# Standard Normal Table: Introduction

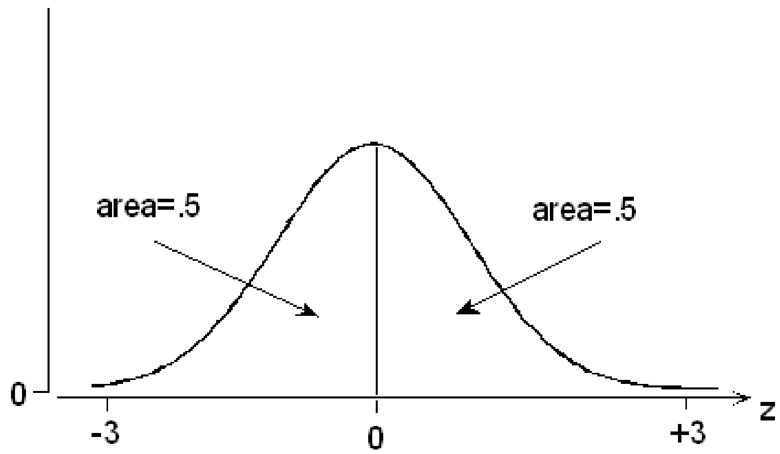
**Learning Objective: Find probabilities associated with the normal distribution.**

## Finding Probabilities with the Normal Table

Now that you have learned to assess the relative value of any normal value by standardizing, the next step is to evaluate probabilities. In other contexts, as mentioned before, we will first take the conventional approach of referring to a **normal table**, which tells the probability of a normal variable taking a value **less than** any standardized score z.

Click here to access the normal table.

Since normal curves are symmetric about their mean, it follows that the curve of z scores must be symmetric about 0. Since the total area under any normal curve is 1, it follows that the areas on either side of z = 0 are both 0.5. Also, according to the Standard Deviation Rule, most of the area under the standardized curve falls between z = -3 and z = +3.

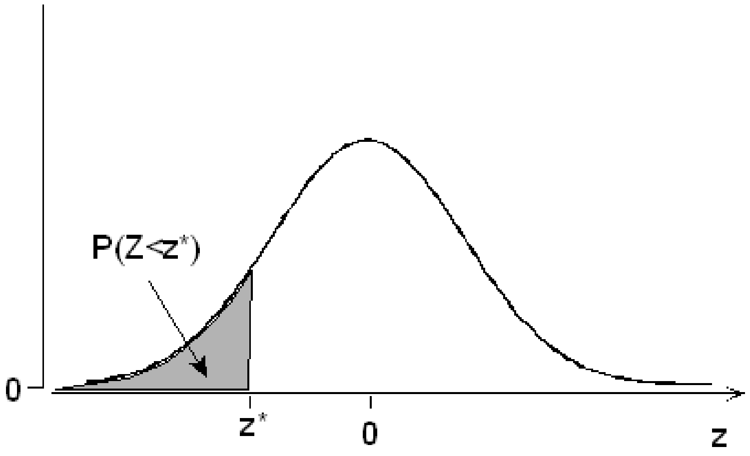


The normal table outlines the precise behavior of the standard normal random variable Z, the number of standard deviations a normal value x is below or above its mean. The normal table provides probabilities that a standardized normal random variable Z would take a value less than or equal to a particular value z*.

These particular values are listed in the form *.* in rows along the left margins of the table, specifying the ones and tenths. The columns fine-tune these values to hundredths, allowing us to look up the probability of being below any standardized value z of the form *.**. Here is part of the table.

| z | .00 | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | .09 |
|---|---|---|---|---|---|---|---|---|---|---|
| -3.4 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0003 | .0002 |
| -3.3 | .0005 | .0005 | .0005 | .0004 | .0004 | .0004 | .0004 | .0004 | .0004 | .0003 |
| -3.2 | .0007 | .0007 | .0006 | .0006 | .0006 | .0006 | .0006 | .0005 | .0005 | .0005 |
| -3.1 | .0010 | .0009 | .0009 | .0009 | .0008 | .0008 | .0008 | .0008 | .0007 | .0007 |
| -3.0 | .0013 | .0013 | .0013 | .0012 | .0012 | .0011 | .0011 | .0011 | .0010 | .0010 |
| -2.9 | .0019 | .0018 | .0018 | .0017 | .0016 | .0016 | .0015 | .0015 | .0014 | .0014 |
| -2.8 | .0026 | .0025 | .0024 | .0023 | .0023 | .0022 | .0021 | .0021 | .0020 | .0019 |
| -2.7 | .0035 | .0034 | .0033 | .0032 | .0031 | .0030 | .0029 | .0028 | .0027 | .0026 |
| -2.6 | .0047 | .0045 | .0044 | .0043 | .0041 | .0040 | .0039 | .0038 | .0037 | .0036 |
| -2.5 | .0062 | .0060 | .0059 | .0057 | .0055 | .0054 | .0052 | .0051 | .0049 | .0048 |
| -2.4 | .0082 | .0080 | .0078 | .0075 | .0073 | .0071 | .0069 | .0068 | .0066 | .0064 |
| -2.3 | .0107 | .0104 | .0102 | .0099 | .0096 | .0094 | .0091 | .0089 | .0087 | .0084 |
| -2.2 | .0139 | .0136 | .0132 | .0129 | .0125 | .0122 | .0119 | .0116 | .0113 | .0110 |
| -2.1 | .0179 | .0174 | .0170 | .0166 | .0162 | .0158 | .0154 | .0150 | .0146 | .0143 |

By construction, the probability $P(Z < z^*)$ equals the area under the z curve to the left of that particular value z*.




A quick sketch is often the key to solving normal problems easily and correctly.