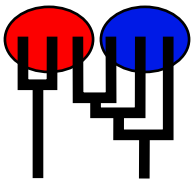
Translated from VCF 2020-07-20

POPULATION SIZE, MIGRATION, DIVERGENCE, ASSIGNMENT, HISTORY
Bayesian inference using the structured coalescent
Migrate-n version 4.5.1(git:4.5-2-g6c1d014-dirty) [July-4-2020]
  Compiled for PARALLEL computer architectures
  One master and 8 compute nodes are available.
  Compiled for a SYMMETRIC multiprocessors (Grandcentral)
Program started at Fri Jul 24 18:39:02 2020
Program finished at Fri Jul 24 19:23:40 2020 [Runtime:0000:00:44:38]



Options

Inheritance scalers in use for Thetas:
All loci use an inheritance scaler of 1.0
[The locus with a scaler of 1.0 used as reference]
Random number seed: (with internal timer) 1061276781
Start parameters:

Theta values were generated Using a percent value of the prior

M values were generated Using a percent value of the prior

Connection matrix:
  m = average (average over a group of Thetas or M,
  s = symmetric migration M, S = symmetric 4Nm,
  0 = zero, and not estimated,
  * = migration free to vary, Thetas are on diagonal
  d = row population split off column population, D = split and then migration

Population	1	2	3
1 Pop1	*	*	t
2 Pop2	*	*	t
3 ancestor	0	0	*

Order of parameters:
  1 Θ_1 <displayed>

2	Θ_2	<displayed>
3	Θ_3	<displayed>
4	$M_{2->1}$	<displayed>
5	$M_{1->2}$	<displayed>
6	$\Delta_{3->1}$	<displayed>
7	$\sigma_{3->1}$	<displayed>
8	$\Delta_{3->2}$	<displayed>
9	$\sigma_{3->2}$	<displayed>

Mutation rate among loci: Mutation rate is constant for all loci

Analysis strategy: Bayesian inference
-Population size estimation: Exponential Distribution
-Geneflow estimation: Exponential Distribution
-Divergence time estimation: Normal Distribution Shortcut (mean and standard dev.)

Proposal distributions for parameter

Parameter	Proposal
Theta	Metropolis sampling
M	Metropolis sampling
Divergence	Metropolis sampling
Divergence Spread	Metropolis sampling
Genealogy	Metropolis-Hastings

Prior distribution for parameter

Parameter			Prior	Minimum	Mean	Maximum	Delta	Bins	UpdateFreq
1	Theta	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
2	Theta	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
3	Theta	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
4	M	**	Gamma	0.000000	500.0	10000	1000.	1500	0.05556
5	M	**	Gamma	0.000000	500.0	10000	1000.	1500	0.05556
6	Splittime mean	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
7	Splittime std	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
8	Splittime mean	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556
9	Splittime std	**	Gamma	0.000000	0.010	0.100	0.010	1500	0.05556

[* * means priors were set globally]

Posterior distribution:
Parameter values were collected using MCMC, these values
were then used to generate the posterior histograms using KERNEL SMOOTHING (window=41)

and subsequent MOVING AVERAGE SMOOTHING (window=11) for combination over loci

Markov chain settings:	Long chain
Number of chains	1
Recorded steps [a]	10000
Increment (record every x step [b]	100
Number of concurrent chains (replicates) [c]	1
Visited (sampled) parameter values [a*b*c]	1000000
Number of discard trees per chain (burn-in)	1000

Multiple Markov chains:

Static heating scheme		4 chains with	temperatures	
	1000000.00	3.00	1.50	1.00
		Swapping interval is 1		

Print options:

Data file:	infile
	parmfile
Haplotyping is turned on:	NO
Output file:	outfile
Posterior distribution raw histogram file:	bayesfile
Raw data from the MCMC run:	bayesallfile.gz
Print data:	No
Print genealogies [only some for some data type]:	None

Data summary

Data file: infile
Datatype: Haplotype data
Number of loci: 20

Mutationmodel:

Locus	Sublocus	Mutationmodel	Mutationmodel parameters
1	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
2	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
3	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
4	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
5	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
6	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
7	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
8	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
9	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
10	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
11	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
12	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
13	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
14	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
15	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
16	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
17	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
18	1	Felsenstein 84	[Bf:0.94 0.00 0.00 0.06, t/t ratio=2.000]
19	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]
20	1	Felsenstein 84	[Bf:0.95 0.00 0.00 0.05, t/t ratio=2.000]

Sites per locus

Locus	Sites
1	10000
2	10000
3	10000
4	10000
5	10000
6	10000
7	10000
8	10000
9	10000
10	10000

11	10000
12	10000
13	10000
14	10000
15	10000
16	10000
17	10000
18	10000
19	10000
20	10000

Site rate variation and probabilities:

Locus	Sublocus	Region type	Rate of change	Probability	Patch size
1	1	1	1.000	1.000	1.000
2	1	1	1.000	1.000	1.000
3	1	1	1.000	1.000	1.000
4	1	1	1.000	1.000	1.000
5	1	1	1.000	1.000	1.000
6	1	1	1.000	1.000	1.000
7	1	1	1.000	1.000	1.000
8	1	1	1.000	1.000	1.000
9	1	1	1.000	1.000	1.000
10	1	1	1.000	1.000	1.000
11	1	1	1.000	1.000	1.000
12	1	1	1.000	1.000	1.000
13	1	1	1.000	1.000	1.000
14	1	1	1.000	1.000	1.000
15	1	1	1.000	1.000	1.000
16	1	1	1.000	1.000	1.000
17	1	1	1.000	1.000	1.000
18	1	1	1.000	1.000	1.000
19	1	1	1.000	1.000	1.000
20	1	1	1.000	1.000	1.000

Population		Locus	Gene copies data	(missing)
1	Pop1	1	10	
		2	10	
		3	10	
		4	10	
		5	10	
		6	10	
		7	10	
		8	10	
		9	10	

	10	10
	11	10
	12	10
	13	10
	14	10
	15	10
	16	10
	17	10
	18	10
	19	10
	20	10
2 Pop2	1	10
	2	10
	3	10
	4	10
	5	10
	6	10
	7	10
	8	10
	9	10
	10	10
	11	10
	12	10
	13	10
	14	10
	15	10
	16	10
	17	10
	18	10
	19	10
	20	10
3 ancestor	1	0
	2	0
	3	0
	4	0
	5	0
	6	0
	7	0
	8	0
	9	0
	10	0
	11	0
	12	0
	13	0
	14	0

	15	0	
	16	0	
	17	0	
	18	0	
	19	0	
	20	0	
Total of all populations	1	20	(0)
	2	20	(0)
	3	20	(0)
	4	20	(0)
	5	20	(0)
	6	20	(0)
	7	20	(0)
	8	20	(0)
	9	20	(0)
	10	20	(0)
	11	20	(0)
	12	20	(0)
	13	20	(0)
	14	20	(0)
	15	20	(0)
	16	20	(0)
	17	20	(0)
	18	20	(0)
	19	20	(0)
	20	20	(0)

Bayesian Analysis: Posterior distribution table

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
1	Θ_1	0.00000	0.00000	0.00123	0.00773	0.03673	0.00777	0.01137
1	Θ_2	0.00000	0.00000	0.00123	0.01580	0.03040	0.00757	0.00607
1	Θ_3	0.00000	0.00007	0.00130	0.00740	0.02727	0.00730	0.00415
1	$M_{2->1}$	0.000	6.667	116.667	386.667	1506.667	376.667	120.385
1	$M_{1->2}$	0.000	0.000	103.333	373.333	1680.000	370.000	95.315
1	$D_{3->1}$	0.00000	0.00000	0.00123	0.00720	0.02900	0.00723	0.00165
1	$S_{3->1}$	0.00000	0.00000	0.00117	0.00767	0.03187	0.00763	0.00167
1	$D_{3->2}$	0.00000	0.00000	0.00123	0.00720	0.02900	0.00723	0.00124
1	$S_{3->2}$	0.00000	0.00000	0.00117	0.00767	0.03187	0.00763	0.00130
2	Θ_1	0.01827	0.02960	0.03390	0.03920	0.04987	0.03390	0.03842
2	Θ_2	0.02880	0.04813	0.04877	0.04973	0.05013	0.04097	0.02851
2	Θ_3	0.00000	0.00013	0.00017	0.00013	0.00027	0.00017	0.02848
2	$M_{2->1}$	0.000	26.667	63.333	100.000	166.667	83.333	7.137
2	$M_{1->2}$	0.000	26.667	56.667	100.000	173.333	83.333	5.592
2	$D_{3->1}$	0.00000	0.00020	0.00130	0.00433	0.01487	0.00410	0.00086
2	$S_{3->1}$	0.00160	0.00487	0.00717	0.01267	0.02460	0.01090	0.00185
2	$D_{3->2}$	0.00000	0.00020	0.00130	0.00433	0.01487	0.00410	0.00065
2	$S_{3->2}$	0.00160	0.00487	0.00717	0.01267	0.02460	0.01090	0.00144
3	Θ_1	0.00000	0.00007	0.00130	0.00733	0.03267	0.00723	0.01013
3	Θ_2	0.00000	0.00007	0.00130	0.00740	0.02860	0.00730	0.00500
3	Θ_3	0.00000	0.00000	0.00123	0.00713	0.02587	0.00717	0.00329
3	$M_{2->1}$	0.000	6.667	130.000	400.000	1340.000	390.000	127.403
3	$M_{1->2}$	0.000	6.667	116.667	400.000	1553.333	390.000	100.966
3	$D_{3->1}$	0.00000	0.00000	0.00123	0.00720	0.02927	0.00717	0.00166
3	$S_{3->1}$	0.00000	0.00000	0.00130	0.00733	0.02793	0.00730	0.00142
3	$D_{3->2}$	0.00000	0.00000	0.00123	0.00720	0.02927	0.00717	0.00124
3	$S_{3->2}$	0.00000	0.00000	0.00130	0.00733	0.02793	0.00730	0.00111
4	Θ_1	0.00000	0.00000	0.00123	0.00707	0.02700	0.00703	0.00977
4	Θ_2	0.00000	0.00000	0.00123	0.01240	0.03073	0.00737	0.00508
4	Θ_3	0.00000	0.00007	0.00137	0.00713	0.02827	0.00730	0.00334
4	$M_{2->1}$	0.000	6.667	123.333	400.000	1526.667	390.000	125.291
4	$M_{1->2}$	0.000	13.333	123.333	406.667	1506.667	390.000	100.797
4	$D_{3->1}$	0.00000	0.00000	0.00117	0.00973	0.02913	0.00730	0.00167

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
4	$S_{3->1}$	0.00000	0.00013	0.00123	0.00733	0.03047	0.00717	0.00143
4	$D_{3->2}$	0.00000	0.00000	0.00117	0.00973	0.02913	0.00730	0.00125
4	$S_{3->2}$	0.00000	0.00013	0.00123	0.00733	0.03047	0.00717	0.00111
5	Θ_1	0.00000	0.00000	0.00150	0.01220	0.02667	0.00730	0.01003
5	Θ_2	0.00000	0.00000	0.00150	0.00720	0.02733	0.00717	0.00494
5	Θ_3	0.00000	0.00000	0.00137	0.00720	0.02833	0.00723	0.00331
5	$M_{2->1}$	0.000	13.333	123.333	406.667	1533.333	390.000	126.071
5	$M_{1->2}$	0.000	13.333	123.333	400.000	2180.000	383.333	100.456
5	$D_{3->1}$	0.00000	0.00000	0.00130	0.02007	0.02840	0.00717	0.00164
5	$S_{3->1}$	0.00000	0.00000	0.00123	0.00733	0.03193	0.00730	0.00145
5	$D_{3->2}$	0.00000	0.00000	0.00130	0.02007	0.02840	0.00717	0.00123
5	$S_{3->2}$	0.00000	0.00000	0.00123	0.00733	0.03193	0.00730	0.00112
6	Θ_1	0.00000	0.00000	0.00130	0.00773	0.03013	0.00770	0.01053
6	Θ_2	0.00000	0.00000	0.00123	0.00753	0.03107	0.00750	0.00546
6	Θ_3	0.00000	0.00000	0.00137	0.00727	0.02913	0.00723	0.00358
6	$M_{2->1}$	0.000	6.667	123.333	380.000	1466.667	370.000	121.348
6	$M_{1->2}$	0.000	6.667	123.333	386.667	1506.667	376.667	97.926
6	$D_{3->1}$	0.00000	0.00000	0.00130	0.00740	0.02833	0.00737	0.00170
6	$S_{3->1}$	0.00000	0.00053	0.00130	0.00333	0.03160	0.00750	0.00150
6	$D_{3->2}$	0.00000	0.00000	0.00130	0.00740	0.02833	0.00737	0.00127
6	$S_{3->2}$	0.00000	0.00053	0.00130	0.00333	0.03160	0.00750	0.00117
7	Θ_1	0.02467	0.03707	0.04210	0.04287	0.05007	0.03843	0.04704
7	Θ_2	0.02653	0.04520	0.04817	0.04980	0.05013	0.04177	0.02744
7	Θ_3	0.00000	0.00620	0.00697	0.00760	0.01067	0.00850	0.02822
7	$M_{2->1}$	0.000	20.000	50.000	86.667	140.000	70.000	3.724
7	$M_{1->2}$	0.000	20.000	50.000	86.667	140.000	70.000	3.581
7	$D_{3->1}$	0.00000	0.00020	0.00137	0.01260	0.01793	0.01017	0.00192
7	$S_{3->1}$	0.00507	0.01187	0.01690	0.02067	0.03887	0.01917	0.00320
7	$D_{3->2}$	0.00000	0.00020	0.00137	0.01260	0.01793	0.01017	0.00144
7	$S_{3->2}$	0.00507	0.01187	0.01690	0.02067	0.03887	0.01917	0.00249
8	Θ_1	0.02400	0.03573	0.04030	0.04707	0.05000	0.03823	0.04635
8	Θ_2	0.03280	0.04353	0.04717	0.04987	0.05013	0.04383	0.03229
8	Θ_3	0.00000	0.00000	0.00003	0.09993	0.09993	0.00003	0.03051
8	$M_{2->1}$	0.000	13.333	43.333	80.000	133.333	63.333	2.562
8	$M_{1->2}$	0.000	13.333	43.333	80.000	126.667	63.333	1.830
8	$D_{3->1}$	0.00000	0.00007	0.00137	0.01300	0.03747	0.01263	0.00263
8	$S_{3->1}$	0.01680	0.02700	0.03297	0.04280	0.04987	0.03323	0.00546

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
8	$D_{3->2}$	0.00000	0.00007	0.00137	0.01300	0.03747	0.01263	0.00197
8	$S_{3->2}$	0.01680	0.02700	0.03297	0.04280	0.04987	0.03323	0.00425
9	Θ_1	0.03153	0.04080	0.04143	0.04227	0.05007	0.04277	0.05697
9	Θ_2	0.03953	0.04620	0.04683	0.04887	0.05013	0.04570	0.03476
9	Θ_3	0.00000	0.00000	0.00003	0.09993	0.09993	0.00003	0.03118
9	$M_{2->1}$	0.000	13.333	36.667	73.333	126.667	63.333	1.716
9	$M_{1->2}$	0.000	6.667	36.667	66.667	126.667	63.333	1.119
9	$D_{3->1}$	0.00000	0.00000	0.00123	0.01107	0.03480	0.01083	0.00230
9	$S_{3->1}$	0.01987	0.03040	0.03517	0.03793	0.04993	0.03463	0.00573
9	$D_{3->2}$	0.00000	0.00000	0.00123	0.01107	0.03480	0.01083	0.00173
9	$S_{3->2}$	0.01987	0.03040	0.03517	0.03793	0.04993	0.03463	0.00445
10	Θ_1	0.00000	0.00000	0.00123	0.00927	0.03113	0.00723	0.01006
10	Θ_2	0.00000	0.00000	0.00170	0.00707	0.02747	0.00710	0.00499
10	Θ_3	0.00000	0.00007	0.00123	0.00733	0.02773	0.00723	0.00334
10	$M_{2->1}$	0.000	6.667	123.333	400.000	1553.333	390.000	125.521
10	$M_{1->2}$	0.000	6.667	110.000	393.333	1526.667	383.333	99.384
10	$D_{3->1}$	0.00000	0.00040	0.00137	0.00420	0.03093	0.00723	0.00165
10	$S_{3->1}$	0.00000	0.00007	0.00123	0.00720	0.02927	0.00710	0.00139
10	$D_{3->2}$	0.00000	0.00040	0.00137	0.00420	0.03093	0.00723	0.00124
10	$S_{3->2}$	0.00000	0.00007	0.00123	0.00720	0.02927	0.00710	0.00108
11	Θ_1	0.00000	0.00013	0.00137	0.00640	0.03453	0.00777	0.01182
11	Θ_2	0.00000	0.00000	0.00123	0.00753	0.03140	0.00750	0.00633
11	Θ_3	0.00000	0.00007	0.00123	0.00740	0.02773	0.00730	0.00460
11	$M_{2->1}$	0.000	0.000	96.667	373.333	1493.333	370.000	120.129
11	$M_{1->2}$	0.000	0.000	96.667	373.333	1553.333	370.000	95.757
11	$D_{3->1}$	0.00000	0.00000	0.00123	0.00727	0.02553	0.00723	0.00165
11	$S_{3->1}$	0.00000	0.00000	0.00123	0.00787	0.02807	0.00790	0.00152
11	$D_{3->2}$	0.00000	0.00000	0.00123	0.00727	0.02553	0.00723	0.00124
11	$S_{3->2}$	0.00000	0.00000	0.00123	0.00787	0.02807	0.00790	0.00118
12	Θ_1	0.00000	0.00000	0.00123	0.00713	0.02820	0.00723	0.01002
12	Θ_2	0.00000	0.00007	0.00137	0.00733	0.02847	0.00723	0.00498
12	Θ_3	0.00000	0.00000	0.00117	0.00727	0.03040	0.00723	0.00333
12	$M_{2->1}$	0.000	6.667	116.667	393.333	1506.667	383.333	123.497
12	$M_{1->2}$	0.000	0.000	116.667	453.333	453.333	396.667	103.021
12	$D_{3->1}$	0.00000	0.00007	0.00130	0.00740	0.03040	0.00730	0.00167
12	$S_{3->1}$	0.00000	0.00013	0.00137	0.00747	0.02887	0.00730	0.00144
12	$D_{3->2}$	0.00000	0.00007	0.00130	0.00740	0.03040	0.00730	0.00125

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
12	$S_{3->2}$	0.00000	0.00013	0.00137	0.00747	0.02887	0.00730	0.00112
13	Θ_1	0.00000	0.00000	0.00130	0.00827	0.02973	0.00817	0.03188
13	Θ_2	0.00000	0.00100	0.00123	0.00153	0.02200	0.01137	0.01163
13	Θ_3	0.00000	0.00000	0.00123	0.00707	0.03060	0.00723	0.01175
13	$M_{2->1}$	0.000	0.000	50.000	233.333	1360.000	236.667	80.303
13	$M_{1->2}$	0.000	0.000	50.000	233.333	1380.000	236.667	64.589
13	$D_{3->1}$	0.00000	0.00007	0.00170	0.00807	0.03187	0.00837	0.00191
13	$S_{3->1}$	0.00000	0.00000	0.00130	0.01253	0.02067	0.01257	0.00325
13	$D_{3->2}$	0.00000	0.00007	0.00170	0.00807	0.03187	0.00837	0.00144
13	$S_{3->2}$	0.00000	0.00000	0.00130	0.01253	0.02067	0.01257	0.00253
14	Θ_1	0.00000	0.00007	0.00163	0.00740	0.03100	0.00730	0.01684
14	Θ_2	0.00000	0.00013	0.00130	0.00660	0.03240	0.00823	0.00708
14	Θ_3	0.00000	0.00007	0.00137	0.00667	0.03020	0.00743	0.00533
14	$M_{2->1}$	0.000	0.000	76.667	340.000	1226.667	343.333	109.879
14	$M_{1->2}$	0.000	0.000	83.333	346.667	1486.667	350.000	89.813
14	$D_{3->1}$	0.00000	0.00000	0.00137	0.00753	0.03027	0.00757	0.00224
14	$S_{3->1}$	0.00000	0.00000	0.00137	0.00827	0.03460	0.00830	0.00200
14	$D_{3->2}$	0.00000	0.00000	0.00137	0.00753	0.03027	0.00757	0.00168
14	$S_{3->2}$	0.00000	0.00000	0.00137	0.00827	0.03460	0.00830	0.00155
15	Θ_1	0.00000	0.00000	0.00123	0.01013	0.01653	0.02137	0.03222
15	Θ_2	0.00000	0.00000	0.00137	0.00813	0.01600	0.02583	0.01443
15	Θ_3	0.00000	0.00007	0.00130	0.00700	0.03120	0.00750	0.01931
15	$M_{2->1}$	0.000	0.000	56.667	140.000	1200.000	136.667	55.974
15	$M_{1->2}$	0.000	0.000	50.000	126.667	1226.667	130.000	44.413
15	$D_{3->1}$	0.00000	0.00000	0.00177	0.01787	0.02667	0.00797	0.00170
15	$S_{3->1}$	0.00000	0.00013	0.00137	0.00667	0.03987	0.01977	0.00302
15	$D_{3->2}$	0.00000	0.00000	0.00177	0.01787	0.02667	0.00797	0.00127
15	$S_{3->2}$	0.00000	0.00013	0.00137	0.00667	0.03987	0.01977	0.00235
16	Θ_1	0.03013	0.04560	0.04663	0.04740	0.05007	0.04263	0.05824
16	Θ_2	0.03220	0.04547	0.04657	0.04987	0.05013	0.04370	0.03048
16	Θ_3	0.00000	0.00000	0.00003	0.09993	0.09993	0.00003	0.03108
16	$M_{2->1}$	0.000	13.333	43.333	80.000	133.333	70.000	3.253
16	$M_{1->2}$	0.000	26.667	56.667	93.333	146.667	76.667	3.950
16	$D_{3->1}$	0.00000	0.00000	0.00123	0.01033	0.02500	0.00830	0.00164
16	$S_{3->1}$	0.00907	0.01967	0.02517	0.03233	0.04360	0.02610	0.00400
16	$D_{3->2}$	0.00000	0.00000	0.00123	0.01033	0.02500	0.00830	0.00123
16	$S_{3->2}$	0.00907	0.01967	0.02517	0.03233	0.04360	0.02610	0.00311

