The *t* Distribution

- Normal distribution

  a symmetric continuous distribution, has two parameters, the ***mean*** and ***std***

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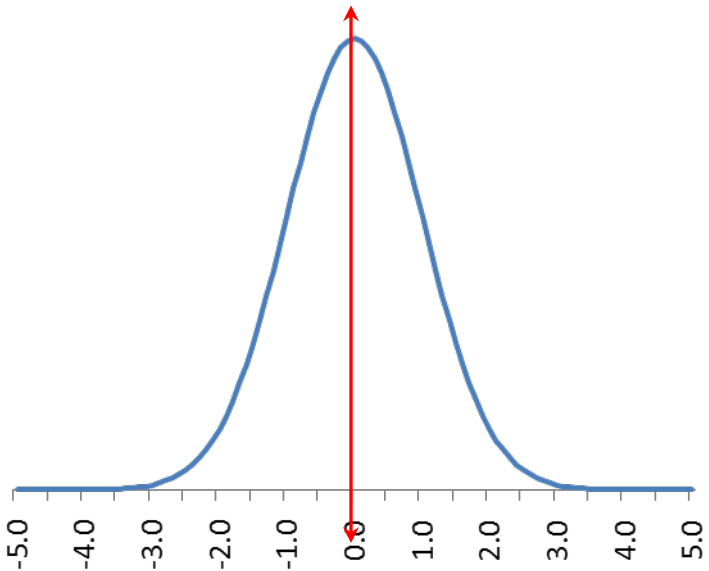
- Standard Normal distribution

  a Normal distribution with mean = 0 and std = 1

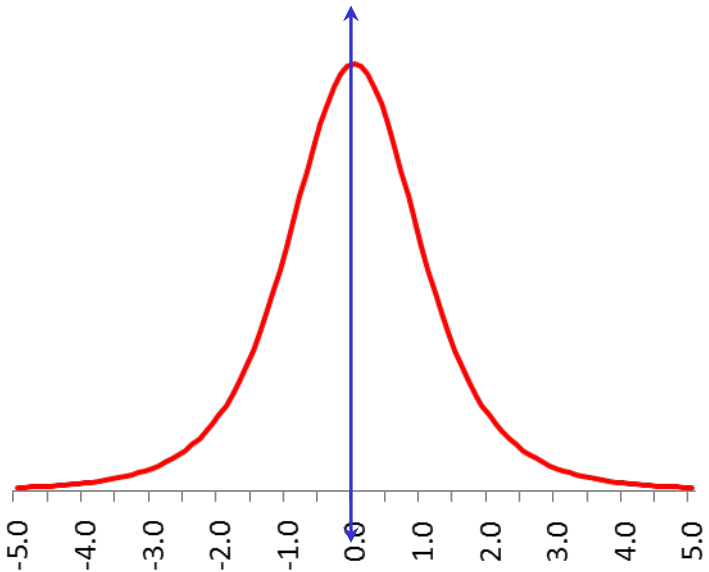
The ***Standard*** Normal Distribution

- It is symmetric about zero with a fixed standard deviation = 1



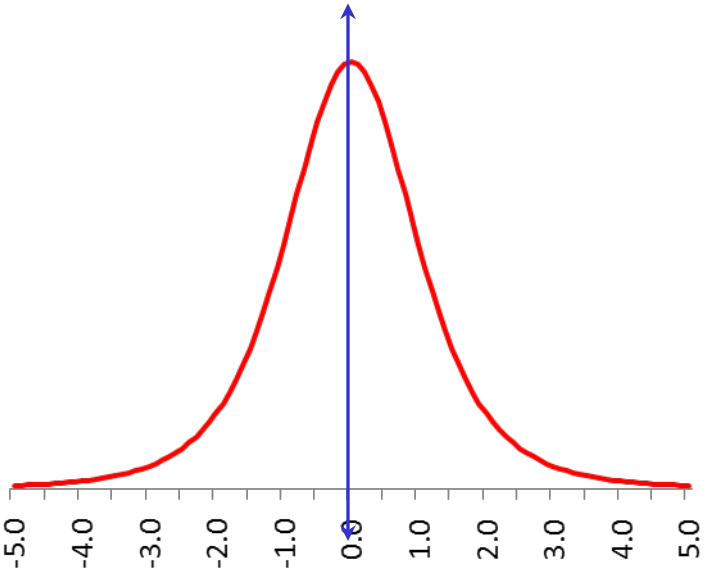
The *t* Distribution, aka the *Student's t* Distribution

