POWER SIMULATION FOR COX REGRESSION

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MODEL log(hazard)=log(baseline hazard) + bx

Survival times:
Two distributions, exponential and Weibull, were used to generate survival times
The following parametrizations were used:

Exponential survival times log(baseline hazard) = a
Weibull survival times log(integrated baseline hazard) = a + c log(time)

Censoring:
Uniform censoring on the interval from 1 - A to 1.
This censoring scheme mimics a trial in which patients enter uniformly from time 0 to time A and are followed until time 1.

The censored suvival time was obtained as the minimum of the survival time and the censoring time.

Exponential survival times
Percent censored values for x=0

a	A=0.2	A=0.5	A=0.8
-1	71.8%	76.0%	80.5%
0	40.7%	47.7%	56.4%
1	8.8%	14.0%	23.7%

Weibull survival times, A = 0.5
Percent censored values for x=0

Shape	a	% cens.
0.2	-1.25	76.4%
0.2	-0.75	64.1%
0.2	-0.25	48.1%
0.5	-1.15	76.1%
0.5	-0.65	63.8%
0.5	-0.15	47.7%
2	-0.75	76.3%
2	-0.25	64.4%
2	0.25	49.1%
5	-0.1	76.4%
5	0.5	63.6%
5	1.1	48.4%

Covariate x
Covariate values were obtained as a sample from a standardized distribution.
Distribution considered: Normal, Uniform, Gamma(3) and Double Exponential

Simulated power and estimated power derived from equivalent two-sample test using either population values or sample values for mean and standard deviation of covariate

	Normal		Uniform		Gamma(3)	
Sample size	mean	s.d.	mean	s.d.	mean	s.d.
n=100	-0.0706	1.0821	-0.0845	1.0653	-0.0356	1.0765
n=200	-0.0482	1.0606	-0.0245	1.0433	-0.0264	0.9940
n=500	-0.0041	0.9747	0.0028	0.9902	-0.0146	0.9473
population	0.0000	1.0000	0.0000	1.0000	0.0000	1.0000

POWER: NORMAL COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0523	0.0500	0.0500	0.0488	0.0500	0.0500	0.0502	0.0500	0.0500
0.05	0.0609	0.0581	0.0595	0.0595	0.0569	0.0581	0.0549	0.0556	0.0565
0.10	0.0888	0.0828	0.0883	0.0828	0.0779	0.0826	0.0755	0.0726	0.0764
0.15	0.1402	0.1252	0.1376	0.1256	0.1138	0.1243		0.1016	0.1101
0.20	0.2078	0.1857	0.2076		0.1652	0.1837	0.1592	0.1431	0.1581
0.25		0.2638	0.2967	0.2596	0.2319	0.2601		0.1972	0.2203
0.30	0.3996	0.3567	0.4005		0.3123	0.3507	0.2954	0.2633	0.2952
0.35		0.4593	0.5117	0.4551	0.4033	0.4507		0.3397	0.3803
0.40	0.6512	0.5648	0.6218		0.5000	0.5537	0.4819	0.4236	0.4716
0.45		0.6658	0.7224	0.6887	0.5967	0.6529		0.5112	0.5641
0.50	0.8375	0.7561	0.8076		0.6878	0.7424	0.6940	0.5983	0.6530
0.55	0.9023	0.8313	0.8744	0.8503	0.7687	0.8179		0.6807	0.7339
0.60	0.9448	0.8896	0.9229	0.9105	0.8364	0.8776	0.8418	0.7551	0.8038
0.65	0.9712	0.9319	0.9556	0.9474	0.8896	0.9219	0.9010	0.8190	0.8610
0.70	0.9880	0.9604	0.9760	0.9723	0.9292	0.9528	0.9385	0.8713	0.9056
0.75		0.9783	0.9878	0.9868	0.9568	0.9729	0.9659	0.9120	0.9385
0.80		0.9889	0.9942		0.9750	0.9853	0.9817	0.9423	0.9616

sample size 200, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0522	0.0500	0.0500	0.0497	0.0500	0.0500	0.0486	0.0500	0.0500
0.05	0.0662	0.0663	0.0683	0.0640	0.0639	0.0656	0.0595	0.0612	0.0626
0.10	0.1182	0.1166	0.1248	0.1071	0.1065	0.1135	0.0938	0.0958	0.1014
0.15		0.2031	0.2216		0.1800	0.1957		0.1551	0.1678
0.20	0.3523	0.3235	0.3543	0.3061	0.2833	0.3101	0.2588	0.2394	0.2615
0.25	0.4903	0.4668	0.5081		0.4100	0.4474		0.3455	0.3776
0.30	0.6473	0.6148	0.6605	0.5738	0.5473	0.5913	0.4914	0.4659	0.5062
0.35	0.7819	0.7476	0.7901	0.7141	0.6791	0.7236		0.5897	0.6339
0.40	0.8718	0.8514	0.8847	0.8223	0.7915	0.8303	0.7315	0.7051	0.7480
0.45	0.9357	0.9219	0.9441	0.8930	0.8766	0.9059		0.8027	0.8398
0.50	0.9751	0.9635	0.9762	0.9467	0.9338	0.9532	0.9033	0.8778	0.9063
0.55	0.9906	0.9849	0.9911	0.9786	0.9679	0.9791	0.9483	0.9301	0.9497
0.60		0.9945	0.9971	0.9916	0.9860	0.9917	0.9739	0.9632	0.9753
0.65		0.9982	0.9992		0.9945	0.9970	0.9902	0.9822	0.9889
0.70		0.9995	0.9998		0.9981	0.9991	0.9959	0.9921	0.9955

sample size 500, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0515	0.0500	0.0500	0.0544	0.0500	0.0500	0.0522	0.0500	0.0500
0.05	0.0844	0.0912	0.0891	0.0780	0.0850	0.0832	0.0727	0.0784	0.0769
0.10	0.2077	0.2205	0.2118	0.1835	0.1948	0.1873	0.1560	0.1671	0.1610
0.15	0.4052	0.4287	0.4110	0.3537	0.3759	0.3601	0.2927	0.3165	0.3032
0.20	0.6393	0.6604	0.6379	0.5637	0.5914	0.5695	0.4841	0.5063	0.4861
0.25	0.8221	0.8430	0.8240	0.7601	0.7820	0.7607	0.6743	0.6948	0.6723
0.30	0.9327	0.9452	0.9343	0.8909	0.9077	0.8929	0.8218	0.8422	0.8231
0.35	0.9815	0.9859	0.9815	0.9642	0.9696	0.9621	0.9248	0.9329	0.9204
0.40	0.9966	0.9973	0.9961	0.9900	0.9923	0.9895	0.9721	0.9768	0.9705