Locus	Parameter	2.5%	25.0%	Mode	75.0%	97.5%	Median	Mean
17	Θ_1	0.00000	0.00000	0.00183	0.00747	0.02827	0.00750	0.01009
17	Θ_2	0.00000	0.00000	0.00130	0.00727	0.02840	0.00723	0.00498
17	Θ_3	0.00000	0.00000	0.00123	0.00720	0.02987	0.00723	0.00333
17	$M_{2->1}$	0.000	13.333	116.667	400.000	1526.667	383.333	125.490
17	$M_{1->2}$	0.000	13.333	130.000	400.000	1526.667	383.333	99.665
17	$D_{3->1}$	0.00000	0.00007	0.00123	0.00667	0.03100	0.00730	0.00168
17	$S_{3->1}$	0.00000	0.00000	0.00130	0.00720	0.02773	0.00723	0.00142
17	$D_{3->2}$	0.00000	0.00007	0.00123	0.00667	0.03100	0.00730	0.00126
17	$S_{3->2}$	0.00000	0.00000	0.00130	0.00720	0.02773	0.00723	0.00111
18	Θ_1	0.02153	0.03487	0.04537	0.04620	0.05020	0.03843	0.04625
18	Θ_2	0.01720	0.04040	0.04210	0.04347	0.05013	0.03597	0.02064
18	Θ_3	0.00000	0.00000	0.00083	0.00880	0.02280	0.01037	0.02812
18	$M_{2->1}$	0.000	13.333	50.000	86.667	260.000	76.667	9.766
18	$M_{1->2}$	0.000	20.000	50.000	93.333	246.667	76.667	7.613
18	$D_{3->1}$	0.00000	0.00067	0.00157	0.00373	0.02333	0.00877	0.00172
18	$S_{3->1}$	0.00453	0.01180	0.01790	0.02273	0.04073	0.01970	0.00319
18	$D_{3->2}$	0.00000	0.00067	0.00157	0.00373	0.02333	0.00877	0.00129
18	$S_{3->2}$	0.00453	0.01180	0.01790	0.02273	0.04073	0.01970	0.00248
19	Θ_1	0.00000	0.00000	0.00123	0.00853	0.03433	0.00857	0.01378
19	Θ_2	0.00000	0.00027	0.00130	0.00447	0.02887	0.00823	0.00765
19	Θ_3	0.00000	0.00000	0.00123	0.00707	0.03020	0.00750	0.00571
19	$M_{2->1}$	0.000	6.667	96.667	353.333	1440.000	343.333	111.698
19	$M_{1->2}$	0.000	6.667	96.667	353.333	1500.000	343.333	89.503
19	$D_{3->1}$	0.00000	0.00007	0.00137	0.00753	0.02893	0.00743	0.00169
19	$S_{3->1}$	0.00000	0.00000	0.00130	0.00833	0.02873	0.00830	0.00210
19	$D_{3->2}$	0.00000	0.00007	0.00137	0.00753	0.02893	0.00743	0.00127
19	$S_{3->2}$	0.00000	0.00000	0.00130	0.00833	0.02873	0.00830	0.00163
20	Θ_1	0.02360	0.04660	0.04750	0.04987	0.05020	0.04157	0.05883
20	Θ_2	0.02200	0.03947	0.04110	0.04473	0.05013	0.03770	0.02244
20	Θ_3	0.00000	0.00000	0.00123	0.01547	0.02380	0.00757	0.02806
20	$M_{2->1}$	0.000	13.333	43.333	80.000	140.000	63.333	5.133
20	$M_{1->2}$	0.000	13.333	43.333	80.000	146.667	70.000	4.395
20	$D_{3->1}$	0.00000	0.00000	0.00137	0.01027	0.03487	0.01063	0.00225
20	$S_{3->1}$	0.01747	0.02880	0.03643	0.04113	0.05007	0.03490	0.00559
20	$D_{3->2}$	0.00000	0.00000	0.00137	0.01027	0.03487	0.01063	0.00169
20	$S_{3->2}$	0.01747	0.02880	0.03643	0.04113	0.05007	0.03490	0.00435

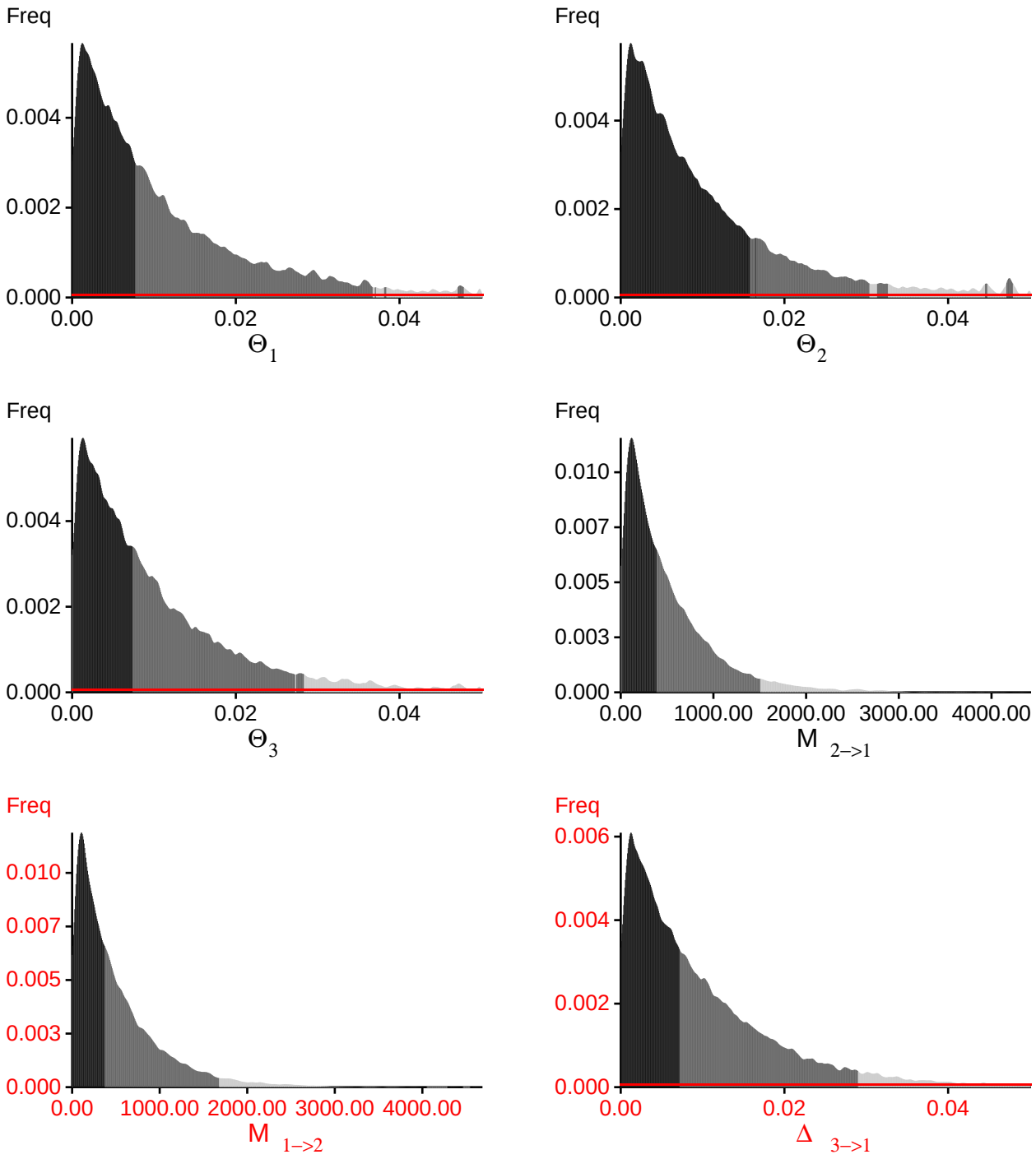
All	Θ_1	0.04647	0.04780	0.04843	0.04887	0.04980	0.04830	0.04800
All	Θ_2	0.04667	0.04833	0.04890	0.04920	0.04980	0.04857	0.04835
All	Θ_3	0.00000	0.00007	0.00030	0.00040	0.00053	0.00037	0.00028
All	$M_{2->1}$	26.667	60.000	83.333	100.000	120.000	83.333	79.776
All	$M_{1->2}$	26.667	53.333	76.667	93.333	120.000	83.333	79.593
All	$D_{3->1}$	0.00760	0.01913	0.02023	0.02227	0.02907	0.01877	0.01862
All	$S_{3->1}$	0.04447	0.04767	0.04830	0.04887	0.04987	0.04610	0.04561
All	$D_{3->2}$	0.00760	0.01913	0.02023	0.02227	0.02907	0.01877	0.01862
All	$S_{3->2}$	0.04447	0.04767	0.04830	0.04887	0.04987	0.04610	0.04561

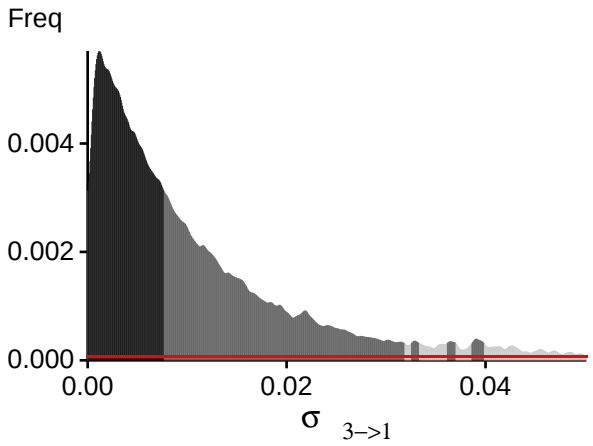
Citation suggestions:

Beerli P., 2006. Comparison of Bayesian and maximum-likelihood inference of population genetic parameters. Bioinformatics 22:341-345

Beerli P., 2009. How to use MIGRATE or why are Markov chain Monte Carlo programs difficult to use? In Population Genetics for Animal Conservation, G. Bertorelle, M. W. Bruford, H. C. Hauffe, A. Rizzoli, and C. Vernesi, eds., vol. 17 of Conservation Biology, Cambridge University Press, Cambridge UK, pp. 42-79.

Bayesian Analysis: Posterior distribution for locus 1

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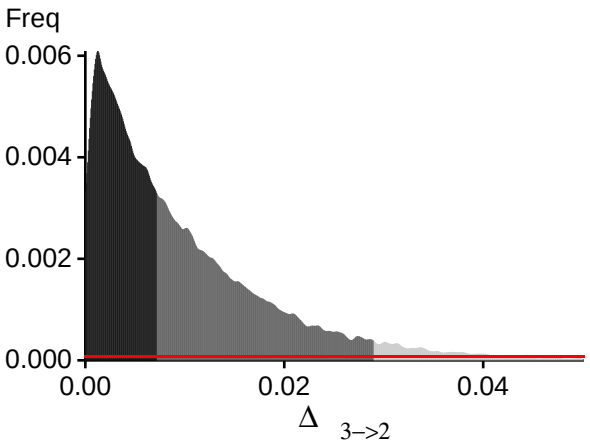
σ 3–>1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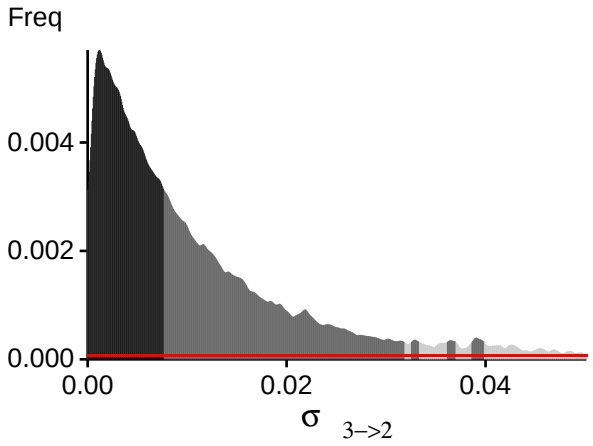
Δ 3–>2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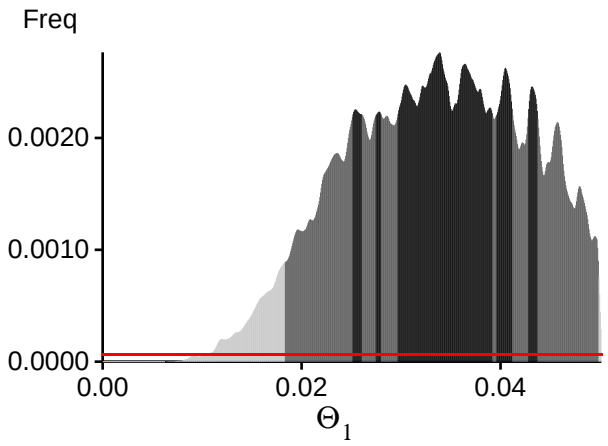
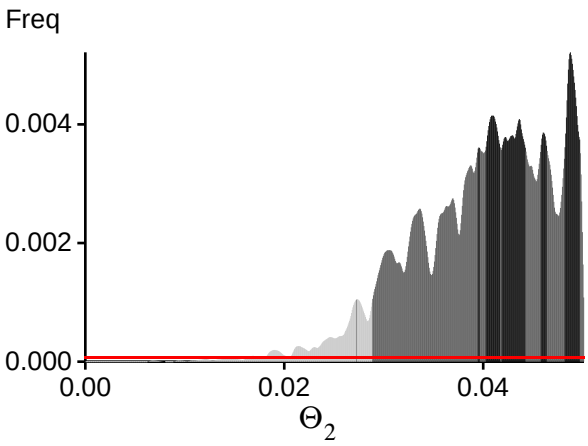
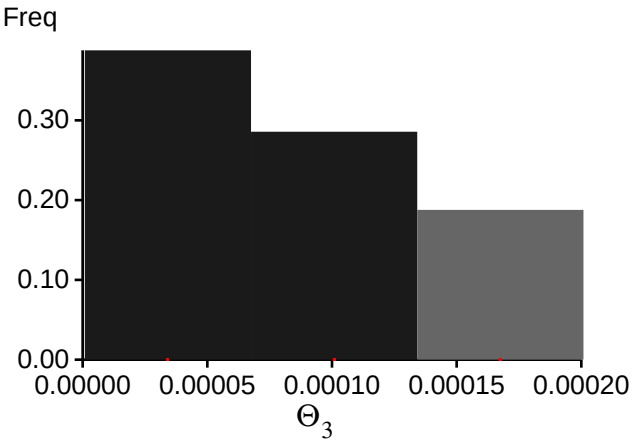
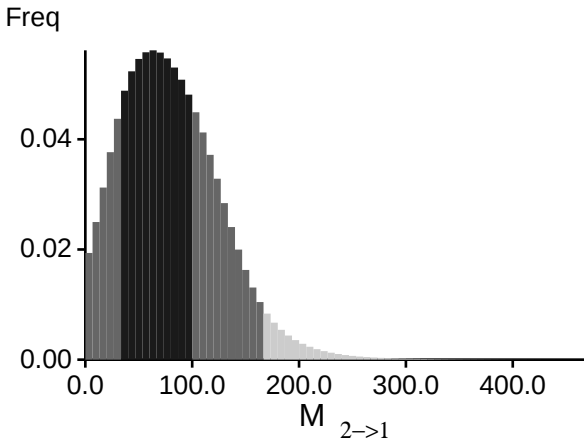
0.04
σ 3–>2

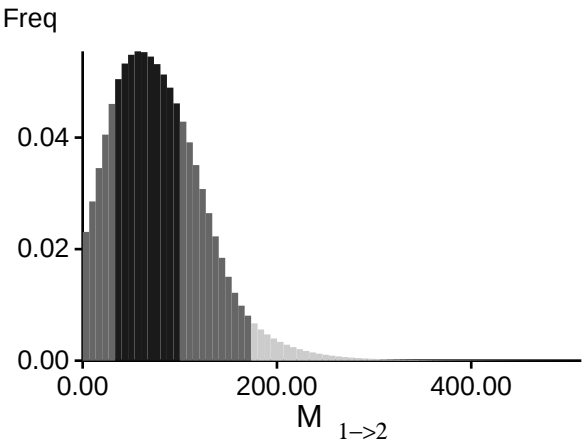
Bayesian Analysis: Posterior distribution for locus 2

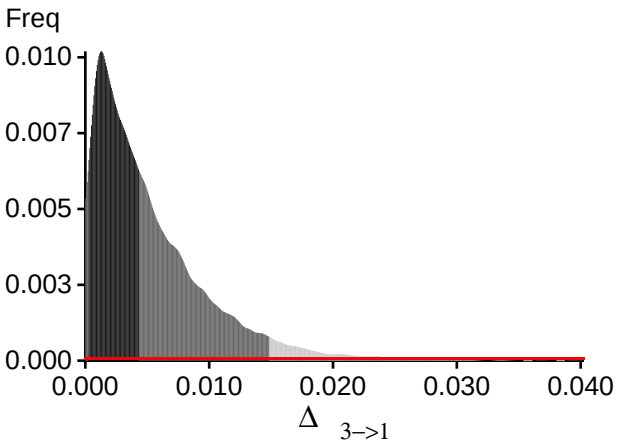


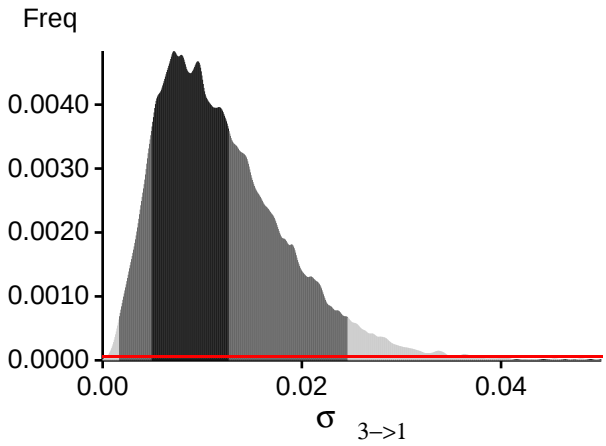








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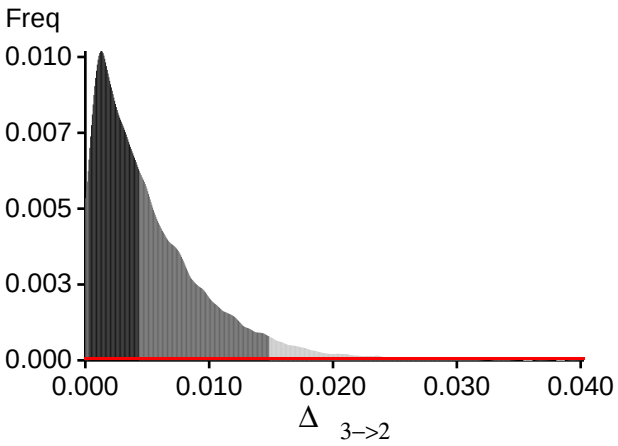
σ 3–>1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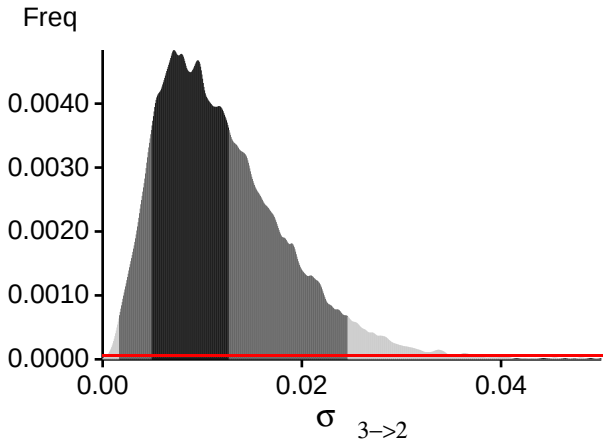
Δ 3–>2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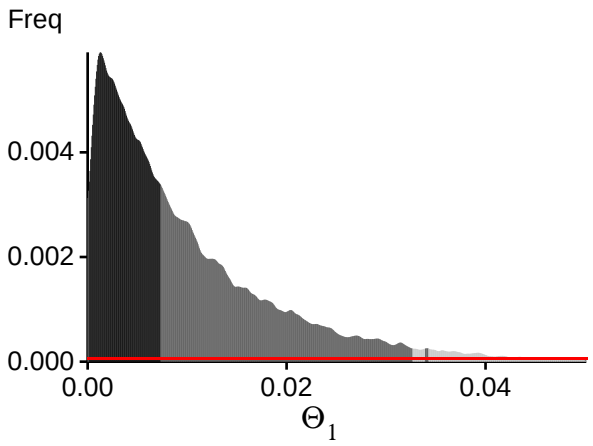
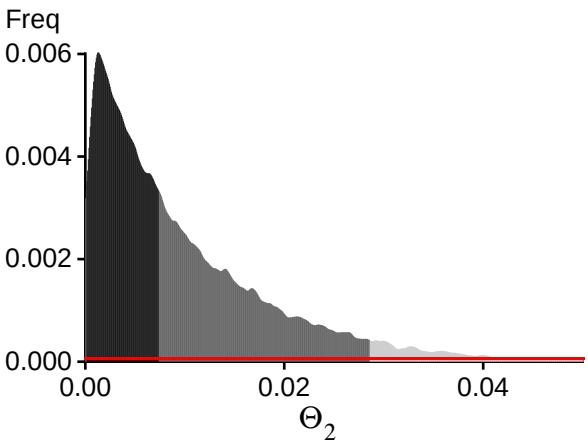
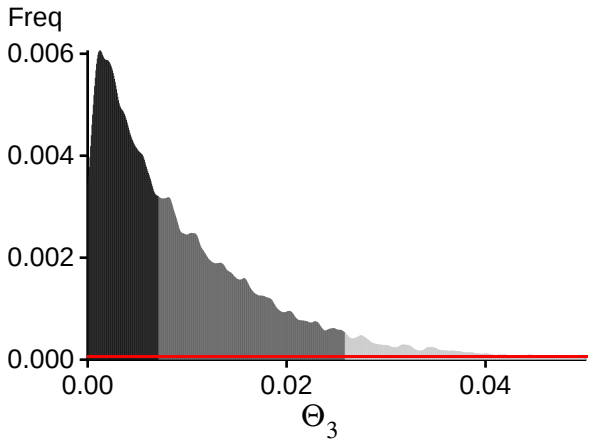
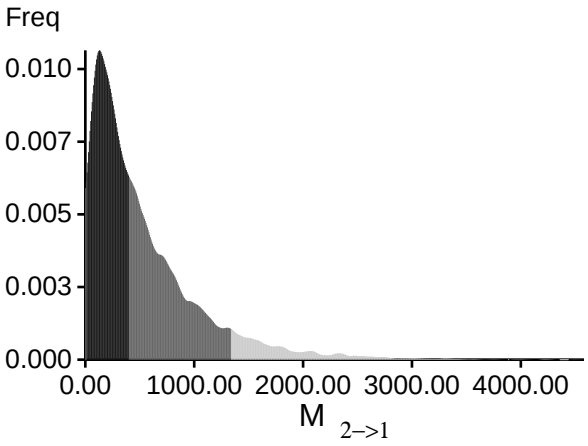
σ 3–>2