- A symmetric distribution centered at zero



The ***t*** Distribution, aka the *Student's* ***t*** Distribution

- A symmetric distribution centered at zero
- Has a single parameter called the ***degrees of freedom*** or ***df***



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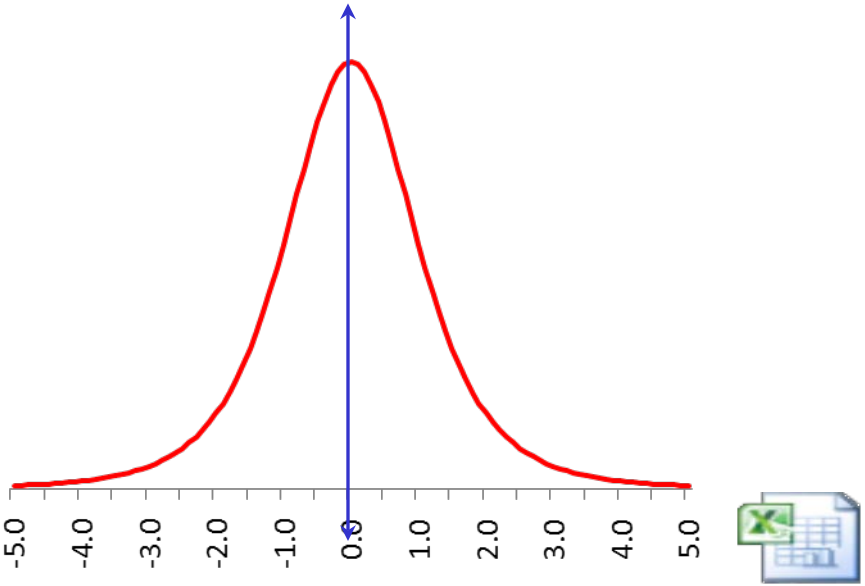

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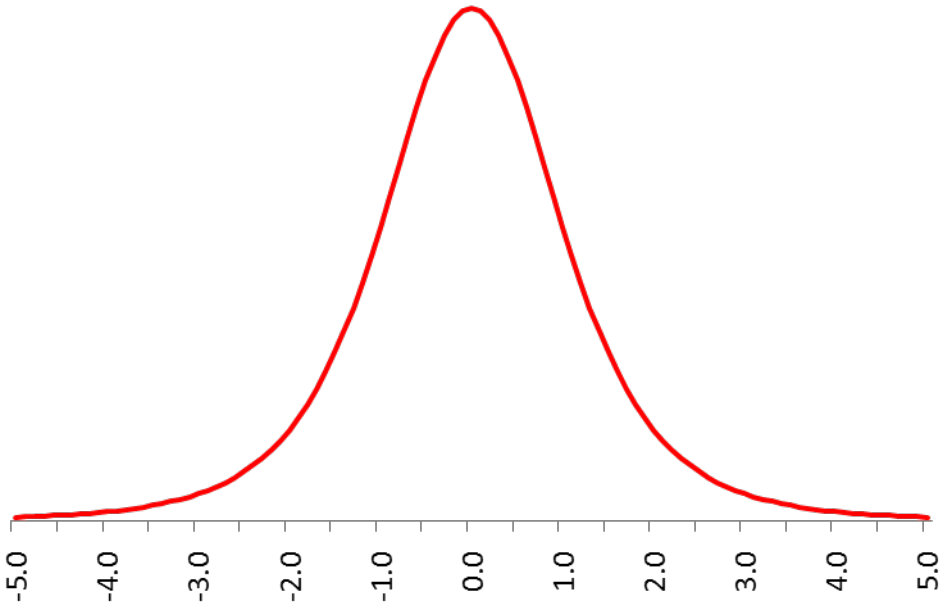
- Associated Excel functions are the **=T.DIST** and **=T.INV**

