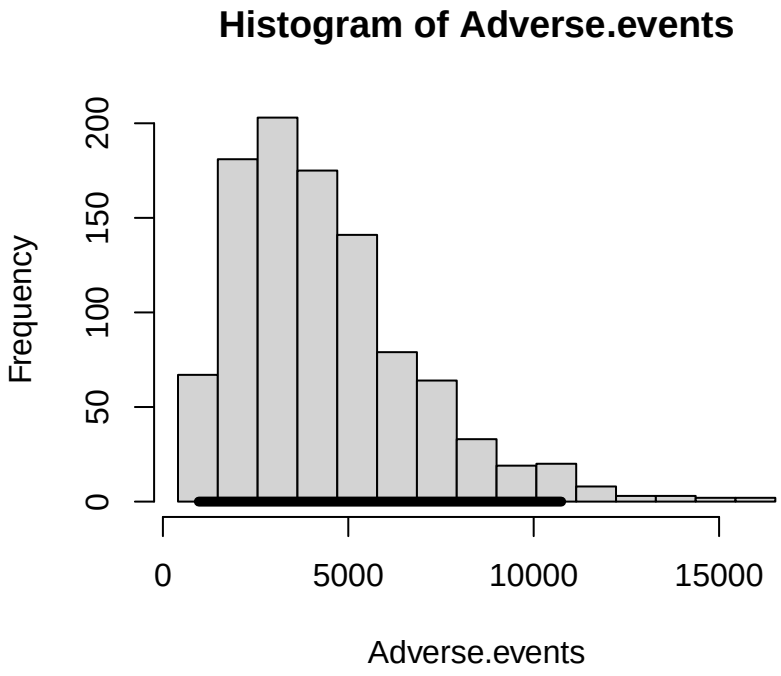
Auto-generated report from BCEAweb

Version: 13 September, 2025

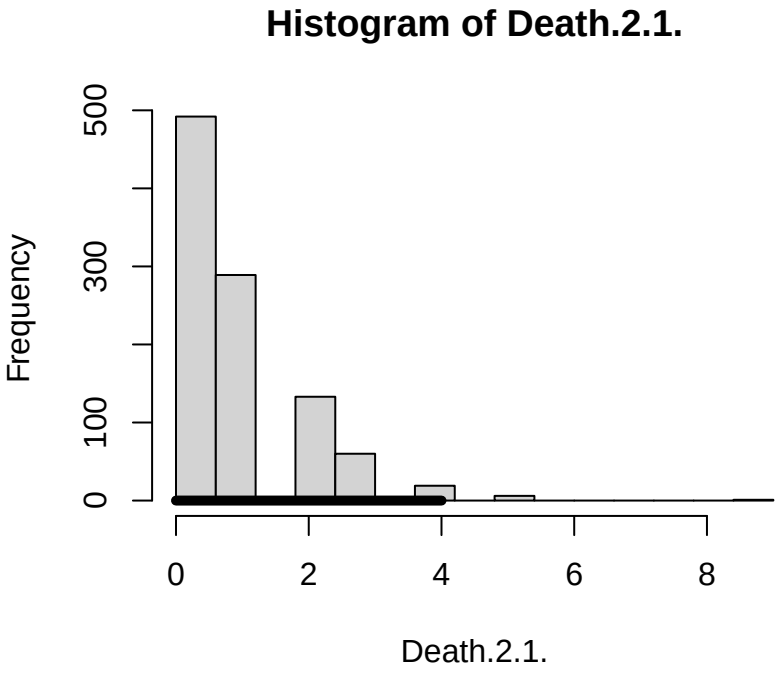
Distributional assumptions

This sections presents graphical and tabular summaries to check the distributional assumptions used for the $n = 77$ parameters included in the economic model. For each parameter, a histogram of the distribution is presented together with a summary table, reporting some relevant statistics.



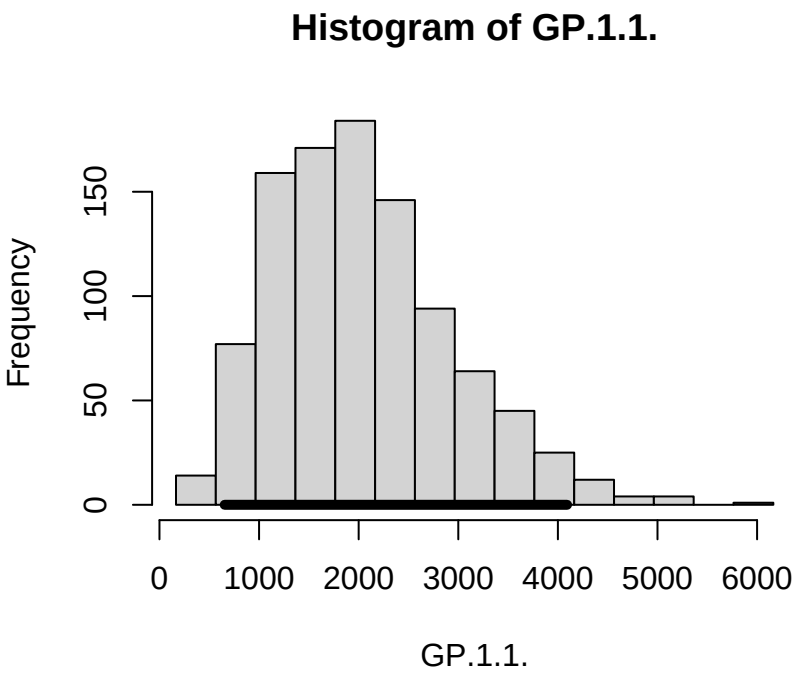
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
4384.479	2518.102	969.425	3874.5	10740.8	79.58956

Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
1.573	1.539169	0	1	5	0.0486484

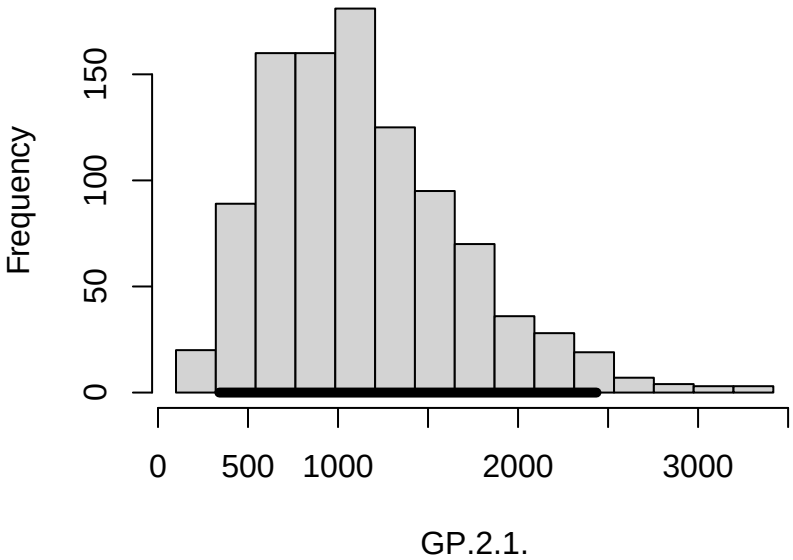


Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.85	1.083824	0	1	4	0.0342564

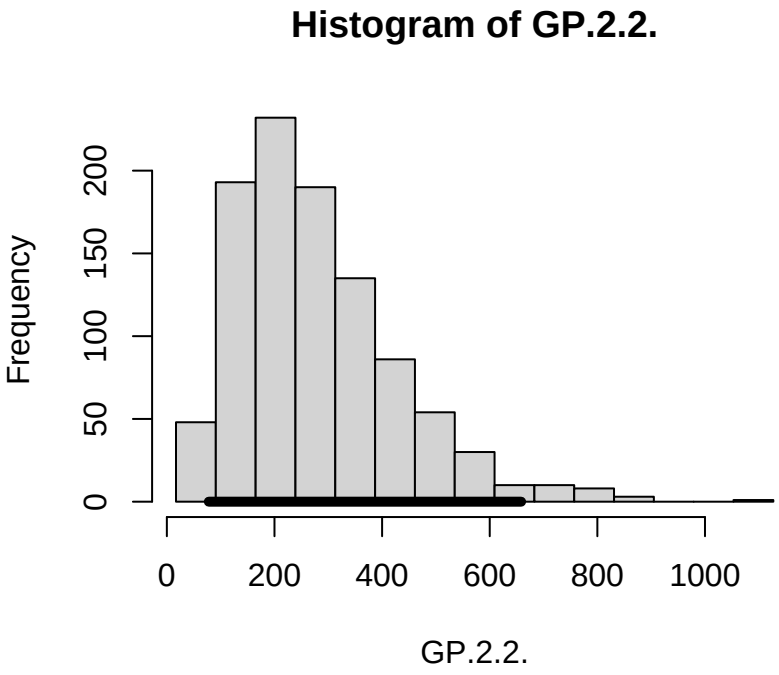
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.248	0.5447869	0	0	2	0.0172191



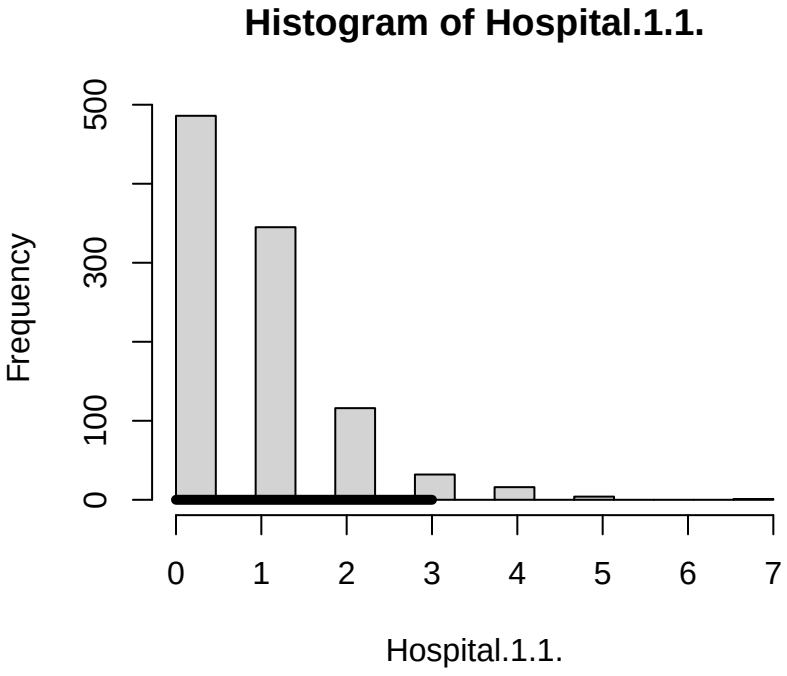
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
2045.987	896.964	654.925	1938.5	4092.15	28.35031



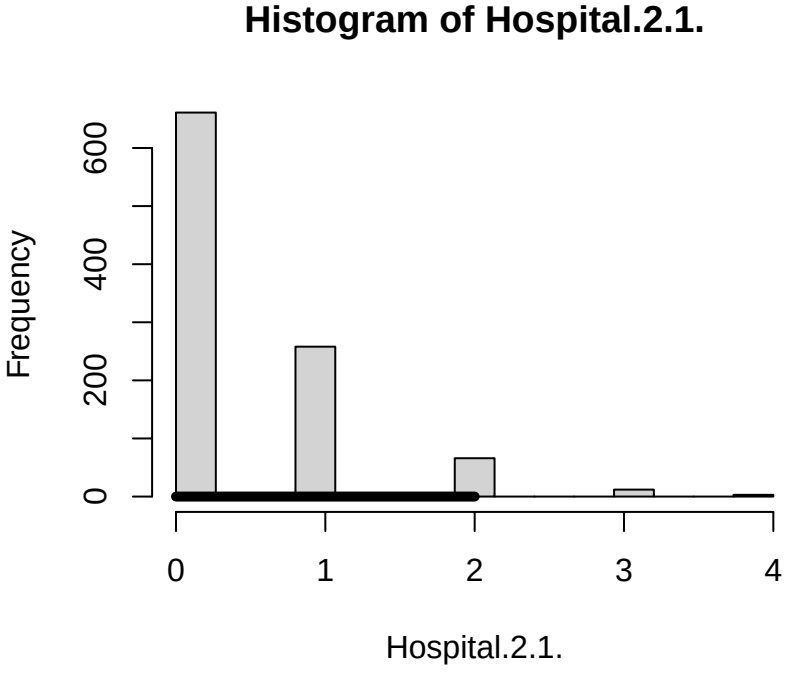
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
1148.308	543.1979	340.925	1083	2435.475	17.16883



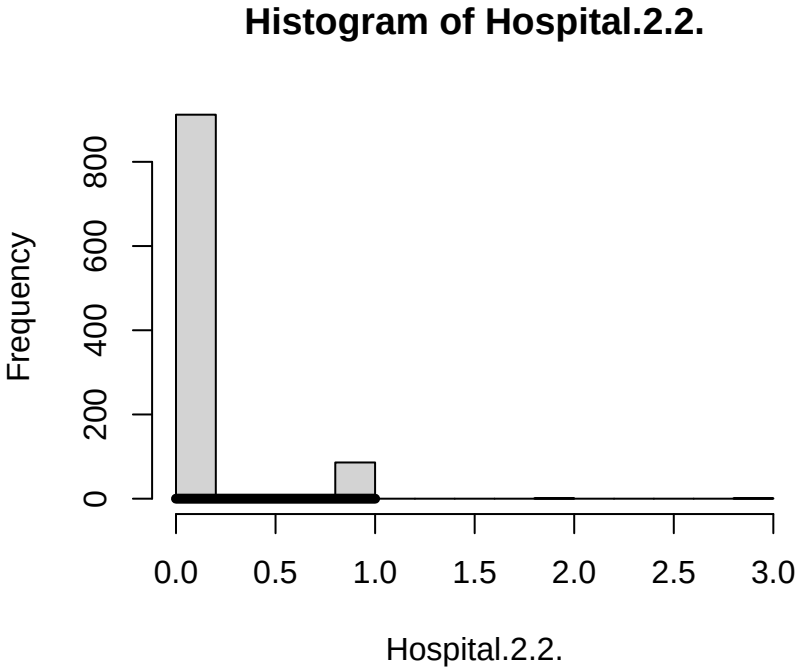
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
279.658	151.5797	78	249.5	658.325	4.790975



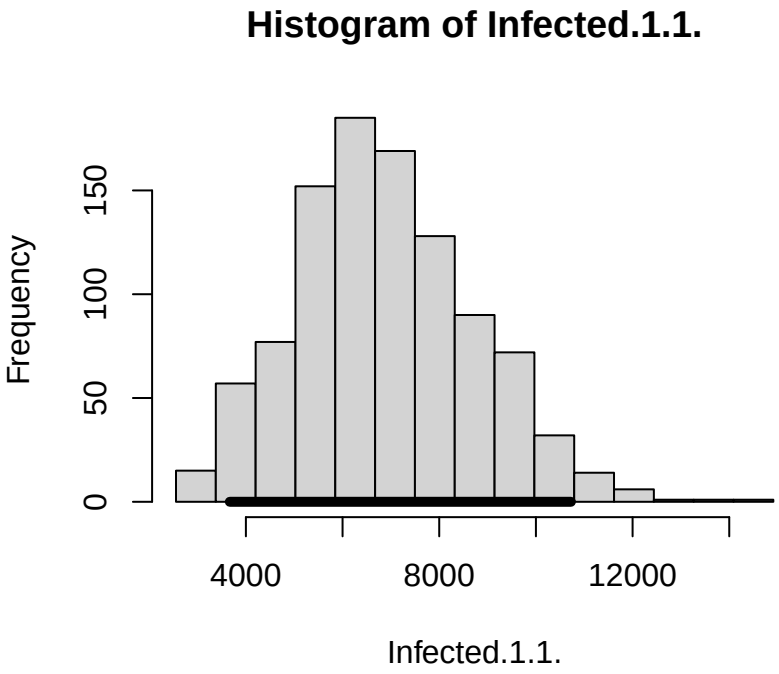
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.764	0.9587613	0	1	3	0.0303035



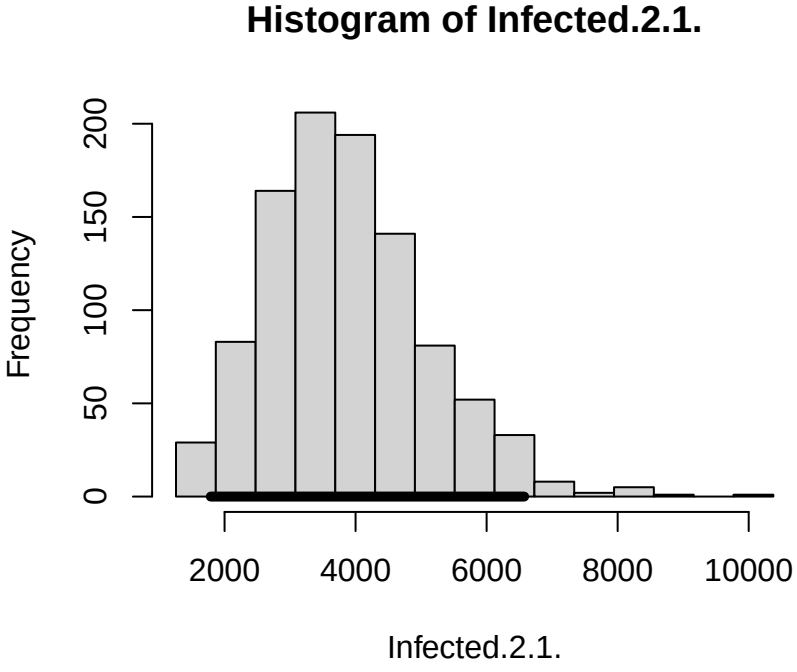
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.438	0.6975978	0	0	2	0.0220489