POWER: NORMAL COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0507	0.0500	0.0500	0.0493	0.0500	0.0500	0.0481	0.0500	0.0500
0.05	0.0712	0.0671	0.0701	0.0700	0.0651	0.0677	0.0678	0.0626	0.0647
0.10	0.1316	0.1202	0.1321	0.1230	0.1117	0.1222	0.1108	0.1013	0.1100
0.15	0.2383	0.2113	0.2382	0.2182	0.1918	0.2155	0.1883	0.1678	0.1875
0.20	0.3766	0.3374	0.3818	0.3452	0.3039	0.3438		0.2620	0.2959
0.25	0.5489	0.4860	0.5444		0.4395	0.4938	0.4227	0.3790	0.4271
0.30	0.7053	0.6367	0.6995	0.6546	0.5828	0.6445		0.5088	0.5670
0.35	0.8254	0.7687	0.8248		0.7158	0.7751	0.7039	0.6377	0.6985
0.40	0.9068	0.8686	0.9104	0.8831	0.8243	0.8728		0.7526	0.8081
0.45	0.9614	0.9338	0.9601	0.9396	0.9021	0.9361	0.8968	0.8444	0.8889
0.50	0.9827	0.9706	0.9846	0.9738	0.9510	0.9717		0.9104	0.9418
0.55		0.9885	0.9949	0.9912	0.9781	0.9889	0.9746	0.9529	0.9724
0.60		0.9961	0.9985	0.9959	0.9913	0.9962	0.9894	0.9775	0.9882
0.65		0.9988	0.9996		0.9969	0.9988	0.9965	0.9902	0.9955
0.70		0.9997	0.9999		0.9990	0.9997	0.9983	0.9961	0.9984

sample size 200, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0527	0.0500	0.0500	0.0503	0.0500	0.0500	0.0506	0.0500	0.0500
0.05	0.0919	0.0846	0.0889	0.0851	0.0804	0.0842	0.0816	0.0753	0.0785
0.10	0.2059	0.1930	0.2108	0.1893	0.1757	0.1913	0.1667	0.1544	0.1674
0.15	0.3949	0.3721	0.4085	0.3558	0.3352	0.3681	0.3045	0.2886	0.3168
0.20	0.6201	0.5862	0.6341	0.5618	0.5339	0.5800	0.4809	0.4636	0.5061
0.25	0.8110	0.7770	0.8203	0.7604	0.7245	0.7704	0.6811	0.6464	0.6938
0.30	0.9260	0.9043	0.9318	0.8868	0.8659	0.8993	0.8243	0.8003	0.8408
0.35	0.9763	0.9679	0.9803	0.9598	0.9472	0.9652	0.9216	0.9049	0.9316
0.40	0.9933	0.9917	0.9958	0.9868	0.9834	0.9906	0.9686	0.9622	0.9760

sample size 500, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0497	0.0500	0.0500	0.0516	0.0500	0.0500	0.0467	0.0500	0.0500
0.05	0.1353	0.1382	0.1337	0.1218	0.1275	0.1236	0.1099	0.1145	0.1112
0.10	0.3867	0.4059	0.3890	0.3465	0.3658	0.3505	0.3008	0.3149	0.3018
0.15	0.6983	0.7331	0.7111	0.6458	0.6790	0.6566	0.5623	0.6010	0.5790
0.20	0.9159	0.9310	0.9185	0.8794	0.8985	0.8831	0.8158	0.8400	0.8209
0.25	0.9853	0.9905	0.9873	0.9728	0.9813	0.9760	0.9453	0.9585	0.9493
0.30	0.9985	0.9993	0.9989	0.9961	0.9981	0.9972	0.9901	0.9933	0.9908
0.35	1.0000	1.0000	1.0000	1.0000	0.9999	0.9998	0.9990	0.9993	0.9990
0.40	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998	1.0000	0.9999

POWER: NORMAL COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0501	0.0500	0.0500	0.0481	0.0500	0.0500	0.0491	0.0500	0.0500
0.05	0.0832	0.0765	0.0811	0.0841	0.0750	0.0793	0.0747	0.0721	0.0759
0.10	0.1750	0.1593	0.1783	0.1646	0.1528	0.1706	0.1505	0.1410	0.1567
0.15	0.3342	0.2994	0.3406	0.3132	0.2850	0.3239	0.2905	0.2586	0.2933
0.20	0.5241	0.4802	0.5413	0.5020	0.4580	0.5168	0.4616	0.4159	0.4704
0.25	0.7154	0.6656	0.7319	0.6880	0.6398	0.7058	0.6419	0.5887	0.6537
0.30	0.8583	0.8174	0.8714	0.8386	0.7943	0.8508	0.7943	0.7457	0.8063
0.35	0.9379	0.9167	0.9502	0.9254	0.9006	0.9379	0.8973	0.8639	0.9087
0.40	0.9777	0.9686	0.9846	0.9718	0.9598	0.9791	0.9560	0.9376	0.9641
0.45	0.9932	0.9903	0.9962	0.9916	0.9865	0.9943	0.9842	0.9757	0.9883

sample size 200, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0500	0.0500	0.0500	0.0500	0.0500	0.0500	0.0498	0.0500	0.0500
0.05	0.1070	0.1037	0.1105	0.1030	0.1005	0.1069	0.0902	0.0947	0.1004
0.10	0.2901	0.2717	0.2991	0.2831	0.2588	0.2846	0.2557	0.2351	0.2581
0.15	0.5654	0.5264	0.5743	0.5420	0.5027	0.5492	0.4962	0.4576	0.5012
0.20	0.8084	0.7708	0.8165	0.7824	0.7461	0.7931	0.7363	0.6954	0.7441
0.25	0.9372	0.9218	0.9470	0.9243	0.9062	0.9345	0.8909	0.8705	0.9046
0.30	0.9879	0.9818	0.9901	0.9824	0.9758	0.9862	0.9684	0.9597	0.9750
0.35	0.9977	0.9972	0.9988	0.9966	0.9957	0.9981	0.9922	0.9910	0.9955
0.40	0.9998	0.9997	0.9999	0.9997	0.9995	0.9998	0.9993	0.9986	0.9994

sample size 500, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0548	0.0500	0.0500	0.0527	0.0500	0.0500	0.0510	0.0500	0.0500
0.05	0.1793	0.1874	0.1804	0.1752	0.1793	0.1726	0.1633	0.1644	0.1585
0.10	0.5459	0.5698	0.5485	0.5242	0.5451	0.5242	0.4771	0.4975	0.4778
0.15	0.8719	0.8932	0.8775	0.8514	0.8749	0.8579	0.8128	0.8341	0.8149
0.20	0.9838	0.9896	0.9862	0.9792	0.9856	0.9813	0.9667	0.9743	0.9677
0.25	0.9996	0.9996	0.9994	0.9988	0.9994	0.9990	0.9975	0.9983	0.9974
0.30	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9999
0.35	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.40	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