The *t* Distribution, T.DIST function



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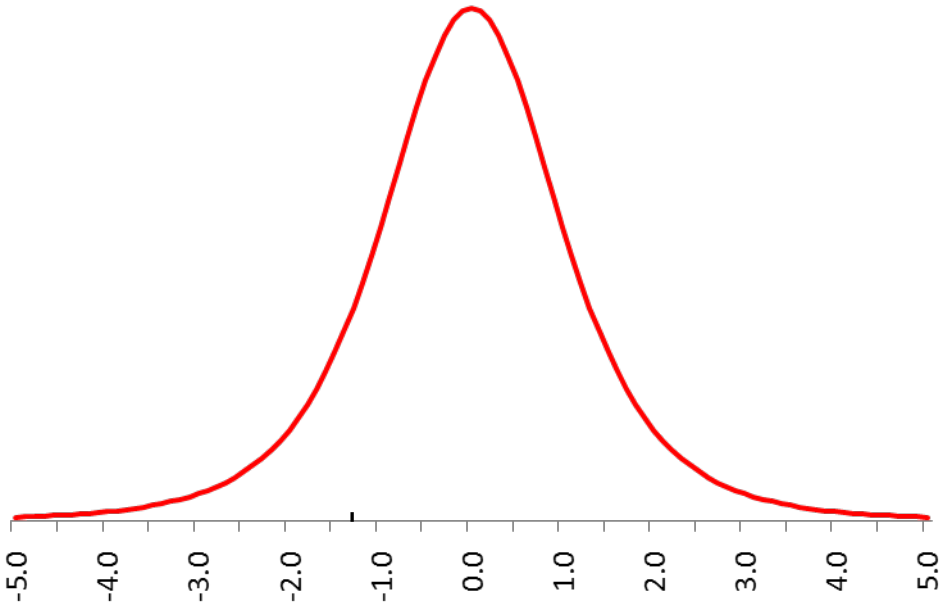

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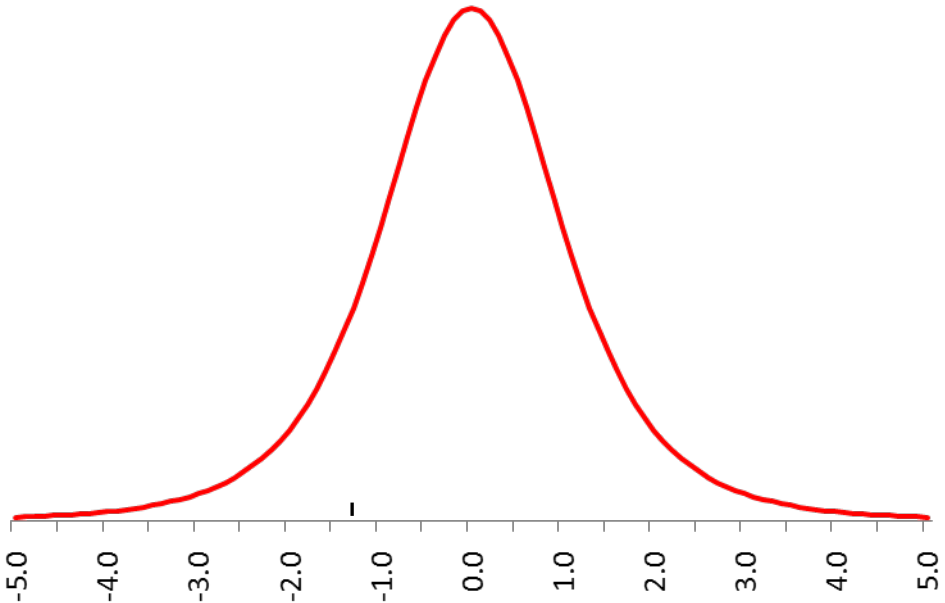