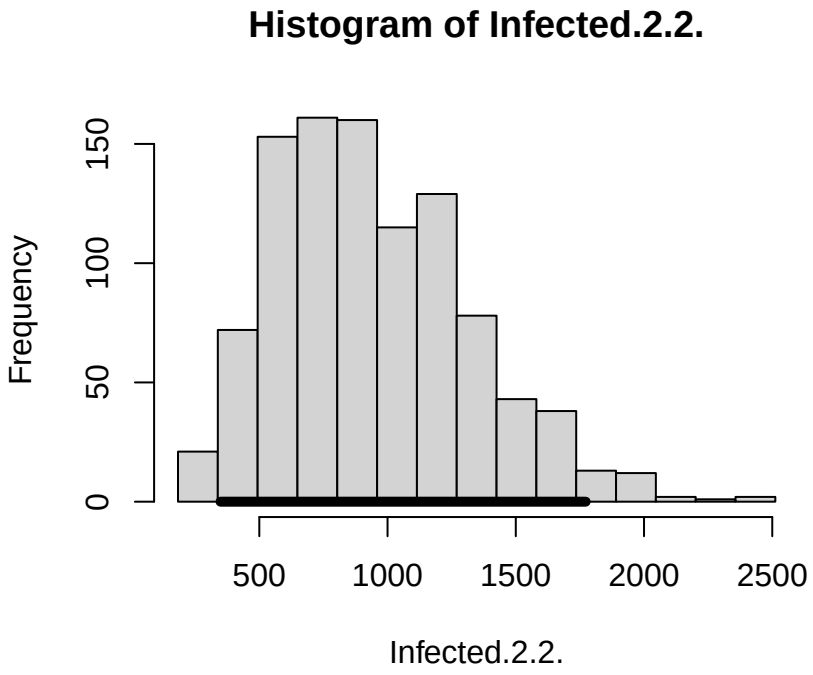
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.091	0.3013467	0	0	1	0.0095247



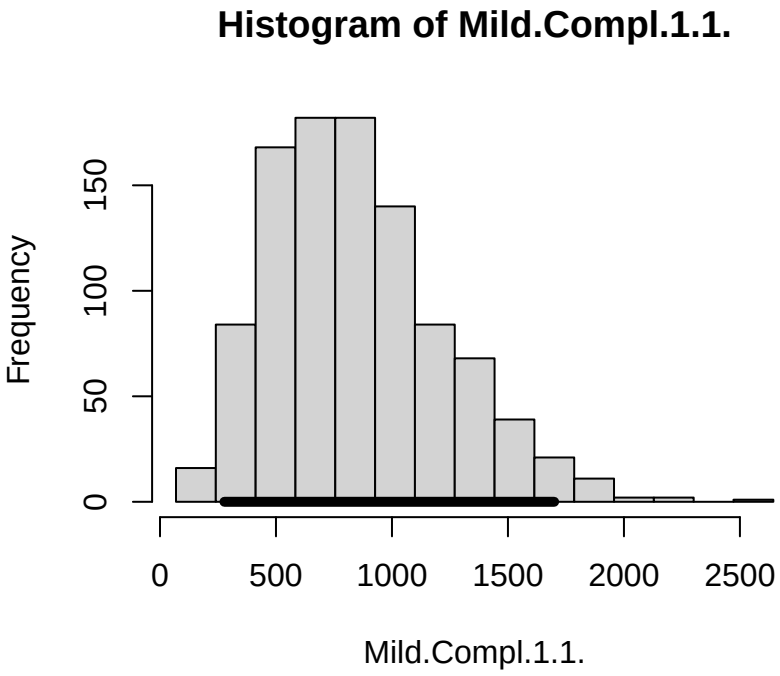
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
6904.96	1850.256	3667.9	6763	10724.17	58.48097



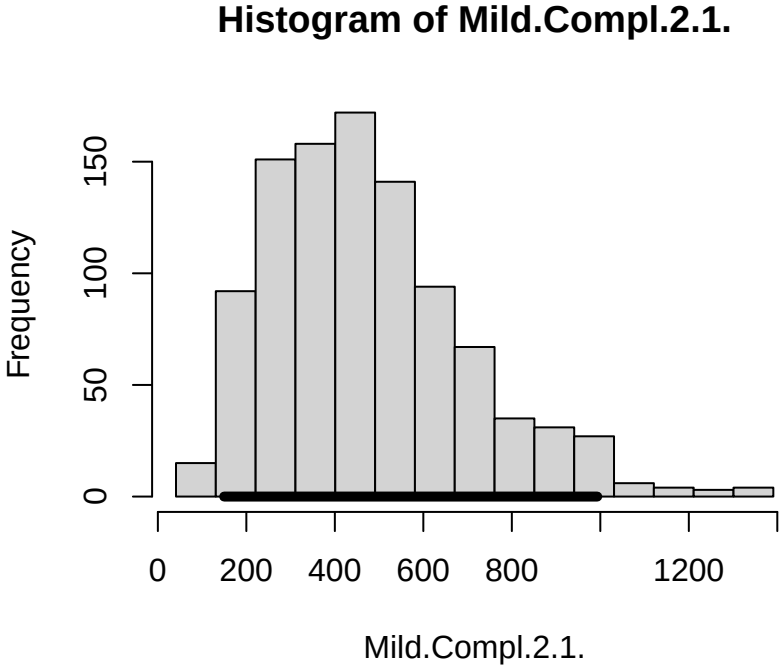
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
3874.547	1236.974	1789.575	3744	6573.125	39.097



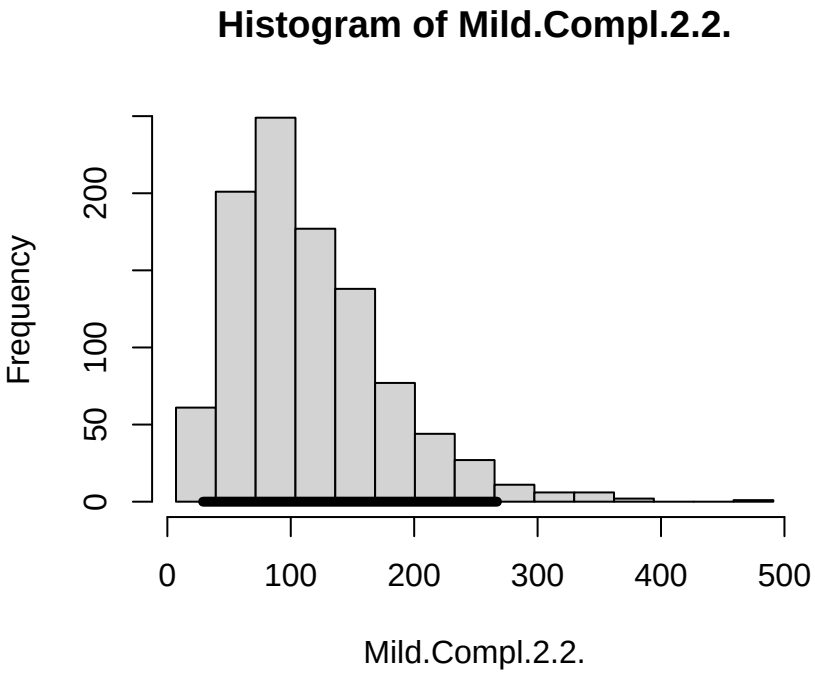
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
944.874	378.7866	348.875	895	1772.5	11.97229



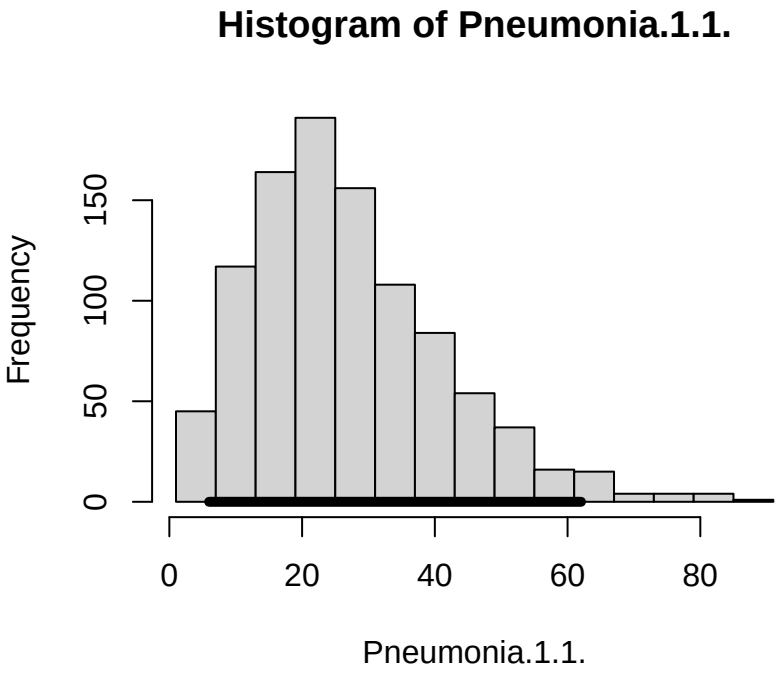
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
847.747	374.6328	277.9	800	1699.1	11.841



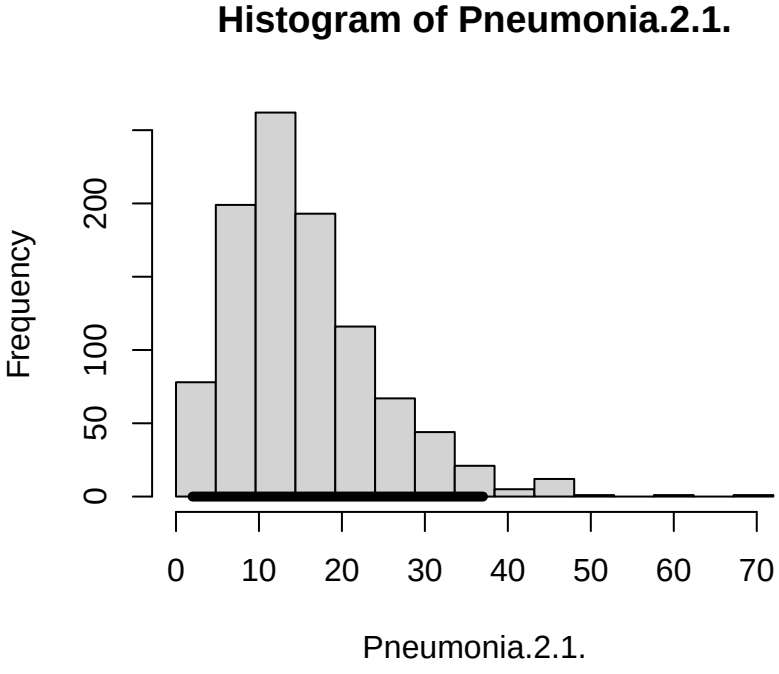
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
476.486	225.2089	149.875	446	993.075	7.118168



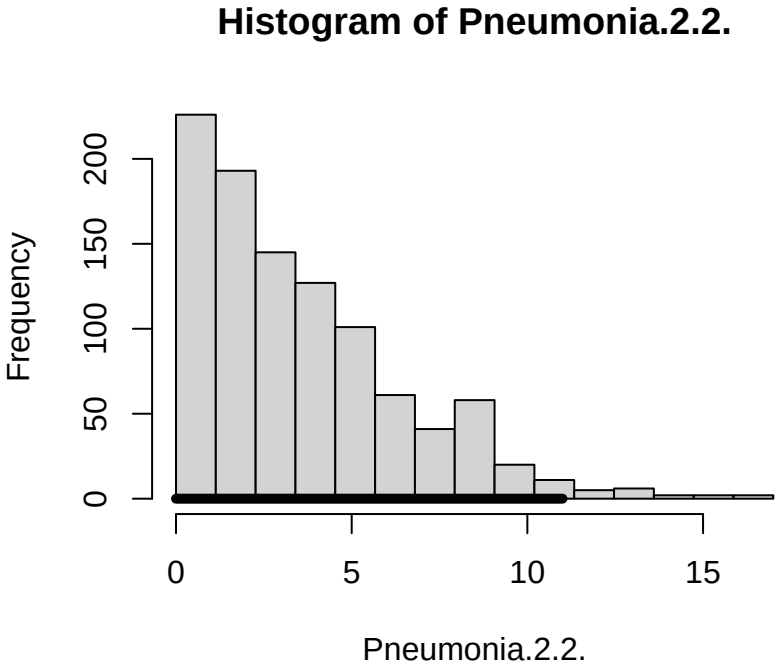
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
115.59	63.15335	29	102	267.05	1.996086



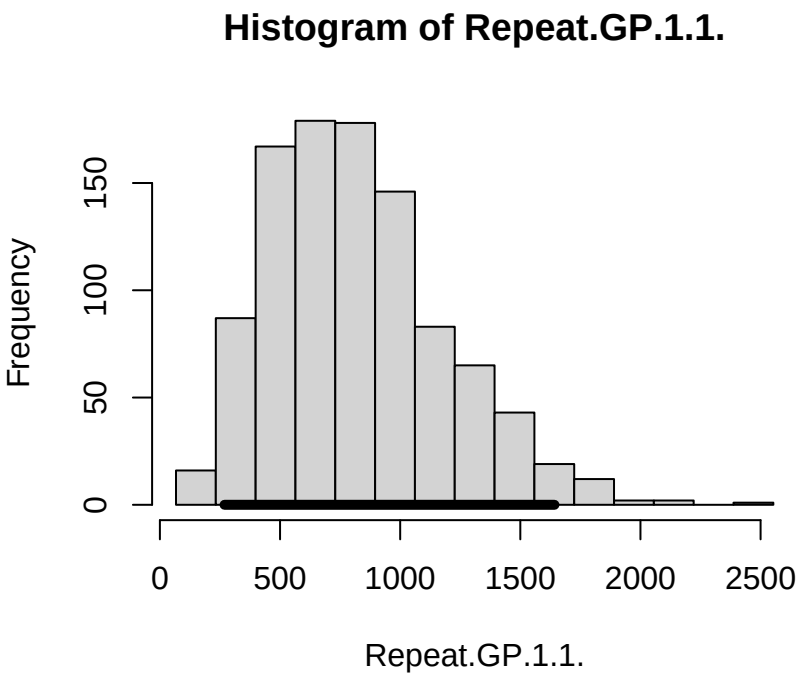
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
27.438	14.51919	6	25	62.025	0.4589076



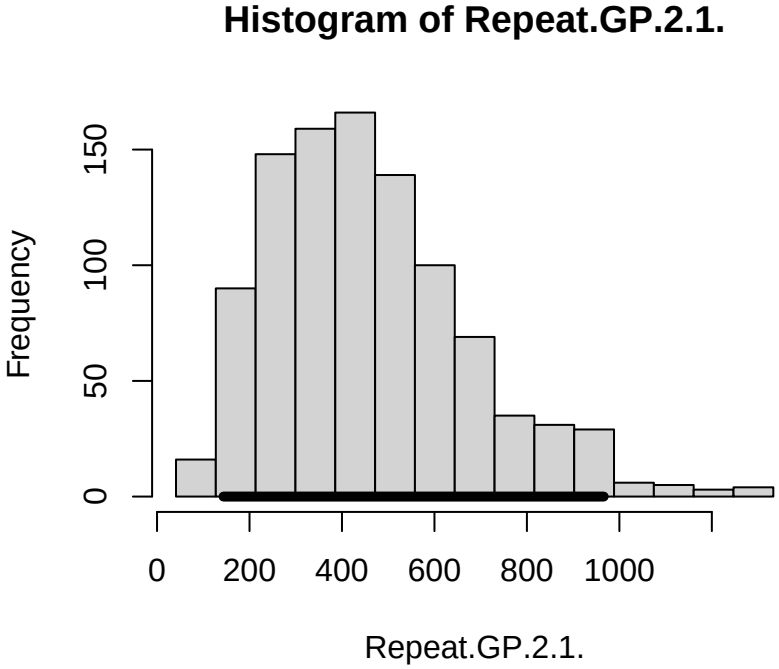
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
15.353	9.095555	2	14	37	0.2874829