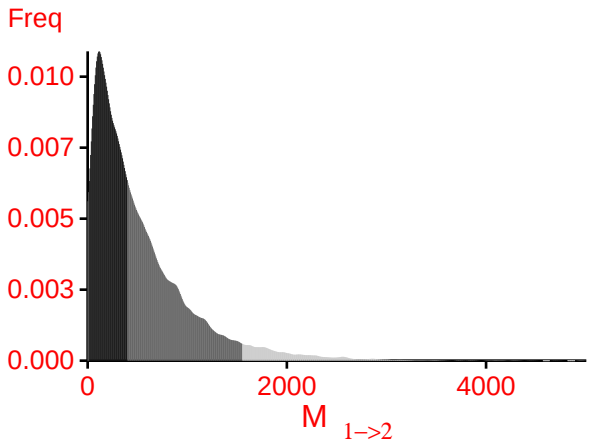
Bayesian Analysis: Posterior distribution for locus 3

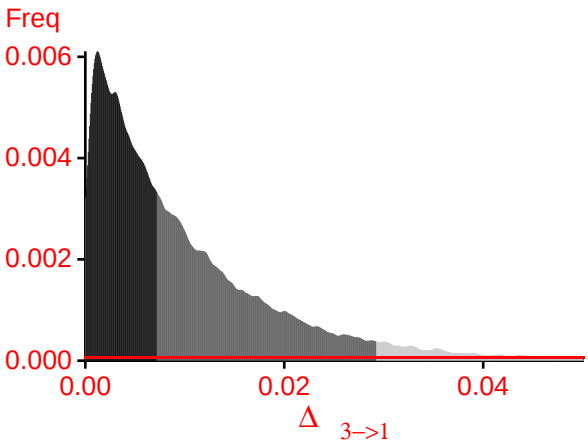


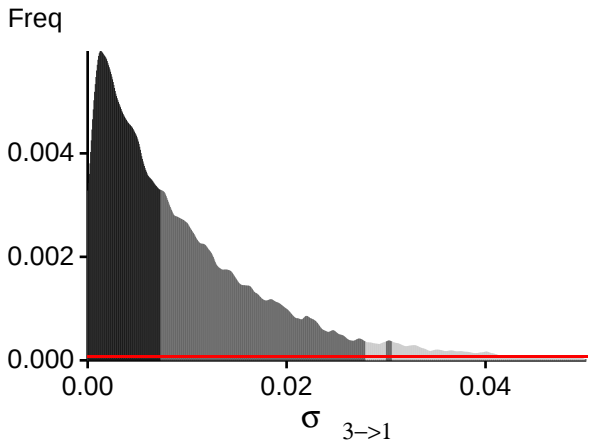








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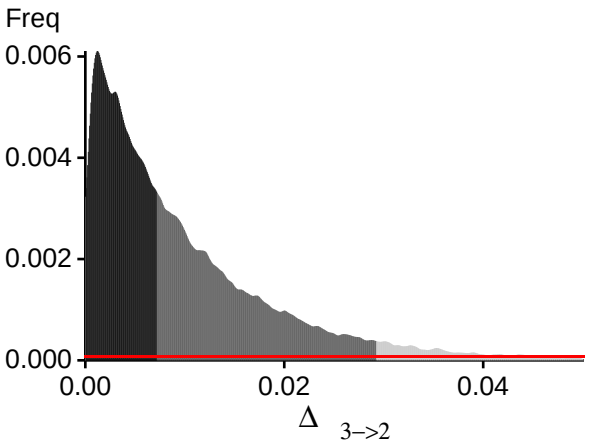
σ 3–>1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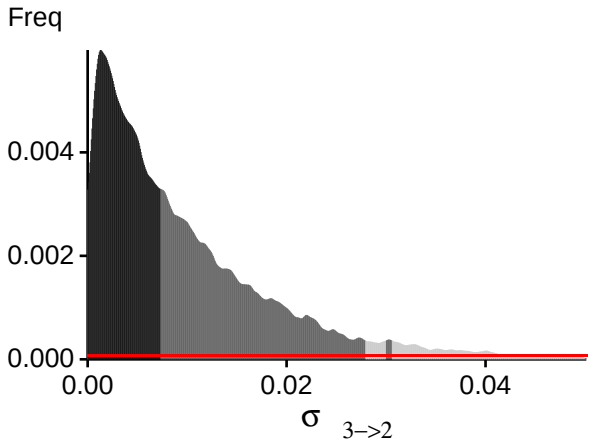
Δ 3–>2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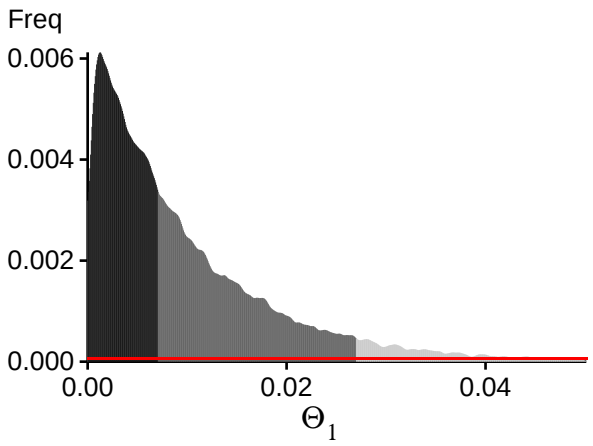
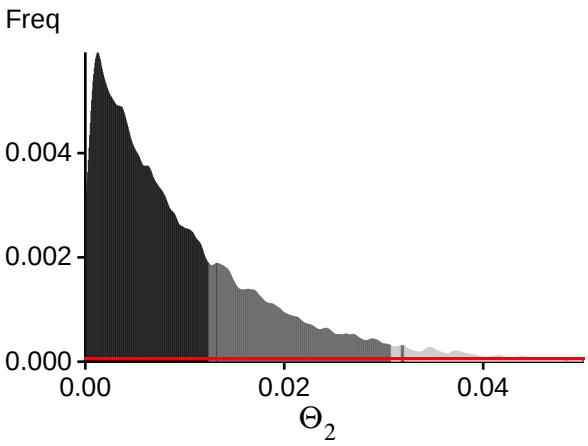
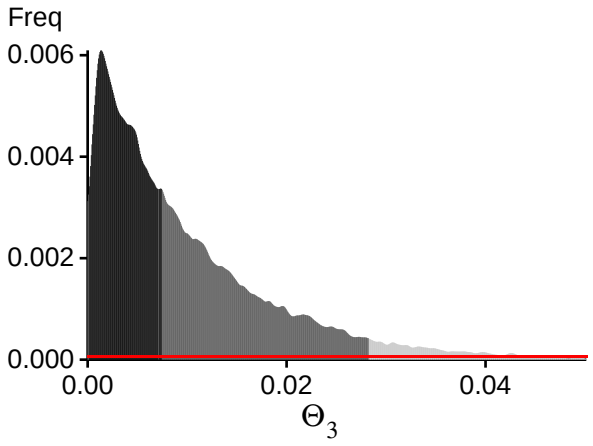
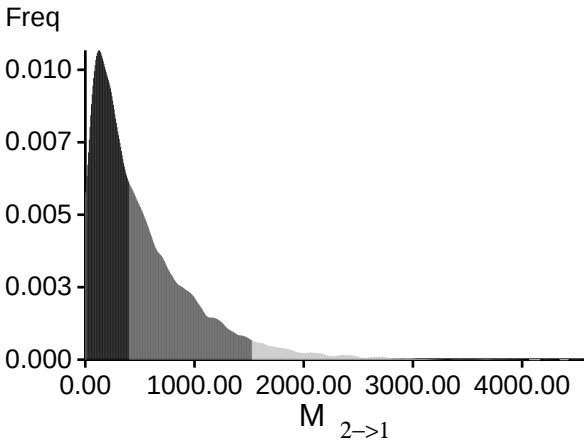
σ 3–>2

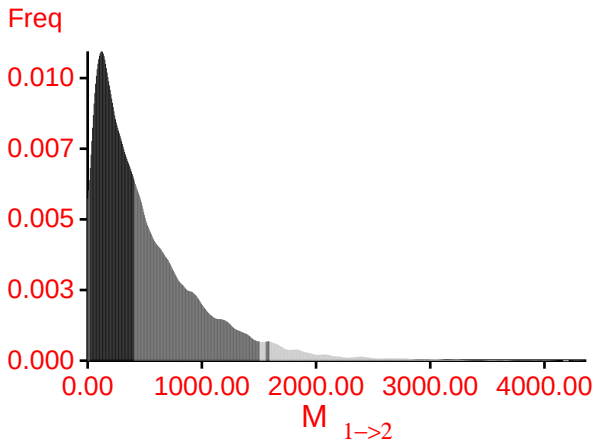
Bayesian Analysis: Posterior distribution for locus 4

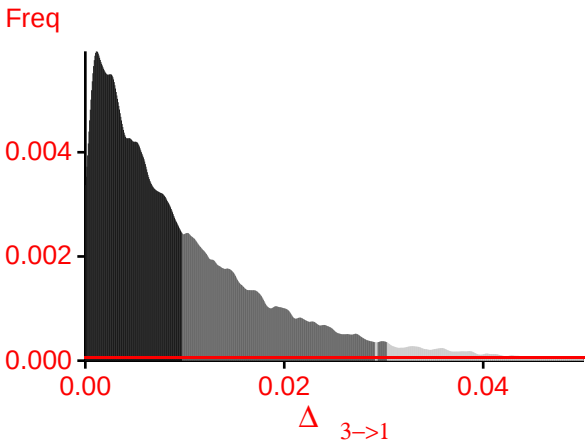


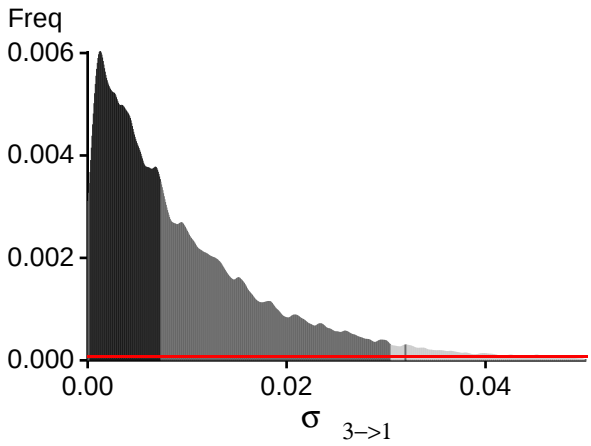








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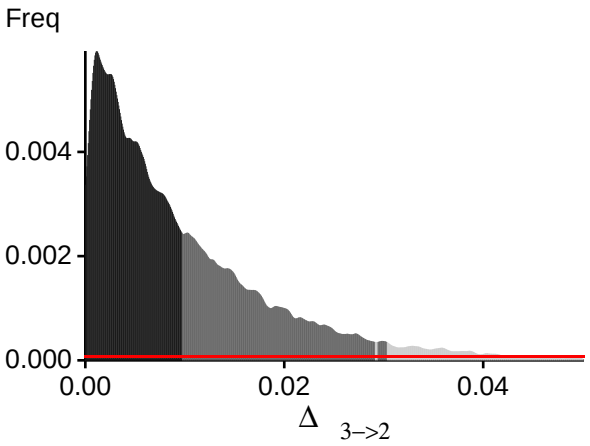
σ 3–>1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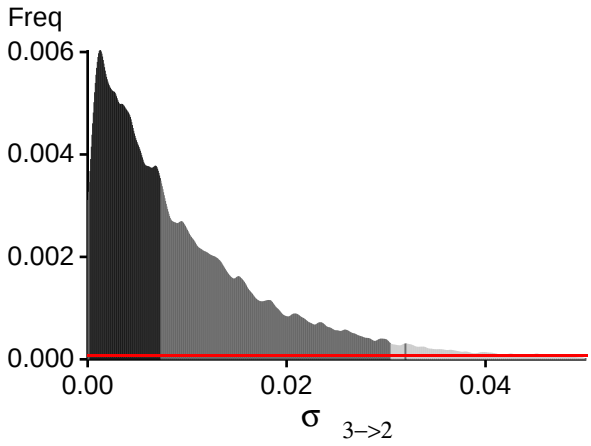
Δ 3–>2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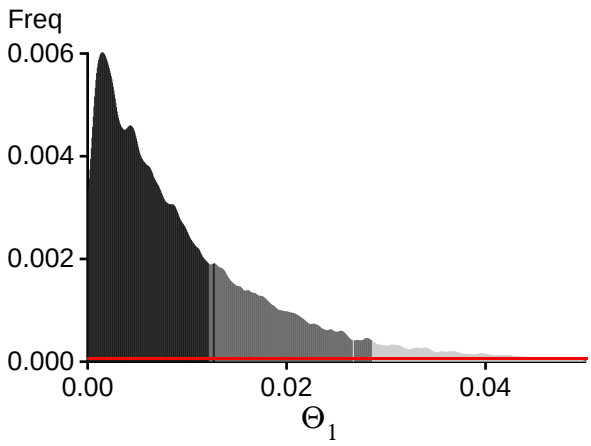
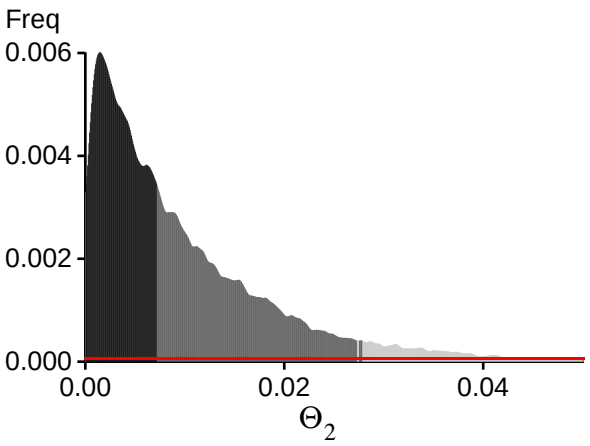
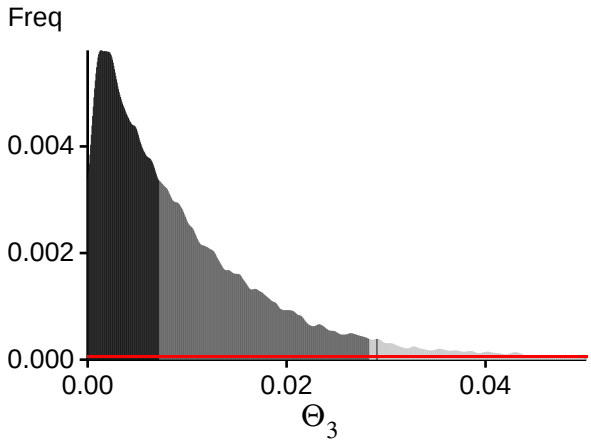
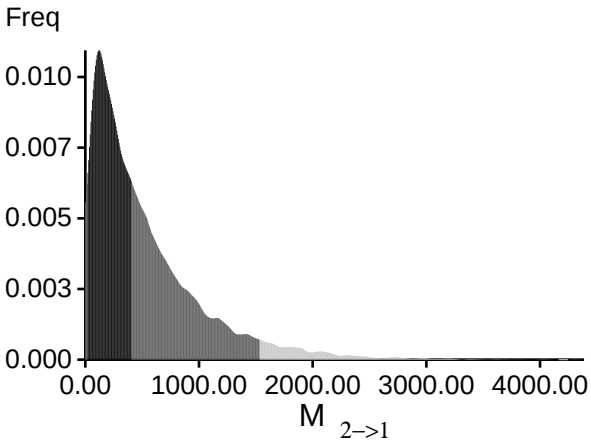
σ 3–>2

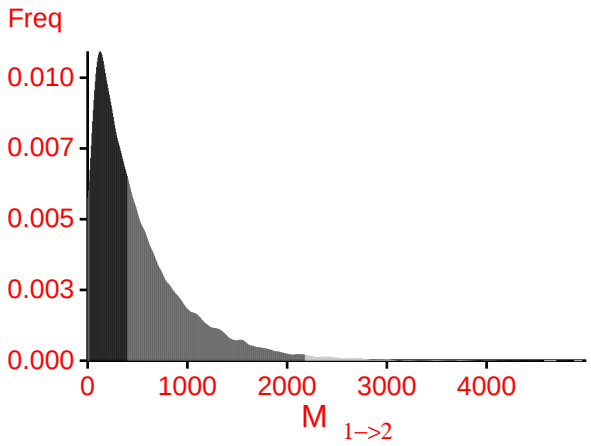
Bayesian Analysis: Posterior distribution for locus 5

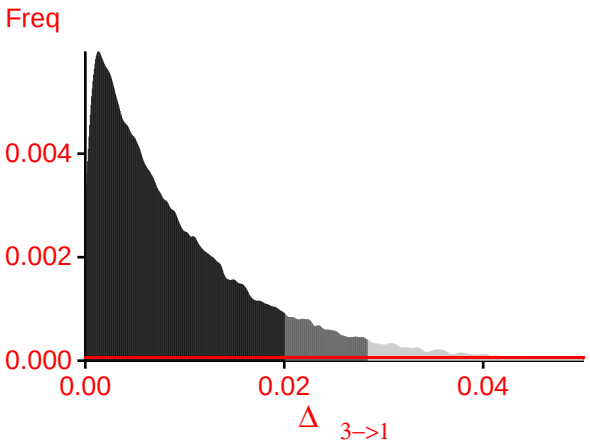


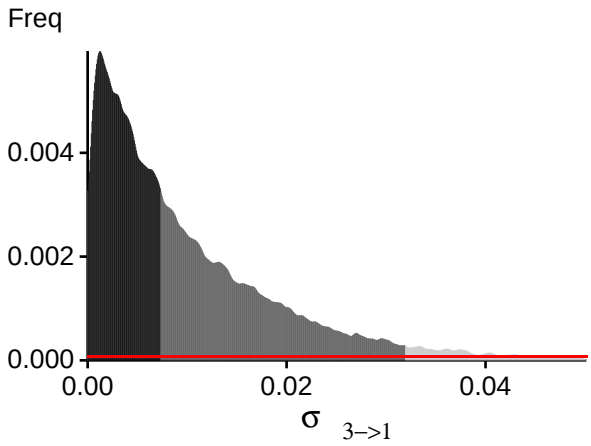








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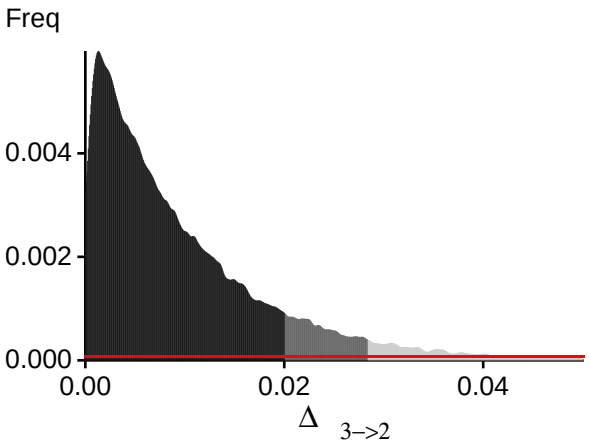
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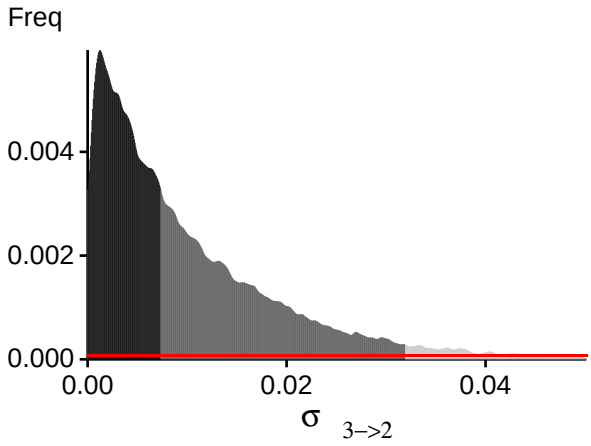
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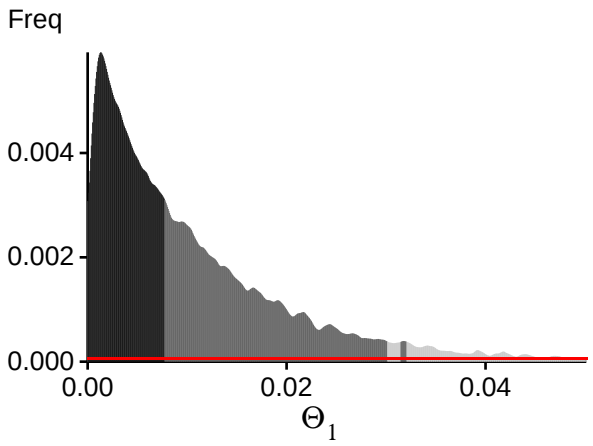
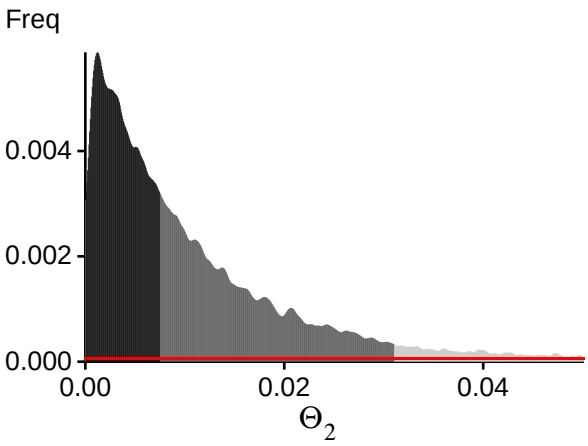
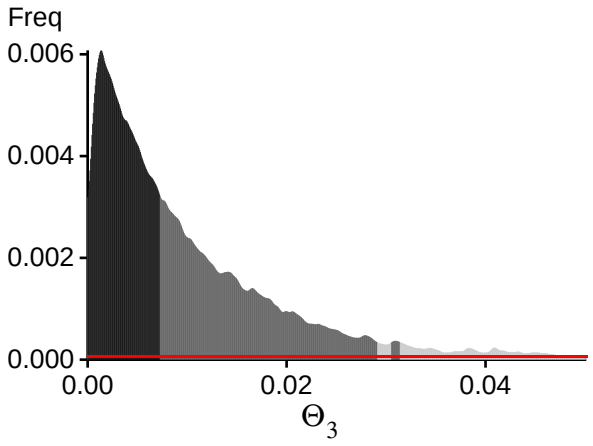
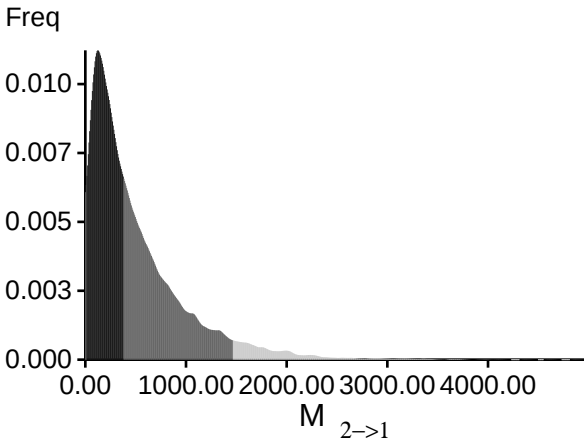
σ 3–>2