POWER: UNIFORM COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0523	0.0500	0.0500	0.0480	0.0500	0.0500	0.0481	0.0500	0.0500
0.05	0.0609	0.0581	0.0592	0.0537	0.0569	0.0578	0.0496	0.0556	0.0563
0.10	0.0888	0.0828	0.0871	0.0793	0.0779	0.0815	0.0701	0.0726	0.0755
0.15	0.1402	0.1252	0.1347	0.1169	0.1138	0.1218		0.1016	0.1081
0.20	0.2078	0.1857	0.2023		0.1652	0.1792	0.1463	0.1431	0.1544
0.25		0.2638	0.2885	0.2439	0.2319	0.2530		0.1972	0.2144
0.30	0.3996	0.3567	0.3892		0.3123	0.3407	0.2747	0.2633	0.2869
0.35		0.4593	0.4978	0.4335	0.4033	0.4379		0.3397	0.3693
0.40	0.6512	0.5648	0.6063		0.5000	0.5389	0.4555	0.4236	0.4581
0.45		0.6658	0.7067	0.6549	0.5967	0.6370		0.5112	0.5488
0.50	0.8375	0.7561	0.7931		0.6878	0.7266	0.6570	0.5983	0.6367
0.55	0.9023	0.8313	0.8620	0.8216	0.7687	0.8033		0.6807	0.7177
0.60	0.9448	0.8896	0.9132	0.8864	0.8364	0.8651	0.8073	0.7551	0.7885
0.65	0.9712	0.9319	0.9485	0.9290	0.8896	0.9119	0.8765	0.8190	0.8475
0.70	0.9880	0.9604	0.9713	0.9614	0.9292	0.9453	0.9162	0.8713	0.8943
0.75		0.9783	0.9849	0.9799	0.9568	0.9677	0.9511	0.9120	0.9295
0.80		0.9889	0.9926		0.9750	0.9819	0.9713	0.9423	0.9549

sample size 200, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0490	0.0500	0.0500	0.0478	0.0500	0.0500	0.0486	0.0500	0.0500
0.05	0.0652	0.0663	0.0677	0.0607	0.0639	0.0651	0.0587	0.0612	0.0622
0.10	0.1216	0.1166	0.1225	0.1064	0.1065	0.1115	0.0938	0.0958	0.0998
0.15		0.2031	0.2165		0.1800	0.1913		0.1551	0.1643
0.20	0.3501	0.3235	0.3459	0.3038	0.2833	0.3028	0.2584	0.2394	0.2555
0.25	0.4911	0.4668	0.4972		0.4100	0.4375		0.3455	0.3691
0.30	0.6464	0.6148	0.6488	0.5703	0.5473	0.5800	0.4918	0.4659	0.4957
0.35	0.7809	0.7476	0.7797	0.7112	0.6791	0.7126		0.5897	0.6228
0.40	0.8725	0.8514	0.8769	0.8235	0.7915	0.8211	0.7381	0.7051	0.7377
0.45	0.9370	0.9219	0.9392	0.8969	0.8766	0.8993		0.8027	0.8312
0.50	0.9770	0.9635	0.9735	0.9484	0.9338	0.9490	0.9019	0.8778	0.9000
0.55	0.9919	0.9849	0.9899	0.9791	0.9679	0.9769	0.9450	0.9301	0.9456
0.60		0.9945	0.9966	0.9926	0.9860	0.9906	0.9755	0.9632	0.9729
0.65		0.9982	0.9990		0.9945	0.9966	0.9902	0.9822	0.9877
0.70		0.9995	0.9998		0.9981	0.9989	0.9964	0.9921	0.9949

sample size 500, a = -1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0493	0.0500	0.0500	0.0535	0.0500	0.0500	0.0509	0.0500	0.0500
0.05	0.0884	0.0912	0.0904	0.0803	0.0850	0.0843	0.0751	0.0784	0.0778
0.10	0.2131	0.2205	0.2172	0.1883	0.1948	0.1919	0.1611	0.1671	0.1648
0.15	0.4165	0.4287	0.4220	0.3677	0.3759	0.3699	0.3073	0.3165	0.3115
0.20	0.6572	0.6604	0.6521	0.5793	0.5914	0.5833	0.4994	0.5063	0.4988
0.25	0.8377	0.8430	0.8362	0.7722	0.7820	0.7742	0.6915	0.6948	0.6866
0.30	0.9395	0.9452	0.9414	0.9008	0.9077	0.9025	0.8307	0.8422	0.8354
0.35	0.9854	0.9859	0.9844	0.9690	0.9696	0.9670	0.9317	0.9329	0.9286
0.40	0.9977	0.9973	0.9970	0.9907	0.9923	0.9914	0.9750	0.9768	0.9747

POWER: UNIFORM COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0513	0.0500	0.0500	0.0492	0.0500	0.0500	0.0472	0.0500	0.0500
0.05	0.0718	0.0671	0.0694	0.0682	0.0651	0.0671	0.0675	0.0626	0.0643
0.10	0.1282	0.1202	0.1295	0.1180	0.1117	0.1198	0.1068	0.1013	0.1080
0.15	0.2295	0.2113	0.2320	0.2092	0.1918	0.2100	0.1858	0.1678	0.1830
0.20	0.3641	0.3374	0.3716	0.3315	0.3039	0.3345		0.2620	0.2879
0.25	0.5305	0.4860	0.5308		0.4395	0.4809	0.4035	0.3790	0.4155
0.30	0.6860	0.6367	0.6849	0.6352	0.5828	0.6297		0.5088	0.5527
0.35	0.8129	0.7687	0.8118		0.7158	0.7609	0.6831	0.6377	0.6835
0.40	0.8980	0.8686	0.9009	0.8675	0.8243	0.8613		0.7526	0.7943
0.45	0.9544	0.9338	0.9543	0.9306	0.9021	0.9281	0.8828	0.8444	0.8779
0.50	0.9803	0.9706	0.9816	0.9688	0.9510	0.9669		0.9104	0.9340
0.55		0.9885	0.9935	0.9869	0.9781	0.9865	0.9696	0.9529	0.9677
0.60		0.9961	0.9980	0.9953	0.9913	0.9951	0.9866	0.9775	0.9856
0.65		0.9988	0.9995		0.9969	0.9984	0.9955	0.9902	0.9942
0.70		0.9997	0.9999		0.9990	0.9996	0.9976	0.9961	0.9979

