Appendix D: Areas Under the Normal Curve

How to Use the Table of Areas Under the Normal Curve

The standard normal curve upon which the values in this table are based has a mean of 0.0 and a standard deviation of 1.0. The total area under the standard normal curve and the corresponding probability are 1.0000. The table gives areas under one half of the curve. If used for parameter estimation, the variable in question must be normally distributed. If used for hypothesis testing, the sampling distribution must be a normal distribution. Before using this table, you must convert raw scores to *z* scores. Remember that a normal curve is symmetrical about the mean (that is, 0.5000 of the area lies on either side of the mean), and that *z* scores can be positive or negative. Positive *z* scores fall above (to the right of) the mean, and negative *z* scores fall below (to the left of) the mean. Figure D.1 shows the relationship between the values in the table and the areas (and corresponding probabilities) under one half of the standard normal curve.

Figure D.1 Areas Under One Half of the Normal Curve

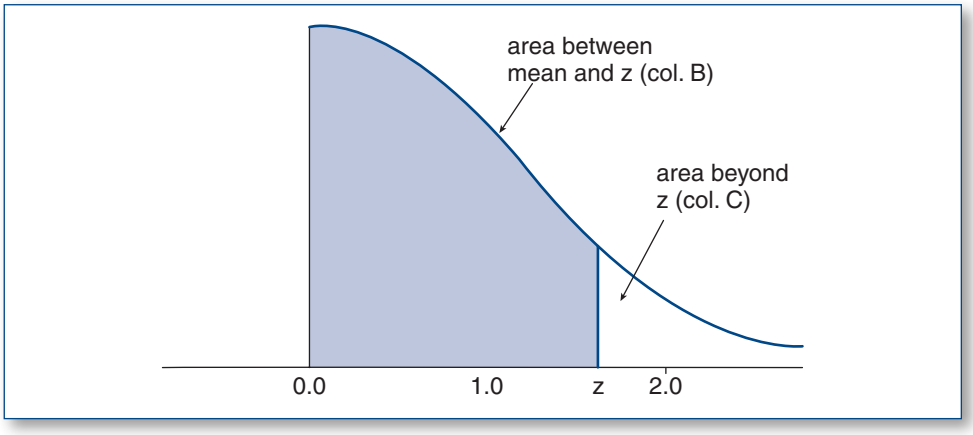

Table D.1 Areas Under the Normal Curve

A	B	C	A	B	C
z	Area Between Mean and *z*	Area Beyond *z*	*z*	Area Between Mean and *z*	Area Beyond *z*
0.00	.0000	.5000	0.25	.0987	.4013
0.01	.0040	.4960	0.26	.1026	.3974
0.02	.0080	.4920	0.27	.1064	.3936
0.03	.0120	.4880	0.28	.1103	.3897
0.04	.0160	.4840	0.29	.1141	.3859
0.05	.0199	.4801	0.30	.1179	.3821
0.06	.0239	.4761	0.31	.1217	.3783
0.07	.0279	.4721	0.32	.1255	.3745
0.08	.0319	.4681	0.33	.1293	.3707
0.09	.0359	.4641	0.34	.1331	.3669
0.10	.0398	.4602	0.35	.1368	.3632
0.11	.0438	.4562	0.36	.1406	.3594
0.12	.0478	.4522	0.37	.1443	.3550
0.13	.0517	.4483	0.38	.1480	.3520
0.14	.0557	.4443	0.39	.1517	.3483
0.15	.0596	.4404	0.40	.1554	.3446
0.16	.0636	.4364	0.41	.1591	.3409
0.17	0.675	.4325	0.42	.1628	.3372
0.18	.0714	.4286	0.43	.1664	.3336
0.19	.0753	.4247	0.44	.1700	.3300
0.20	.0793	.4207	0.45	.1736	.3264
0.21	.0832	.4168	0.46	.1772	.3228
0.22	.0871	.4129	0.47	.1808	.3192
0.23	.0910	.4090	0.48	.1844	.3156
0.24	.0948	.4052	0.49	.1879	.3121

(Continued)

Table D.1 Areas Under the Normal Curve (Continued)