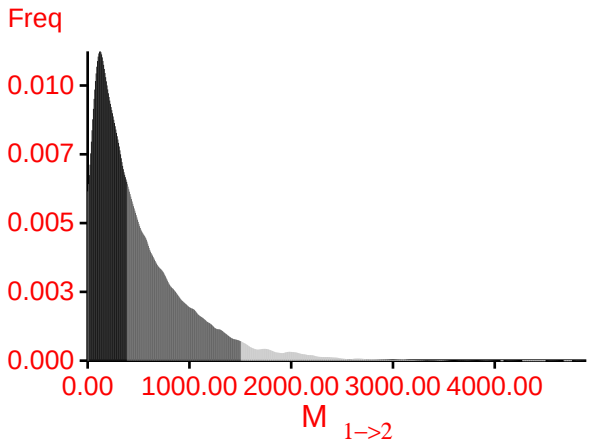
Bayesian Analysis: Posterior distribution for locus 6

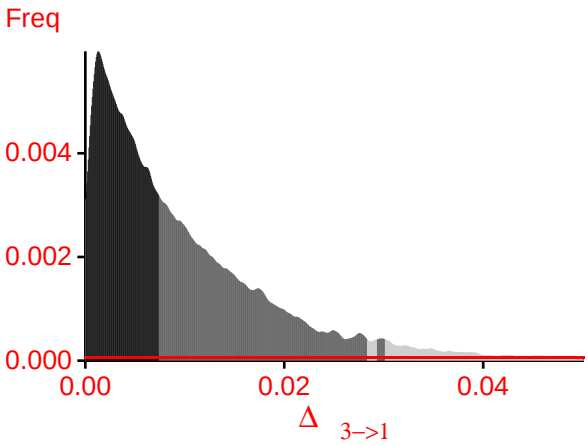


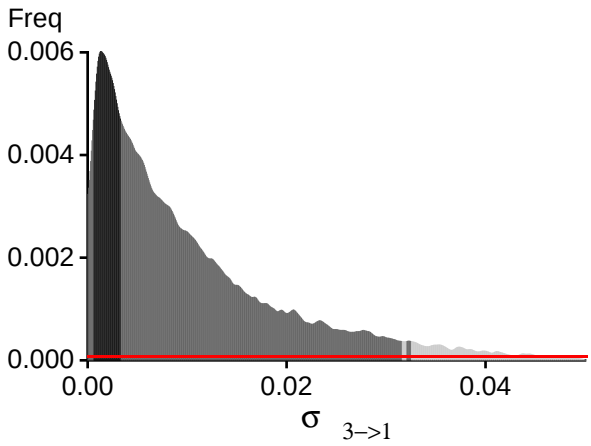








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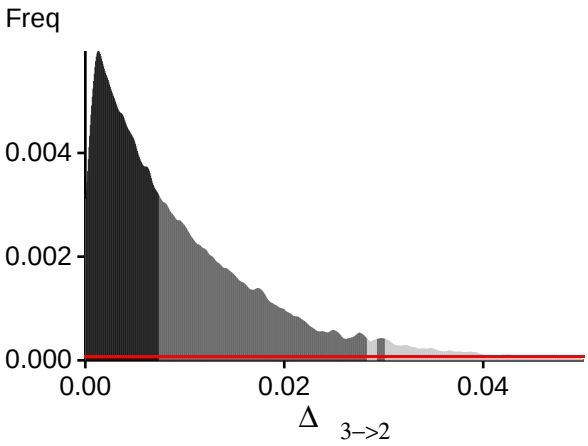
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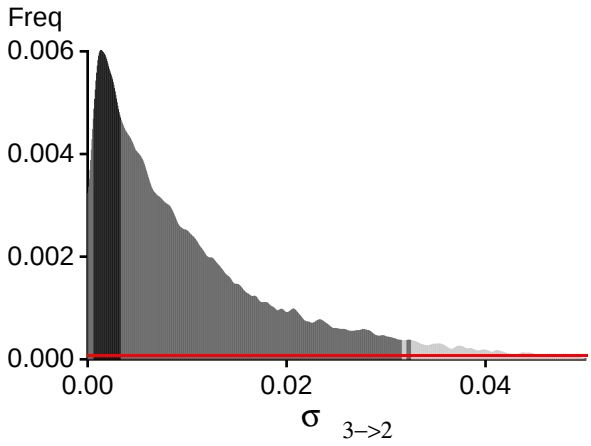
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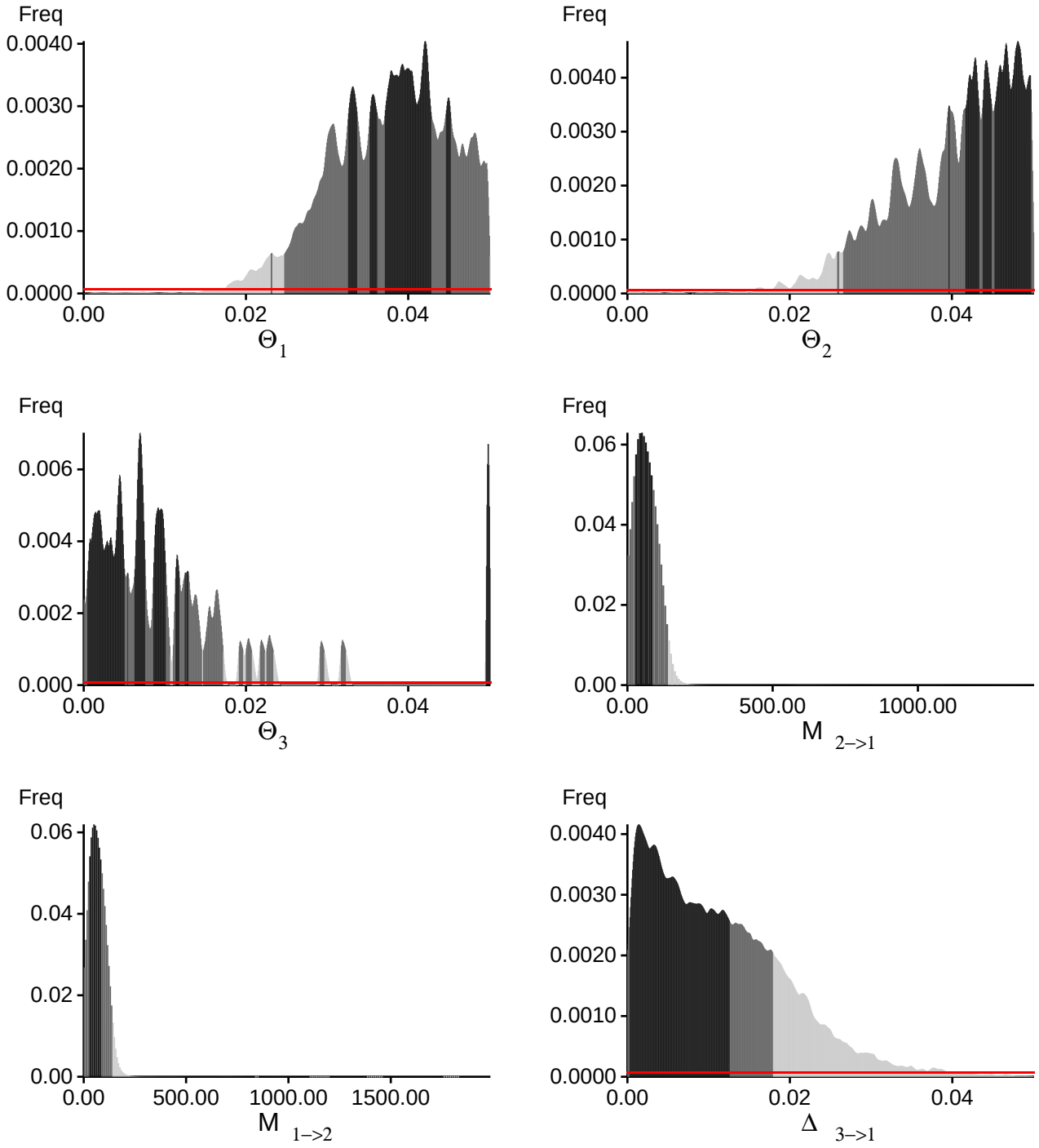
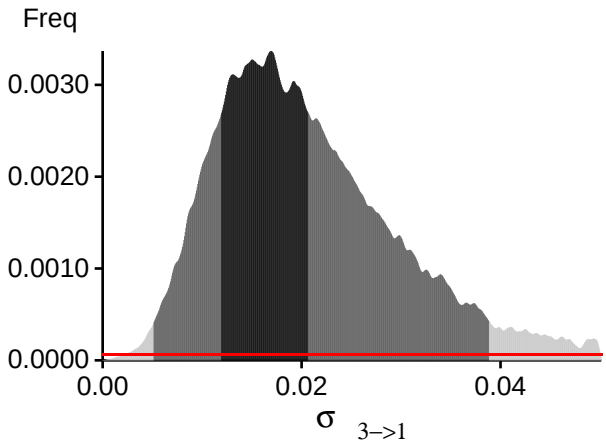
Bayesian Analysis: Posterior distribution for locus 7

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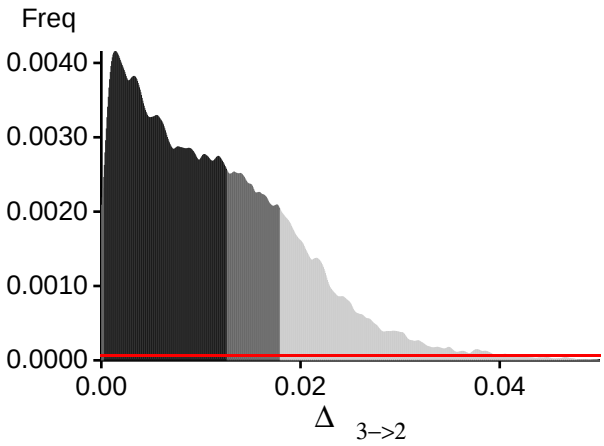
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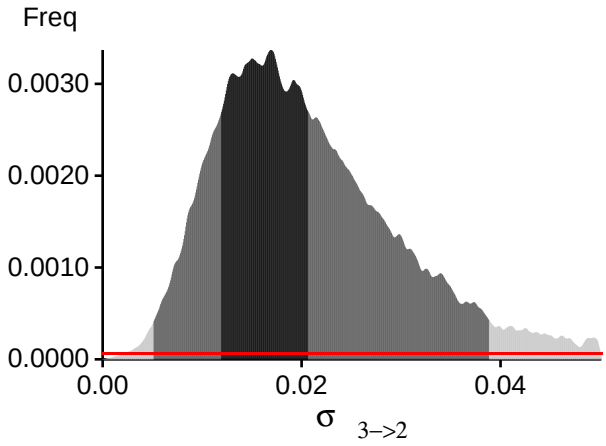
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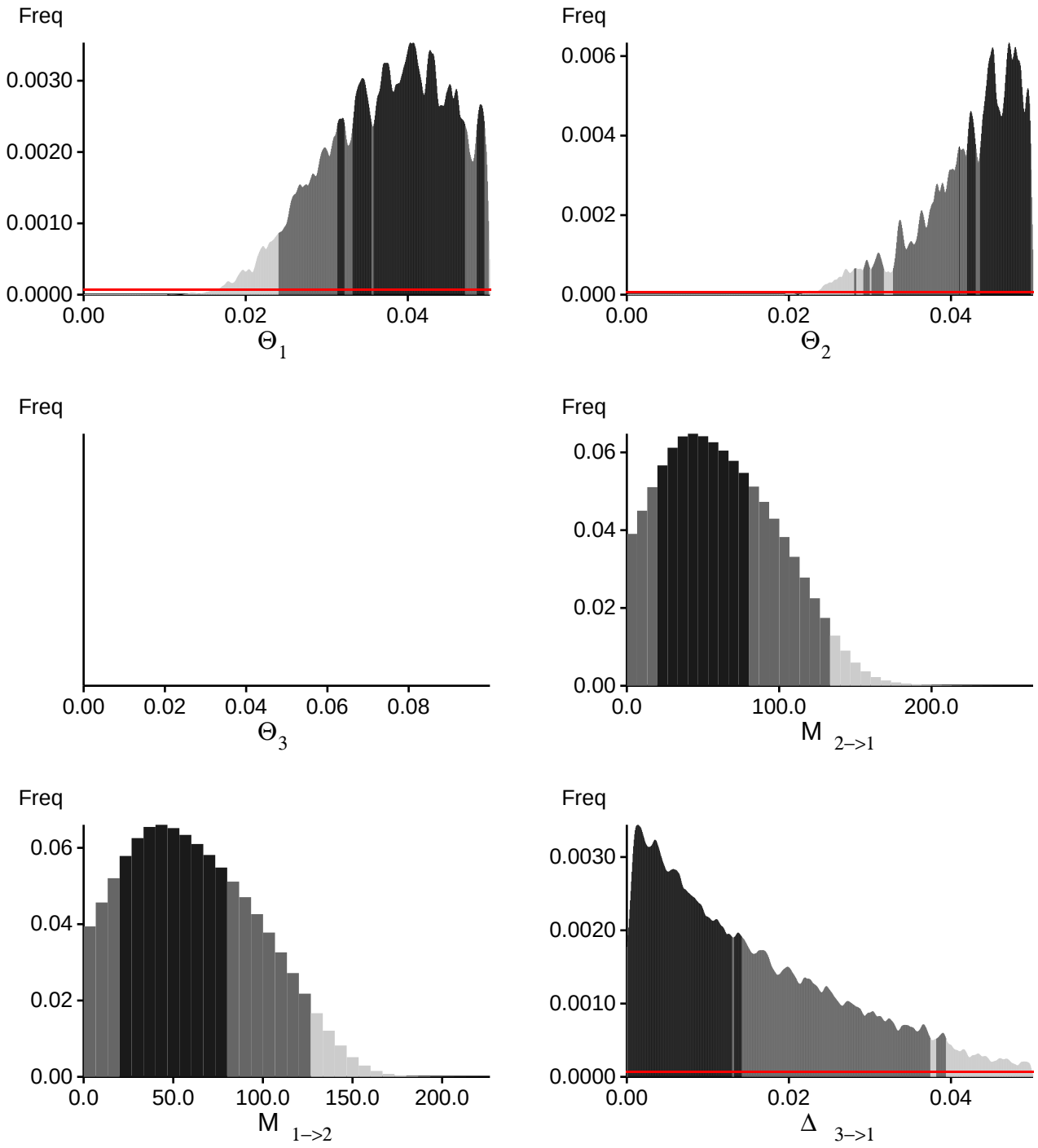
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 8



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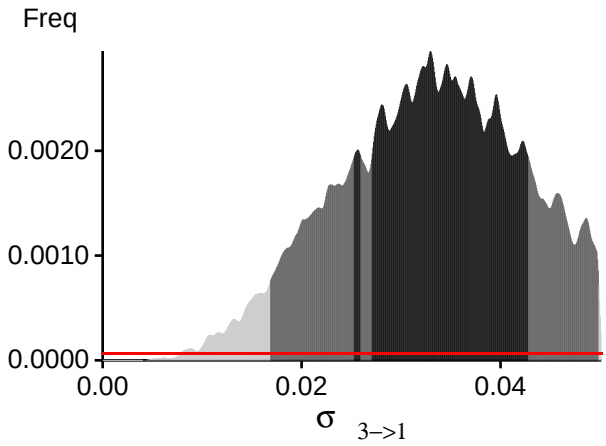
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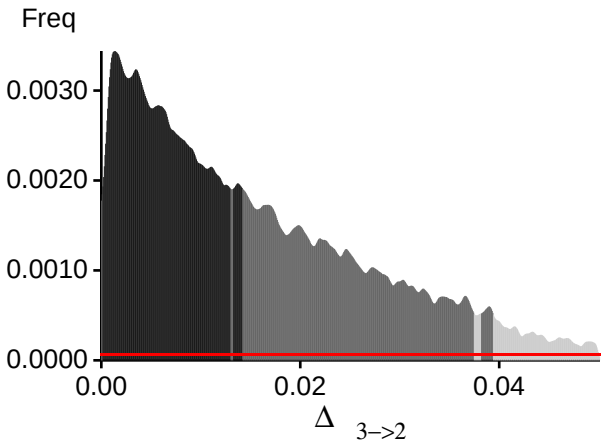
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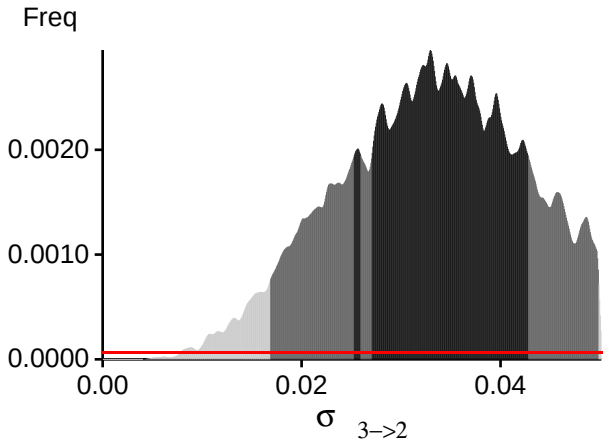
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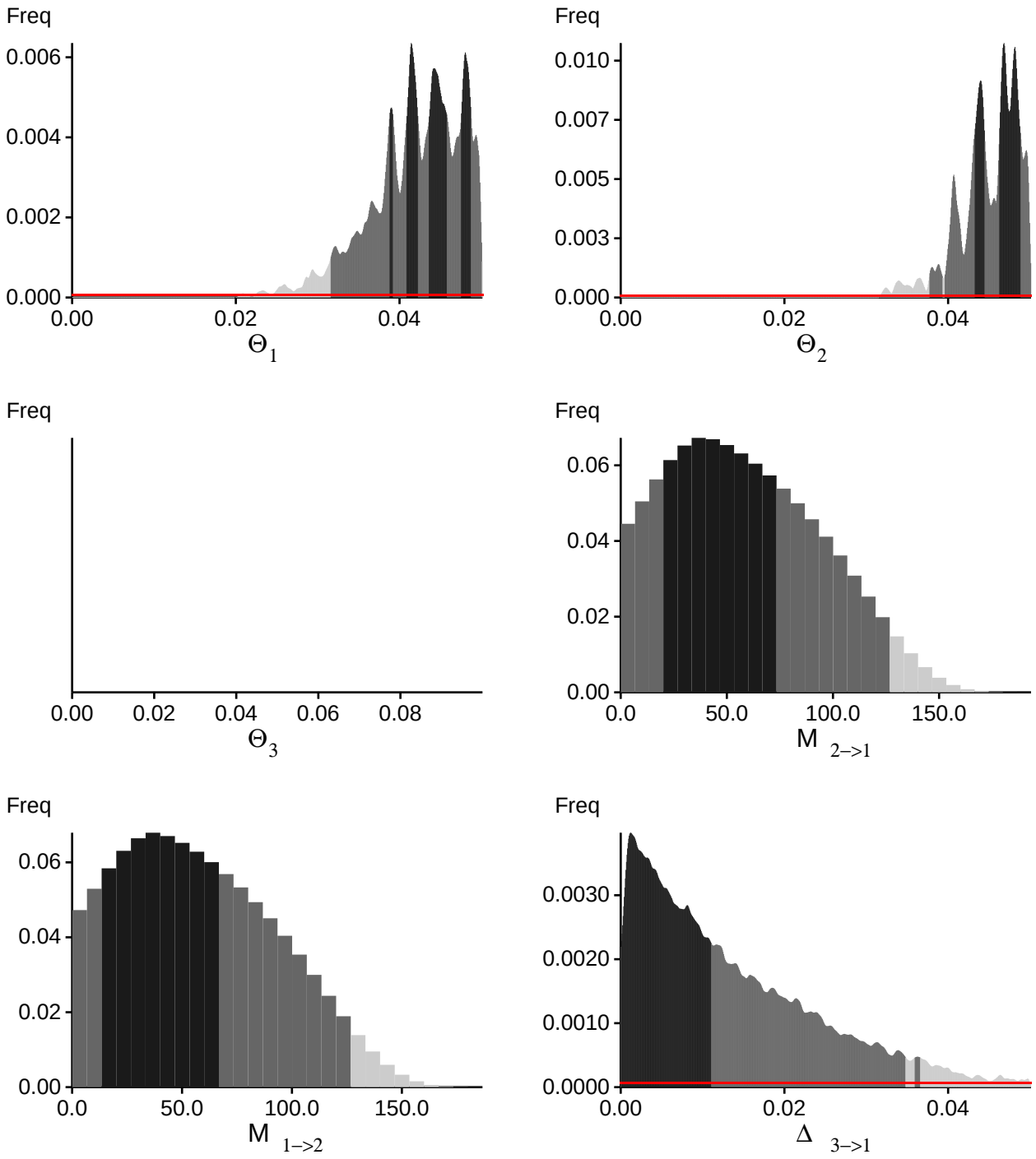
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 9