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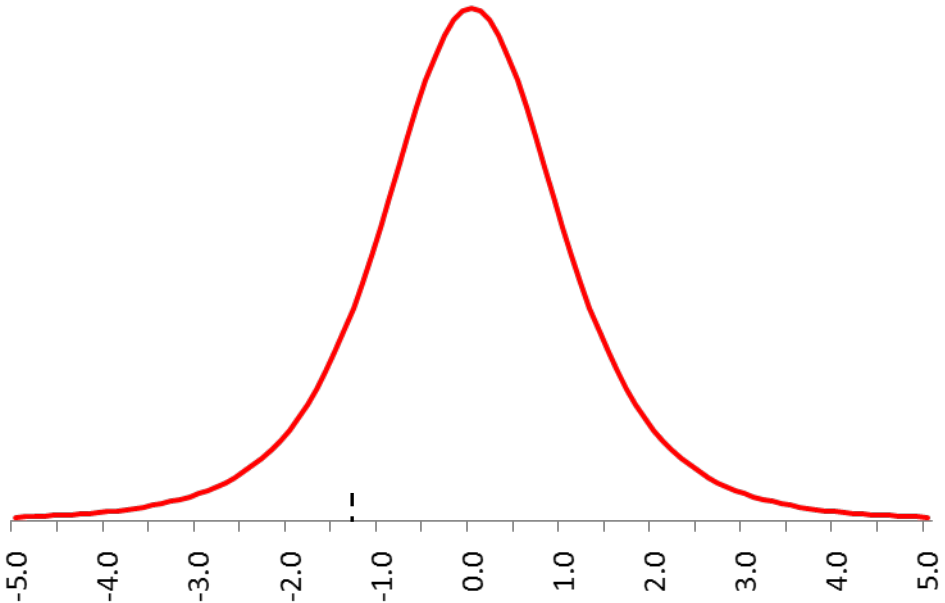

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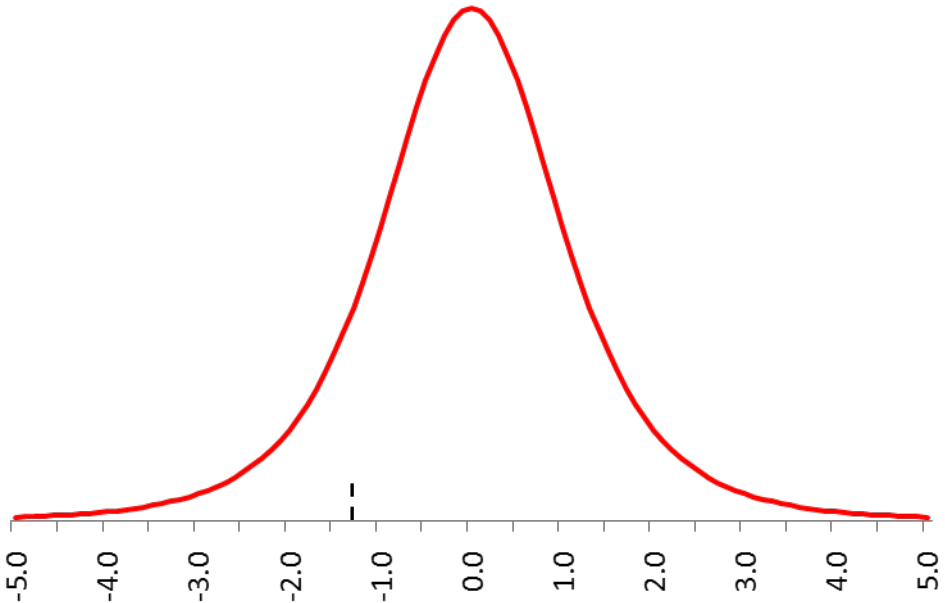

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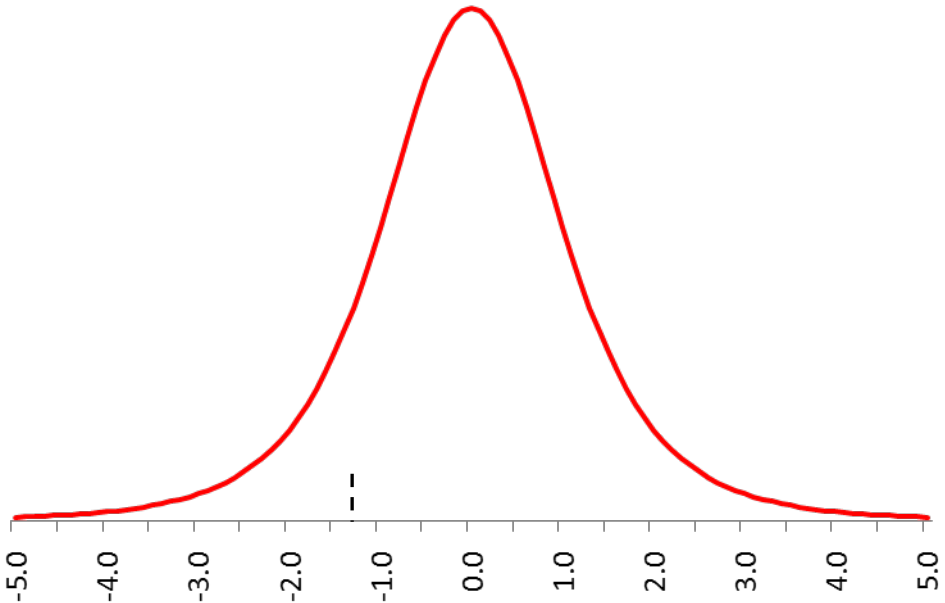