A	B	C	A	B	C
z	Area Between Mean and *z*	Area Beyond *z*	*z*	Area Between Mean and *z*	Area Beyond *z*
0.50	.1915	.3085	0.90	.3159	.1841
0.51	.1950	.3050	0.91	.3186	.1814
0.52	.1985	.3015	0.92	.3212	.1788
0.53	.2019	.2981	0.93	.3238	.1762
0.54	.2054	.2946	0.94	.3264	.1736
0.55	.2088	.2912	0.95	.3289	.1711
0.56	.2123	.2877	0.96	.3315	.1685
0.57	.2157	.2843	0.97	.3340	.1660
0.58	.2190	.2810	0.98	.3365	.1635
0.59	.2224	.2776	0.99	.3389	.1611
0.60	.2257	.2743	1.00	.3413	.1587
0.61	.2291	.2709	1.01	.3438	.1562
0.62	.2324	.2676	1.02	.3461	.1539
0.63	.2357	.2643	1.03	.3485	.1515
0.64	.2389	.2611	1.04	.3508	.1492
0.65	.2422	.2578	1.05	.3531	.1469
0.66	.2454	.2546	1.06	.3554	.1446
0.67	.2486	.2514	1.07	.3577	.1423
0.68	.2517	.2483	1.08	.3599	.1401
0.69	.2549	.2451	1.09	.3621	.1379
0.70	.2580	.2420	1.10	.3643	.1357
0.71	.2611	.2389	1.11	.3665	.1335
0.72	.2642	.2358	1.12	.3686	.1314
0.73	.2673	.2327	1.13	.3708	.1292
0.74	.2704	.2296	1.14	.3729	.1271
0.75	.2734	.2266	1.15	.3749	.1251
0.76	.2764	.2236	1.16	.3770	.1230
0.77	.2794	.2206	1.17	.3790	.1210
0.78	.2823	.2177	1.18	.3810	.1190
0.79	.2852	.2148	1.19	.3830	.1170
0.80	.2881	.2119	1.20	.3849	.1151
0.81	.2910	.2090	1.21	.3869	.1131
0.82	.2939	.2061	1.22	.3888	.1112
0.83	.2967	.2033	1.23	.3907	.1093
0.84	.2995	.2005	1.24	.3925	.1075
0.85	.3023	.1977	1.25	.3944	.1056
0.86	.3051	.1949	1.26	.3962	.1038
0.87	.3078	.1922	1.27	.3980	.1020
0.88	.3106	.1894	1.28	.3997	.1003
0.89	.3133	.1867	1.29	.4015	.0985

(Continued)

Table D.1 Areas Under the Normal Curve (Continued)

A	B	C	A	B	C
z	Area Between Mean and *z*	Area Beyond *z*	*z*	Area Between Mean and *z*	Area Beyond *z*
1.30	.4032	.0968	1.70	.4554	.0446
1.31	.4049	.0951	1.71	.4564	.0436
1.32	.4066	.0934	1.72	.4573	.0427
1.33	.4082	.0918	1.73	.4582	.0418
1.34	.4099	.0901	1.74	.4591	.0409
1.35	.4115	.0885	1.75	.4599	.0401
1.36	.4131	.0869	1.76	.4608	.0392
1.37	.4147	.0853	1.77	.4616	.0384
1.38	.4162	.0838	1.78	.4625	.0375
1.39	.4177	.0823	1.79	.4633	.0367
1.40	.4192	.0808	1.80	.4641	.0359
1.41	.4207	.0793	1.81	.4649	.0351
1.42	.4222	.0778	1.82	.4656	.0344
1.43	.4236	.0764	1.83	.4664	.0336
1.44	.4251	.0749	1.84	.4671	.0329
1.45	.4265	.0735	1.85	.4678	.0322
1.46	.4279	.0721	1.86	.4686	.0314
1.47	.4292	.0708	1.87	.4693	.0307
1.48	.4306	.0694	1.88	.4699	.0301
1.49	.4319	.0681	1.89	.4706	.0294
1.50	.4332	.0668	1.90	.4713	.0287
1.51	.4345	.0655	1.91	.4719	.0281
1.52	.4357	.0643	1.92	.4726	.0274
1.53	.4370	.0630	1.93	.4732	.0268
1.54	.4382	.0618	1.94	.4738	.0262
1.55	.4394	.0606	1.95	.4744	.0256
1.56	.4406	.0594	1.96	.4750	.0250
1.57	.4418	.0582	1.97	.4756	.0244
1.58	.4429	.0571	1.98	.4761	.0239
1.59	.4441	.0559	1.99	.4767	.0233
1.60	.4452	.0548	2.00	.4772	.0228
1.61	.4463	.0537	2.01	.4778	.0222
1.62	.4474	.0526	2.02	.4783	.0217
1.63	.4484	.0516	2.03	.4788	.0212
1.64	.4495	.0505	2.04	.4793	.0207
1.65	.4505	.0495	2.05	.4798	.0202
1.66	.4515	.0485	2.06	.4803	.0197
1.67	.4525	.0475	2.07	.4808	.0192
1.68	.4535	.0465	2.08	.4812	.0188
1.69	.4545	.0455	2.09	.4817	.0183