sample size 200, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0530	0.0500	0.0500	0.0501	0.0500	0.0500	0.0518	0.0500	0.0500
0.05	0.0914	0.0846	0.0877	0.0844	0.0804	0.0831	0.0798	0.0753	0.0776
0.10	0.2062	0.1930	0.2057	0.1910	0.1757	0.1869	0.1624	0.1544	0.1637
0.15	0.3895	0.3721	0.3984	0.3525	0.3352	0.3589	0.3063	0.2886	0.3089
0.20	0.6148	0.5862	0.6212	0.5597	0.5339	0.5675	0.4806	0.4636	0.4945
0.25	0.8087	0.7770	0.8091	0.7598	0.7245	0.7585	0.6777	0.6464	0.6814
0.30	0.9257	0.9043	0.9251	0.8891	0.8659	0.8911	0.8227	0.8003	0.8306
0.35	0.9775	0.9679	0.9775	0.9576	0.9472	0.9610	0.9205	0.9049	0.9253
0.40	0.9939	0.9917	0.9949	0.9868	0.9834	0.9891	0.9712	0.9622	0.9729

sample size 500, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0497	0.0500	0.0500	0.0487	0.0500	0.0500	0.0445	0.0500	0.0500
0.05	0.1402	0.1382	0.1365	0.1241	0.1275	0.1260	0.1127	0.1145	0.1132
0.10	0.3986	0.4059	0.3994	0.3614	0.3658	0.3600	0.3076	0.3149	0.3099
0.15	0.7134	0.7331	0.7249	0.6596	0.6790	0.6706	0.5767	0.6010	0.5927
0.20	0.9259	0.9310	0.9265	0.8902	0.8985	0.8929	0.8293	0.8400	0.8330
0.25	0.9890	0.9905	0.9894	0.9780	0.9813	0.9795	0.9518	0.9585	0.9552
0.30	0.9992	0.9993	0.9992	0.9976	0.9981	0.9978	0.9922	0.9933	0.9924
0.35	1.0000	1.0000	1.0000	1.0000	0.9999	0.9999	0.9990	0.9993	0.9992
0.40	1.0000	1.0000	1.0000	0.9999	1.0000	1.0000	1.0000	1.0000	1.0000

POWER: UNIFORM COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0501	0.0500	0.0500	0.0466	0.0500	0.0500	0.0490	0.0500	0.0500
0.05	0.0809	0.0765	0.0801	0.0786	0.0750	0.0783	0.0733	0.0721	0.0751
0.10	0.1721	0.1593	0.1742	0.1597	0.1528	0.1667	0.1500	0.1410	0.1533
0.15	0.3250	0.2994	0.3317	0.3087	0.2850	0.3154	0.2833	0.2586	0.2857
0.20	0.5131	0.4802	0.5284	0.4910	0.4580	0.5041	0.4479	0.4159	0.4584
0.25	0.7053	0.6656	0.7182	0.6744	0.6398	0.6919	0.6283	0.5887	0.6396
0.30	0.8498	0.8174	0.8607	0.8301	0.7943	0.8392	0.7823	0.7457	0.7934
0.35	0.9342	0.9167	0.9440	0.9209	0.9006	0.9307	0.8879	0.8639	0.8995
0.40	0.9760	0.9686	0.9819	0.9692	0.9598	0.9756	0.9518	0.9376	0.9589
0.45	0.9924	0.9903	0.9953	0.9905	0.9865	0.9930	0.9824	0.9757	0.9860

sample size 200, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0493	0.0500	0.0500	0.0487	0.0500	0.0500	0.0517	0.0500	0.0500
0.05	0.1080	0.1037	0.1085	0.1049	0.1005	0.1051	0.0944	0.0947	0.0988
0.10	0.2872	0.2717	0.2912	0.2754	0.2588	0.2772	0.2542	0.2351	0.2515
0.15	0.5575	0.5264	0.5609	0.5354	0.5027	0.5362	0.4921	0.4576	0.4890
0.20	0.8016	0.7708	0.8043	0.7772	0.7461	0.7805	0.7309	0.6954	0.7310
0.25	0.9354	0.9218	0.9407	0.9219	0.9062	0.9274	0.8914	0.8705	0.8960
0.30	0.9876	0.9818	0.9882	0.9831	0.9758	0.9838	0.9810	0.9597	0.9714
0.35	0.9978	0.9972	0.9985	0.9969	0.9957	0.9976	0.9929	0.9910	0.9945
0.40	0.9999	0.9997	0.9999	0.9996	0.9995	0.9998	0.9990	0.9986	0.9993

sample size 500, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0525	0.0500	0.0500	0.0515	0.0500	0.0500	0.0505	0.0500	0.0500
0.05	0.1859	0.1874	0.1847	0.1818	0.1793	0.1767	0.1648	0.1644	0.1621
0.10	0.5611	0.5698	0.5616	0.5366	0.5451	0.5370	0.4865	0.4975	0.4899
0.15	0.8836	0.8932	0.8873	0.8664	0.8749	0.8685	0.8262	0.8341	0.8269
0.20	0.9874	0.9896	0.9884	0.9828	0.9856	0.9841	0.9716	0.9743	0.9719
0.25	0.9995	0.9996	0.9996	0.9994	0.9994	0.9992	0.9979	0.9983	0.9980
0.30	1.0000	1.0000	1.0000	0.9999	1.0000	1.0000	0.9999	1.0000	0.9999