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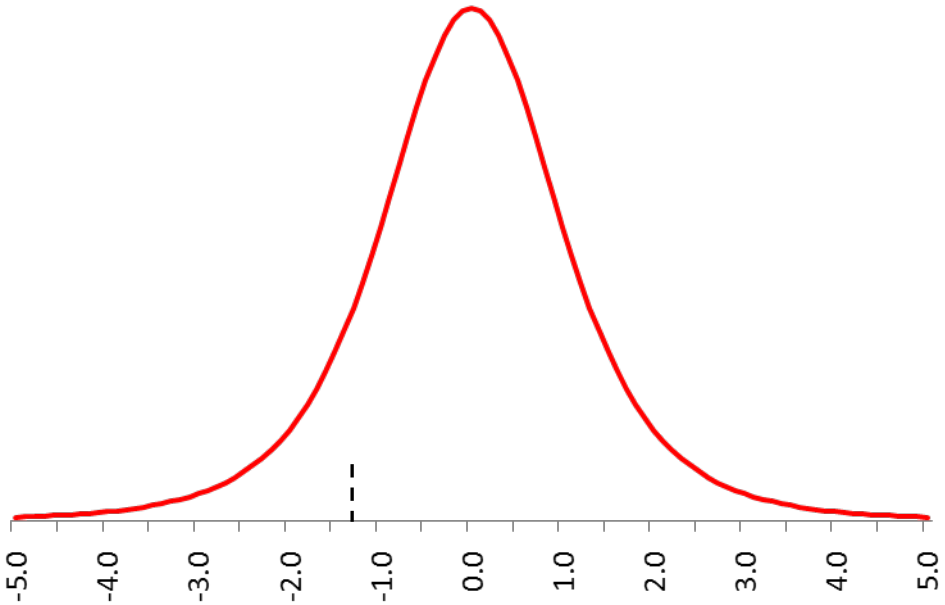

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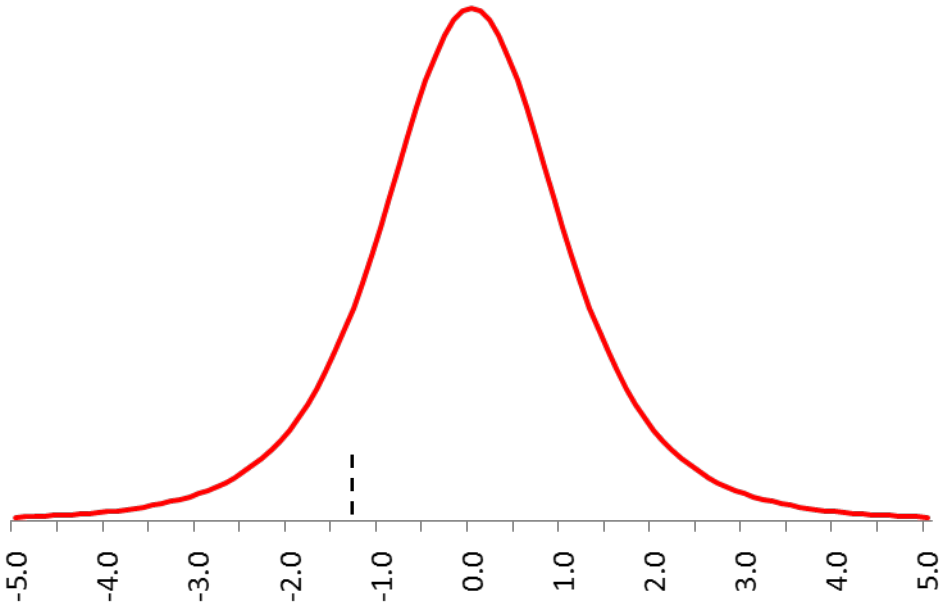