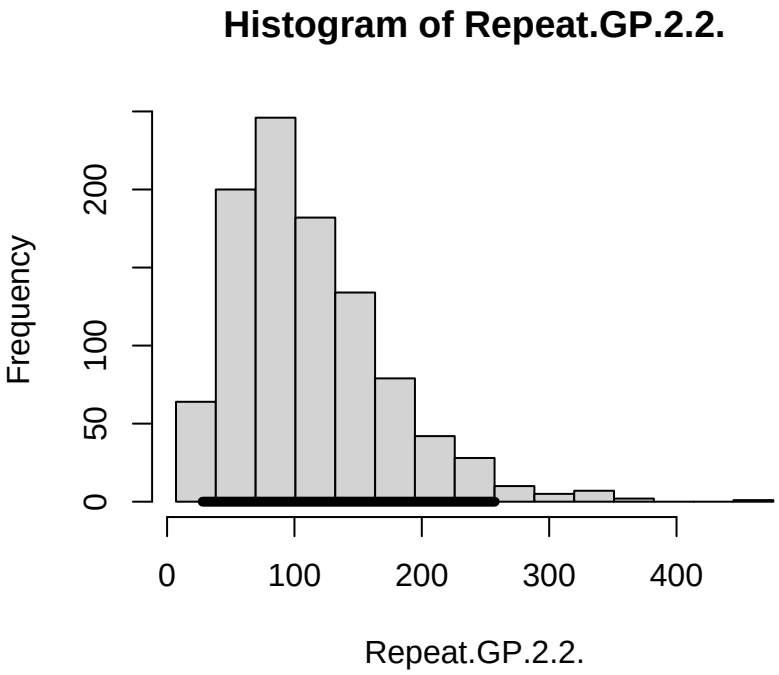
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
3.672	2.859824	0	3	11	0.0903904



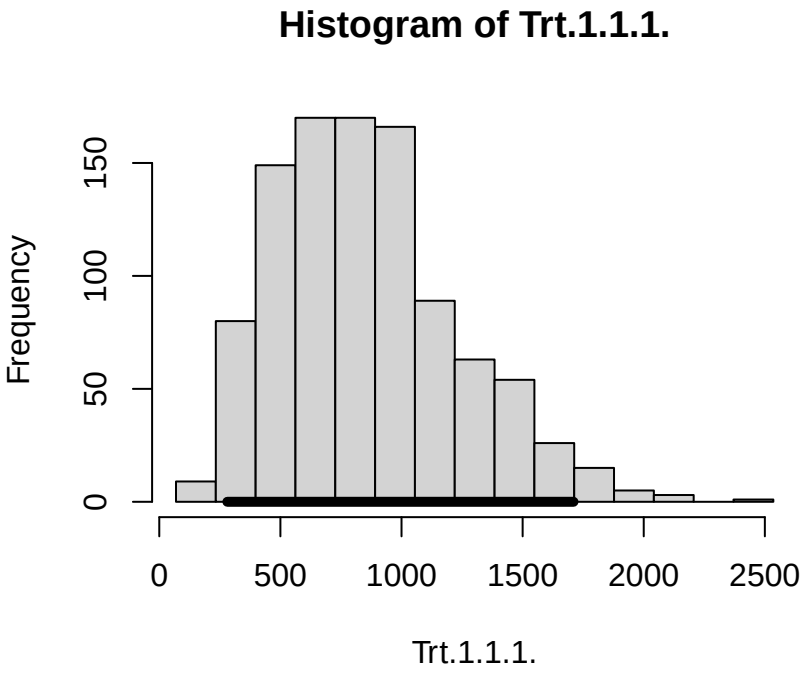
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
820.309	362.7582	269	773	1642.1	11.46568



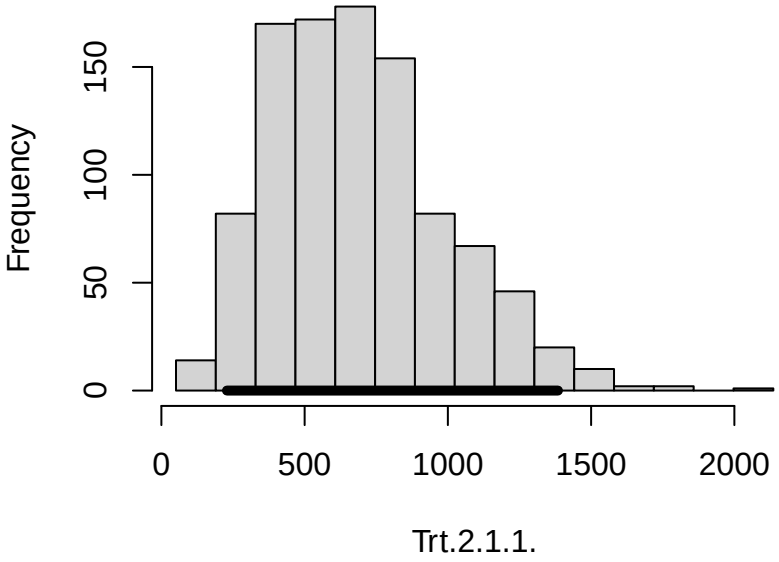
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
461.133	217.8635	143.85	432	966.075	6.886004



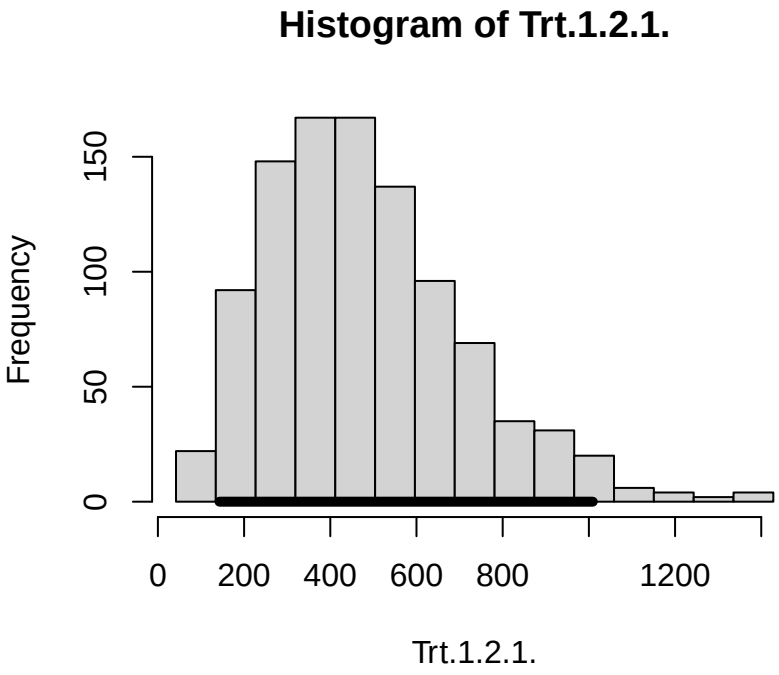
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
111.918	61.17493	27.975	98	257.175	1.933553



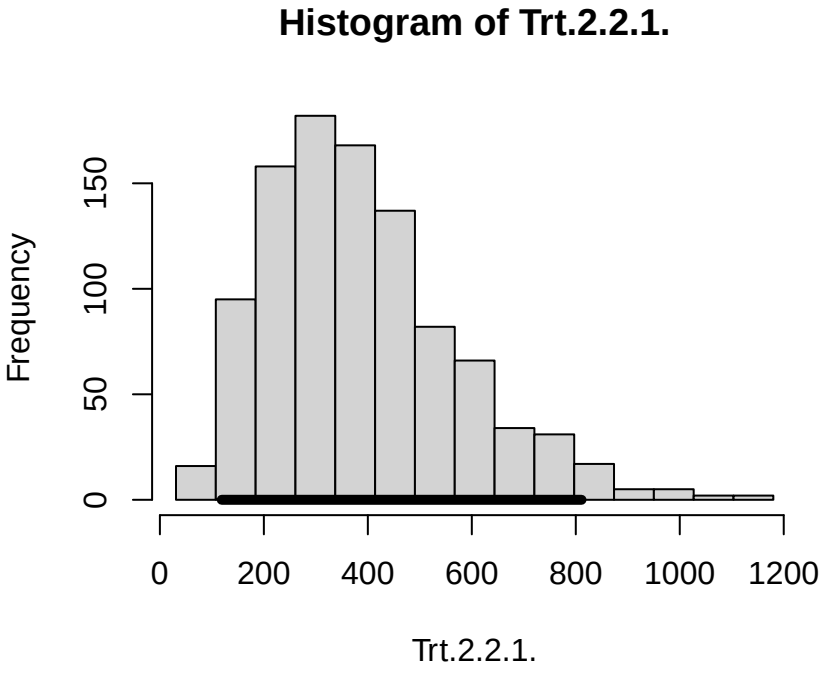
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
859.031	375.9444	281	816	1710.025	11.88246



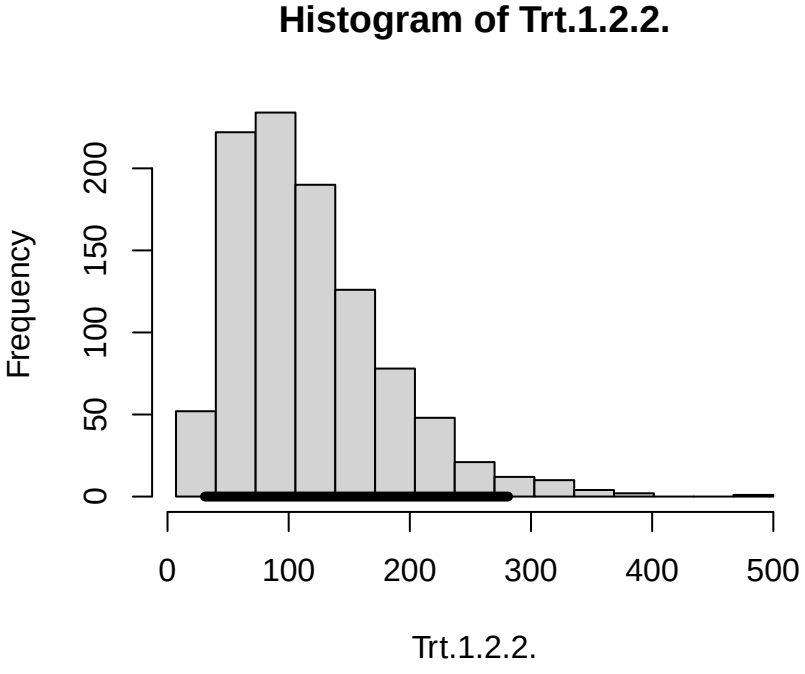
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
689.768	303.9169	228.875	653	1384.2	9.605891



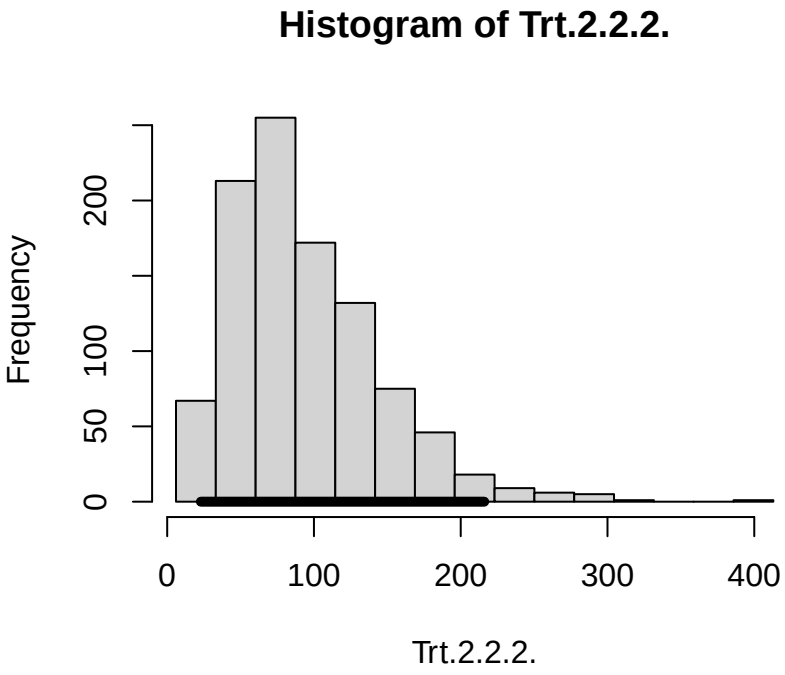
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
481.877	227.604	143	455	1009.075	7.19387



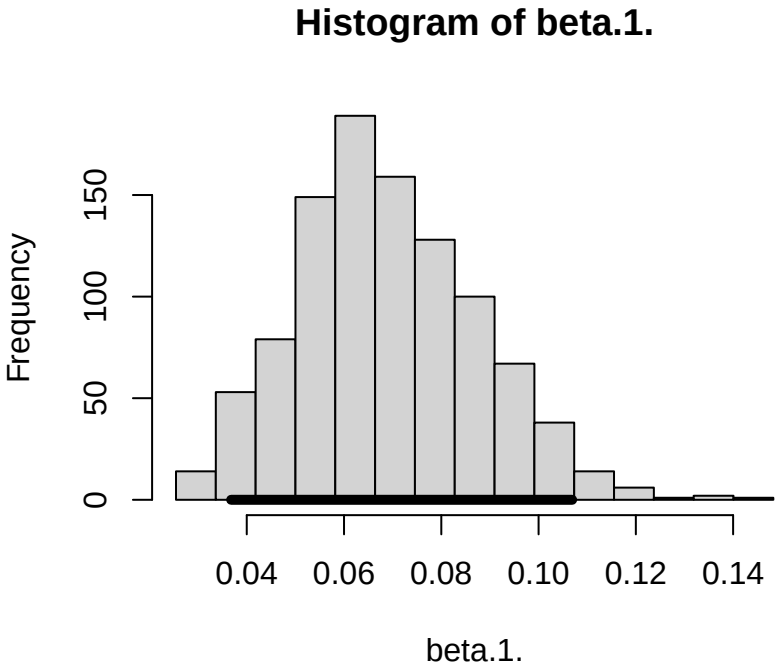
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
388.103	183.2891	118.975	364	811.05	5.793213



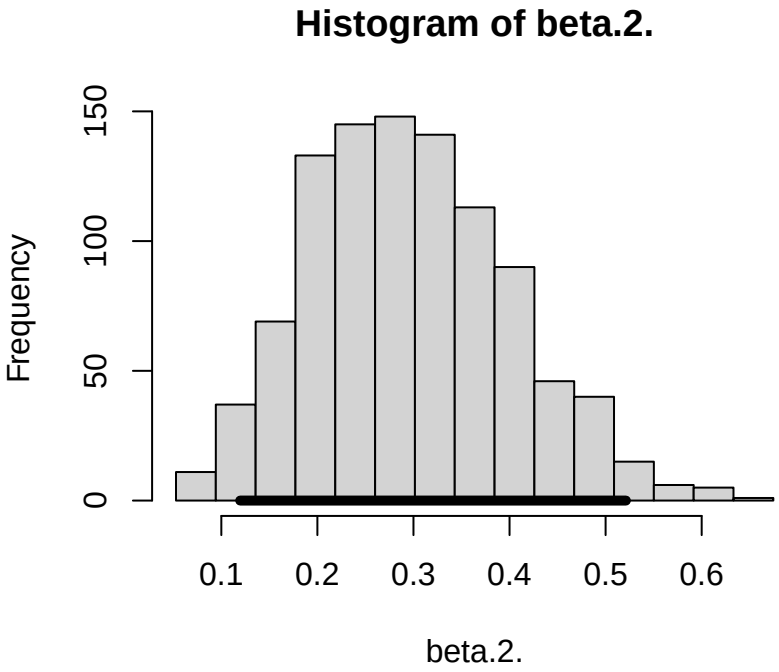
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
117.33	64.61155	30.975	105	281.025	2.042175



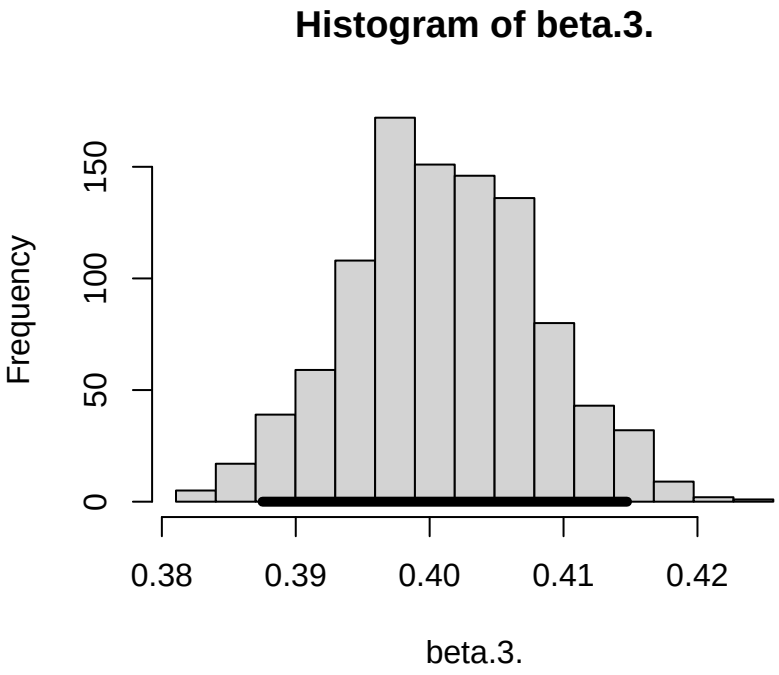
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
94.158	51.4585	22.975	83	216	1.626447