POWER: GAMMA(3) COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = -1

		A = 0.2			A = 0.5			A = 0.8	
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0509	0.0500	0.0500	0.0473	0.0500	0.0500	0.0484	0.0500	0.0500
0.05	0.0674	0.0581	0.0594	0.0640	0.0569	0.0580	0.0614	0.0556	0.0565
0.10	0.1040	0.0828	0.0880	0.0975	0.0779	0.0823	0.0885	0.0726	0.0762
0.15	0.1684	0.1252	0.1370	0.1534	0.1138	0.1238		0.1016	0.1097
0.20	0.2516	0.1857	0.2069		0.1652	0.1831	0.1961	0.1431	0.1576
0.25		0.2638	0.2960	0.3138	0.2319	0.2595		0.1972	0.2198
0.30	0.4780	0.3567	0.4000		0.3123	0.3503	0.3642	0.2633	0.2950
0.35		0.4593	0.5117	0.5528	0.4033	0.4508		0.3397	0.3805
0.40	0.7442	0.5648	0.6224		0.5000	0.5544	0.5868	0.4236	0.4723
0.45		0.6658	0.7237	0.7915	0.5967	0.6543		0.5112	0.5656
0.50	0.9135	0.7561	0.8093		0.6878	0.7444	0.8084	0.5983	0.6552
0.55	0.9577	0.8313	0.8763	0.9289	0.7687	0.8203		0.6807	0.7367
0.60	0.9814	0.8896	0.9247	0.9640	0.8364	0.8801	0.9317	0.7551	0.8070
0.65	0.9930	0.9319	0.9571	0.9844	0.8896	0.9242	0.9649	0.8190	0.8643
0.70	0.9988	0.9604	0.9771	0.9951	0.9292	0.9547	0.9810	0.8713	0.9087
0.75		0.9783	0.9886	0.9988	0.9568	0.9744	0.9932	0.9120	0.9412
0.80		0.9889	0.9947		0.9750	0.9864	0.9977	0.9423	0.9638

sample size 200, a = -1

		A = 0.2			A = 0.5			A = 0.8	
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0489	0.0500	0.0500	0.0481	0.0500	0.0500	0.0484	0.0500	0.0500
0.05	0.0680	0.0663	0.0661	0.0682	0.0639	0.0637	0.0626	0.0612	0.0611
0.10	0.1304	0.1166	0.1156	0.1150	0.1065	0.1057	0.1024	0.0958	0.0951
0.15	0.3749	0.2031	0.2007		0.1800	0.1779		0.1551	0.1534
0.20		0.3235	0.3191	0.3323	0.2833	0.2795	0.2855	0.2394	0.2362
0.25	0.5154	0.4668	0.4603		0.4100	0.4041		0.3455	0.3404
0.30	0.6770	0.6148	0.6068	0.6066	0.5473	0.5395	0.5285	0.4659	0.4589
0.35	0.8098	0.7476	0.7393	0.7481	0.6791	0.6704		0.5897	0.5811
0.40	0.8933	0.8514	0.8440	0.8569	0.7915	0.7830	0.7820	0.7051	0.6959
0.45	0.9524	0.9219	0.9163	0.9233	0.8766	0.8694		0.8027	0.7939
0.50	0.9846	0.9635	0.9599	0.9646	0.9338	0.9284	0.9343	0.8778	0.8701
0.55	0.9955	0.9849	0.9829	0.9879	0.9679	0.9644	0.9708	0.9301	0.9242
0.60		0.9945	0.9936	0.9963	0.9860	0.9840	0.9876	0.9632	0.9591
0.65		0.9982	0.9978		0.9945	0.9935	0.9964	0.9822	0.9796
0.70		0.9995	0.9994		0.9981	0.9976	0.9991	0.9921	0.9907

sample size 500, a = -1

		A = 0.2			A = 0.5			A = 0.8	
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0511	0.0500	0.0500	0.0549	0.0500	0.0500	0.0528	0.0500	0.0500
0.05	0.0872	0.0912	0.0869	0.0848	0.0850	0.0813	0.0779	0.0784	0.0754
0.10	0.2195	0.2205	0.2025	0.1976	0.1948	0.1794	0.1688	0.1671	0.1546
0.15	0.4270	0.4287	0.3917	0.3762	0.3759	0.3430	0.3231	0.3165	0.2889
0.20	0.6696	0.6604	0.6125	0.5990	0.5914	0.5450	0.5204	0.5063	0.4639
0.25	0.8513	0.8430	0.8013	0.7945	0.7820	0.7358	0.7169	0.6948	0.6464
0.30	0.9489	0.9452	0.9202	0.9197	0.9077	0.8744	0.8636	0.8422	0.8001
0.35	0.9900	0.9859	0.9754	0.9783	0.9696	0.9520	0.9509	0.9329	0.9045
0.40	0.9985	0.9973	0.9942	0.9946	0.9923	0.9854	0.9829	0.9768	0.9619

POWER: GAMMA(3) COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0479	0.0500	0.0500	0.0489	0.0500	0.0500	0.0490	0.0500	0.0500
0.05	0.0793	0.0671	0.0699	0.0758	0.0651	0.0675	0.0743	0.0626	0.0646
0.10	0.1496	0.1202	0.1314	0.1371	0.1117	0.1216	0.1275	0.1013	0.1095
0.15	0.2636	0.2113	0.2368	0.2416	0.1918	0.2143	0.2178	0.1678	0.1866
0.20	0.4127	0.3374	0.3799	0.3824	0.3039	0.3422		0.2620	0.2945
0.25	0.5929	0.4860	0.5424		0.4395	0.4921	0.4786	0.3790	0.4257
0.30	0.7596	0.6367	0.6979	0.7049	0.5828	0.6430		0.5088	0.5657
0.35	0.8704	0.7687	0.8237		0.7158	0.7742	0.7663	0.6377	0.6978
0.40	0.9411	0.8686	0.9100	0.9204	0.8243	0.8725		0.7526	0.8080
0.45	0.9785	0.9338	0.9600	0.9662	0.9021	0.9362	0.9379	0.8444	0.8892
0.50	0.9916	0.9706	0.9847	0.9878	0.9510	0.9718		0.9104	0.9422
0.55		0.9885	0.9949	0.9965	0.9781	0.9891	0.9925	0.9529	0.9728
0.60		0.9961	0.9986	0.9986	0.9913	0.9963	0.9966	0.9775	0.9885
0.65		0.9988	0.9996		0.9969	0.9989	0.9993	0.9902	0.9957
0.70		0.9997	0.9999		0.9990	0.9997	0.9998	0.9961	0.9985

sample size 200, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0541	0.0500	0.0500	0.0523	0.0500	0.0500	0.0521	0.0500	0.0500
0.05	0.0910	0.0846	0.0841	0.0867	0.0804	0.0800	0.0825	0.0753	0.0750
0.10	0.2068	0.1930	0.1910	0.1924	0.1757	0.1739	0.1717	0.1544	0.1529
0.15	0.3888	0.3721	0.3676	0.3528	0.3352	0.3311	0.3071	0.2886	0.2851
0.20	0.6143	0.5862	0.5797	0.5626	0.5339	0.5276	0.4894	0.4636	0.4578
0.25	0.8059	0.7770	0.7704	0.7546	0.7245	0.7174	0.6792	0.6464	0.6392
0.30	0.9240	0.9043	0.8995	0.8871	0.8659	0.8601	0.8331	0.8003	0.7934
0.35	0.9776	0.9679	0.9654	0.9606	0.9472	0.9436	0.9269	0.9049	0.8997
0.40	0.9928	0.9917	0.9907	0.9879	0.9834	0.9817	0.9728	0.9622	0.9591