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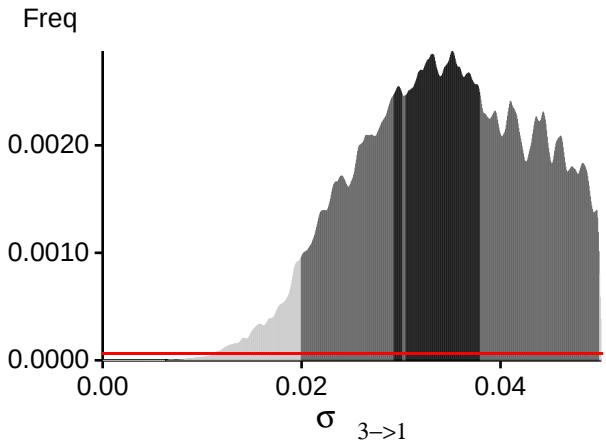
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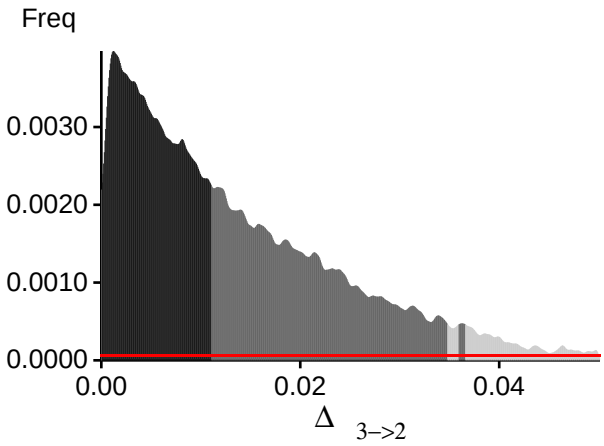
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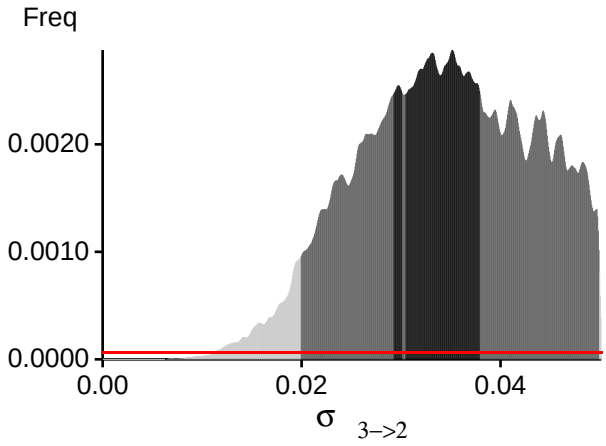
Δ 3–>2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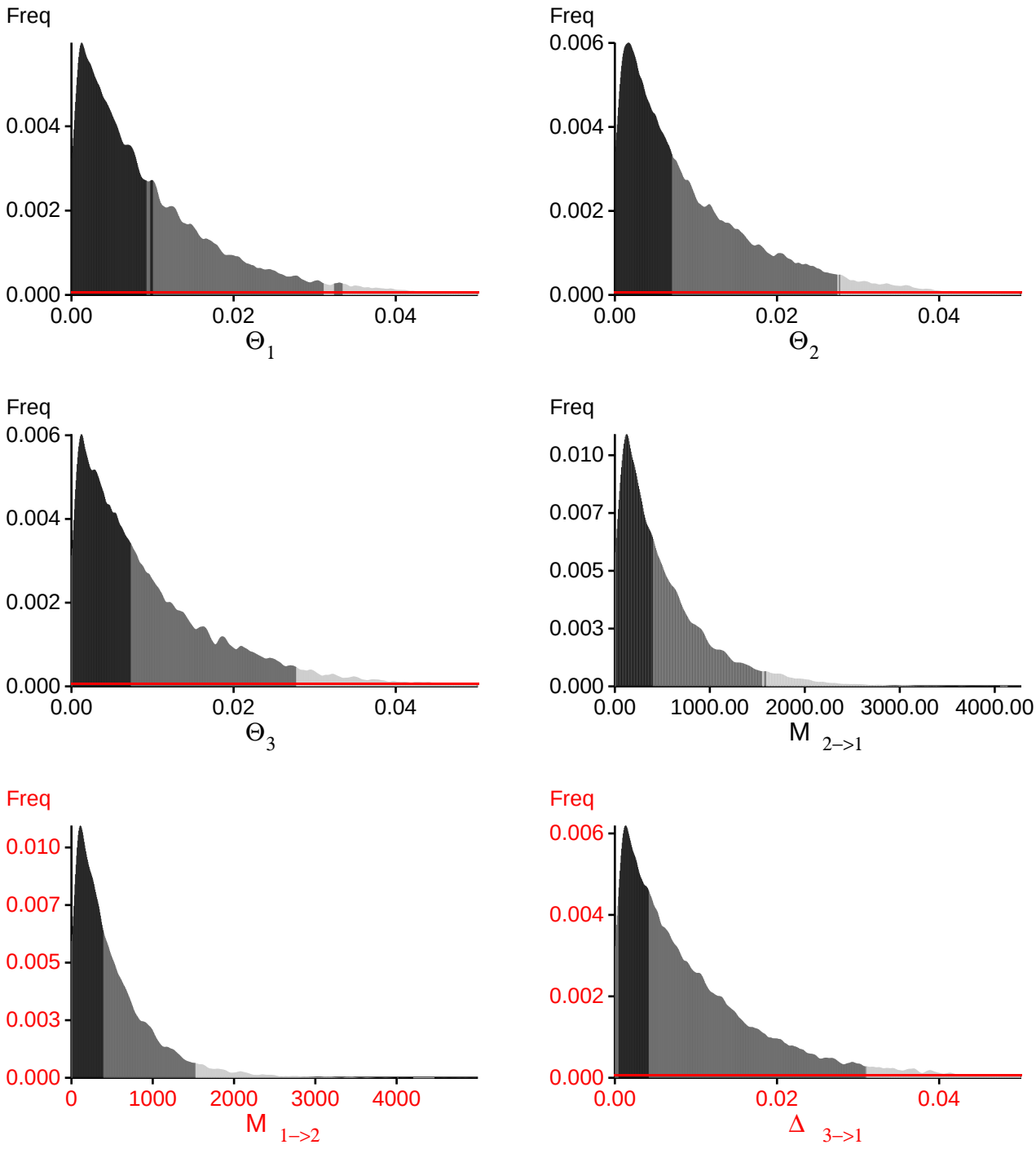
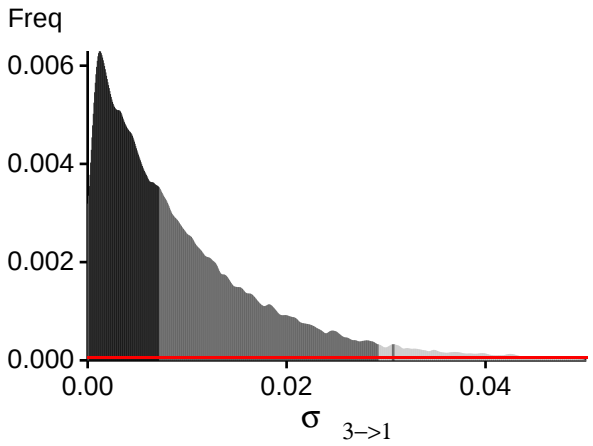
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 10

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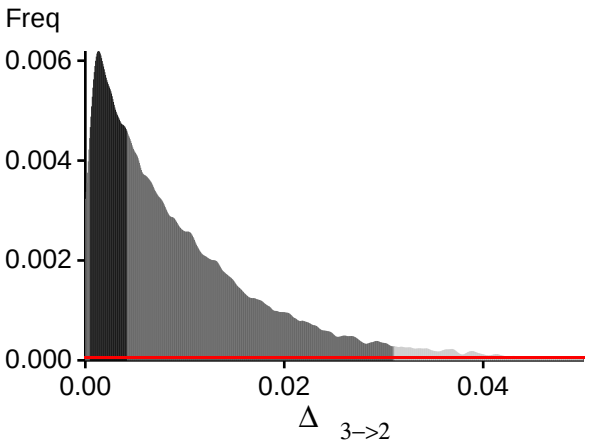
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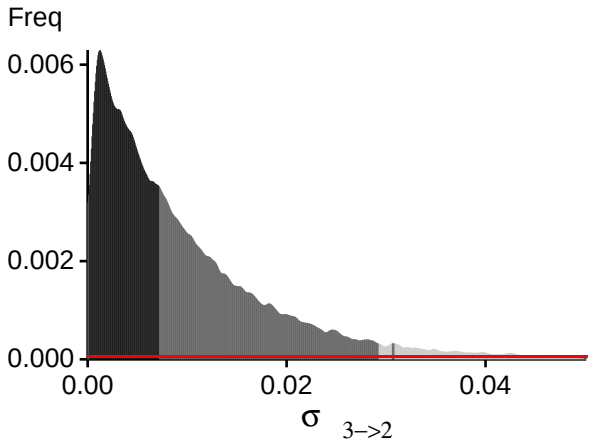
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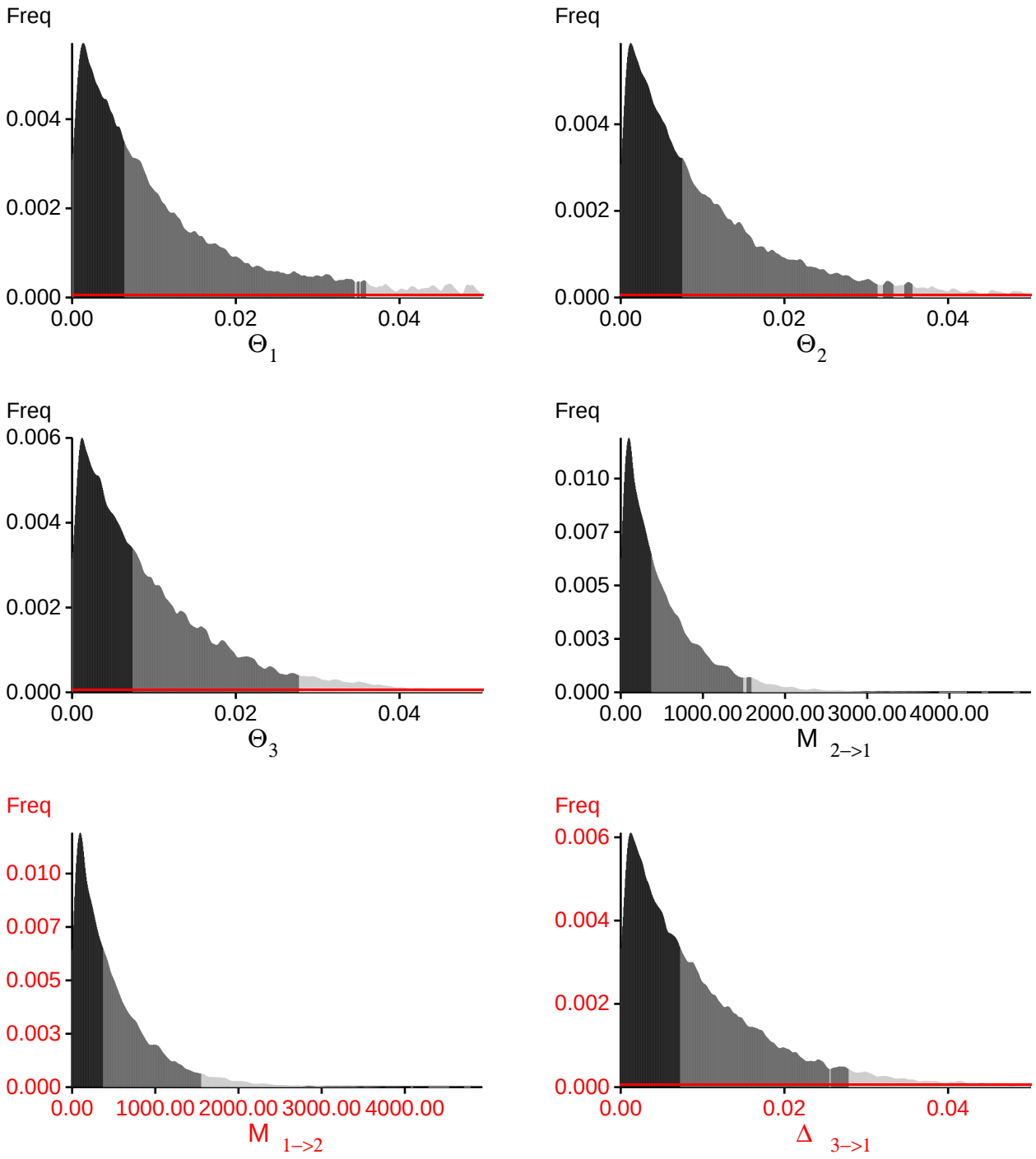
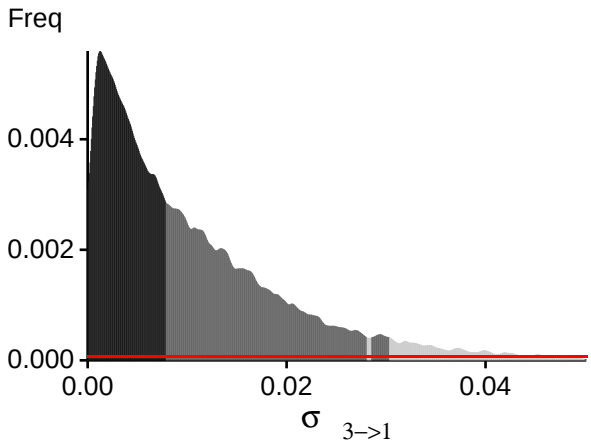
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 11

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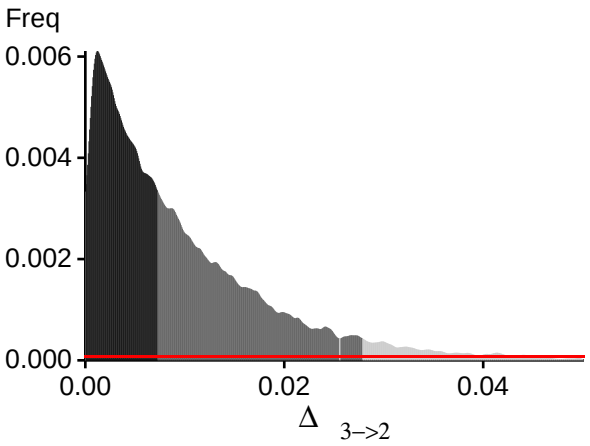
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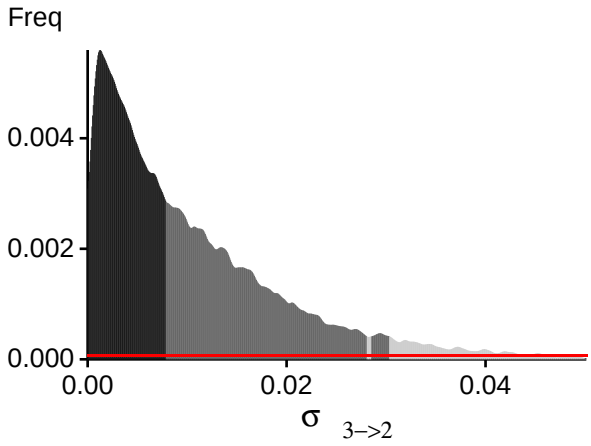
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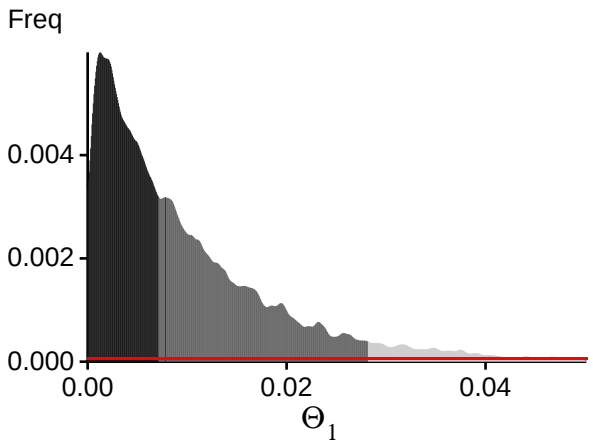
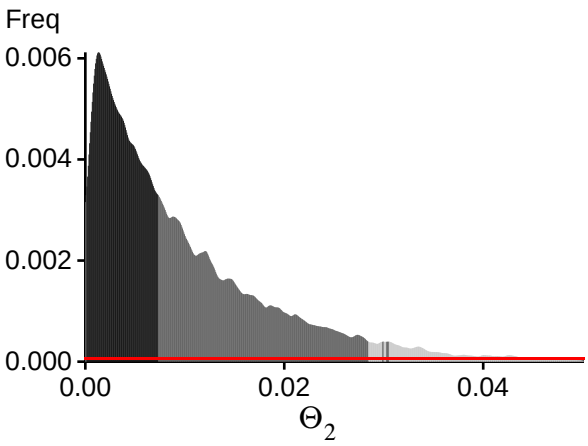
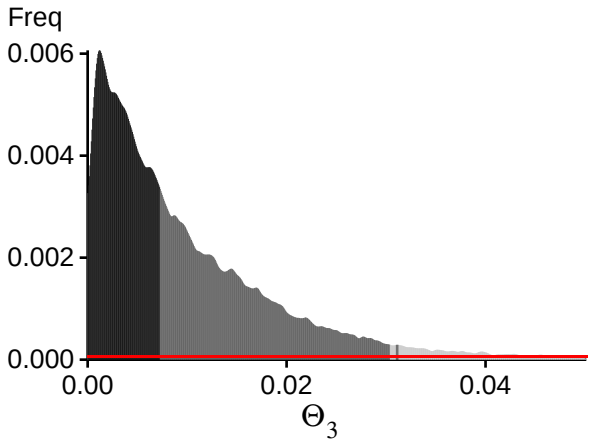
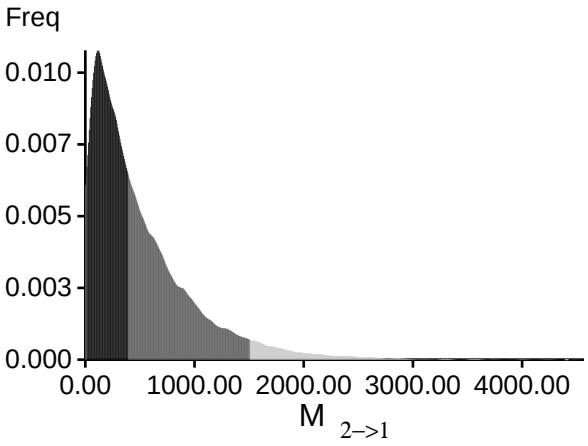
σ 3–>2

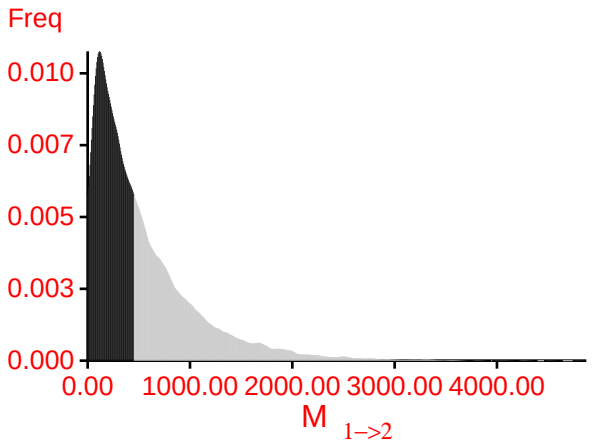
Bayesian Analysis: Posterior distribution for locus 12

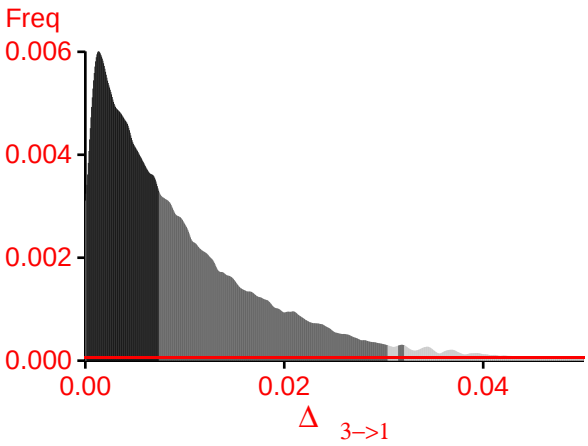


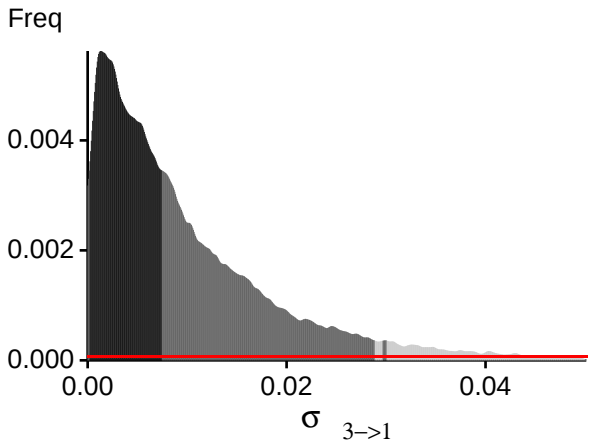








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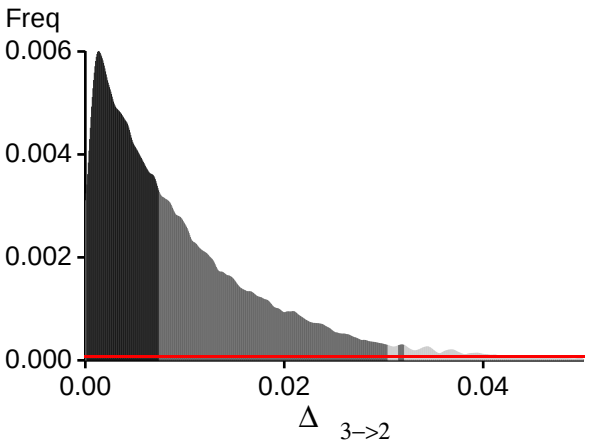
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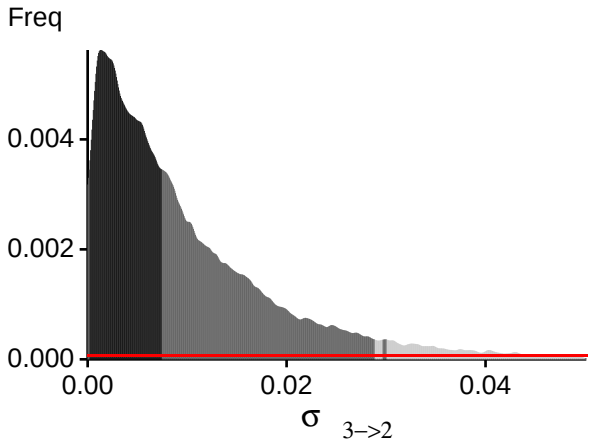
Δ 3–>2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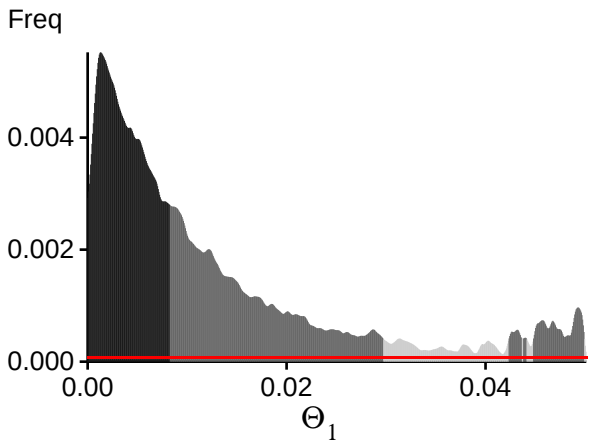
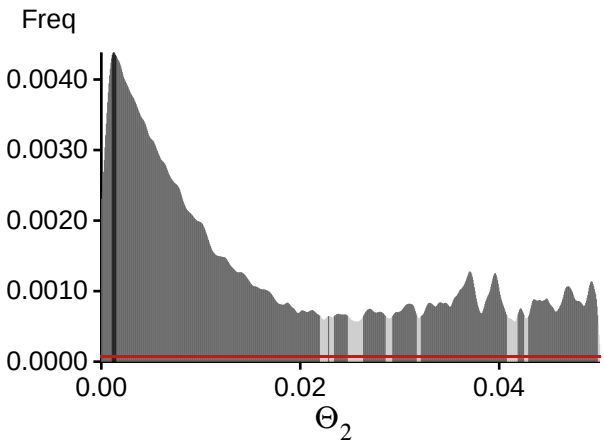
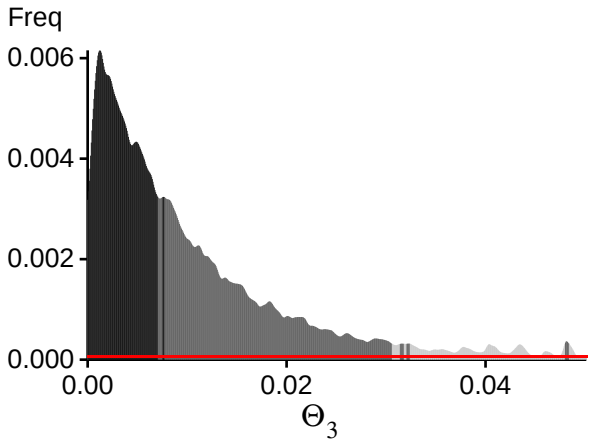
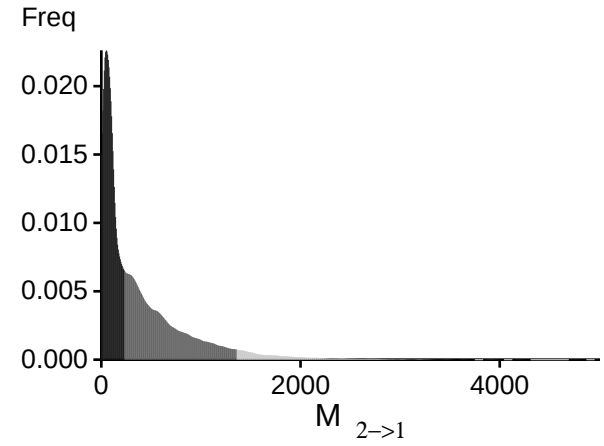
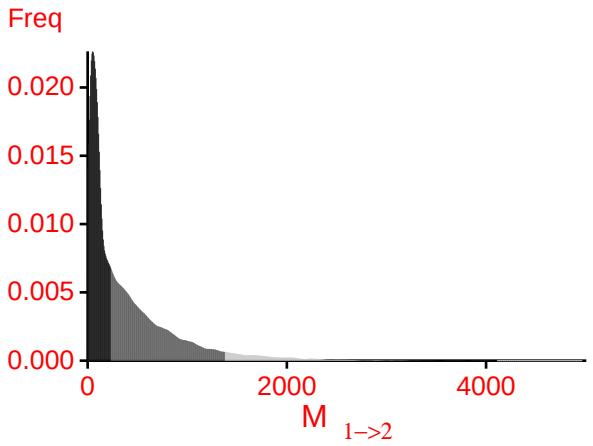
Bayesian Analysis: Posterior distribution for locus 13