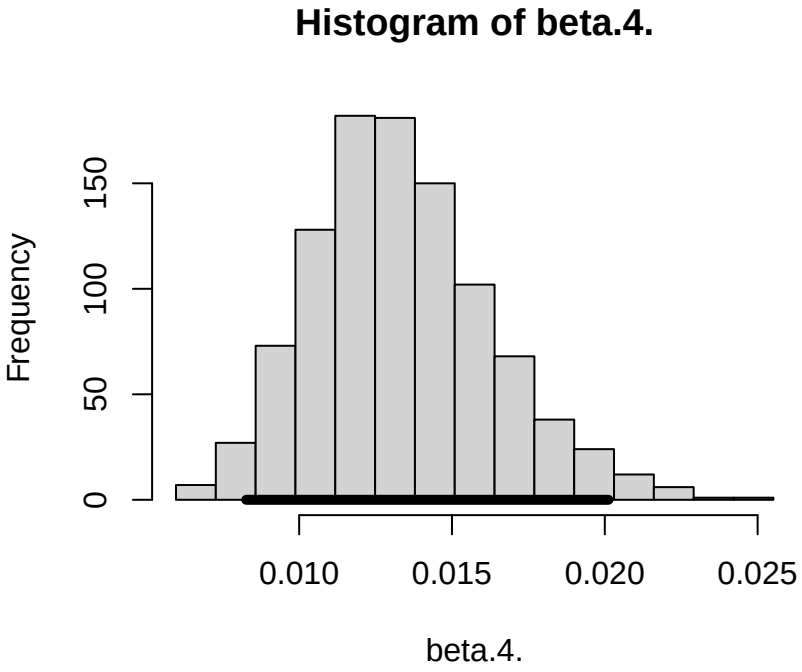
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0690728	0.0185195	0.0367975	0.0676216	0.1069079	0.0005853



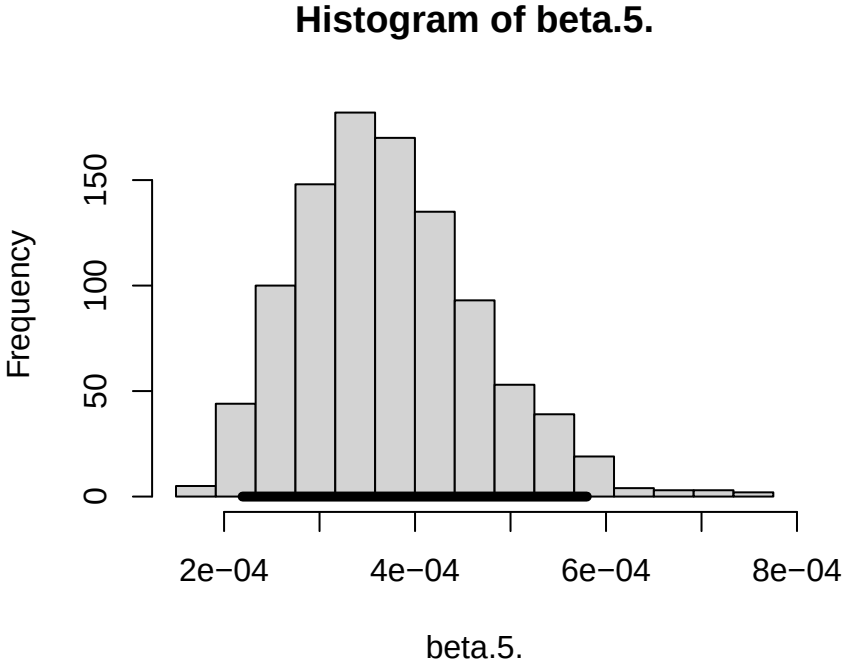
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.2971902	0.1047984	0.1196443	0.2898017	0.5211321	0.0033124



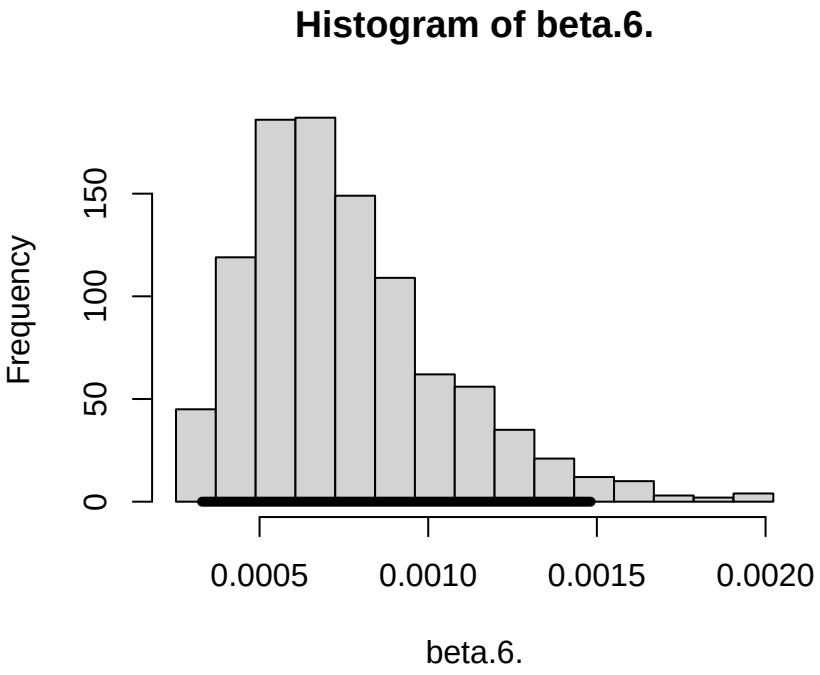
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.4010433	0.00703	0.3875232	0.4009802	0.4147382	0.0002222



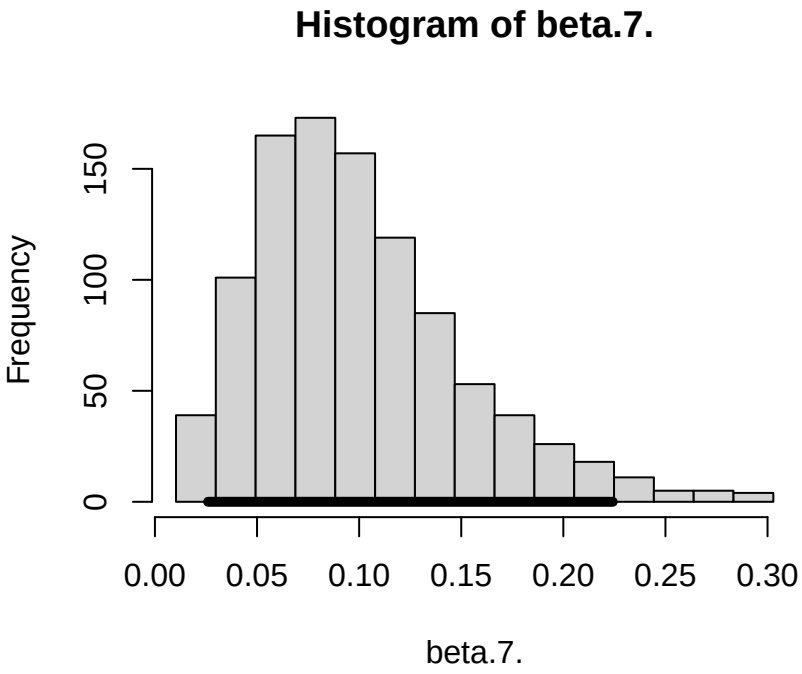
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.013347	0.0029279	0.0082679	0.0130898	0.020119	9.25e-05



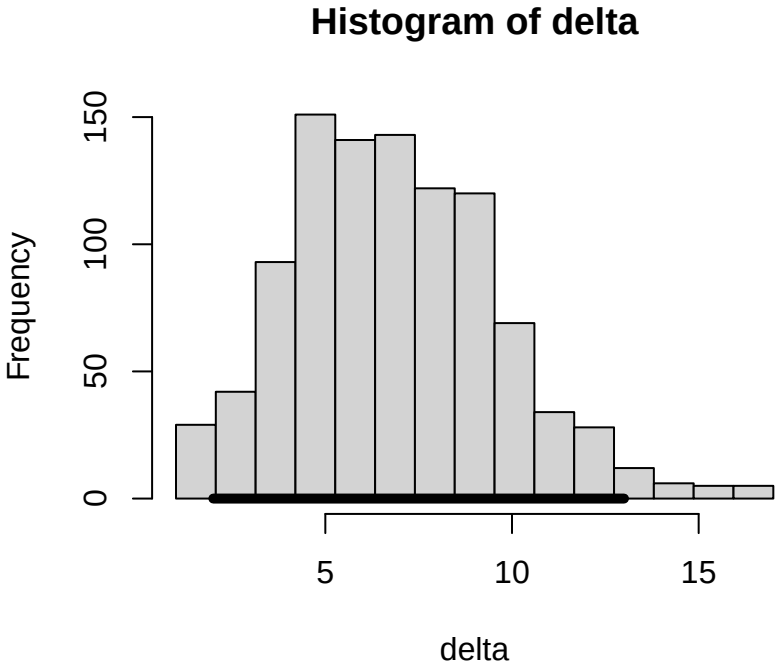
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0003727	9.44e-05	0.0002194	0.0003636	0.0005799	3e-06



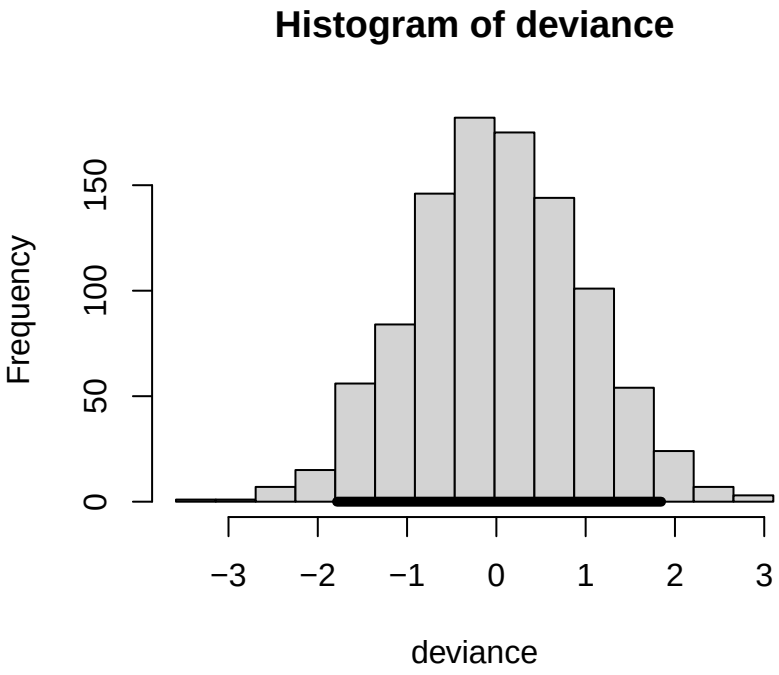
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0007564	0.0002967	0.0003294	0.0007006	0.0014815	9.4e-06



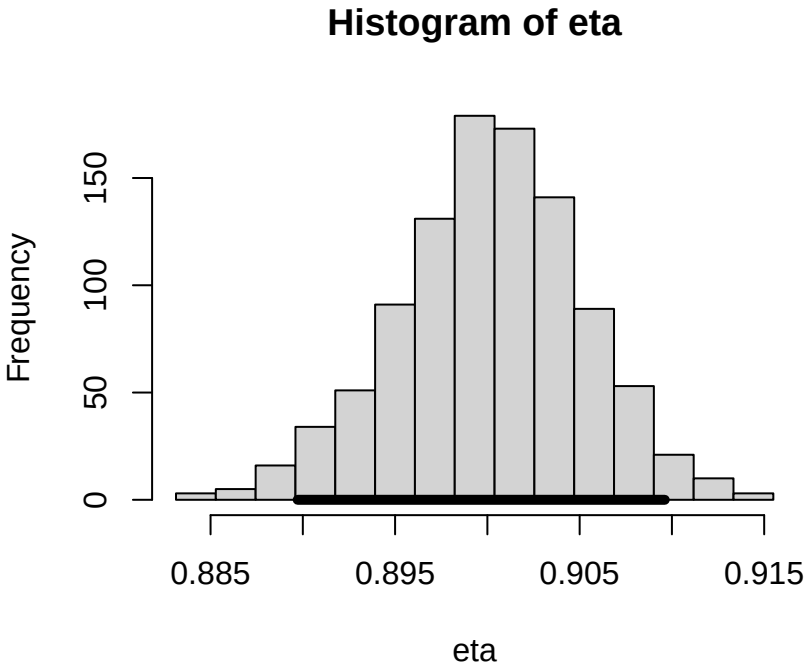
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0997926	0.051201	0.0260358	0.0906289	0.2241951	0.0016183



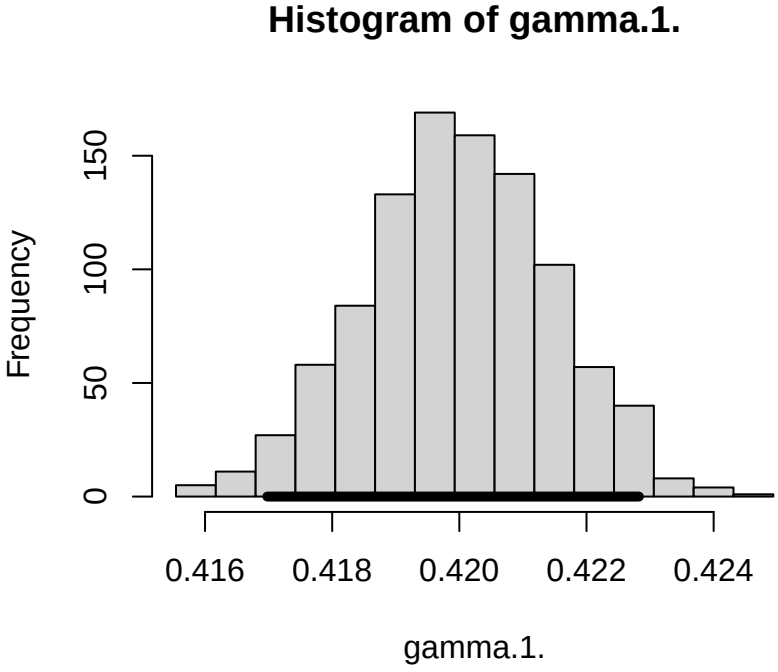
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
7.004	2.643667	2	7	13	0.0835583



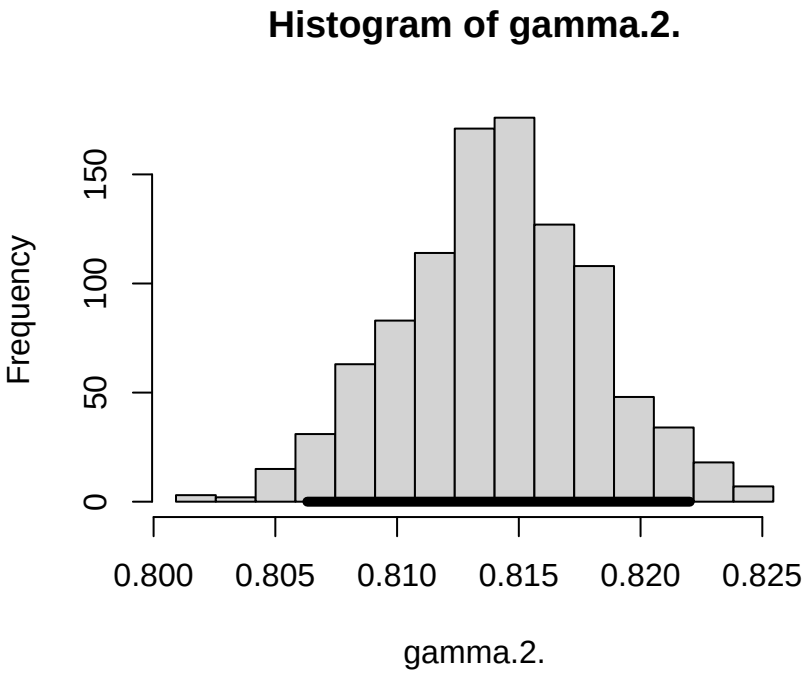
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0065729	0.9573016	-1.784163	0.0010277	1.844494	0.0302574



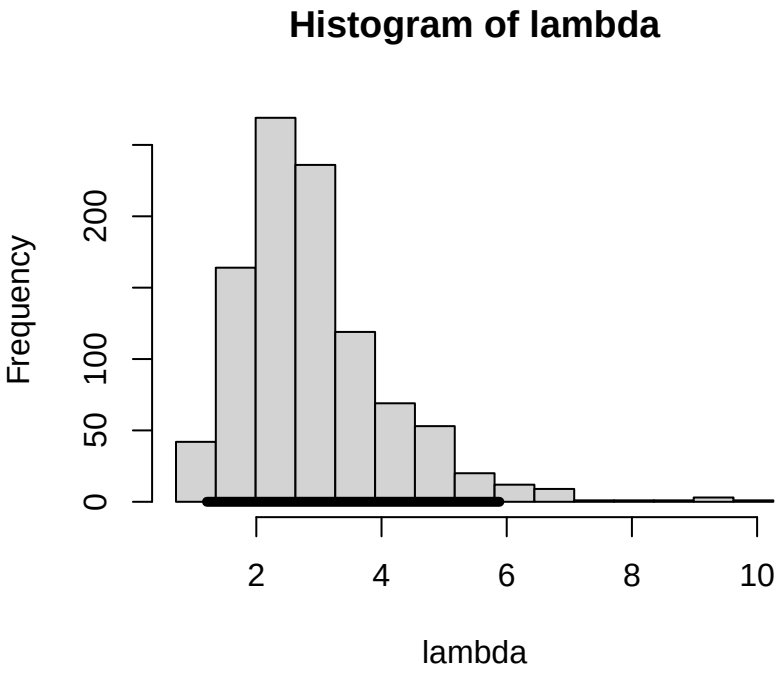
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.9001309	0.0050356	0.8897217	0.9002975	0.9096117	0.0001592