sample size 500, a = 0

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0480	0.0500	0.0500	0.0486	0.0500	0.0500	0.0454	0.0500	0.0500
0.05	0.1373	0.1382	0.1289	0.1271	0.1275	0.1194	0.1158	0.1145	0.1077
0.10	0.3860	0.4059	0.3709	0.3552	0.3658	0.3341	0.3068	0.3149	0.2877
0.15	0.7047	0.7331	0.6860	0.6571	0.6790	0.6314	0.5761	0.6010	0.5547
0.20	0.9186	0.9310	0.9030	0.8887	0.8985	0.8643	0.8286	0.8400	0.7984
0.25	0.9878	0.9905	0.9827	0.9768	0.9813	0.9688	0.9541	0.9585	0.9375
0.30	0.9993	0.9993	0.9983	0.9977	0.9981	0.9957	0.9932	0.9933	0.9872
0.35	1.0000	1.0000	0.9999	0.9998	0.9999	0.9997	0.9994	0.9993	0.9983

POWER: GAMMA(3) COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0505	0.0500	0.0500	0.0504	0.0500	0.0500	0.0522	0.0500	0.0500
0.05	0.0875	0.0765	0.0808	0.0842	0.0750	0.0790	0.0808	0.0721	0.0757
0.10	0.1901	0.1593	0.1770	0.1809	0.1528	0.1694	0.1693	0.1410	0.1557
0.15	0.3461	0.2994	0.3380	0.3304	0.2850	0.3215	0.3130	0.2586	0.2913
0.20	0.5451	0.4802	0.5378	0.5286	0.4580	0.5136	0.4932	0.4159	0.4676
0.25	0.7340	0.6656	0.7284	0.7112	0.6398	0.7025	0.6710	0.5887	0.6507
0.30	0.8687	0.8174	0.8688	0.8585	0.7943	0.8483	0.8236	0.7457	0.8039
0.35	0.9482	0.9167	0.9488	0.9402	0.9006	0.9365	0.9174	0.8639	0.9072
0.40	0.9834	0.9686	0.9841	0.9798	0.9598	0.9785	0.9710	0.9376	0.9634
0.45	0.9961	0.9903	0.9961	0.9951	0.9865	0.9941	0.9907	0.9757	0.9881

sample size 200, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0496	0.0500	0.0500	0.0490	0.0500	0.0500	0.0511	0.0500	0.0500
0.05	0.1043	0.1037	0.1030	0.1010	0.1005	0.0999	0.0940	0.0947	0.0942
0.10	0.2788	0.2717	0.2689	0.2652	0.2588	0.2561	0.2504	0.2351	0.2327
0.15	0.5415	0.5264	0.5212	0.5187	0.5027	0.4975	0.4770	0.4576	0.4527
0.20	0.7788	0.7708	0.7654	0.7602	0.7461	0.7404	0.7093	0.6954	0.6893
0.25	0.9203	0.9218	0.9184	0.9086	0.9062	0.9023	0.8745	0.8705	0.8657
0.30	0.9811	0.9818	0.9805	0.9757	0.9758	0.9741	0.9621	0.9597	0.9572
0.35	0.9966	0.9972	0.9969	0.9954	0.9957	0.9953	0.9906	0.9910	0.9901
0.40	0.9999	0.9997	0.9997	0.9996	0.9995	0.9994	0.9985	0.9986	0.9984

sample size 500, a = 1

	A = 0.2			A = 0.5			A = 0.8		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0509	0.0500	0.0500	0.0505	0.0500	0.0500	0.0518	0.0500	0.0500
0.05	0.1813	0.1874	0.1729	0.1728	0.1793	0.1656	0.1611	0.1644	0.1523
0.10	0.5302	0.5698	0.5251	0.5092	0.5451	0.5014	0.4730	0.4975	0.4563
0.15	0.8653	0.8932	0.8586	0.8480	0.8749	0.8376	0.8120	0.8341	0.7924
0.20	0.9827	0.9896	0.9815	0.9778	0.9856	0.9753	0.9665	0.9743	0.9590
0.25	0.9993	0.9996	0.9990	0.9987	0.9994	0.9984	0.9971	0.9983	0.9961
0.30	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9998

POWER: GAMMA(3) COVARIATE

EXPONENTIAL SURVIVAL TIMES

sample size 100

	a = -1, A = 0.8			a = 0, A = 0.5			a = 1, A = 0.2		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0484	0.0500	0.0500	0.0489	0.0500	0.0500	0.0505	0.0500	0.0500
-0.05	0.0416	0.0556	0.0565	0.0581	0.0651	0.0675	0.0735	0.0765	0.0808
-0.10	0.0513	0.0726	0.0764	0.0999	0.1117	0.1219	0.1576	0.1593	0.1772
-0.15		0.1016	0.1103	0.1749	0.1918	0.2155	0.3092	0.2994	0.3387
-0.20	0.0969	0.1431	0.1590	0.2787	0.3039	0.3449	0.4892	0.4802	0.5391
-0.25		0.1972	0.2225		0.4395	0.4966	0.6773	0.6656	0.7301
-0.30	0.1981	0.2633	0.2996	0.5459	0.5828	0.6492	0.8178	0.8174	0.8704
-0.35		0.3397	0.3874		0.7158	0.7809	0.9161	0.9167	0.9499
-0.40	0.3284	0.4236	0.4818	0.7903	0.8243	0.8786	0.9648	0.9686	0.9846
-0.45		0.5112	0.5774	0.8794	0.9021	0.9407	0.9883	0.9903	0.9963
-0.50	0.4744	0.5983	0.6688	0.9360	0.9510	0.9747		0.9976	0.9993
-0.55		0.6807	0.7512	0.9726	0.9781	0.9906		0.9995	0.9999
-0.60	0.6461	0.7551	0.8213	0.9844	0.9913	0.9970		0.9999	
-0.65	0.7214	0.8190	0.8776		0.9969	0.9991			
-0.70	0.7812	0.8713	0.9201		0.9990	0.9998			
-0.75	0.8443	0.9120	0.9504		0.9997				
-0.80	0.8878	0.9423	0.9708		0.9999				