(Continued)

Table D.1 Areas Under the Normal Curve (Continued)

A	B	C	A	B	C
z	Area Between Mean and *z*	Area Beyond *z*	*z*	Area Between Mean and *z*	Area Beyond *z*
2.10	.4821	.0179	2.50	.4938	.0062
2.11	.4826	.0174	2.51	.4940	.0060
2.12	.4830	.0170	2.52	.4941	.0059
2.13	.4834	.0166	2.53	.4943	.0057
2.14	.4838	.0162	2.54	.4945	.0055
2.15	.4842	.0158	2.55	.4946	.0054
2.16	.4846	.0154	2.56	.4948	.0052
2.17	.4850	.0150	2.57	.4949	.0051
2.18	.4854	.0146	2.58	.4951	.0049
2.19	.4857	.0143	2.59	.4952	.0048
2.20	.4861	.0139	2.60	.4953	.0047
2.21	.4864	.0136	2.61	.4955	.0045
2.22	.4868	.0132	2.62	.4956	.0044
2.23	.4871	.0129	2.63	.4957	.0043
2.24	.4875	.0125	2.64	.4959	.0041
2.25	.4878	.0122	2.65	.4960	.0040
2.26	.4881	.0119	2.66	.4961	.0039
2.27	.4884	.0116	2.67	.4962	.0038
2.28	.4887	.0113	2.68	.4963	.0037
2.29	.4890	.0110	2.69	.4964	.0036
2.30	.4893	.0107	2.70	.4965	.0035
2.31	.4896	.0104	2.71	.4966	.0034
2.32	.4898	.0102	2.72	.4967	.0033
2.33	.4901	.0099	2.73	.4968	.0032
2.34	.4904	.0096	2.74	.4969	.0031
2.35	.4906	.0094	2.75	.4970	.0030
2.36	.4909	.0091	2.76	.4971	.0029
2.37	.4911	.0089	2.77	.4972	.0028
2.38	.4913	.0087	2.78	.4973	.0027
2.39	.4916	.0084	2.79	.4974	.0026
2.40	.4918	.0082	2.80	.4974	.0026
2.41	.4920	.0080	2.81	.4975	.0025
2.42	.4922	.0078	2.82	.4976	.0024
2.43	.4925	.0075	2.83	.4977	.0023
2.44	.4927	.0073	2.84	.4977	.0023
2.45	.4929	.0071	2.85	.4978	.0022
2.46	.4931	.0069	2.86	.4979	.0021
2.47	.4932	.0068	2.87	.4979	.0021
2.48	.4934	.0066	2.88	.4980	.0020
2.49	.4936	.0064	2.89	.4981	.0019

(Continued)

Table D.1 Areas Under the Normal Curve (Continued)

A	B	C	A	B	C
z	Area Between Mean and *z*	Area Beyond *z*	*z*	Area Between Mean and *z*	Area Beyond *z*
2.90	.4981	.0019	3.13	.4991	.0009
2.91	.4982	.0018	3.14	.4992	.0008
2.92	.4982	.0018	3.15	.4992	.0008
2.93	.4983	.0017	3.16	.4992	.0008
2.94	.4984	.0016	3.17	.4992	.0008
2.95	.4984	.0016	3.18	.4993	.0007
2.96	.4985	.0015	3.19	.4993	.0007
2.97	.4985	.0015	3.20	.4993	.0007
2.98	.4986	.0014	3.21	.4993	.0007
2.99	.4986	.0014	3.22	.4994	.0006
3.00	.4987	.0013	3.23	.4994	.0006
3.01	.4987	.0013	3.24	.4994	.0006
3.02	.4987	.0013	3.25	.4994	.0006
3.03	.4988	.0012	3.30	.4995	.0005
3.04	.4988	.0012	3.35	.4996	.0004
3.05	.4989	.0011	3.40	.4997	.0003
3.06	.4989	.0011	3.45	.4997	.0003
3.07	.4989	.0011	3.50	.4998	.0002
3.08	.4990	.0010	3.60	.4998	.0002
3.09	.4990	.0010	3.70	.4999	.0001
3.10	.4990	.0010	3.80	.4999	.0001
3.11	.4991	.0009	3.90	.49995	.00005
3.12	.4991	.0009	4.00	.49997	.00003

Source: Richard Runyon and Audrey Haber. *Fundamentals of Behavioral Statistics,* 2nd ed. Table A (pp. 289–291). © 1971. Reprinted by permission of Pearson Education, Inc., Upper Saddle River, NJ.