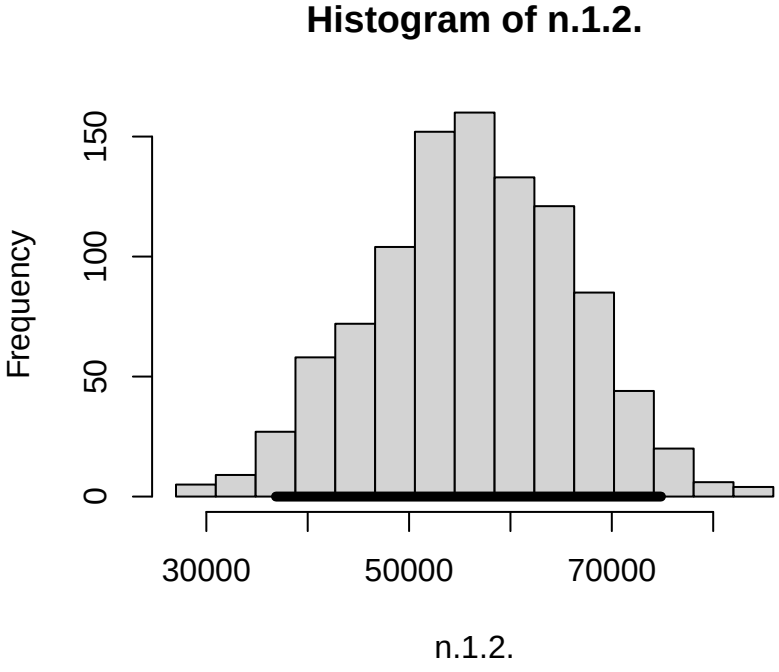
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.4199825	0.0014766	0.4169795	0.4199816	0.4228245	4.67e-05



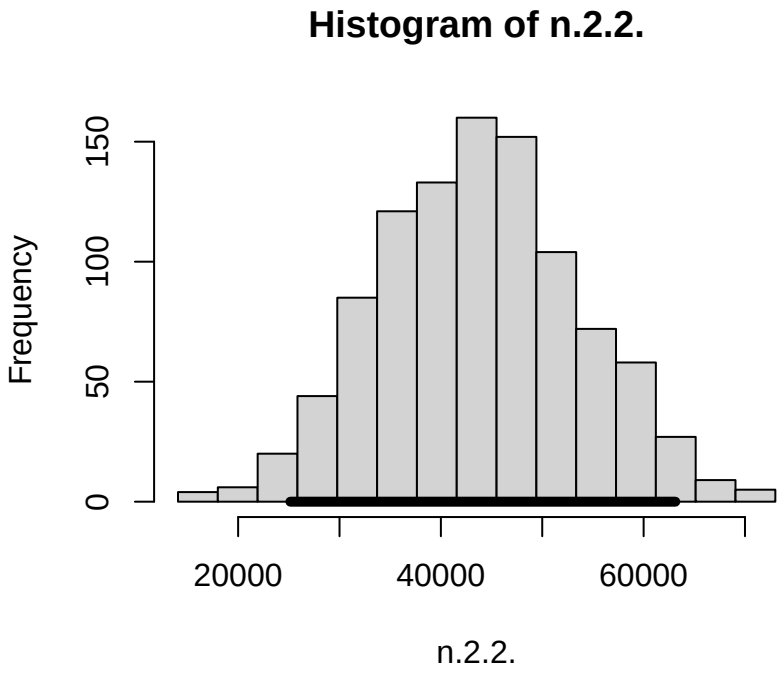
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.8141167	0.004001	0.8063162	0.8141551	0.822019	0.0001265



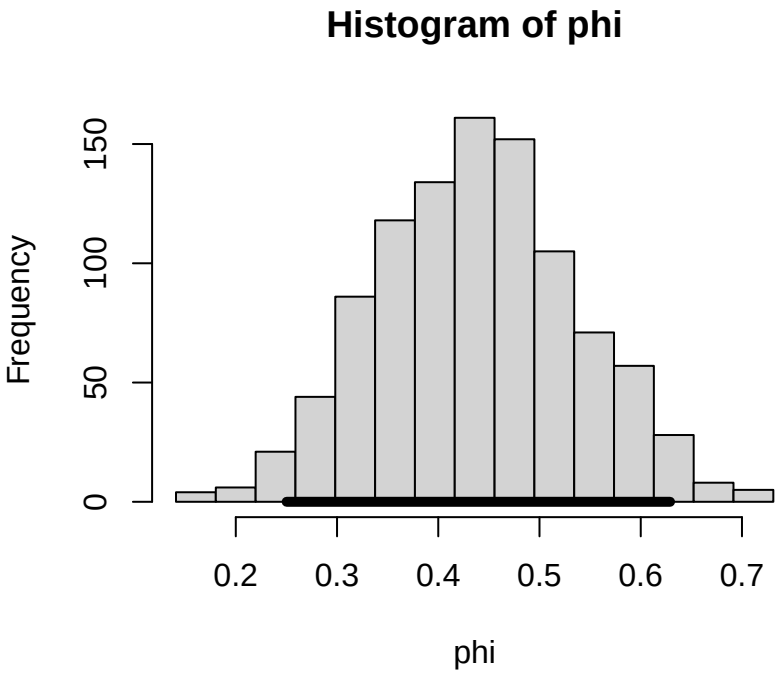
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
2.905089	1.225704	1.211919	2.681323	5.88241	0.0387408



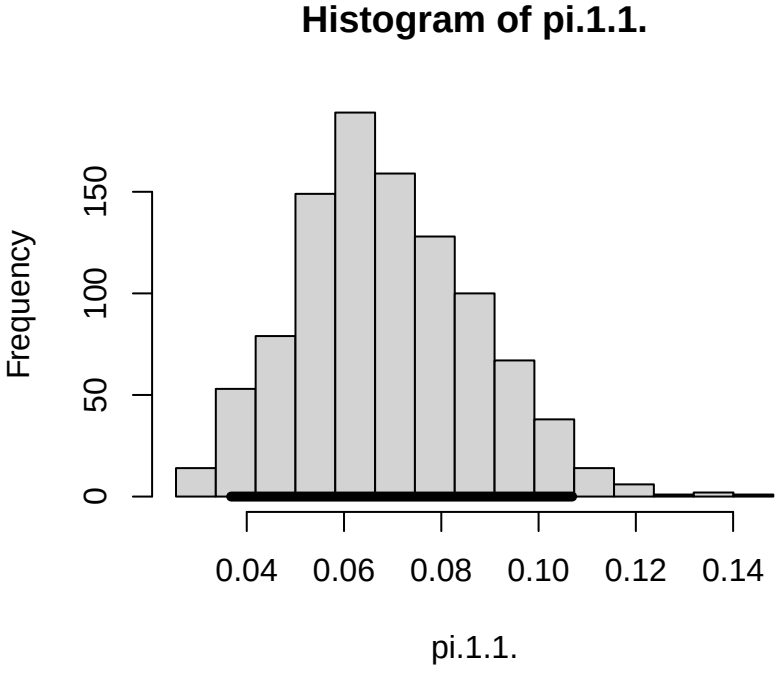
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
56170.33	9860.615	36874.55	56216.5	74843.7	311.6641



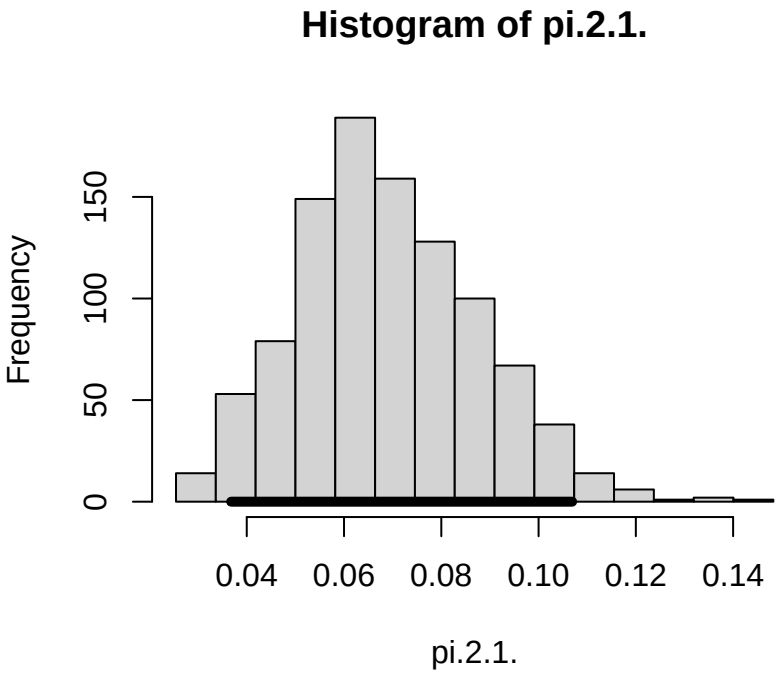
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
43829.67	9860.615	25156.3	43783.5	63125.45	311.6641



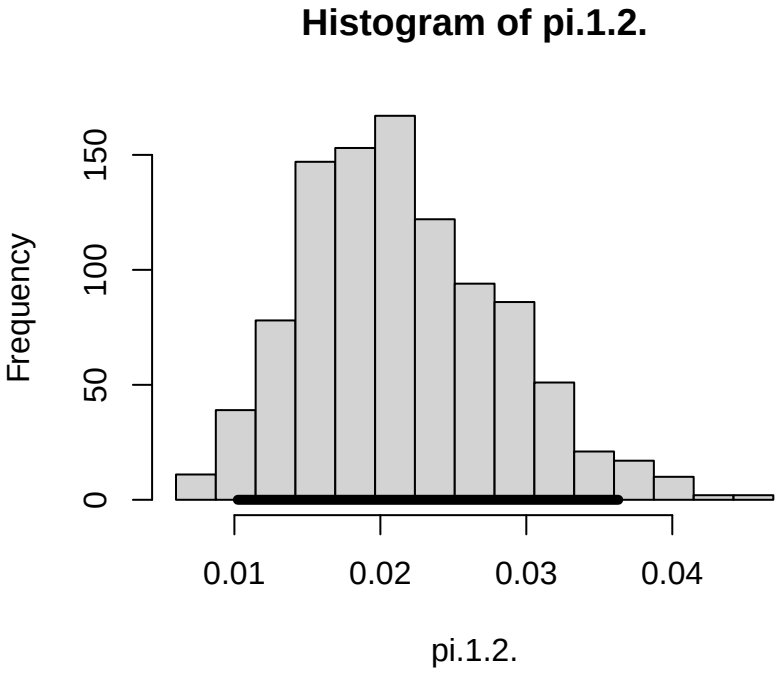
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.4382939	0.098694	0.2502404	0.4381762	0.6289504	0.0031194



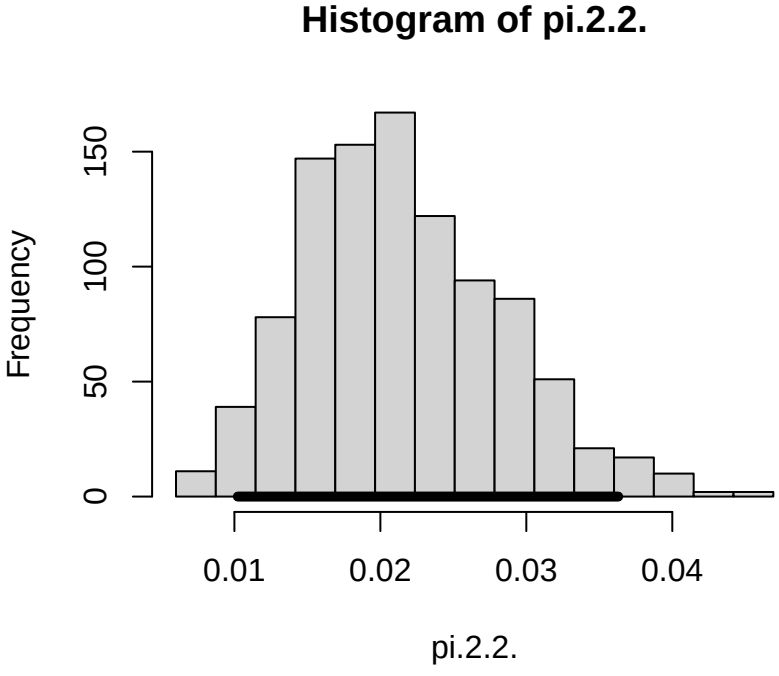
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0690728	0.0185195	0.0367975	0.0676216	0.1069079	0.0005853



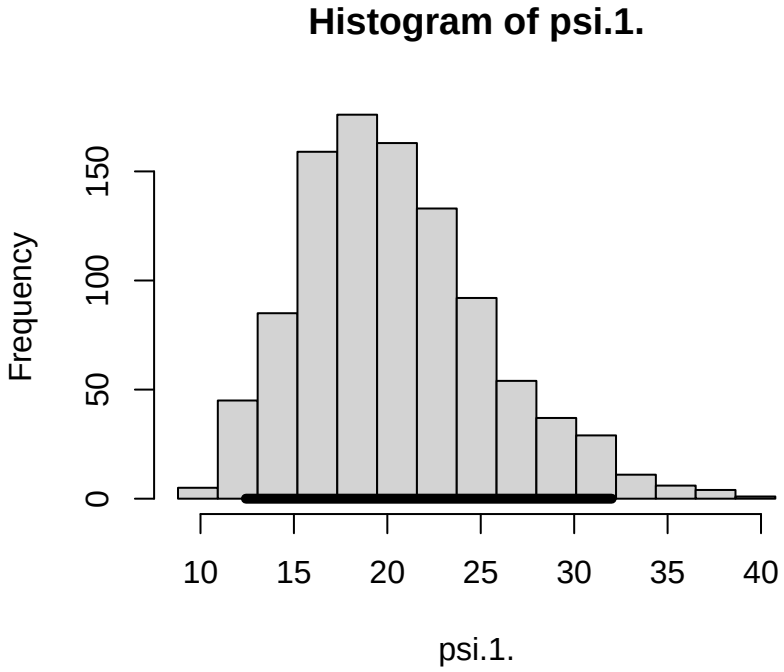
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0690728	0.0185195	0.0367975	0.0676216	0.1069079	0.0005853



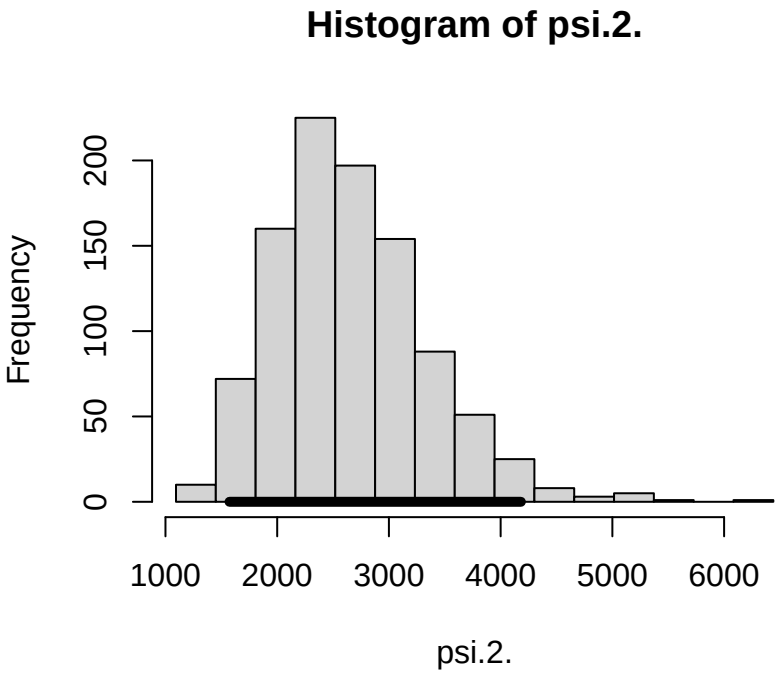
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0215133	0.0068073	0.0102327	0.0207813	0.0362975	0.0002152



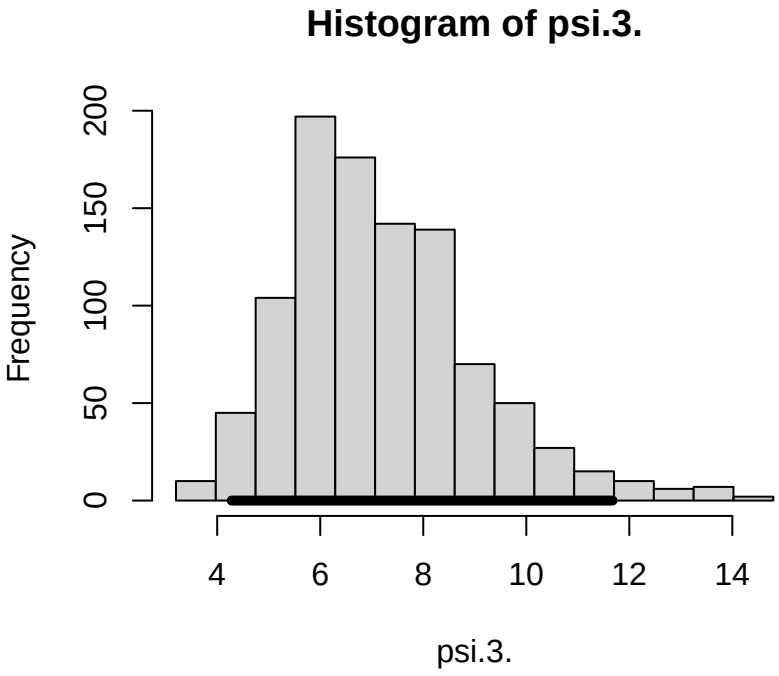
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.0215133	0.0068073	0.0102327	0.0207813	0.0362975	0.0002152