sample size 200

	a = -1, A = 0.8			a = 0, A = 0.5			a = 1, A = 0.2		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0484	0.0500	0.0500	0.0523	0.0500	0.0500	0.0496	0.0500	0.0500
-0.05	0.0543	0.0612	0.0611	0.0767	0.0804	0.0801	0.0963	0.1037	0.1030
-0.10	0.0812	0.0958	0.0953	0.1618	0.1757	0.1743	0.2548	0.2717	0.2691
-0.15		0.1551	0.1542	0.3093	0.3352	0.3326	0.4877	0.5264	0.5220
-0.20	0.1943	0.2394	0.2380	0.4858	0.5339	0.5304	0.7355	0.7708	0.7664
-0.25		0.3455	0.3437	0.6737	0.7245	0.7212	0.8992	0.9218	0.9191
-0.30	0.3910	0.4659	0.4640	0.8201	0.8659	0.8637	0.9700	0.9818	0.9809
-0.35		0.5897	0.5880	0.9172	0.9472	0.9461	0.9949	0.9972	0.9970
-0.40	0.6122	0.7051	0.7039	0.9685	0.9834	0.9830	0.9996	0.9997	0.9997
-0.45		0.8027	0.8021		0.9959	0.9958			
-0.50	0.8073	0.8778	0.8776		0.9992	0.9992			
-0.55	0.8766	0.9301	0.9302		0.9999	0.9999			
-0.60	0.9259	0.9632	0.9635						
-0.65	0.9616	0.9822	0.9825						
-0.70	0.9819	0.9921	0.9923						

sample size 500

	a = -1, A = 0.8			a = 0, A = 0.5			a = 1, A = 0.2		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0528	0.0500	0.0500	0.0486	0.0500	0.0500	0.0509	0.0500	0.0500
-0.05	0.0666	0.0784	0.0754	0.1139	0.1275	0.1194	0.1666	0.1874	0.1730
-0.10	0.1343	0.1671	0.1549	0.3168	0.3658	0.3346	0.5102	0.5698	0.5254
-0.15	0.2515	0.3165	0.2898	0.6023	0.6790	0.6326	0.8476	0.8932	0.8589
-0.20	0.4092	0.5063	0.4658	0.8401	0.8985	0.8656	0.9772	0.9896	0.9816
-0.25	0.5877	0.6948	0.6492	0.9545	0.9813	0.9695	0.9982	0.9996	0.9990
-0.30	0.7395	0.8422	0.8031	0.9915	0.9981	0.9959	0.9999	1.0000	1.0000
-0.35	0.8617	0.9329	0.9070	0.9988	0.9999	0.9997	1.0000	1.0000	1.0000
-0.40	0.9339	0.9768	0.9635	0.9998	1.0000	1.0000	1.0000	1.0000	1.0000

POWER: NORMAL COVARIATE

WEIBULL SURVIVAL TIMES

sample size 200, A = 0.5

	shape = 0.2, a = -1.25			shape = 0.2, a = -0.75			shape = 0.2, a = -0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0505	0.0500	0.0500	0.0547	0.0500	0.0500	0.0485	0.0500	0.0500
0.10	0.1099	0.1056	0.1125	0.1442	0.1354	0.1460	0.1872	0.1748	0.1904
0.20	0.2978	0.2797	0.3061	0.4189	0.3954	0.4326	0.5655	0.5312	0.5773
0.30	0.5693	0.5408	0.5847	0.7583	0.7195	0.7643	0.8842	0.8638	0.8974
0.40	0.817	0.7852	0.8244	0.9417	0.9234	0.9459	0.9893	0.9829	0.9902
0.50	0.9481	0.9302	0.9503	0.9934	0.9886	0.9936			
0.60	0.9911	0.9848	0.9909						

	shape = 0.5, a = -1.15			shape = 0.5, a = -0.65			shape = 0.5, a = -0.15		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0505	0.0500	0.0500	0.0547	0.0500	0.0500	0.0485	0.0500	0.0500
0.10	0.1099	0.1062	0.1131	0.1442	0.1361	0.1468	0.1872	0.1756	0.1913
0.20	0.2978	0.2819	0.3086	0.4189	0.3980	0.4355	0.5655	0.5337	0.5799
0.30	0.5693	0.5447	0.5887	0.7583	0.7230	0.7676	0.8842	0.8658	0.8992
0.40	0.817	0.7890	0.8280	0.9417	0.9254	0.9475	0.9893	0.9834	0.9906
0.50	0.9481	0.9324	0.9520	0.9934	0.9891	0.9939			
0.60	0.9911	0.9855	0.9914						

	shape = 2, a = -0.75			shape = 2, a = -0.25			shape = 2, a = 0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0505	0.0500	0.0500	0.0547	0.0500	0.0500	0.0485	0.0500	0.0500
0.10	0.1099	0.1058	0.1127	0.1442	0.1347	0.1452	0.1872	0.1723	0.1875
0.20	0.2978	0.2802	0.3068	0.4189	0.3929	0.4300	0.5655	0.5231	0.5689
0.30	0.5693	0.5418	0.5857	0.7583	0.7163	0.7612	0.8842	0.8569	0.8916
0.40	0.817	0.7862	0.8254	0.9417	0.9216	0.9445	0.9893	0.9810	0.9891
0.50	0.9481	0.9308	0.9508	0.9934	0.9881	0.9933			
0.60	0.9911	0.9850	0.9910						

	shape = 5, a = -0.1			shape = 5, a = 0.5			shape = 5, a = 1.1		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0505	0.0500	0.0500	0.0547	0.0500	0.0500	0.0485	0.0500	0.0500
0.10	0.1099	0.1055	0.1123	0.1442	0.1367	0.1476	0.1872	0.1741	0.1897
0.20	0.2978	0.2790	0.3056	0.4189	0.4004	0.4385	0.5655	0.5290	0.5756
0.30	0.5693	0.5396	0.5839	0.7583	0.7261	0.7713	0.8842	0.8619	0.8966
0.40	0.817	0.7840	0.8239	0.9417	0.9271	0.9494	0.9893	0.9824	0.9901
0.50	0.9481	0.9295	0.9501	0.9934	0.9895	0.9943			
0.60	0.9911	0.9846	0.9908						

