diagnostics for beta1
beta1
2.5
2.0
1.5
1.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.5
1.0
1.5
2.0
2.5
beta1


Diagnostics for sigma2
sigma2
1.75
1.50
1.25
1.00
0.75
0.50
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.5
1.0
1.5
sigma2

Log PSA and gleason score

The MCMC Procedure

Number of Observations Read	96
Number of Observations Used	96

Parameters

Block	Parameter	Sampling Method	Initial Value	Prior Distribution
1	**beta0**	N-Metropolis	0	normal(mean = 0, var = 1000)
	beta1		0	normal(mean = 0, var = 1000)
	beta2		0	normal(mean = 0, var = 1000)
2	**sigma2**	Conjugate	1.0000	igamma(shape = 2.001,scale = 1.001)

Log PSA and gleason score

The MCMC Procedure

Posterior Summaries and Intervals

Parameter	N	Mean	Standard Deviation	95% HPD Interval	
beta0	10000	3.6205	0.2053	3.2263	4.0284
beta1	10000	-1.7563	0.2632	-2.2699	-1.2395
beta2	10000	-1.2318	0.2507	-1.7310	-0.7718
sigma2	10000	0.9416	0.1379	0.6869	1.2072

Log PSA and gleason score

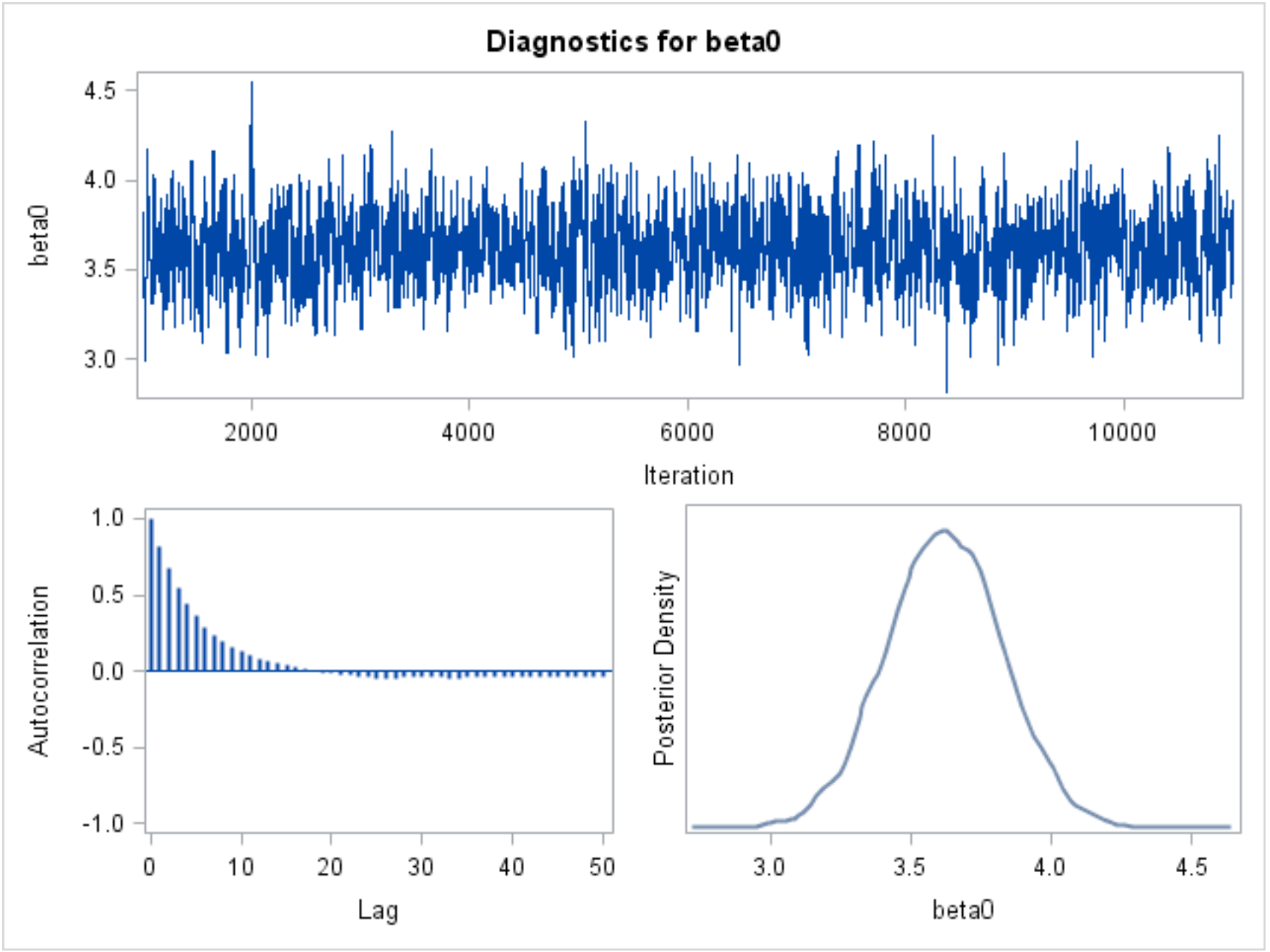
The MCMC Procedure

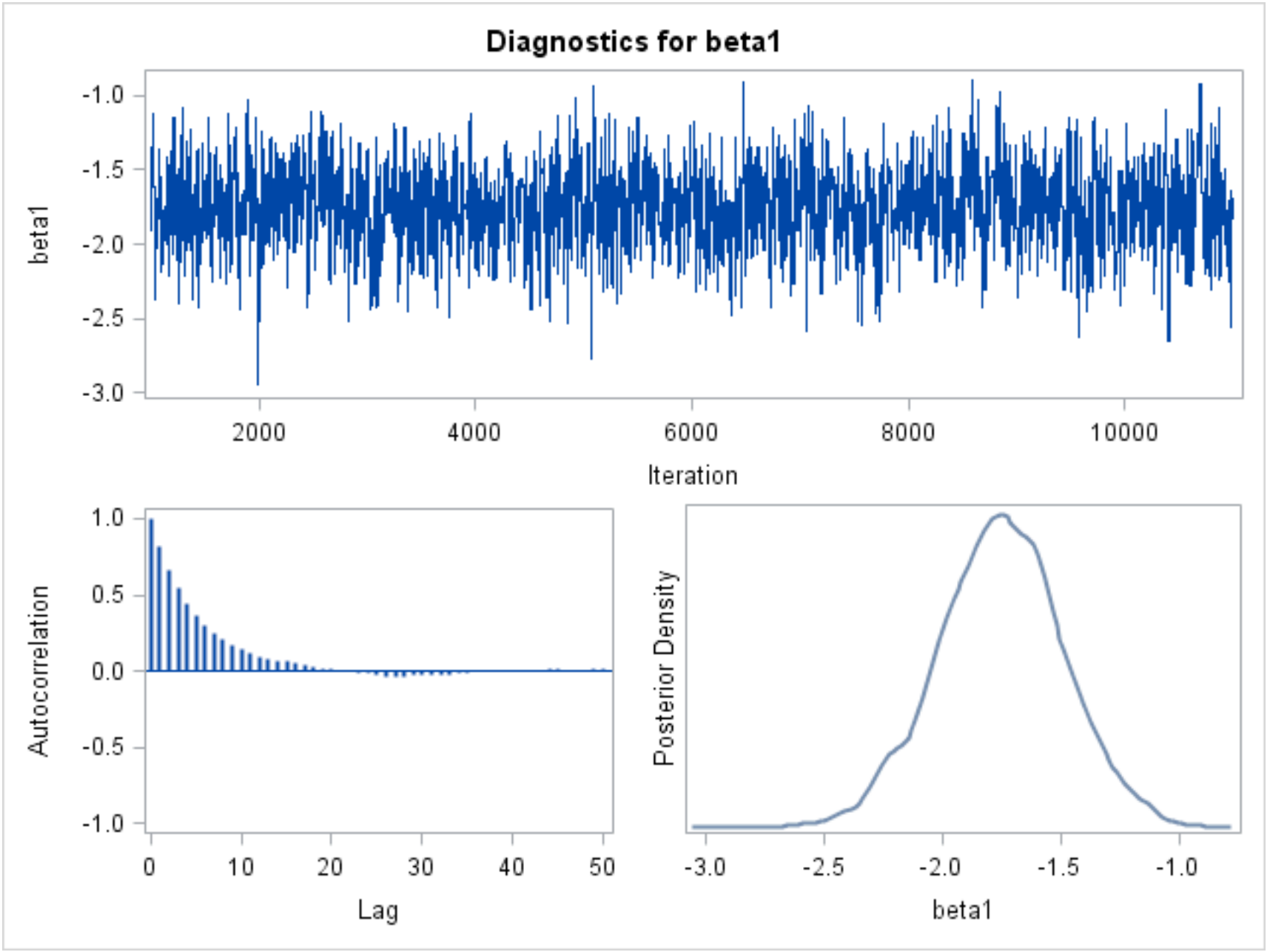
Effective Sample Sizes

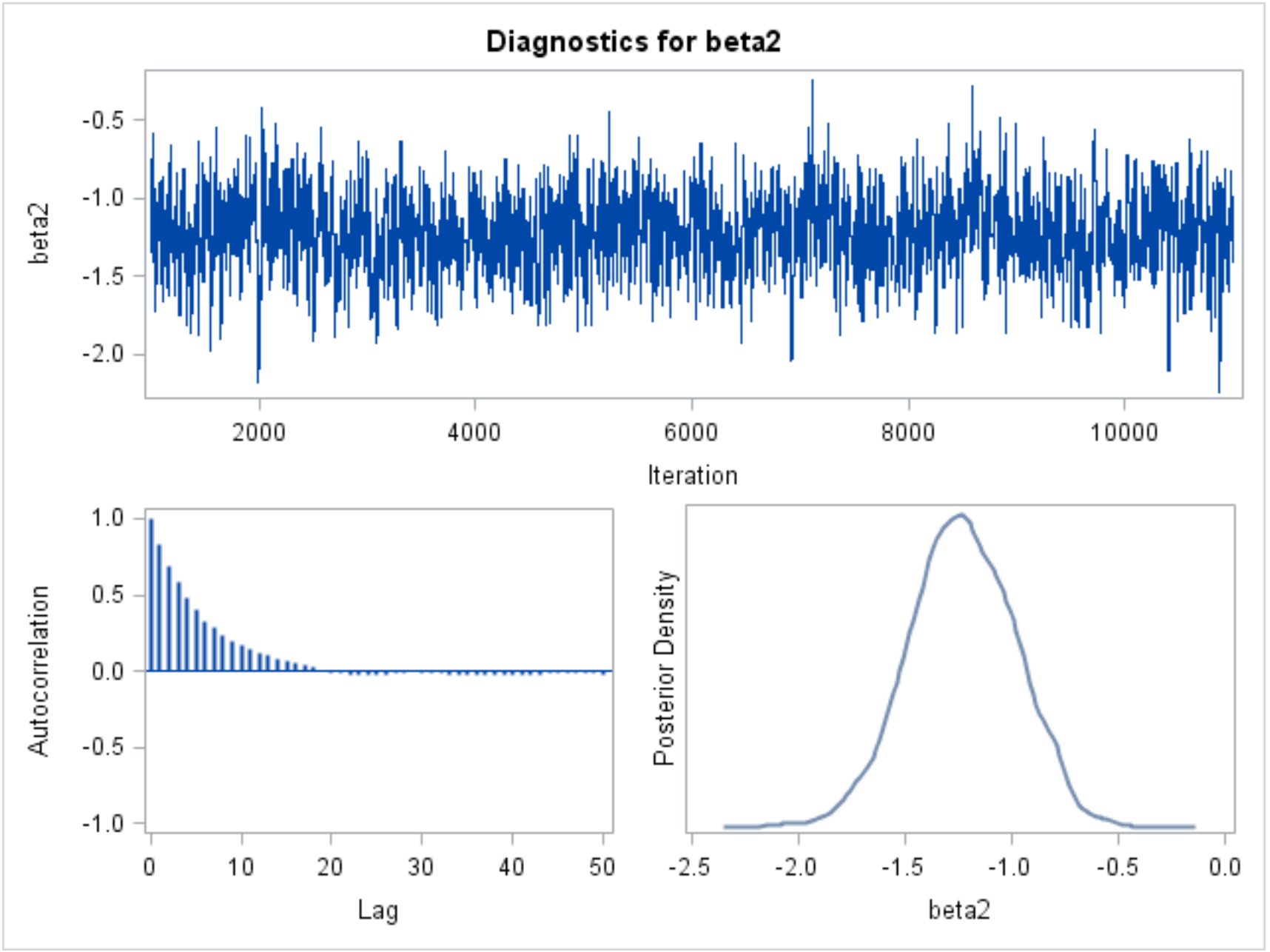
Parameter	ESS	Autocorrelation Time	Efficiency
beta0	1058.4	9.4484	0.1058
beta1	999.4	10.0060	0.0999
beta2	939.0	10.6501	0.0939
sigma2	7999.2	1.2501	0.7999