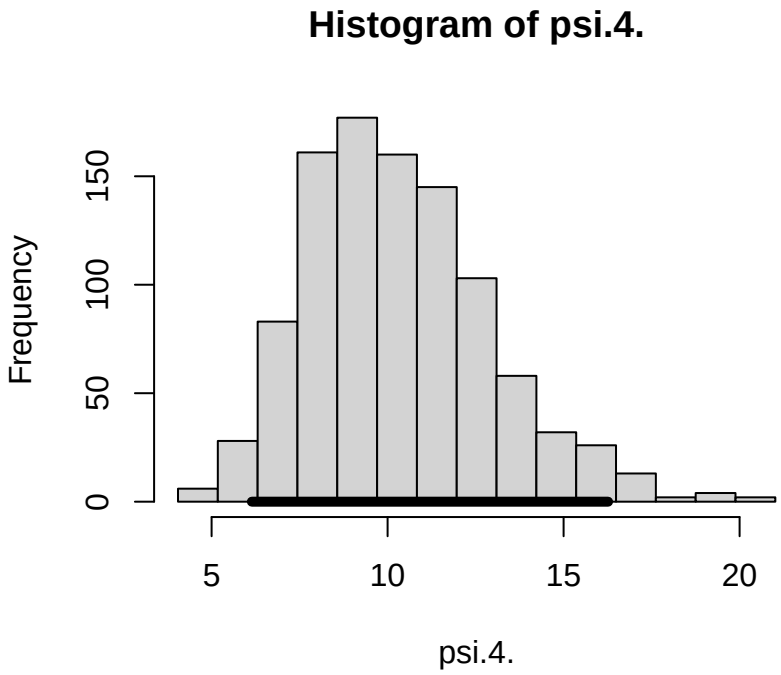
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
20.50602	5.086617	12.4331	20.01152	32.00584	0.1607725



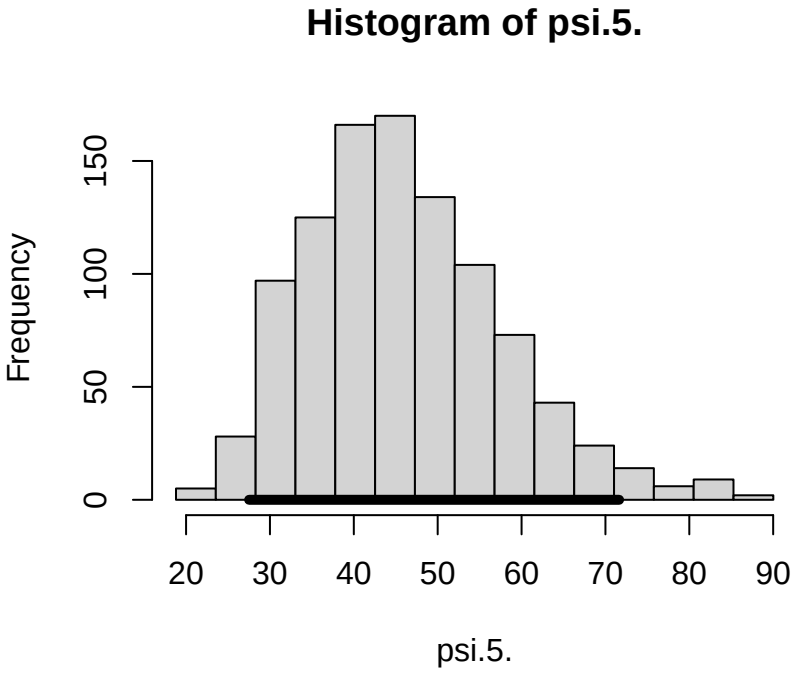
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
2661.843	684.1538	1573.676	2583.913	4181.041	21.62402



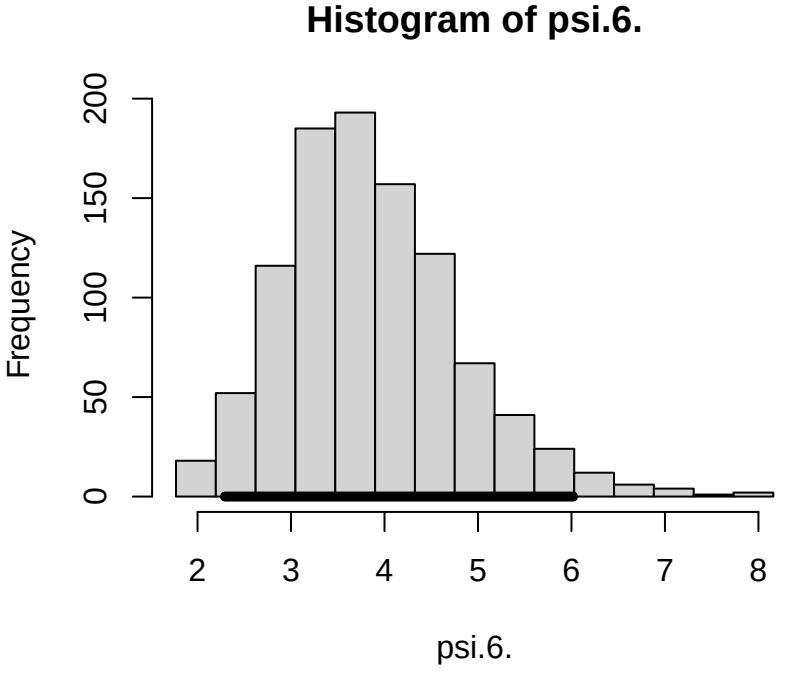
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
7.199515	1.83873	4.279942	6.90417	11.67563	0.0581167



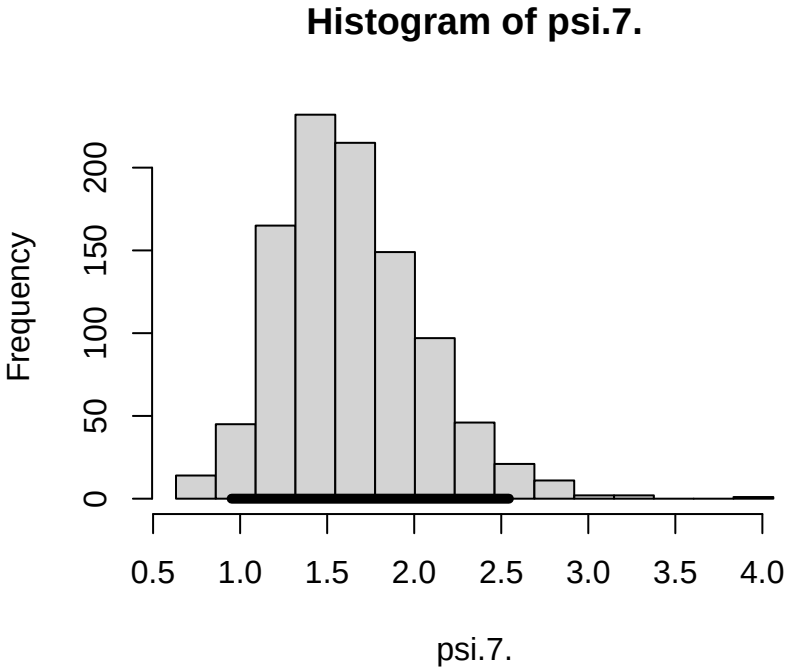
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
10.29213	2.607787	6.143624	9.955699	16.26332	0.0824242



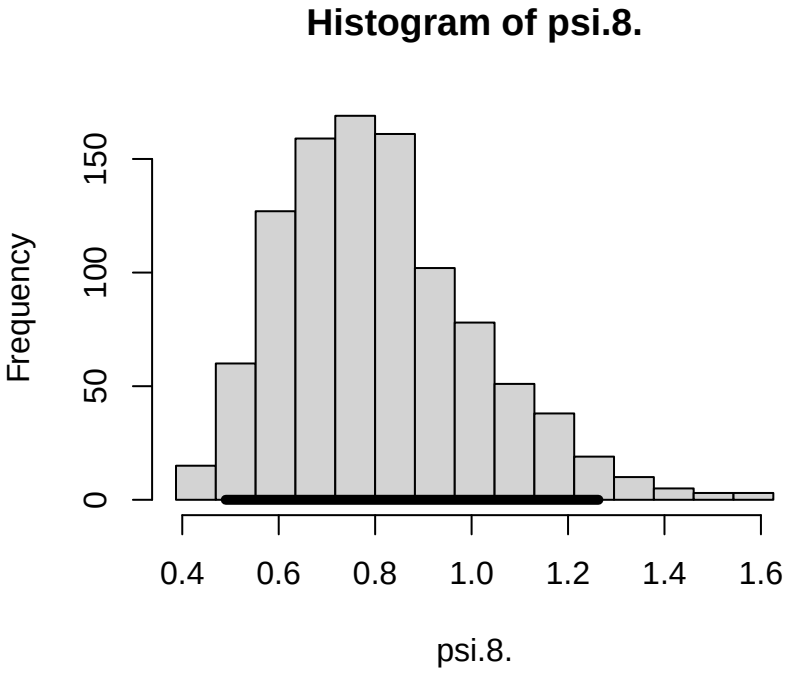
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
45.91777	11.68489	27.51898	44.53583	71.62707	0.3693238



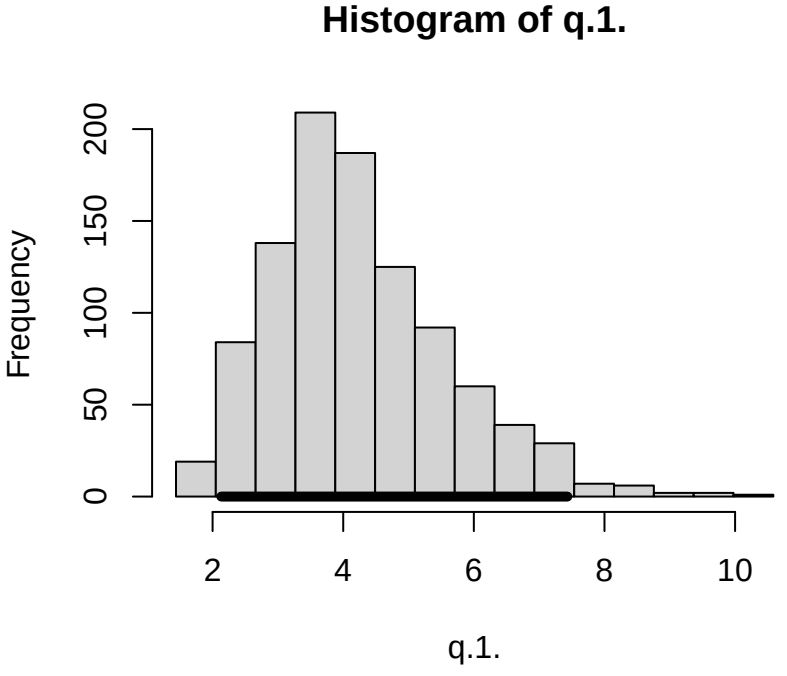
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
3.854695	0.9479262	2.292722	3.755557	6.017339	0.0299611



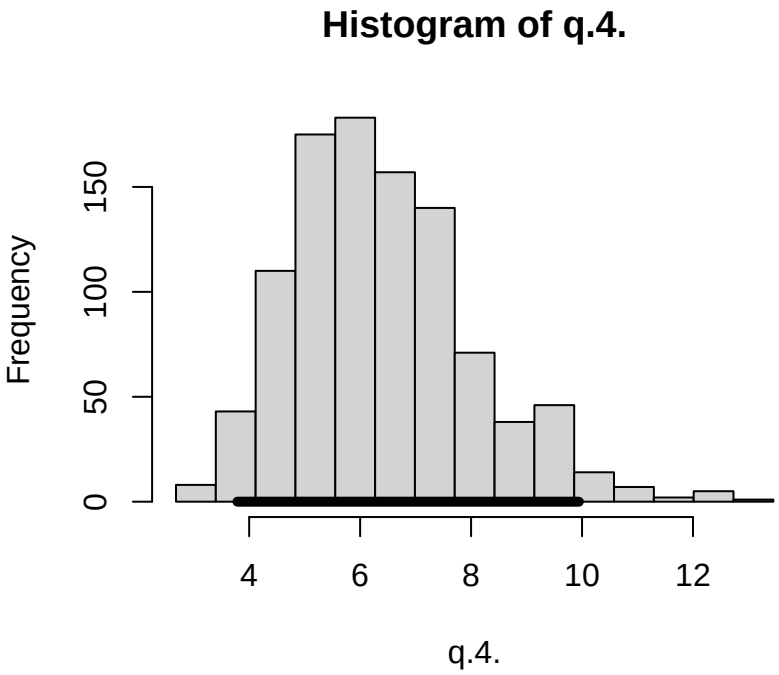
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
1.635824	0.4130969	0.9513184	1.591567	2.543868	0.0130567



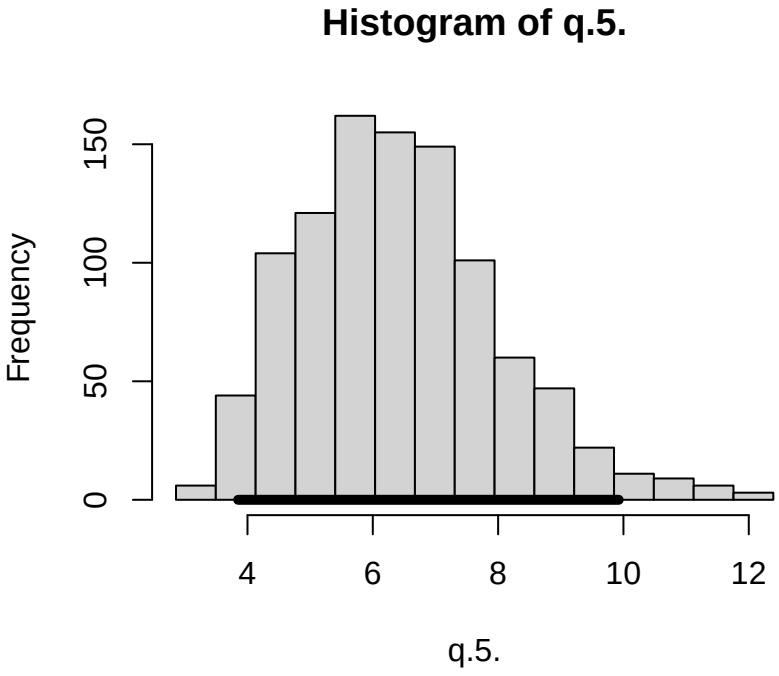
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.8108407	0.2026673	0.4901607	0.7876551	1.262942	0.0064057



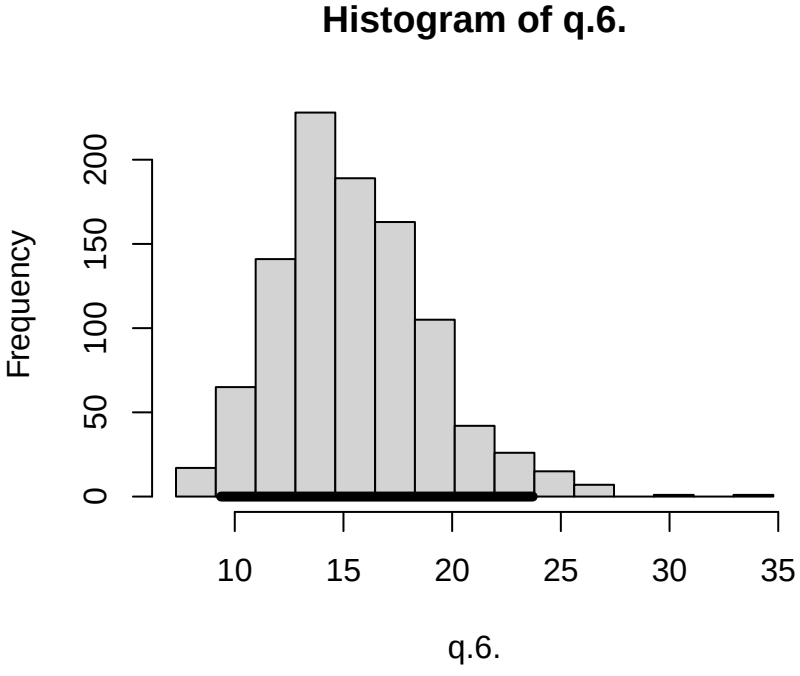
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
4.245515	1.380328	2.133401	4.020643	7.43128	0.043628



