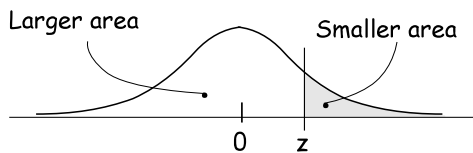


Table 1: Areas under the normal curve

z	z to \bar{x}	smaller area	larger area	z	z to \bar{x}	smaller area	larger area	z	z to \bar{x}	smaller area	larger area
0.000	0.0000	0.5000	0.5000	1.033	0.3493	0.1507	0.8493	2.033	0.4790	0.0210	0.9790
0.033	0.0133	0.4867	0.5133	1.067	0.3569	0.1431	0.8569	2.067	0.4806	0.0194	0.9806
0.067	0.0266	0.4734	0.5266	1.100	0.3643	0.1357	0.8643	2.100	0.4821	0.0179	0.9821
0.100	0.0398	0.4602	0.5398	1.133	0.3715	0.1285	0.8715	2.133	0.4836	0.0164	0.9836
0.133	0.0530	0.4470	0.5530	1.167	0.3783	0.1217	0.8783	2.167	0.4849	0.0151	0.9849
0.167	0.0662	0.4338	0.5662	1.200	0.3849	0.1151	0.8849	2.200	0.4861	0.0139	0.9861
0.200	0.0793	0.4207	0.5793	1.200	0.3849	0.1151	0.8849	2.233	0.4872	0.0128	0.9872
0.233	0.0922	0.4078	0.5922	1.233	0.3913	0.1087	0.8913	2.267	0.4883	0.0117	0.9883
0.267	0.1051	0.3949	0.6051	1.267	0.3974	0.1026	0.8974	2.300	0.4893	0.0107	0.9893
0.300	0.1179	0.3821	0.6179	1.300	0.4032	0.0968	0.9032	2.333	0.4902	0.0098	0.9902
0.333	0.1306	0.3694	0.6306	1.333	0.4088	0.0912	0.9088	2.367	0.4910	0.0090	0.9910
0.367	0.1431	0.3569	0.6431	1.367	0.4141	0.0859	0.9141	2.400	0.4918	0.0082	0.9918
0.400	0.1554	0.3446	0.6554	1.400	0.4192	0.0808	0.9192	2.400	0.4918	0.0082	0.9918
0.433	0.1676	0.3324	0.6676	1.433	0.4241	0.0759	0.9241	2.433	0.4925	0.0075	0.9925
0.467	0.1796	0.3204	0.6796	1.467	0.4288	0.0712	0.9288	2.467	0.4932	0.0068	0.9932
0.500	0.1915	0.3085	0.6915	1.500	0.4332	0.0668	0.9332	2.500	0.4938	0.0062	0.9938
0.533	0.2031	0.2969	0.7031	1.533	0.4374	0.0626	0.9374	2.533	0.4944	0.0056	0.9944
0.567	0.2145	0.2855	0.7145	1.567	0.4414	0.0586	0.9414	2.567	0.4949	0.0051	0.9949
0.600	0.2257	0.2743	0.7257	1.600	0.4452	0.0548	0.9452	2.600	0.4953	0.0047	0.9953
0.633	0.2367	0.2633	0.7367	1.633	0.4488	0.0512	0.9488	2.633	0.4958	0.0042	0.9958
0.667	0.2475	0.2525	0.7475	1.667	0.4522	0.0478	0.9522	2.667	0.4962	0.0038	0.9962
0.700	0.2580	0.2420	0.7580	1.700	0.4554	0.0446	0.9554	2.700	0.4965	0.0035	0.9965
0.733	0.2683	0.2317	0.7683	1.733	0.4585	0.0415	0.9585	2.733	0.4969	0.0031	0.9969
0.767	0.2784	0.2216	0.7784	1.767	0.4614	0.0386	0.9614	2.767	0.4972	0.0028	0.9972
0.800	0.2881	0.2119	0.7881	1.800	0.4641	0.0359	0.9641	2.800	0.4974	0.0026	0.9974
0.833	0.2977	0.2023	0.7977	1.833	0.4666	0.0334	0.9666	2.833	0.4977	0.0023	0.9977
0.867	0.3069	0.1931	0.8069	1.867	0.4690	0.0310	0.9690	2.867	0.4979	0.0021	0.9979
0.900	0.3159	0.1841	0.8159	1.900	0.4713	0.0287	0.9713	2.900	0.4981	0.0019	0.9981
0.933	0.3247	0.1753	0.8247	1.933	0.4734	0.0266	0.9734	2.933	0.4983	0.0017	0.9983
0.967	0.3331	0.1669	0.8331	1.967	0.4754	0.0246	0.9754	2.967	0.4985	0.0015	0.9985
1.000	0.3413	0.1587	0.8413	2.000	0.4772	0.0228	0.9772	3.000	0.4987	0.0013	0.9987



$$d_i = x_i - \bar{x}$$

$$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}} \approx \frac{s}{\sqrt{n}}$$

$$Z = \frac{\bar{x} - \mu}{\sigma_{\bar{x}}}$$

$$\bar{x} = \frac{\sum x_i}{n}$$

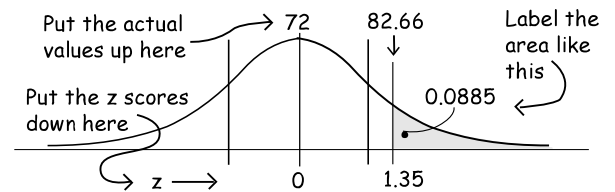
$$s^2 = \frac{\sum d_i^2}{n-1} = \frac{SS}{n-1}$$

$$Z_i = \frac{x_i - \bar{x}}{s}$$

$$s = \sqrt{\frac{\sum X_i^2 - (\sum X)^2/n}{n-1}}$$

$$s = \sqrt{\frac{\sum d_i^2}{n-1}}$$

How to label the curves



If the mean is 72, the standard deviation is 8.2 and a person has a grade of 82.66, what percent have higher grades?

The grade of 82.66 gives a z-score of 1.35.

The smaller area for z (1.35) is 0.0885 or 8.85%.

$$SS = \sum d_i^2 = \sum (x_i - \bar{x})^2$$