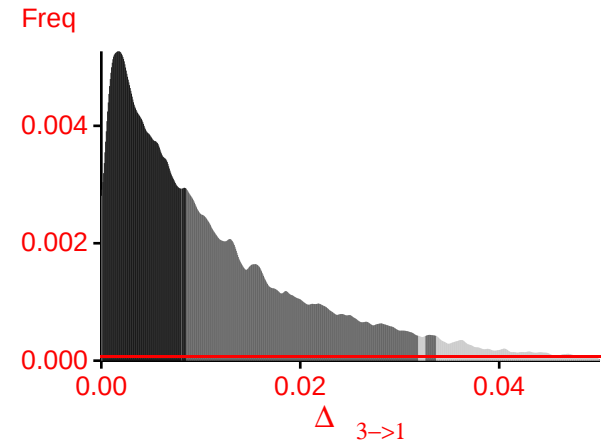


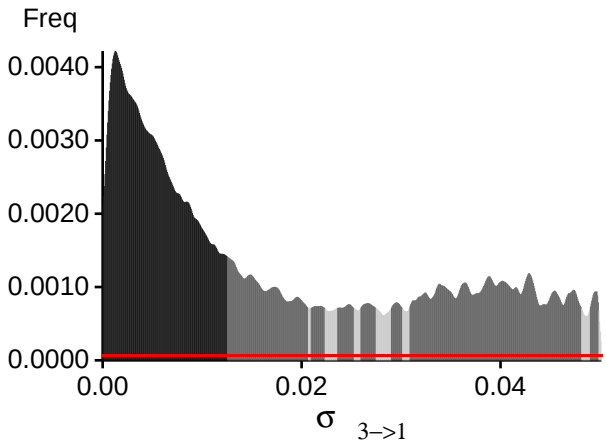








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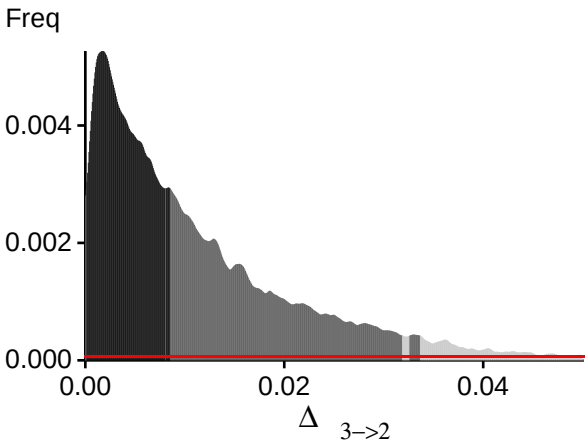
0.04
σ 3–>1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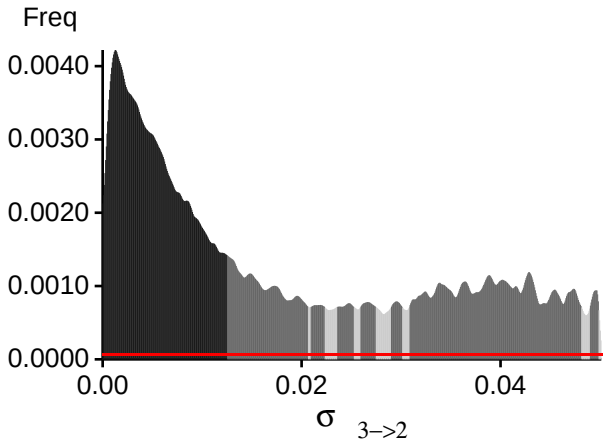
0.02
0.04
Δ 3–>2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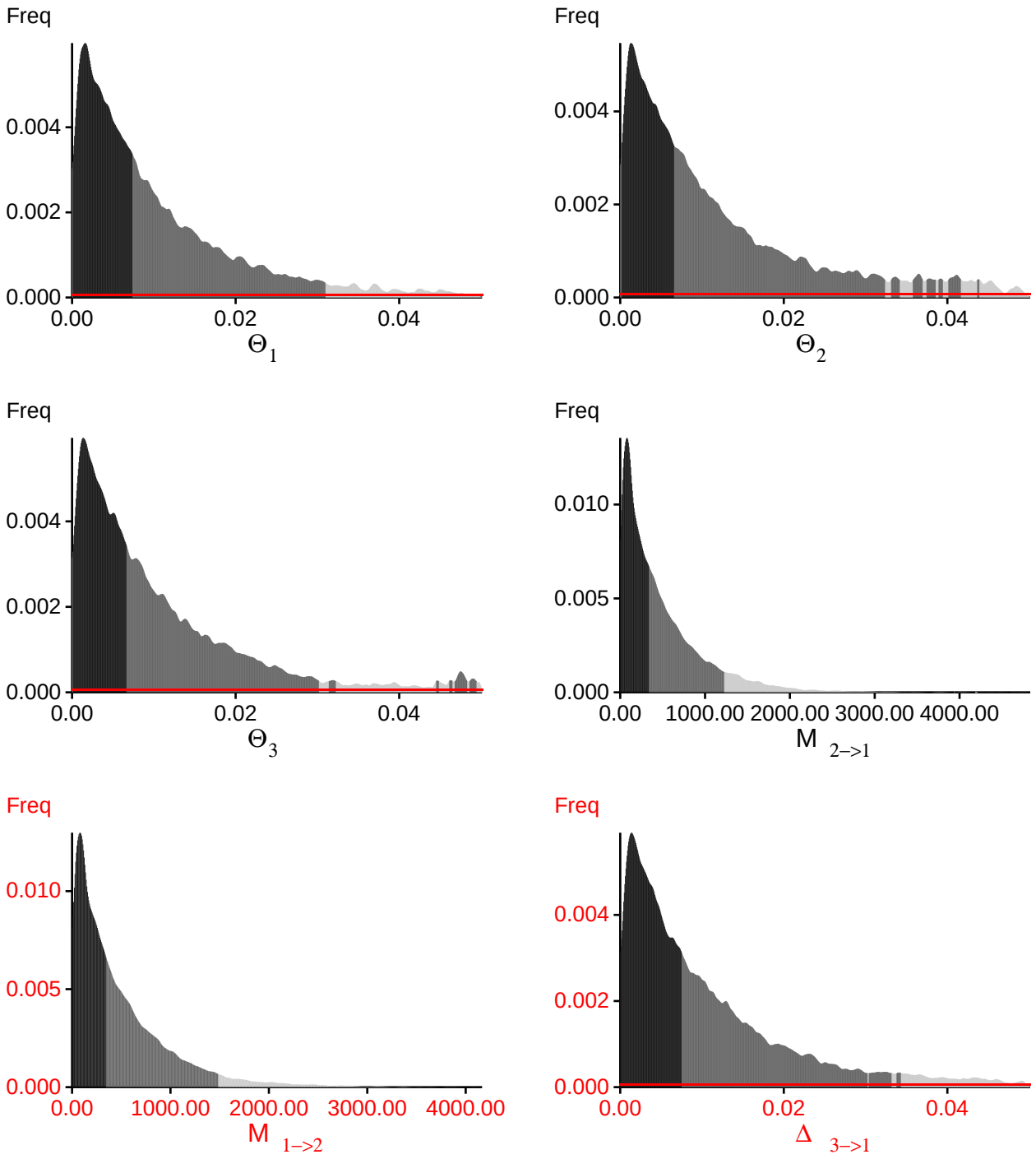
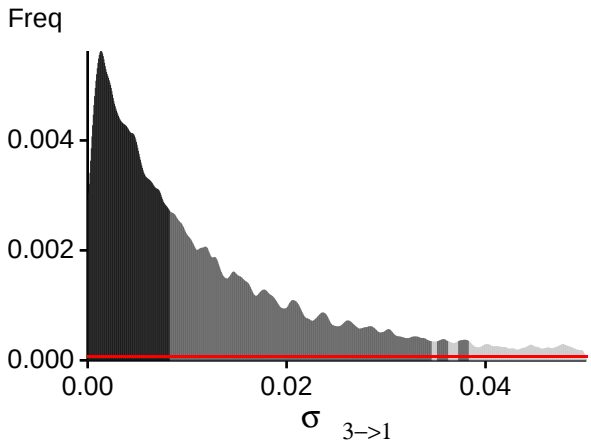
0.02
0.04
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 14

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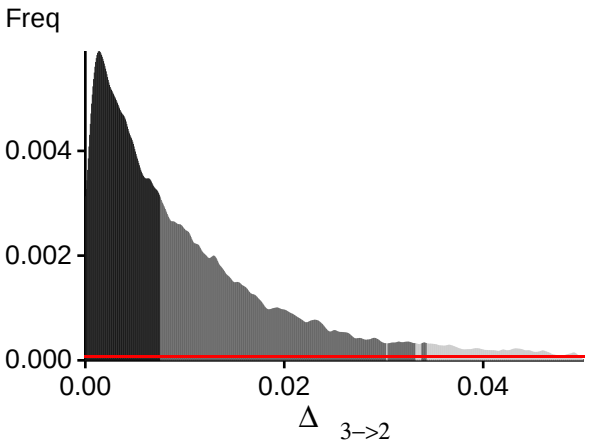
0.04
σ 3–>1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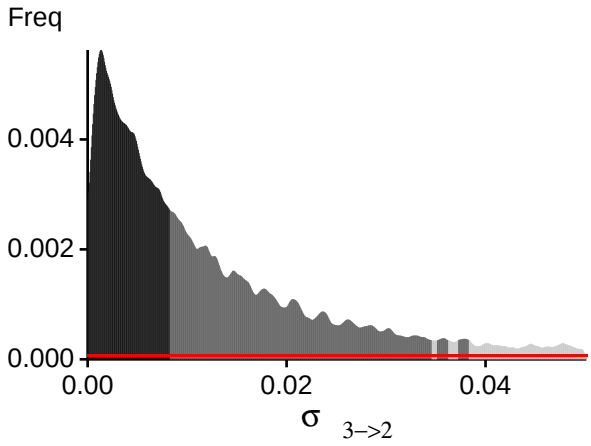
Δ 3–>2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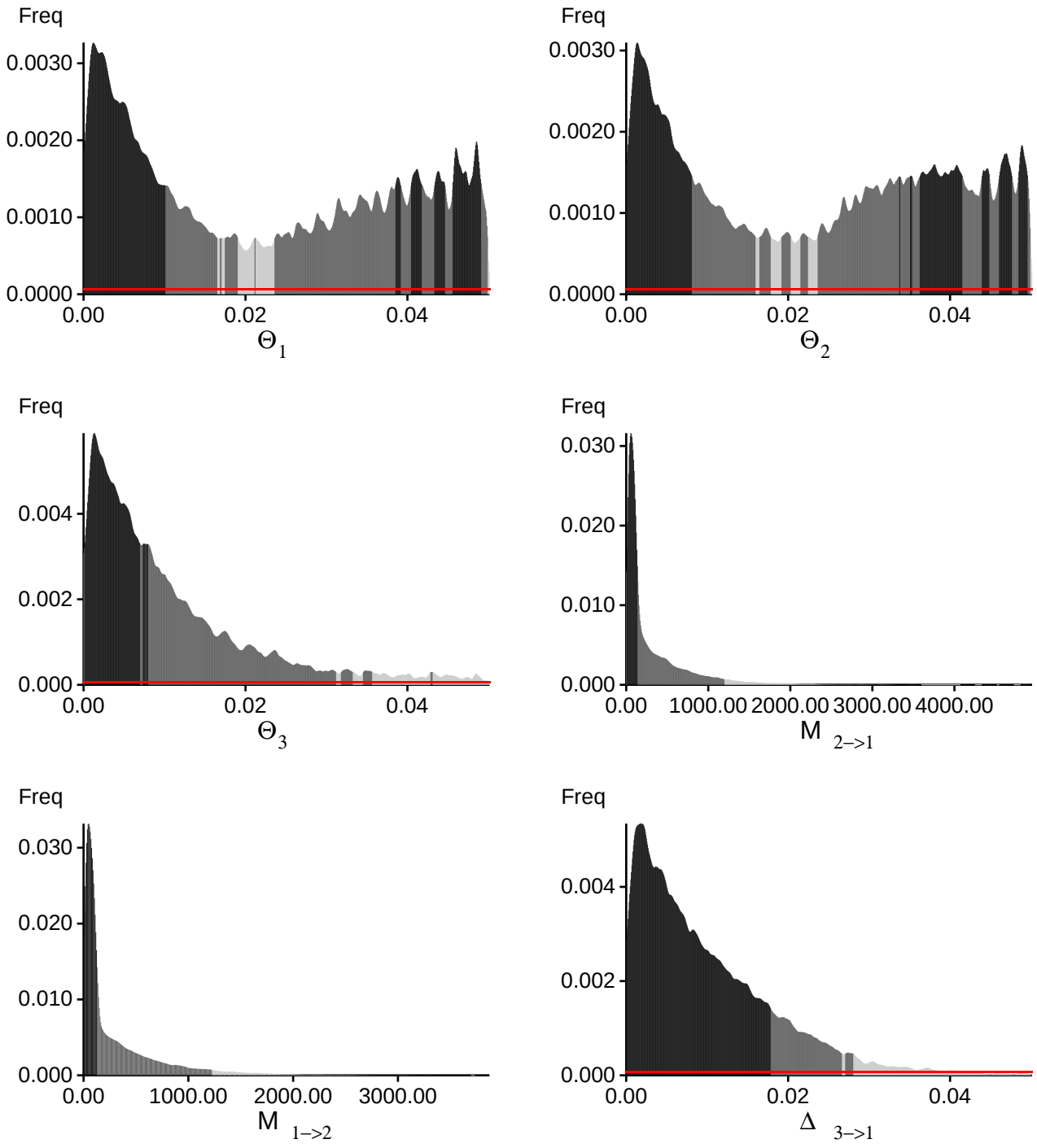
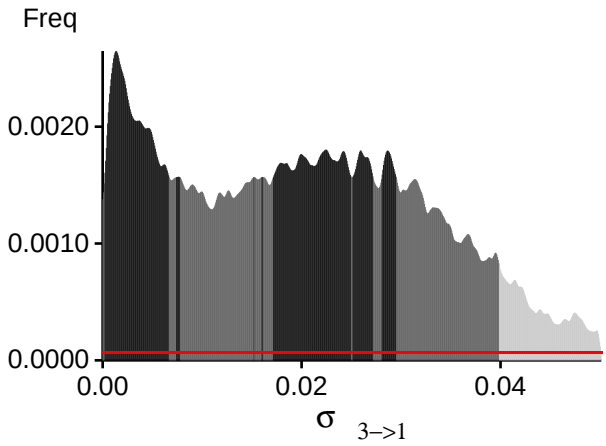
0.04
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 15

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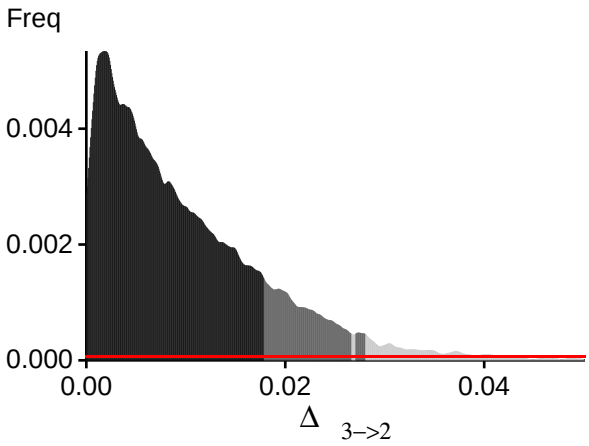
0.04
σ 3–>1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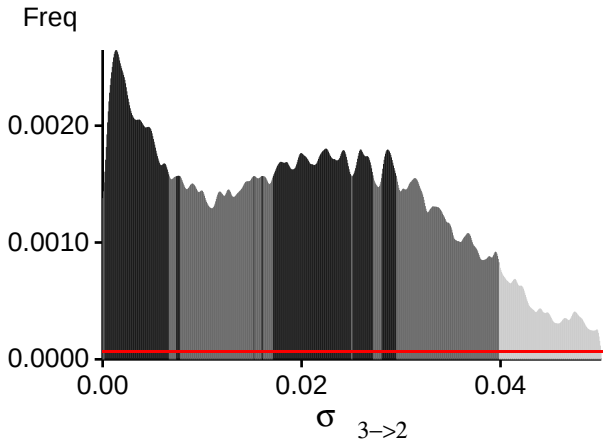
0.04
Δ 3–>2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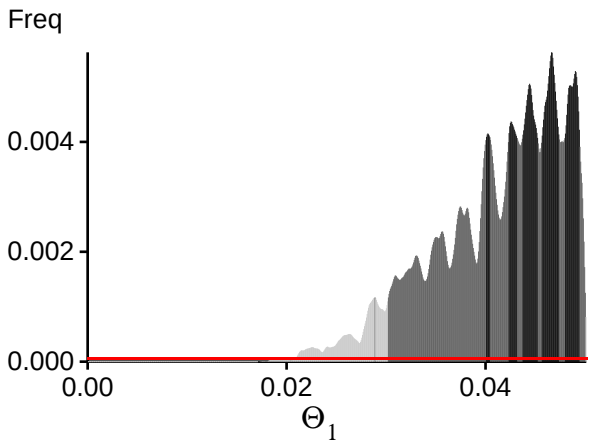
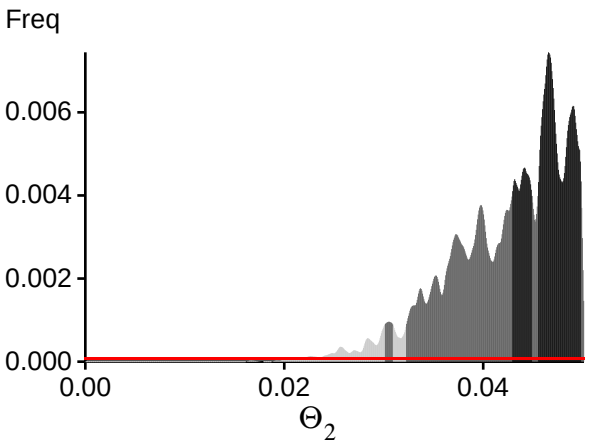
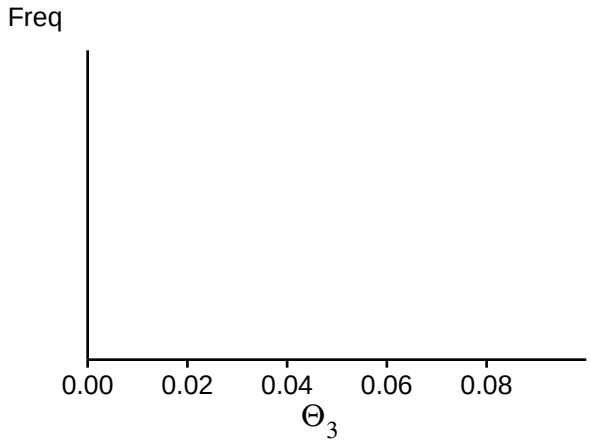
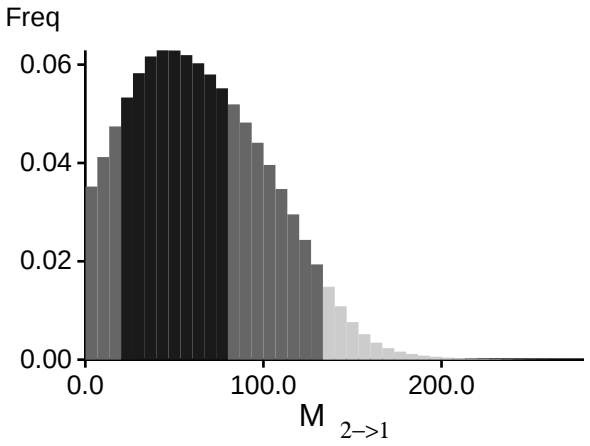
0.04
σ 3–>2