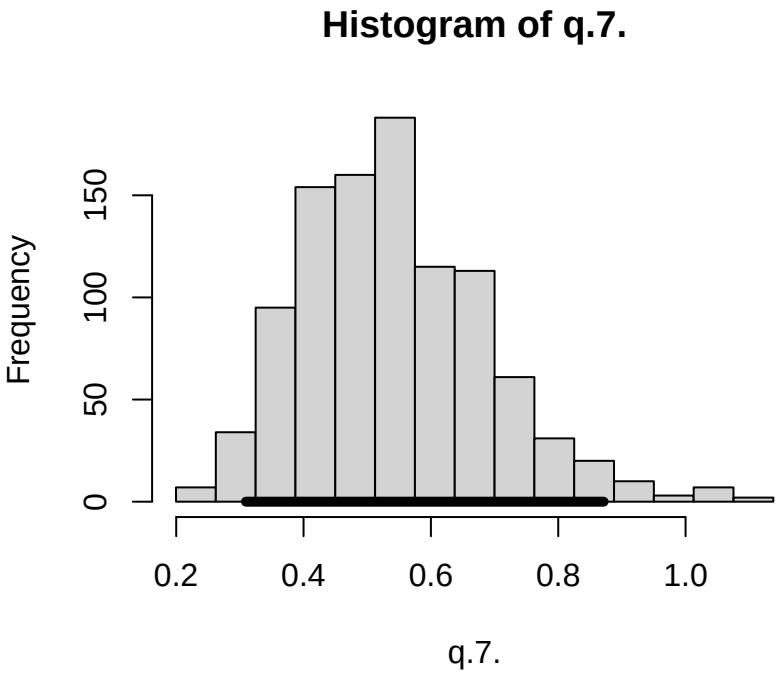
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
6.414003	1.640791	3.78795	6.185502	9.942465	0.0518604



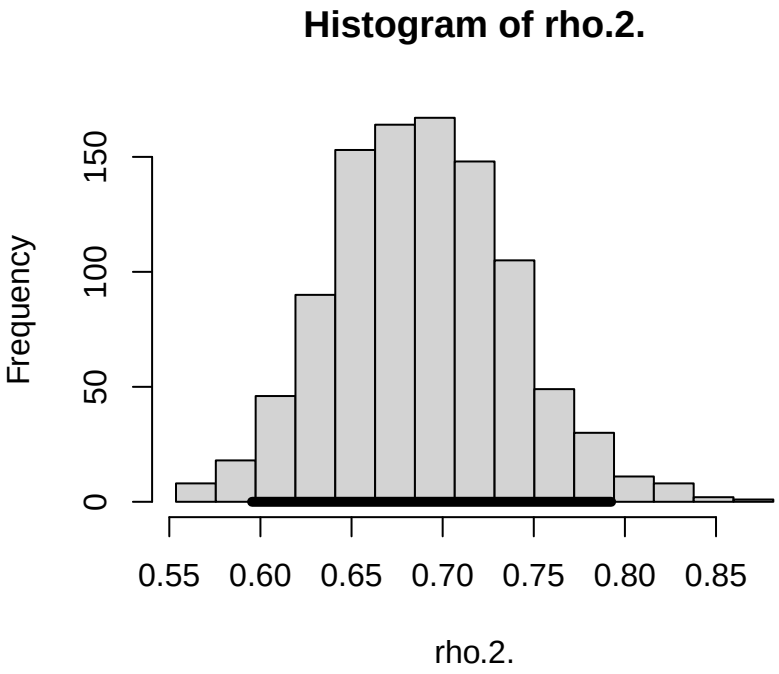
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
6.42076	1.584056	3.850581	6.285484	9.924699	0.0500672



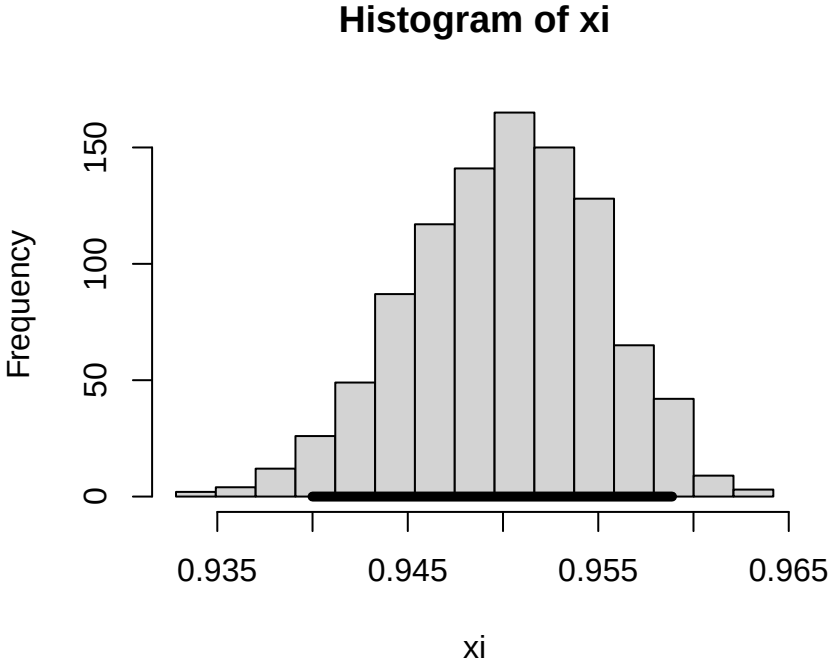
Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
15.48614	3.549163	9.37079	15.09543	23.70509	0.1121783



Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.5424171	0.1463549	0.3095674	0.528529	0.8712211	0.0046258



Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.6888042	0.0496164	0.5954323	0.6872181	0.7924515	0.0015682



Mean	Standard deviation	2.5%	Median	97.5%	Monte Carlo SE
0.9500773	0.0049722	0.9400008	0.9502989	0.9588729	0.0001572

Economic Analysis

This section contains a summary of the economic evaluation.

Cost-effectiveness analysis

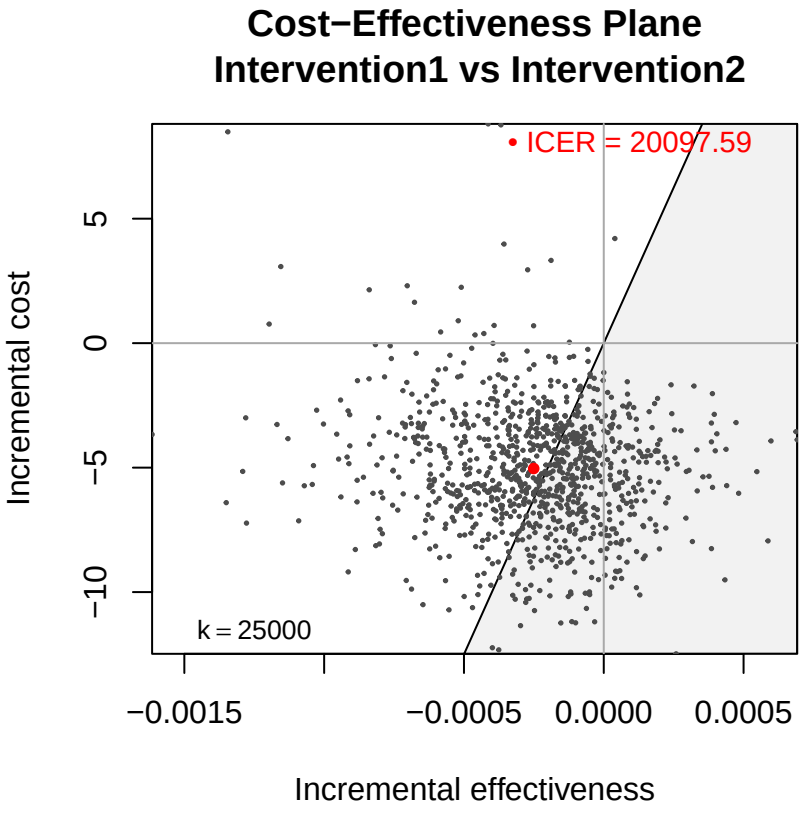
This sub-section presents a summary table reporting basic economic results as well as the optimal decision, given the selected willingness-to-pay threshold $k = 25000$.

```
Cost-effectiveness analysis summary

Reference intervention:  Intervention1
Comparator intervention: Intervention2

Optimal decision: choose Intervention1 for k < 20100 and Intervention2 for k >= 20100


Analysis for willingness to pay parameter k = 25000

              Expected net benefit
Intervention1              -36.054
Intervention2              -34.826

                                  EIB  CEAC  ICER
Intervention1 vs Intervention2 -1.2284 0.471 20098

Optimal intervention (max expected net benefit) for k = 25000: Intervention2

EVPI 2.4145
```

Cost-effectiveness plane

The following graph shows the cost-effectiveness plane. This presents the joint distribution of the population average benefit and cost differential, (Δ_e, Δ_c).

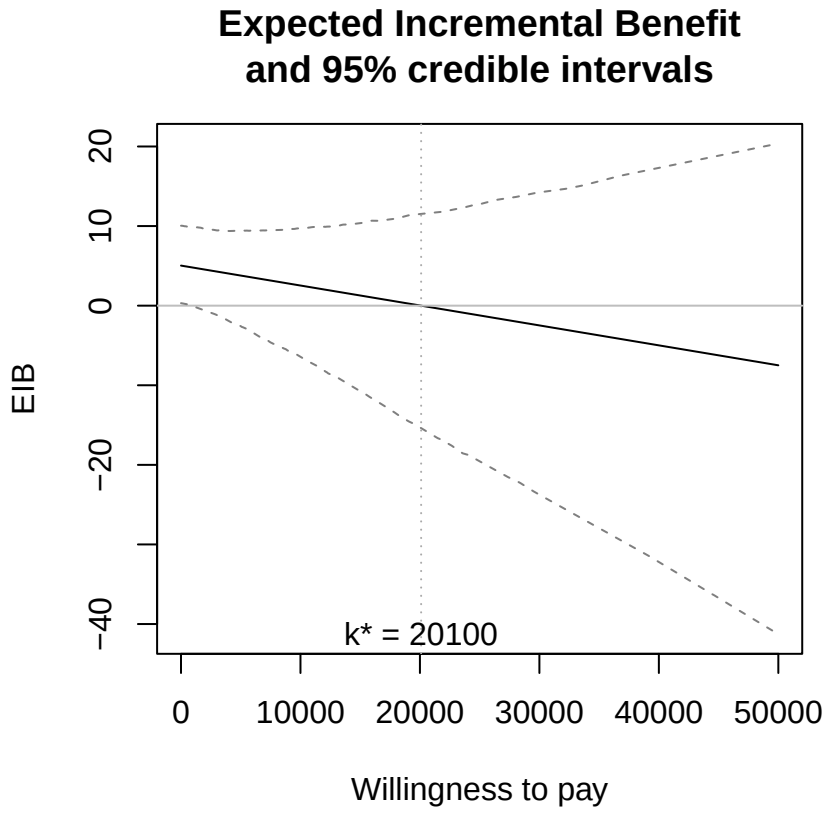
Each point in the graph represents a 'potential future' in terms of expected incremental economic outcomes. The shaded portion of the plane is the '*sustainability area*'. The more points lay in the sustainability area, the more likely that the reference intervention will turn out to be cost-effective, at a given willingness to pay threshold, k (in this case selected at $k = 25000$)



Expected Incremental Benefit

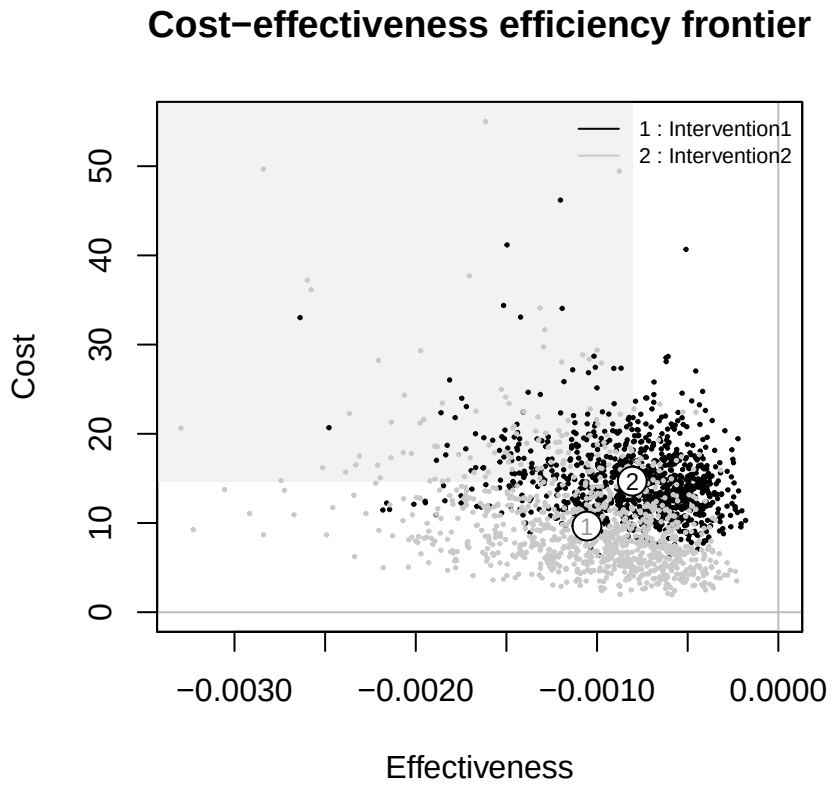
The following graph shows the Expected Incremental Benefit (EIB), as a function of a grid of values for the willingness to pay k (in this case in the interval 0 - 50000).

The value for k in correspondence of which the line crosses the $x-$axis is termed the '*break-even point*' and represents the point(s) at which the optimal decision changes. The graph also reports the 95% credible limits around the EIB.



Cost-effectiveness efficiency frontier

```
Cost-effectiveness efficiency frontier summary

Interventions on the efficiency frontier:
             Effectiveness  Costs Increase slope Increase angle
Intervention2   -0.00080537 14.691             NA             NA

Interventions not on the efficiency frontier:
             Effectiveness  Costs     Dominance type
Intervention1    -0.0010559 9.6555 Extended dominance
```

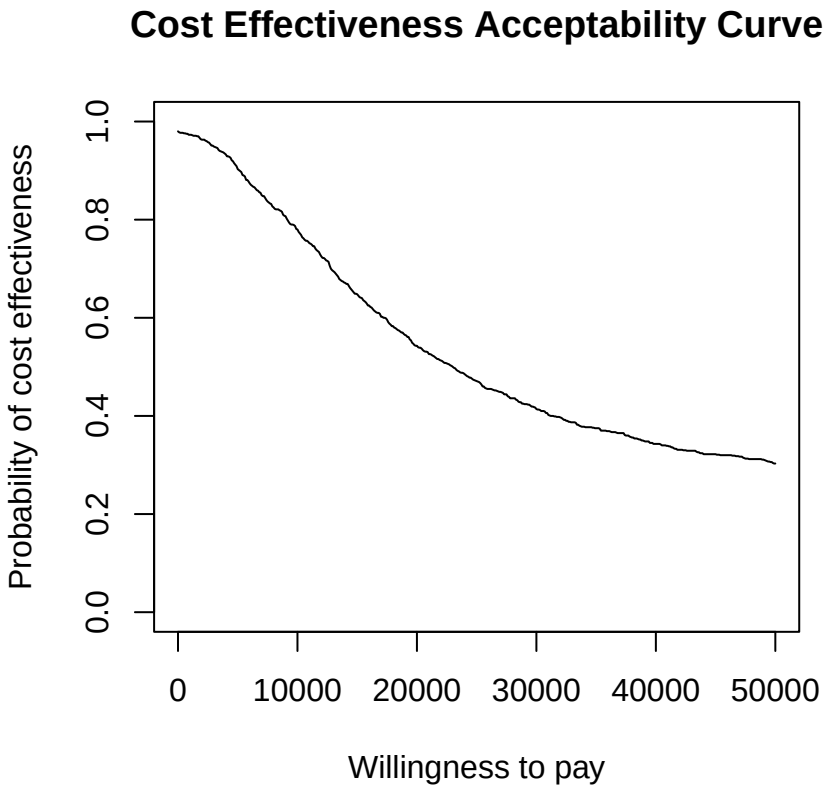


Probabilistic Sensitivity Analysis

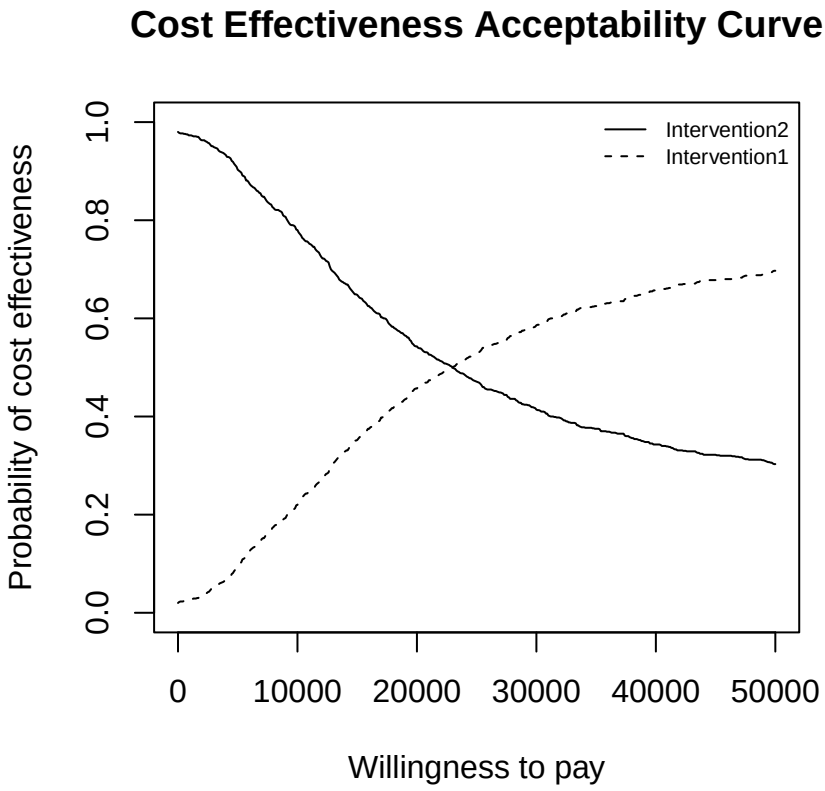
This section presents the results of Probabilistic Sensitivity Analysis (PSA). PSA is used to assess the impact of parameter uncertainty on the decision-making process.