POWER: UNIFORM COVARIATE

WEIBULL SURVIVAL TIMES

sample size 200, A = 0.5

	shape = 0.2, a = -1.25			shape = 0.2, a = -0.75			shape = 0.2, a = -0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0479	0.0500	0.0500	0.0518	0.0500	0.0500	0.0489	0.0500	0.0500
0.10	0.1069	0.1056	0.1106	0.1427	0.1354	0.1430	0.1817	0.1748	0.1860
0.20	0.2949	0.2797	0.2989	0.4156	0.3954	0.4225	0.5638	0.5312	0.5648
0.30	0.5706	0.5408	0.5734	0.753	0.7195	0.7530	0.8805	0.8638	0.8892
0.40	0.8138	0.7852	0.8151	0.9418	0.9234	0.9408	0.9896	0.9829	0.9887
0.50	0.9498	0.9302	0.9460	0.9927	0.9886	0.9926			
0.60	0.9922	0.9848	0.9897						

	shape = 0.5, a = -1.15			shape = 0.5, a = -0.65			shape = 0.5, a = -0.15		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0494	0.0500	0.0500	0.0495	0.0500	0.0500	0.0495	0.0500	0.0500
0.10	0.1089	0.1062	0.1112	0.1452	0.1361	0.1438	0.184	0.1756	0.1868
0.20	0.2966	0.2819	0.3013	0.4222	0.3980	0.4253	0.5636	0.5337	0.5674
0.30	0.5734	0.5447	0.5774	0.7584	0.7230	0.7563	0.8833	0.8658	0.8910
0.40	0.8177	0.7890	0.8187	0.9427	0.9254	0.9425	0.9903	0.9834	0.9891
0.50	0.95	0.9324	0.9478	0.9928	0.9891	0.9930			
0.60	0.9921	0.9855	0.9903						

	shape = 2, a = -0.75			shape = 2, a = -0.25			shape = 2, a = 0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0479	0.0500	0.0500	0.051	0.0500	0.0500	0.0537	0.0500	0.0500
0.10	0.1068	0.1058	0.1107	0.135	0.1347	0.1423	0.18	0.1723	0.1832
0.20	0.2882	0.2802	0.2995	0.4099	0.3929	0.4199	0.55	0.5231	0.5564
0.30	0.5799	0.5418	0.5744	0.7409	0.7163	0.7498	0.8806	0.8569	0.8830
0.40	0.819	0.7862	0.8161	0.936	0.9216	0.9393	0.9862	0.9810	0.9874
0.50	0.9466	0.9308	0.9465	0.992	0.9881	0.9923			
0.60	0.9919	0.9850	0.9899						

	shape = 5, a = -0.1			shape = 5, a = 0.5			shape = 5, a = 1.1		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0497	0.0500	0.0500	0.051	0.0500	0.0500	0.053	0.0500	0.0500
0.10	0.1107	0.1055	0.1104	0.1413	0.1367	0.1445	0.1807	0.1741	0.1853
0.20	0.289	0.2790	0.2983	0.413	0.4004	0.4280	0.5523	0.5290	0.5629
0.30	0.5661	0.5396	0.5724	0.7366	0.7261	0.7597	0.88	0.8619	0.8879
0.40	0.8113	0.7840	0.8143	0.9369	0.9271	0.9442	0.9853	0.9824	0.9884
0.50	0.9445	0.9295	0.9456	0.9923	0.9895	0.9933			
0.60	0.9886	0.9846	0.9896						

POWER: GAMMA(3) COVARIATE

WEIBULL SURVIVAL TIMES

sample size 200, A = 0.5

	shape = 0.2, a = -1.25			shape = 0.2, a = -0.75			shape = 0.2, a = -0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0525	0.0500	0.0500	0.0531	0.0500	0.0500	0.0491	0.0500	0.0500
0.10	0.1195	0.1056	0.1048	0.1535	0.1354	0.1342	0.185	0.1748	0.1731
0.20	0.32	0.2797	0.2759	0.4346	0.3954	0.3901	0.5637	0.5312	0.5249
0.30	0.6068	0.5408	0.5331	0.7735	0.7195	0.7117	0.8866	0.8638	0.8579
0.40	0.8524	0.7852	0.7766	0.9518	0.9234	0.9184	0.9907	0.9829	0.9811
0.50	0.9684	0.9302	0.9247	0.9955	0.9886	0.9871			
0.60	0.9968	0.9848	0.9827						

	shape = 0.5, a = -1.15			shape = 0.5, a = -0.65			shape = 0.5, a = -0.15		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0504	0.0500	0.0500	0.0505	0.0500	0.0500	0.0481	0.0500	0.0500
0.10	0.1211	0.1062	0.1054	0.1554	0.1361	0.1349	0.19	0.1756	0.1739
0.20	0.3226	0.2819	0.2781	0.4357	0.3980	0.3927	0.5656	0.5337	0.5274
0.30	0.6076	0.5447	0.5370	0.773	0.7230	0.7151	0.8875	0.8658	0.8600
0.40	0.8569	0.7890	0.7805	0.9535	0.9254	0.9204	0.9906	0.9834	0.9817
0.50	0.9674	0.9324	0.9269	0.995	0.9891	0.9876			
0.60	0.9962	0.9855	0.9835						

	shape = 2, a = -0.75			shape = 2, a = -0.25			shape = 2, a = 0.25		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0502	0.0500	0.0500	0.0493	0.0500	0.0500	0.0545	0.0500	0.0500
0.10	0.1158	0.1058	0.1050	0.1428	0.1347	0.1335	0.1807	0.1723	0.1706
0.20	0.3089	0.2802	0.2764	0.4249	0.3929	0.3877	0.5499	0.5231	0.5169
0.30	0.6114	0.5418	0.5341	0.7569	0.7163	0.7085	0.8767	0.8569	0.8510
0.40	0.8519	0.7862	0.7777	0.9466	0.9216	0.9165	0.9882	0.9810	0.9792
0.50	0.9645	0.9308	0.9253	0.9937	0.9881	0.9865			
0.60	0.995	0.9850	0.9829						

	shape = 5, a = -0.1			shape = 5, a = 0.5			shape = 5, a = 1.1		
b	simulation	formula population	formula sample	simulation	formula population	formula sample	simulation	formula population	formula sample
0.00	0.0509	0.0500	0.0500	0.0527	0.0500	0.0500	0.0534	0.0500	0.0500
0.10	0.1161	0.1055	0.1047	0.1421	0.1367	0.1355	0.1792	0.1741	0.1724
0.20	0.302	0.2790	0.2753	0.4278	0.4004	0.3953	0.5403	0.5290	0.5231
0.30	0.5933	0.5396	0.5322	0.7419	0.7261	0.7187	0.8762	0.8619	0.8565
0.40	0.84	0.7840	0.7758	0.9411	0.9271	0.9225	0.9849	0.9824	0.9808
0.50	0.9578	0.9295	0.9242	0.9928	0.9895	0.9882			
0.60	0.9937	0.9846	0.9825						