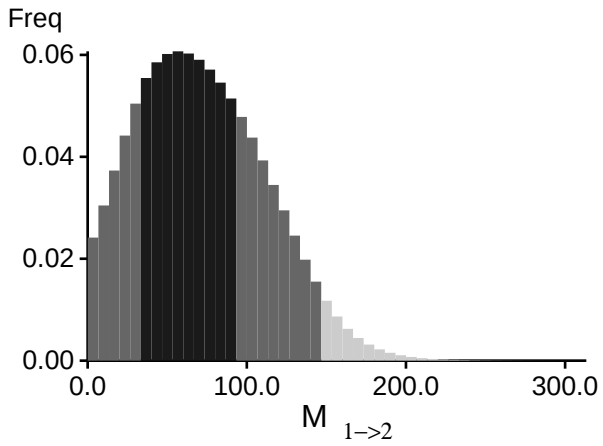
Bayesian Analysis: Posterior distribution for locus 16

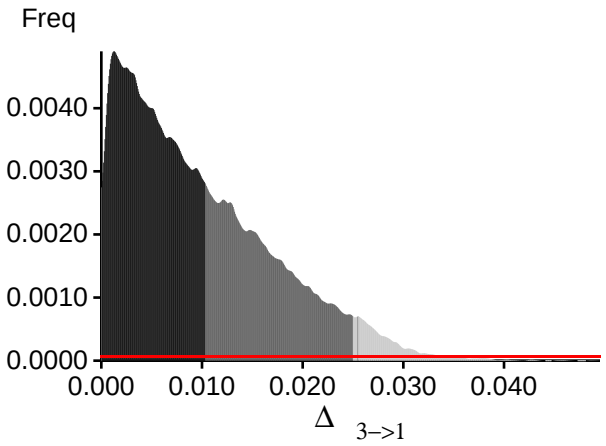












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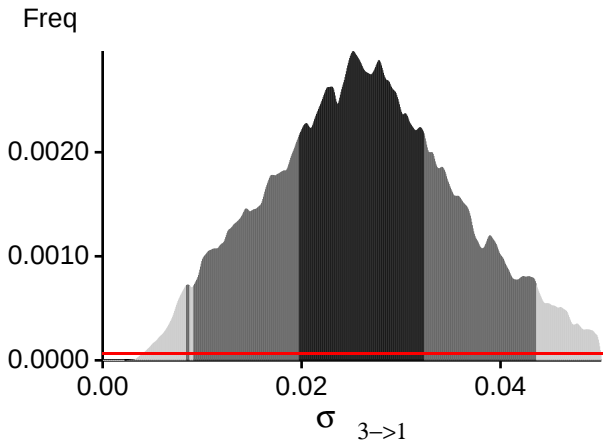
Freq
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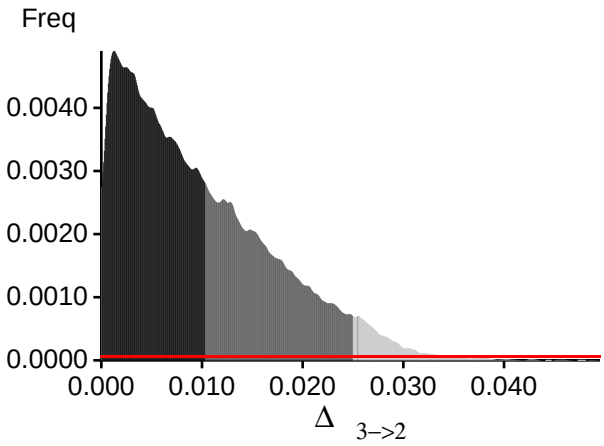
0.0000
0.00
0.02
0.04
σ 3–>1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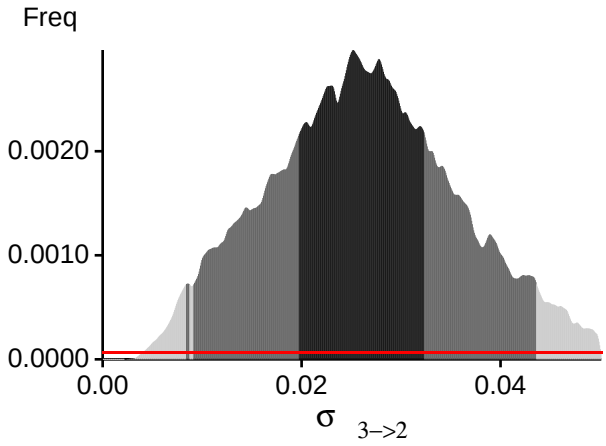
Δ 3–>2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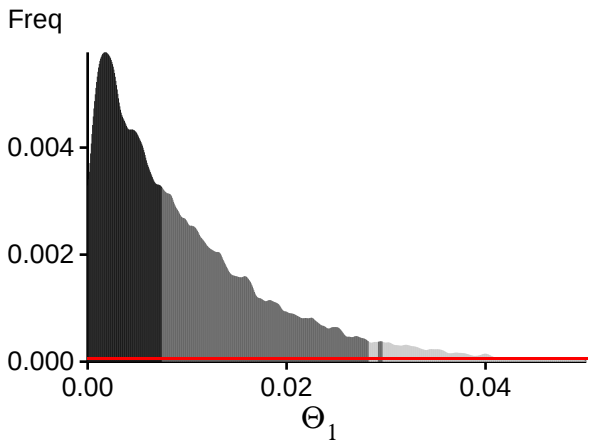
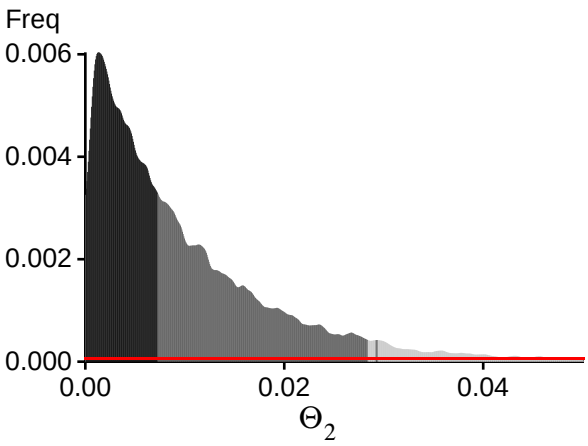
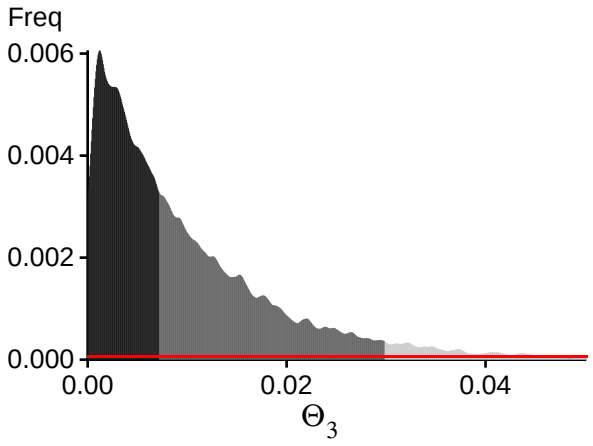
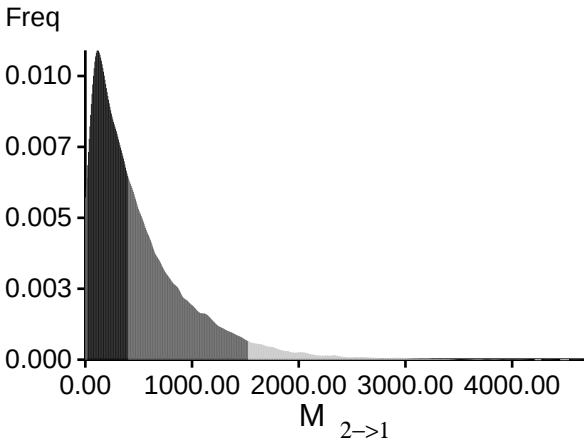
0.02
0.04
σ 3–>2

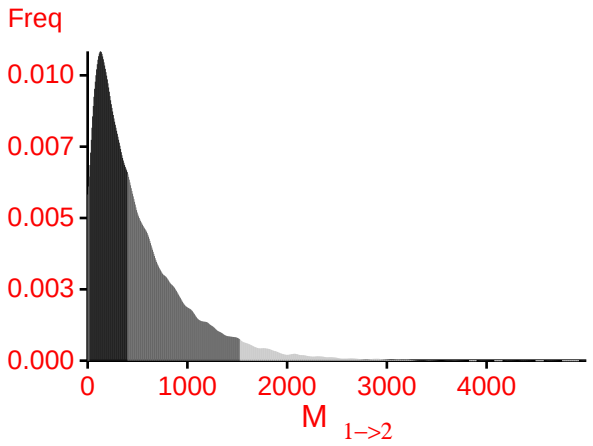
Bayesian Analysis: Posterior distribution for locus 17

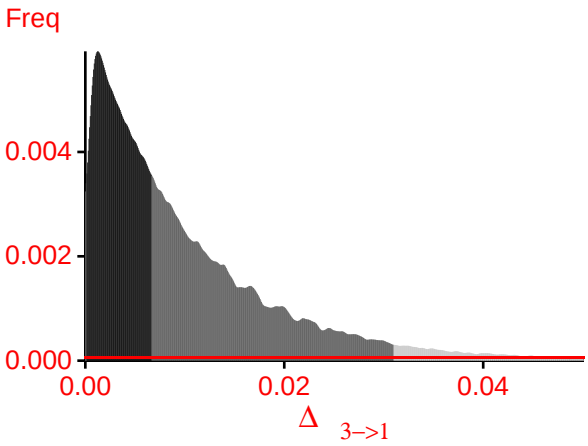


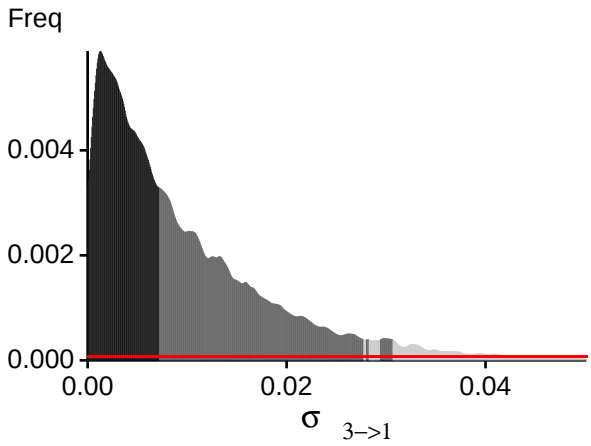











Freq
0.004
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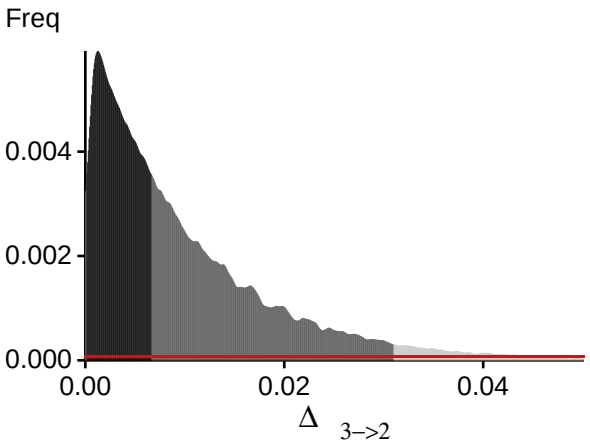
0.02
0.04
σ 3–>1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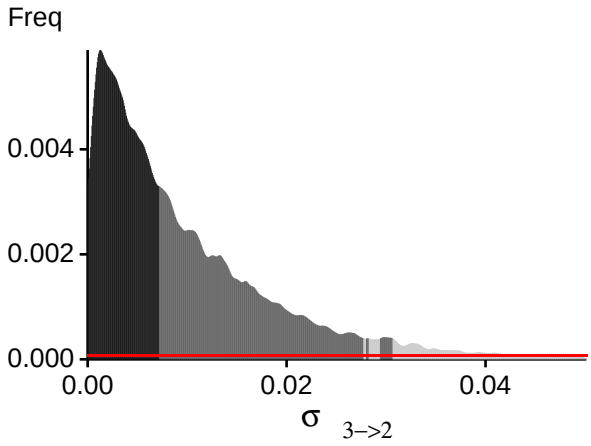
Δ 3–>2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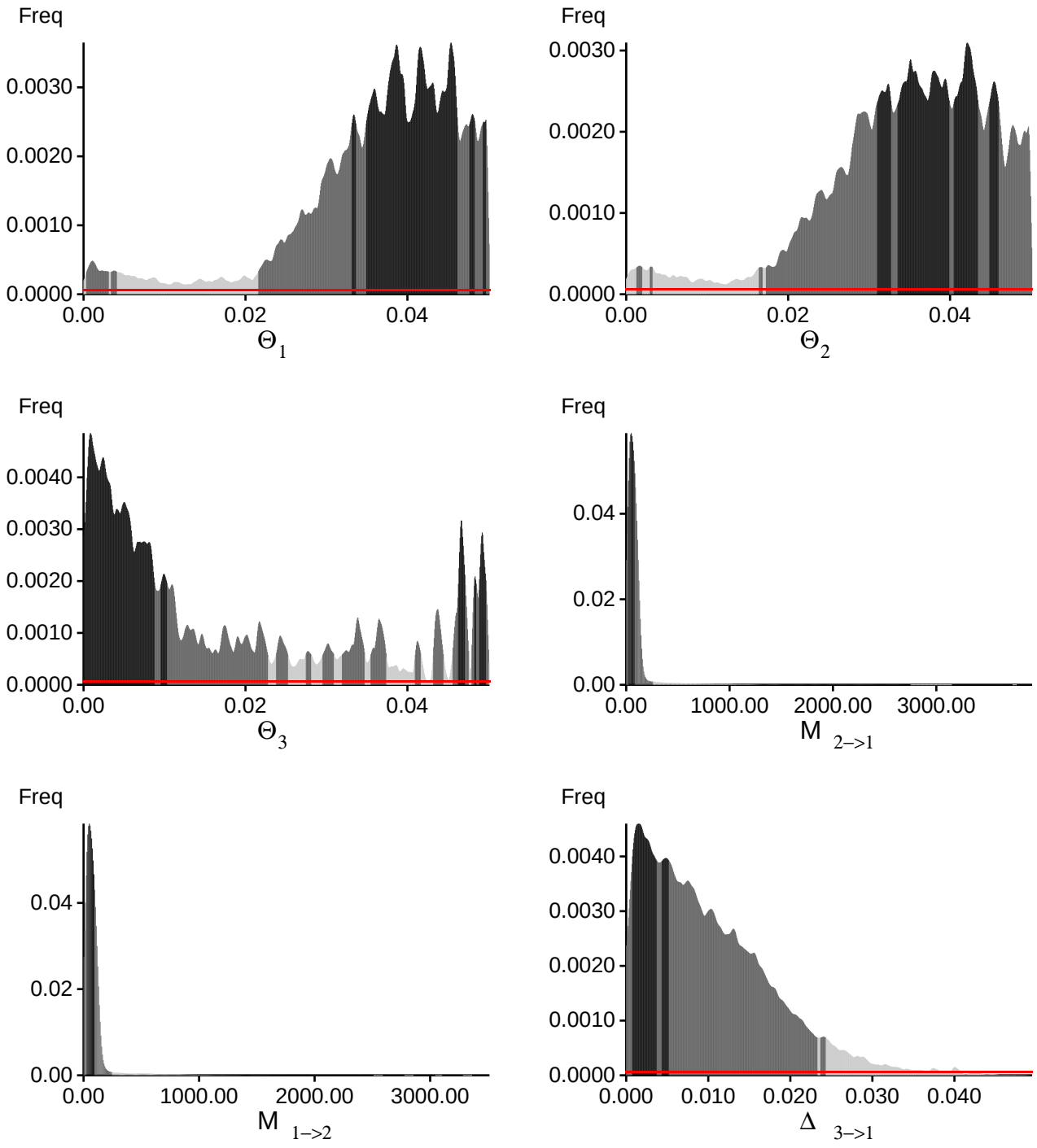
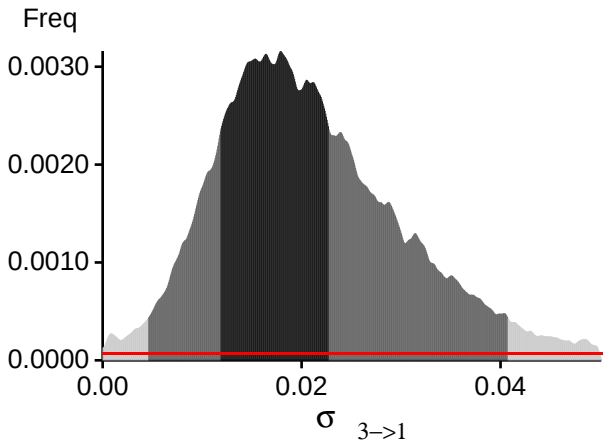
0.02
0.04
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 18

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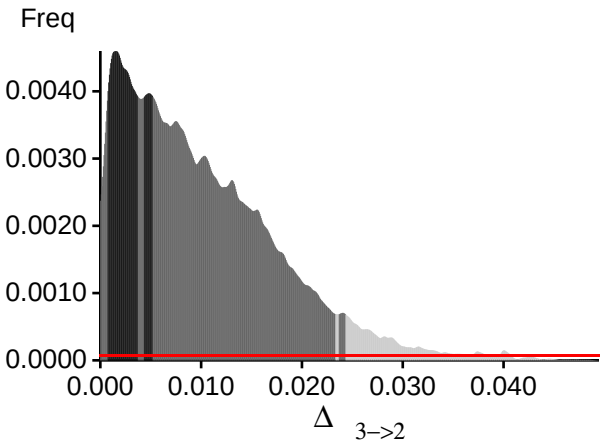
0.04
σ 3–>1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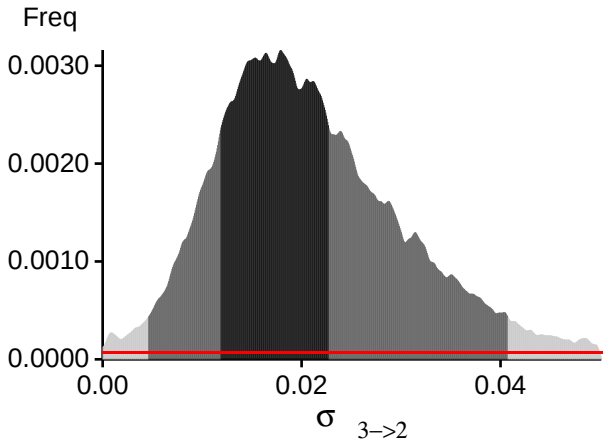
Δ 3–>2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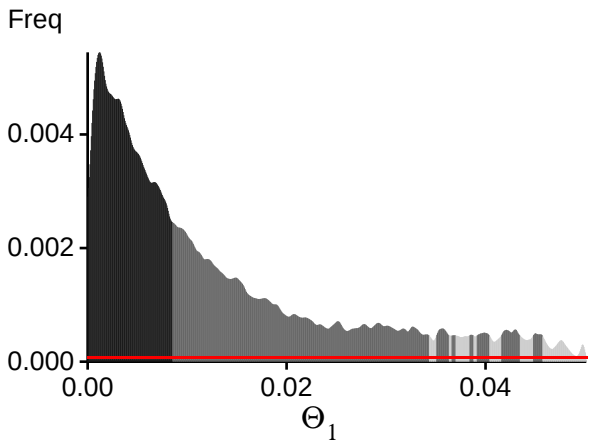
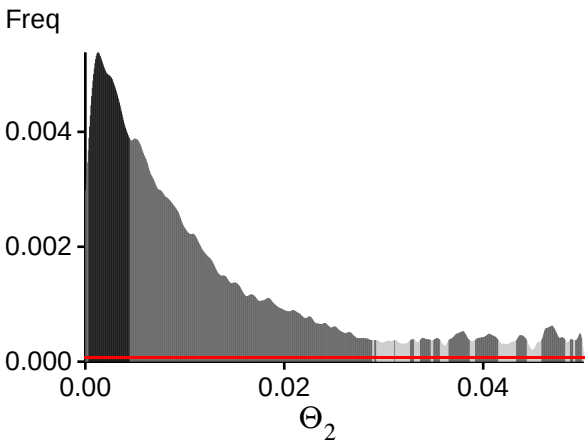
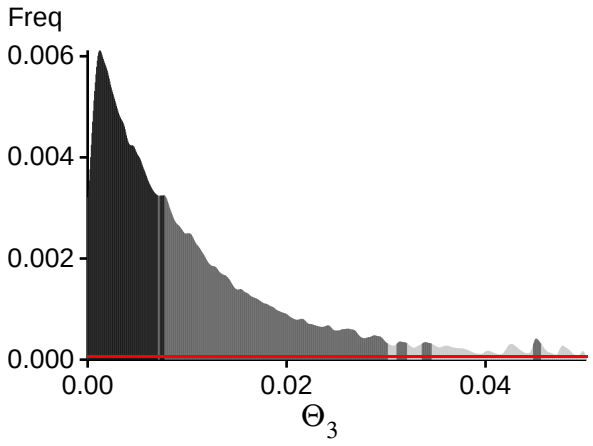
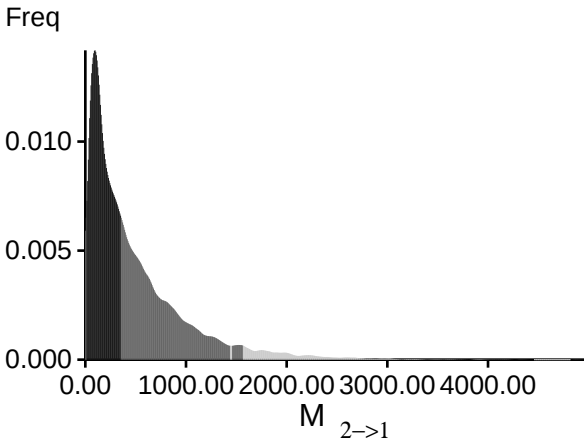
0.02
0.04
σ 3–>2