Cost-effectiveness acceptability curve

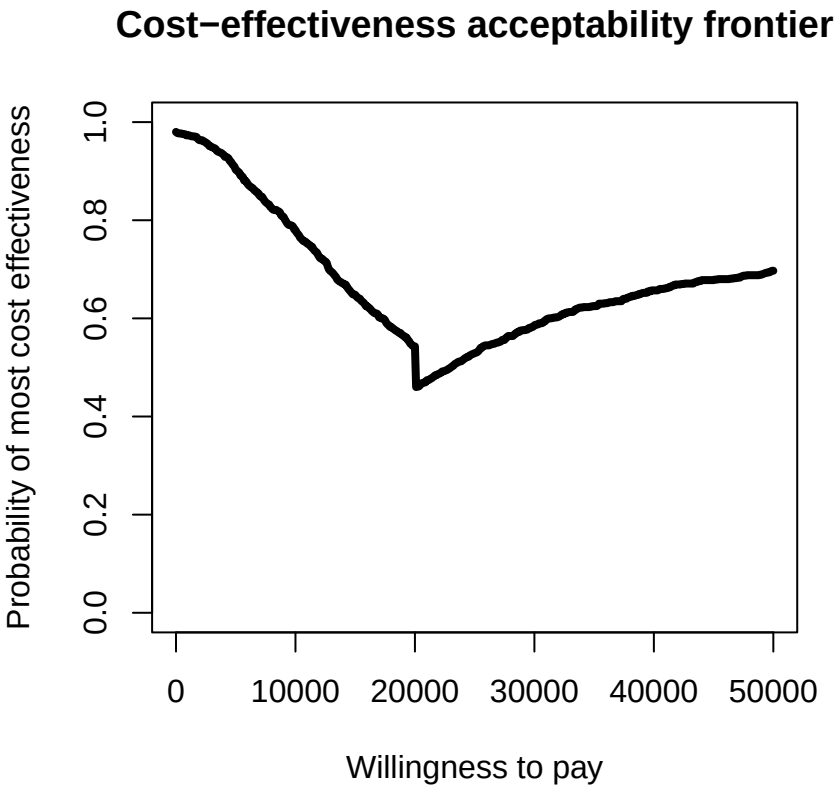
The following graph shows the cost-effectiveness acceptability curve (CEAC). The CEAC represents the proportion of 'potential futures' in which the reference intervention is estimated to be more cost-effective than the comparator. Thus, it can be interpreted as the 'probability of cost-effectiveness'.


Cost Effectiveness Acceptability Curve
Probability of cost effectiveness
0.0
0.2
0.4
0.6
0.8
1.0
0
10000
20000
30000
40000
50000
Willingness to pay

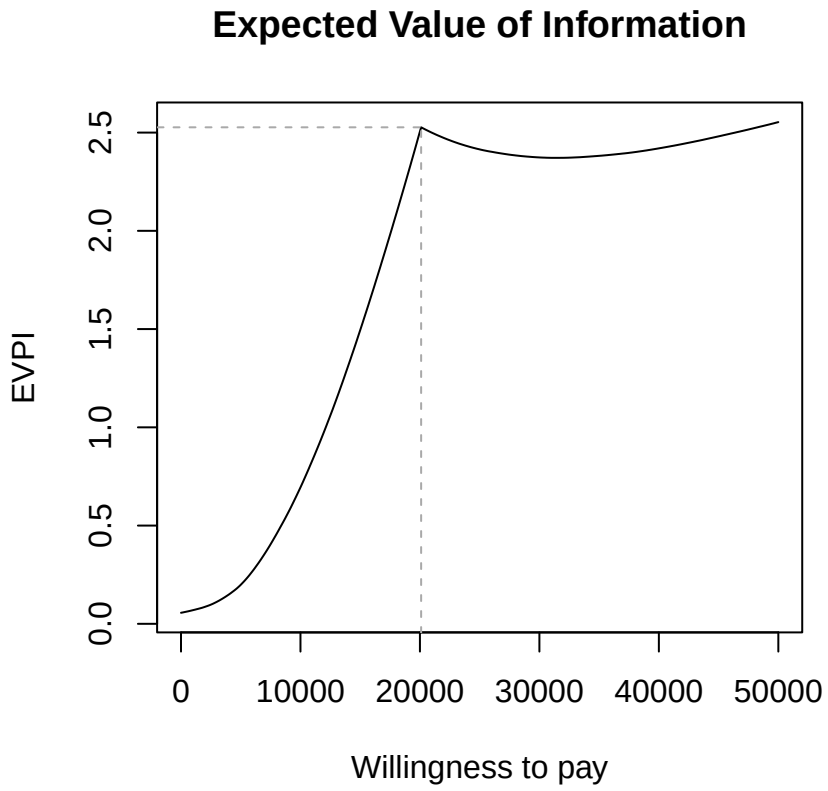
Multi-comparison Cost-effectiveness acceptability curve



Cost-effectiveness acceptability frontier



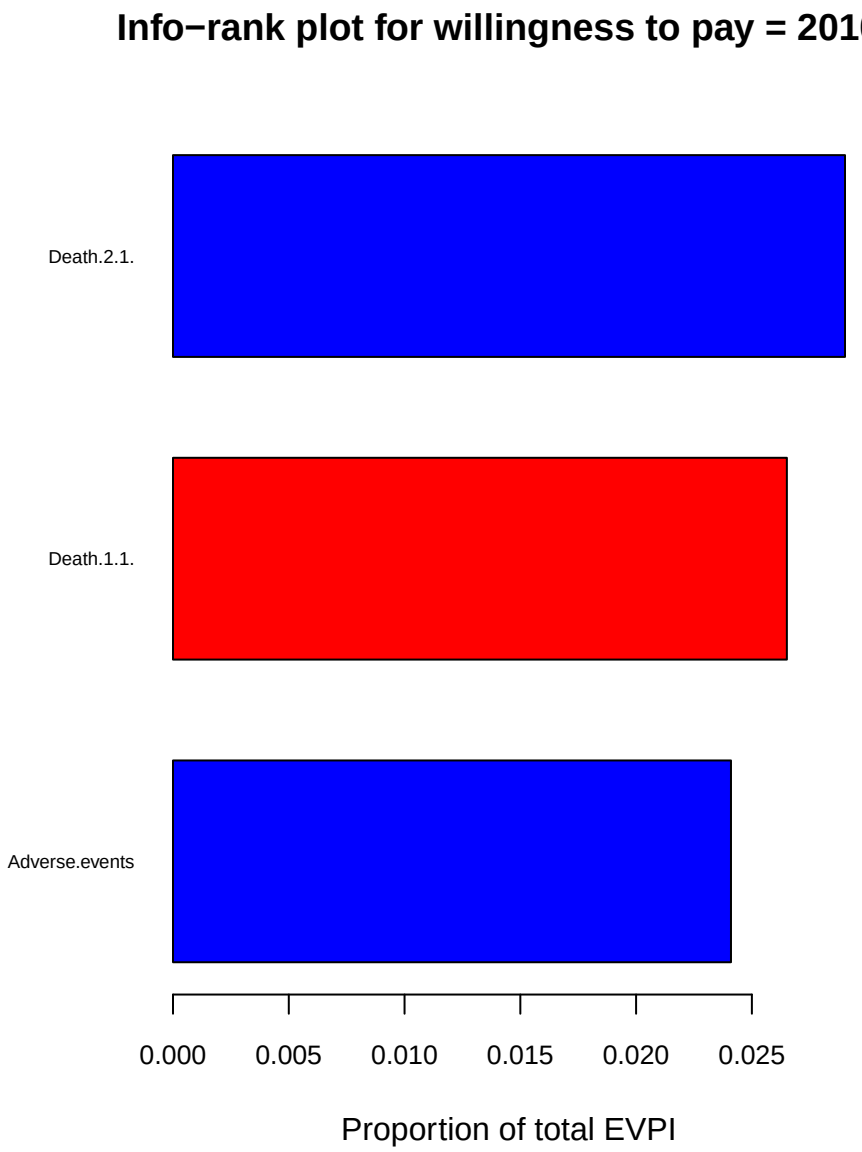
Expected value of perfect information



Info-rank plot

This section presents the results of the Info-rank plot. This is an extension of the Tornado plot, which is used to identify the most important parameters. Instead of using deterministic sensitivity analysis, however, the Info-rank plot is based on the analysis of the Expected Value of Partial Perfect Information (EVPPI).

For each parameter and value of the willingness-to-pay threshold k, a barchart is plotted to describe the ratio of EVPPI (specific to that parameter) to EVPI. This represents the relative 'importance' of each parameter in terms of the expected value of information.

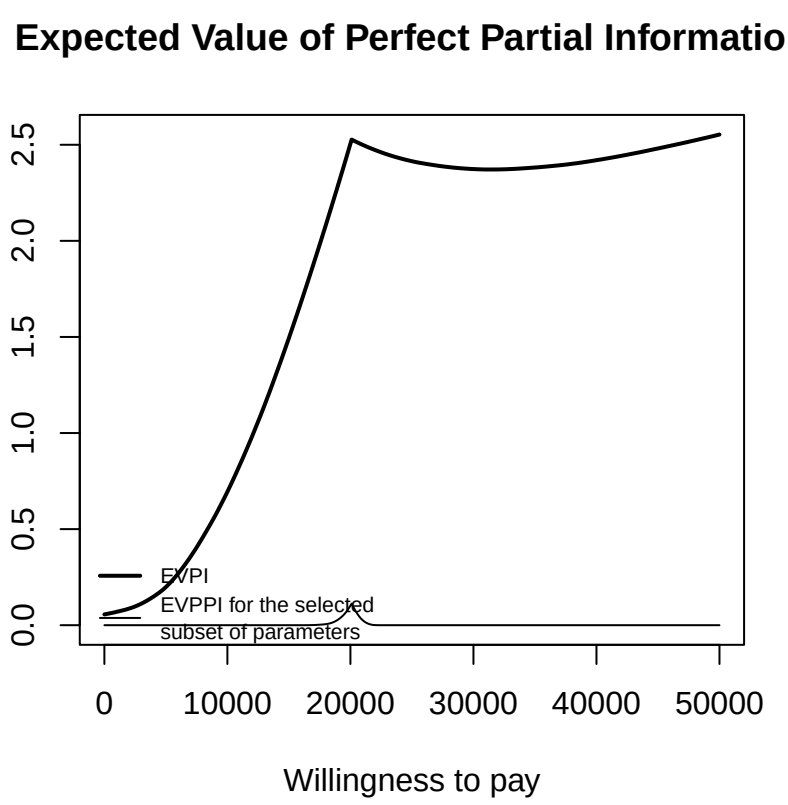


Expected value of perfect partial information

This section presents the results of the analysis of the Expected Value of Partial Perfect Information (EVPPI). The analysis considers specifically the set of *important* parameters ϕ = (Death.2.1., Death.1.1., Adverse.events). The resulting EVPPI describes the value of learning about ϕ, while all the other parameters remain uncertain at the current level of knowledge.

Estimation of the EVPPI

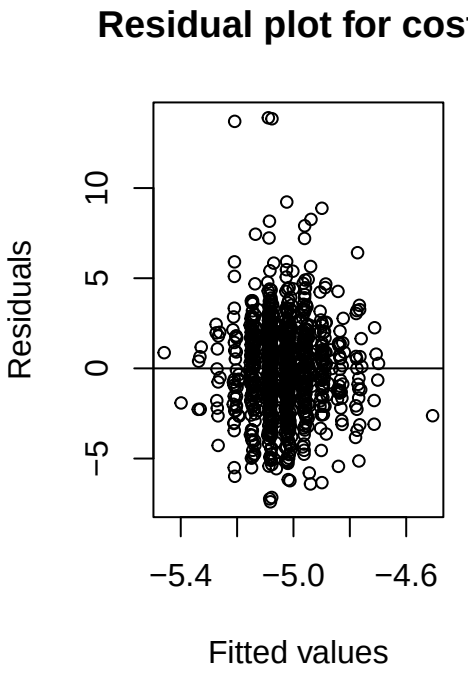
The EVPPI has been estimated using Gaussian Process regression with a total running time of 0 seconds. The following graph shows the EVPPI as a function of the willingness-to-pay k.

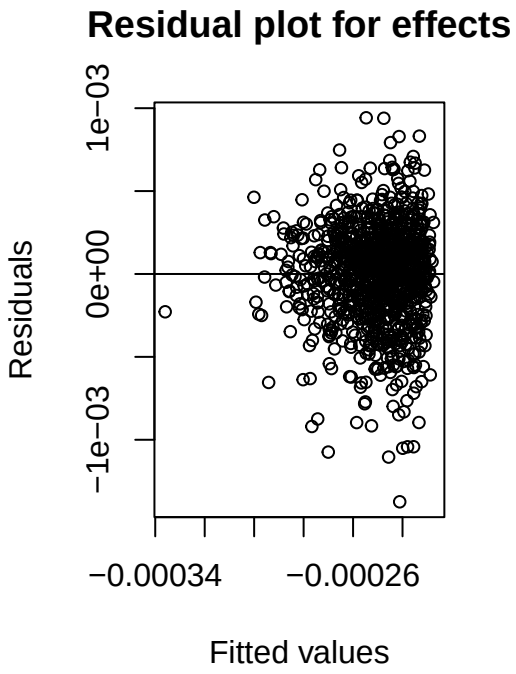


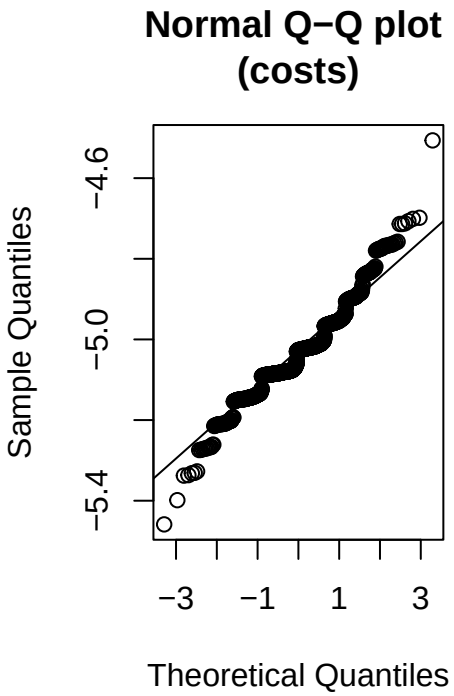
Diagnostics

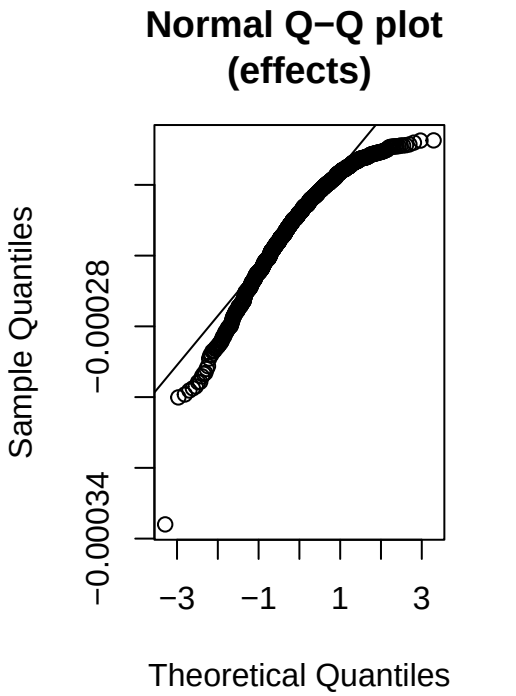
The following graphs can be used to assess the model and method used to perform the calculations. The *Residual Plot* shows the model residuals, separately for the costs and the effects. A scatter plot with no evident pattern indicates satisfactory fit.

Since the calculation methods are based on some form of underlying normality of the process describing the distribution of the Net Benefits, the *Q-Q Plot* for both costs and effects should show points lying on top of the 45 degrees line. Substantial departure from linearity in this graph indicate poor model fitting.


Residual plot for costs
Residuals
10
5
0
−5
−5.4
−5.0
−4.6
Fitted values


Residual plot for effects
Residuals
1e−03
0e+00
−1e−03
−0.00034
−0.00026
Fitted values


Normal Q−Q plot
(costs)
Sample Quantiles
−4.6
−5.0
−5.4
−3
−1
1
3
Theoretical Quantiles


Normal Q−Q plot
(effects)
Sample Quantiles
−0.00028
−0.00034
−3
−1
1
3
Theoretical Quantiles