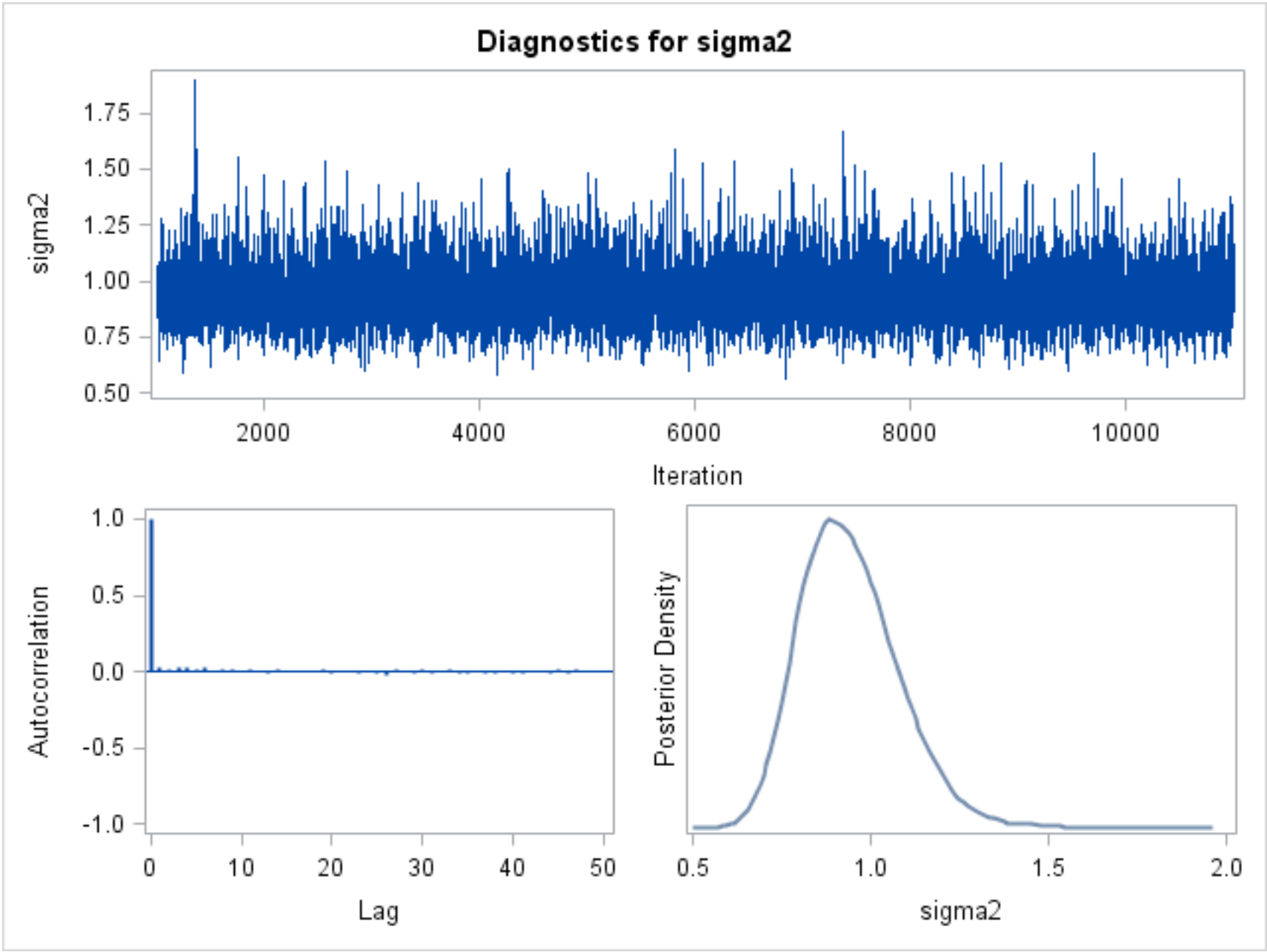
Log PSA and gleason score

The MCMC Procedure


Diagnostics for beta0
beta0
4.5
4.0
3.5
3.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
3.0
3.5
4.0
4.5
beta0


Diagnostics for beta1
beta1
-1.0
-1.5
-2.0
-2.5
-3.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-3.0
-2.5
-2.0
-1.5
-1.0
beta1


Diagnostics for beta2
beta2
-0.5
-1.0
-1.5
-2.0
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
-2.5
-2.0
-1.5
-1.0
-0.5
0.0
beta2


Diagnostics for sigma2
sigma2
1.75
1.50
1.25
1.00
0.75
0.50
2000
4000
6000
8000
10000
Iteration
Autocorrelation
1.0
0.5
0.0
-0.5
-1.0
0
10
20
30
40
50
Lag
Posterior Density
0.5
1.0
1.5
2.0
sigma2