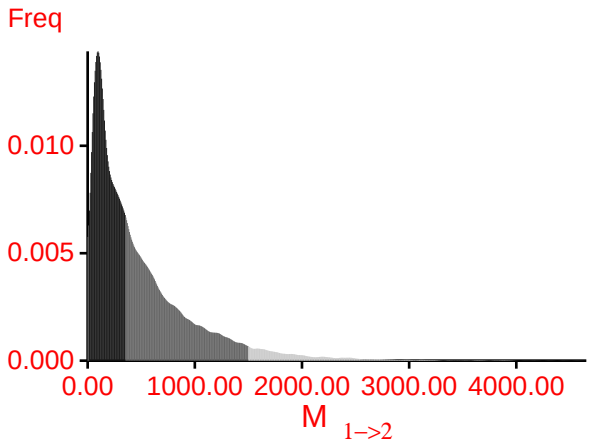
Bayesian Analysis: Posterior distribution for locus 19

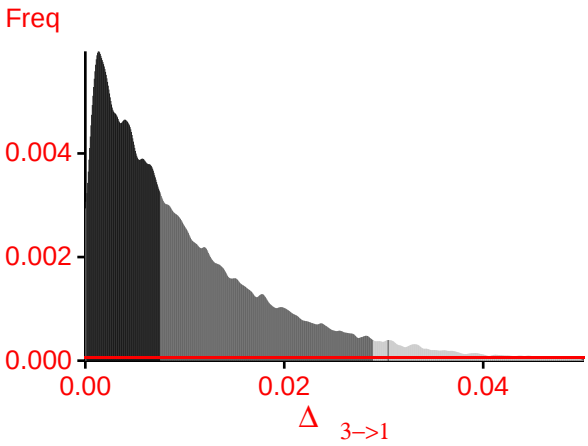


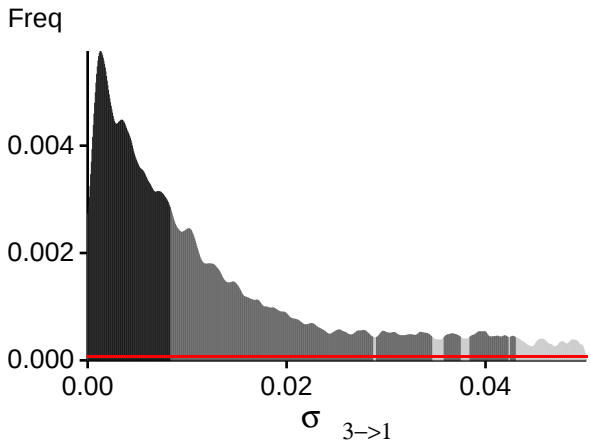











Freq
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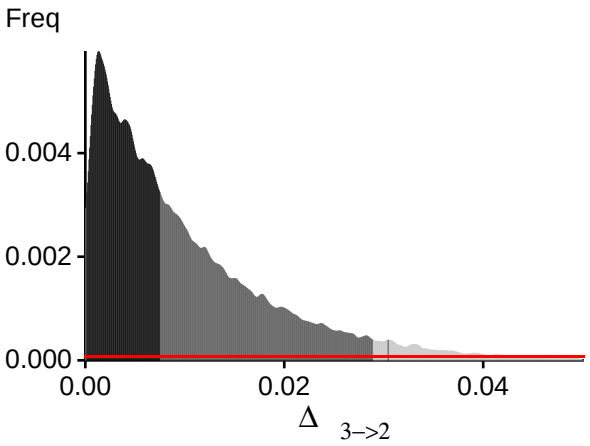
0.02
0.04
σ 3–>1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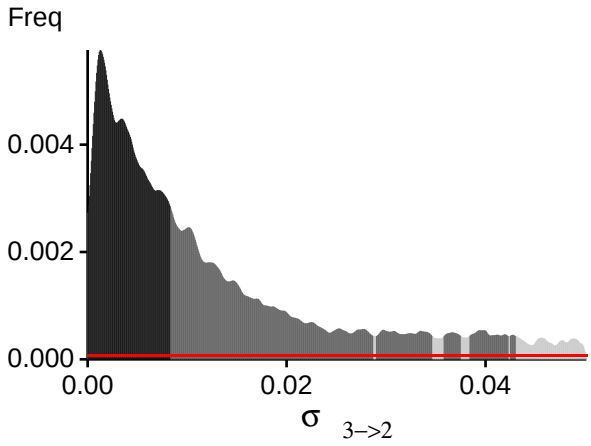
0.04
Δ 3–>2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0.002
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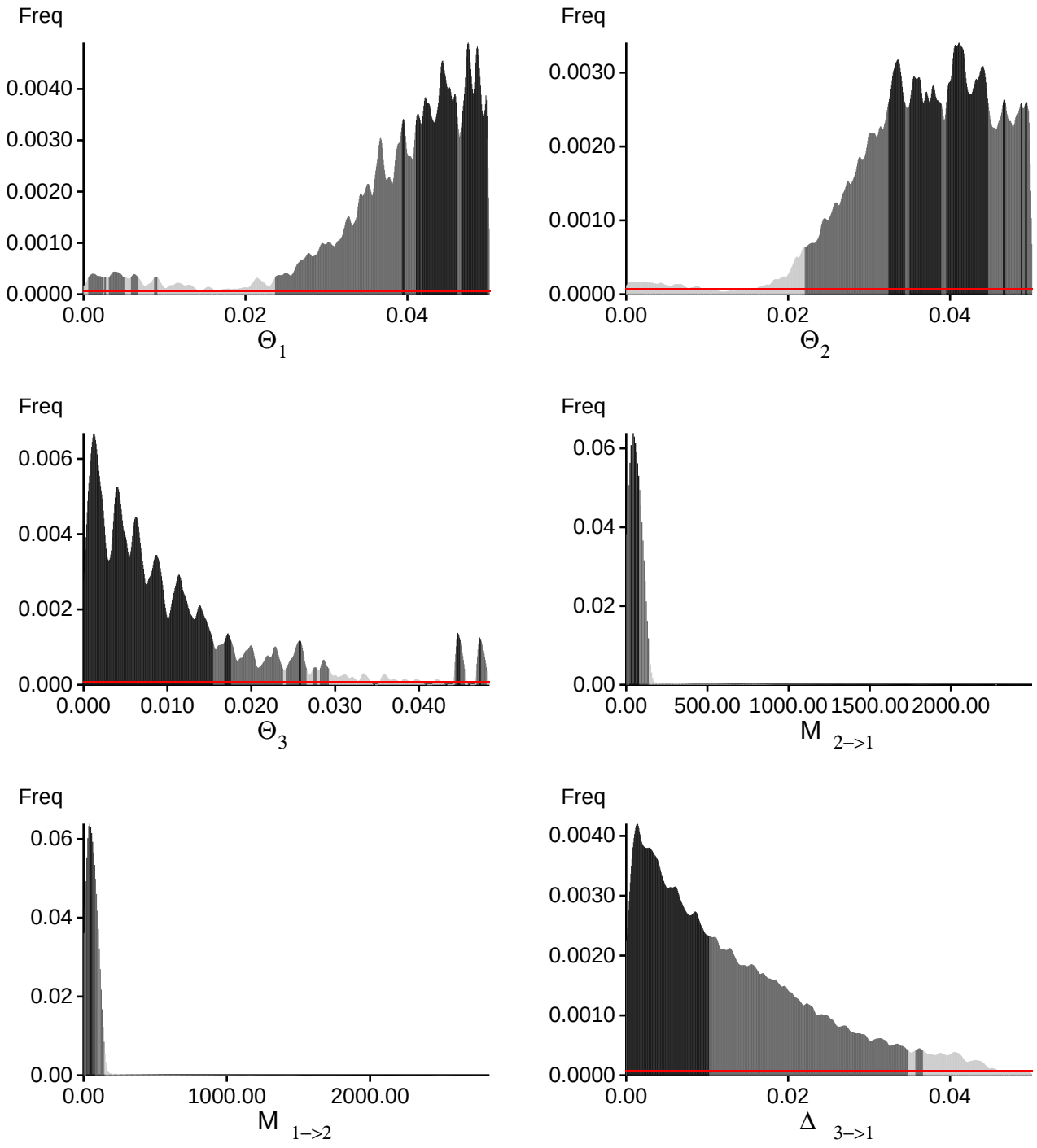
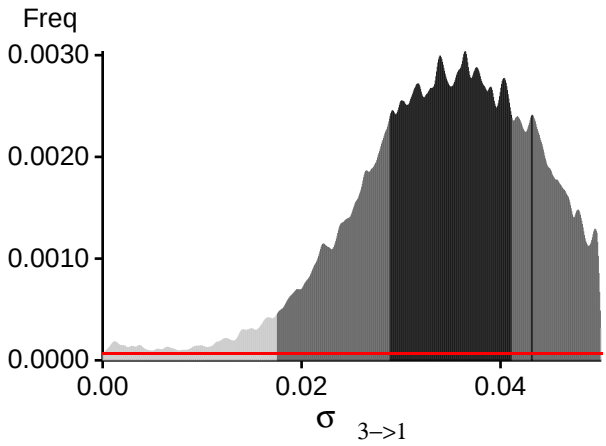
0.00
0.02
0.04
σ 3–>2

Bayesian Analysis: Posterior distribution for locus 20

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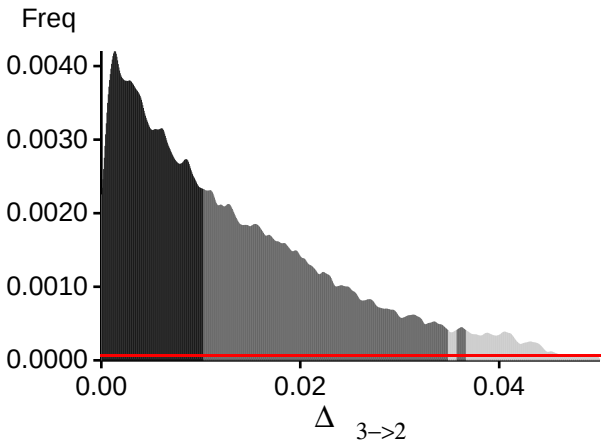
0.00
0.02
0.04
σ 3–>1


Freq
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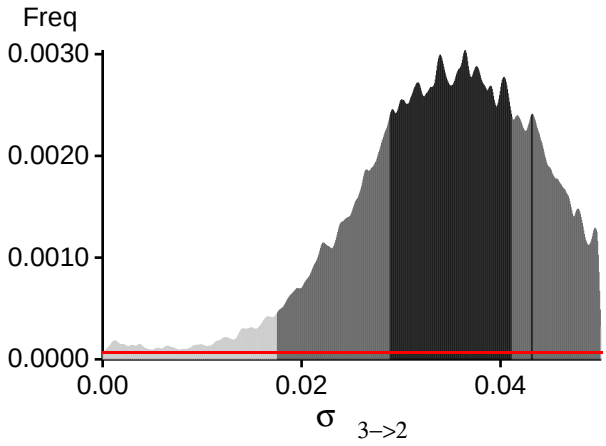
0.0000
0.00
0.02
0.04
Δ 3–>2


Freq
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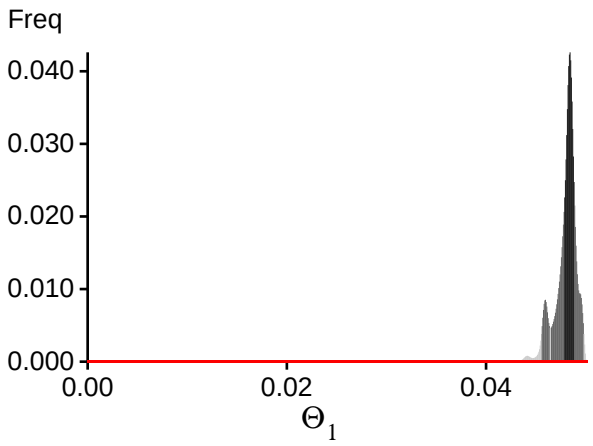
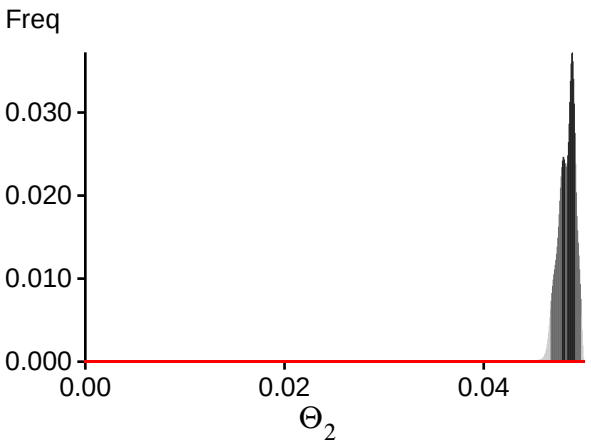
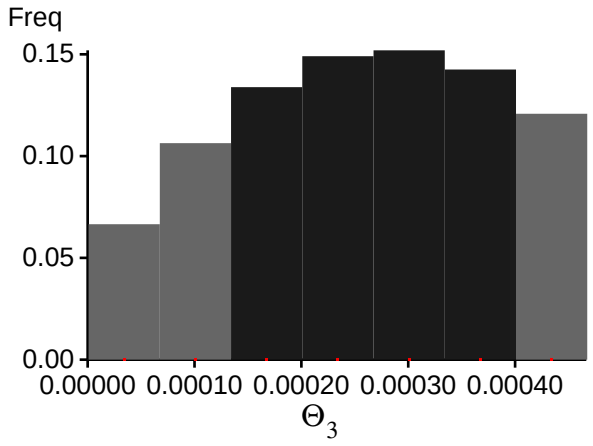
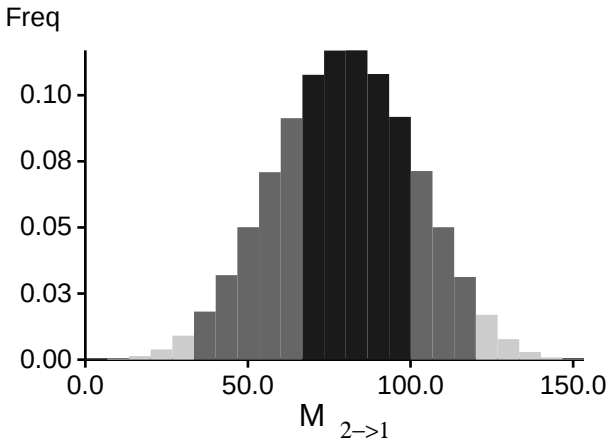
0.00
0.02
0.04
σ 3–>2

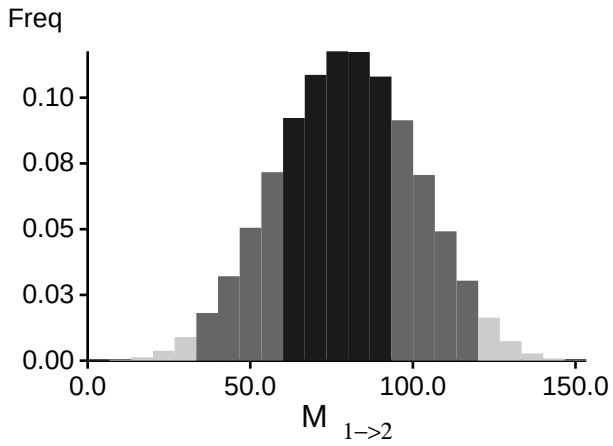
Bayesian Analysis: Posterior distribution over all loci

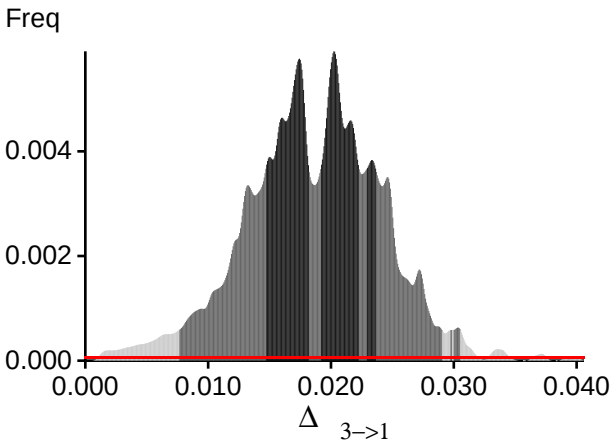


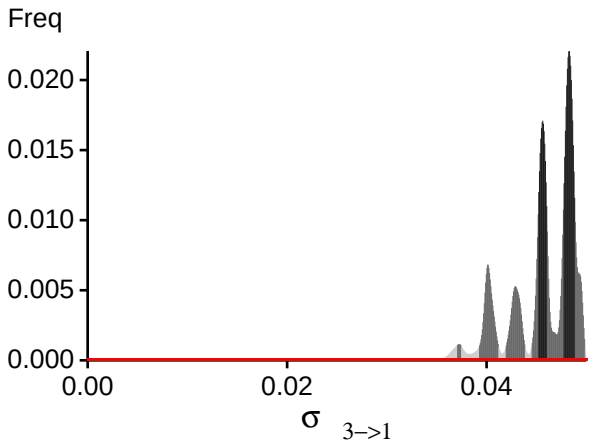


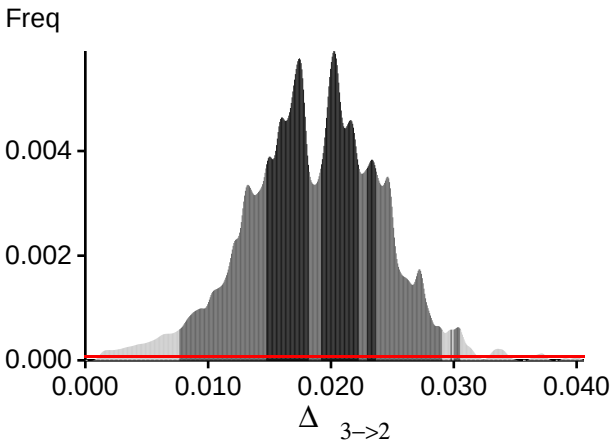









Freq
0.020
0.015
0.010
0.005
0.000
0.00
0.02
0.04
σ
3–>1


Freq
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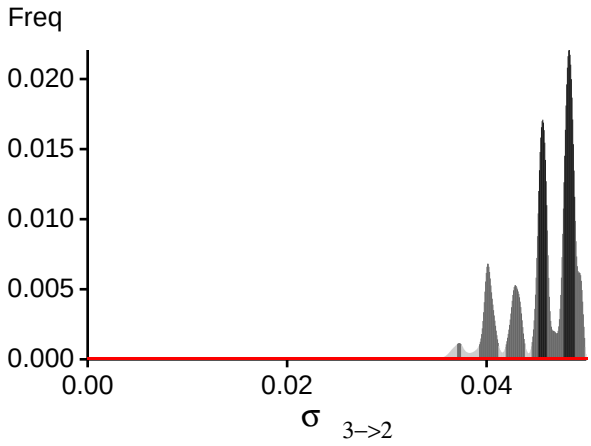
0.002
0.000
0.000
0.010
0.020
0.030
0.040
Δ
3–>2


Freq
0.020
0.015
0.010
0.005
0.000
0.00
0.02
0.04
σ
3–>2

Log-Probability of the data given the model (marginal likelihood)

Use this value for Bayes factor calculations:
BF = Exp[ln(Prob(D | thisModel) - ln(Prob(D | otherModel)
or as LBF = 2 (ln(Prob(D | thisModel) - ln(Prob(D | otherModel))
shows the support for thisModel]

Locus	Raw thermodynamic score(1a)	Bezier approximation score(1b)	Harmonic mean(2)
1	-15515.72	-9530.76	-8693.57
2	-12653.81	-7734.87	-6778.53
3	-12984.78	-8239.04	-7418.44
4	-12490.26	-8059.64	-7844.29
5	-15026.88	-9493.03	-8552.04
6	-13597.44	-8681.75	-7900.95
7	-13810.70	-8673.85	-7642.31
8	-13420.07	-8570.72	-7416.38
9	-14945.54	-9833.54	-8797.60
10	-15194.28	-9699.20	-9147.67
11	-12926.35	-8256.48	-7630.85
12	-13924.01	-8647.57	-8110.97
13	-16059.57	-10465.79	-9125.39
14	-15210.86	-10152.71	-9153.63
15	-13480.00	-8530.74	-7436.54
16	-13813.24	-8967.48	-8000.49
17	-13548.23	-8735.23	-7988.93
18	-15102.58	-9302.17	-8263.55
19	-13926.12	-8818.18	-8629.94
20	-14955.35	-9455.69	-8222.73
All	-283124.60	-180387.23	-163293.61

(1a, 1b and 2) are approximations to the marginal likelihood, make sure that the program run long enough!
(1a, 1b) and (2) should give similar results, in principle.
But (2) is overestimating the likelihood, it is presented for historical reasons and should not be used
(1a, 1b) needs heating with chains that span a temperature range of 1.0 to at least 100,000.
(1b) is using a Bezier-curve to get better approximations for runs with low number of heated chains
[Scaling factor = -538.801014]

Citation suggestions:

Beerli P. and M. Palczewski, 2010. Unified framework to evaluate panmixia and migration direction among multiple sampling locations, Genetics, 185: 313-326.

Acceptance ratios for all parameters and the genealogies

Parameter	Accepted changes	Ratio
Θ_1	669623/1111208	0.60261
Θ_2	667166/1111757	0.60010
Θ_3	654383/1110577	0.58923
$M_{2->1}$	676837/1111698	0.60883
$M_{1->2}$	677425/1111397	0.60953
$\Delta_{3->1}$	962312/1111254	0.86597
$\sigma_{3->1}$	718607/1110999	0.64681
$\Delta_{3->2}$	962075/1111483	0.86558
$\sigma_{3->2}$	718003/1109059	0.64740
Genealogies	322084/10000568	0.03221

MCMC-Autocorrelation and Effective MCMC Sample Size

Parameter	Autocorrelation	Effective Sampe Size
Θ_1	0.52208	211928.62
Θ_2	0.55087	196223.52
Θ_3	0.60051	180588.59
$M_{2->1}$	0.28957	326846.95
$M_{1->2}$	0.29068	325441.18
$\Delta_{3->1}$	0.15945	390973.20
$\sigma_{3->1}$	0.38962	263521.73
$\Delta_{3->2}$	0.15945	390973.20
$\sigma_{3->2}$	0.38962	263521.73
Genealogies	0.38962	263521.73

Potential Problems

This section reports potential problems with your run, but such reporting is often not very accurate. Whith many parameters in a multilocus analysi s, it is very common that some parameters for some loci will not be very informative, triggering suggestions (for example to increase the prior ran ge) that are not sensible. This suggestion tool will improve with time, therefore do not blindly follow its suggestions. If some parameters are fla gged, inspect the tables carefully and judge wether an action is required. For example, if you run a Bayesian inference with sequence data, for mac roscopic species there is rarely the need to increase the prior for Theta beyond 0.1; but if you use microsatellites it is rather common that your prior distribution for Theta should have a range from 0.0 to 100 or more. With many populations (>3) it is also very common that some migration rou tes are estimated poorly because the data contains little or no information for that route. Increasing the range will not help in such situations, reducing number of parameters may help in such situations.

No warning was recorded during the run