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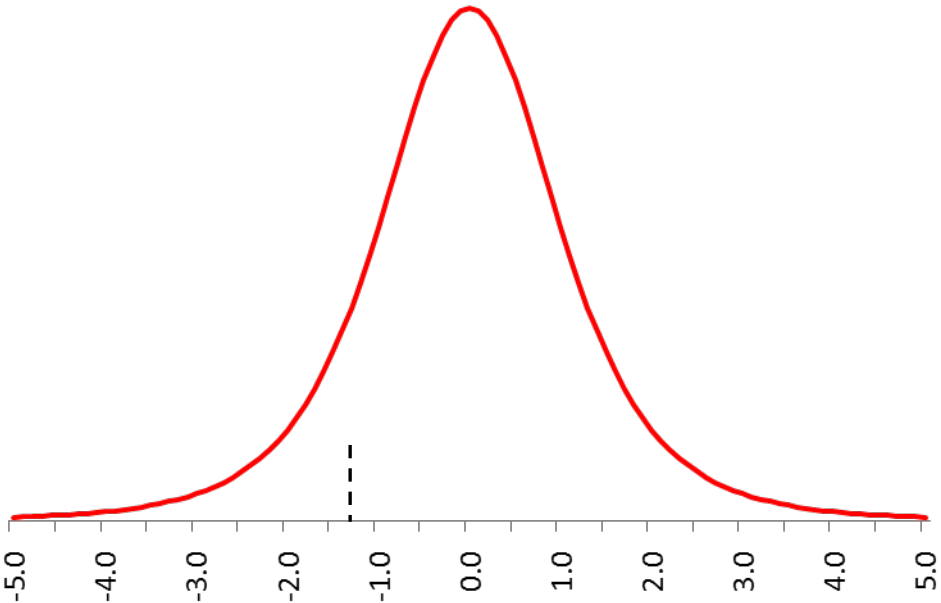

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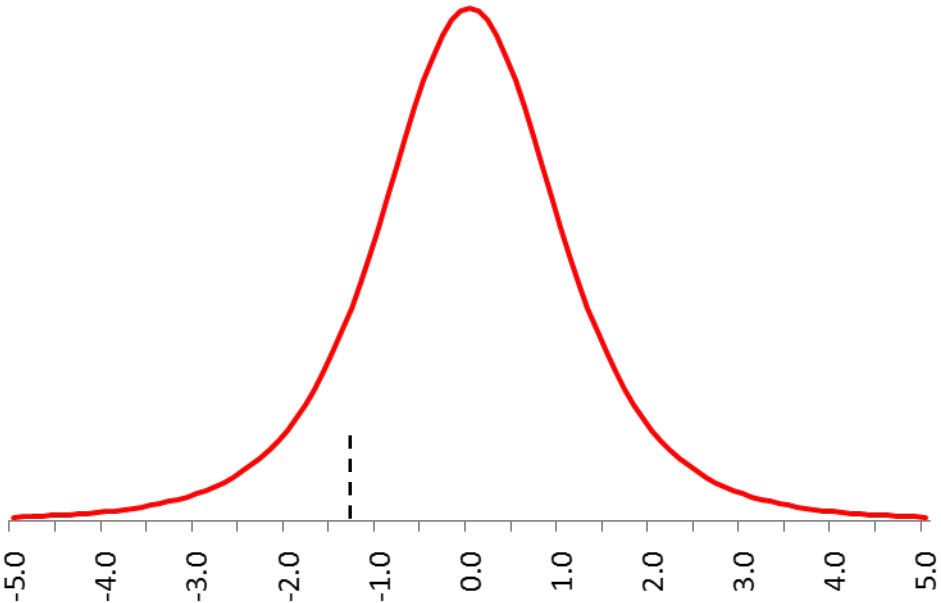

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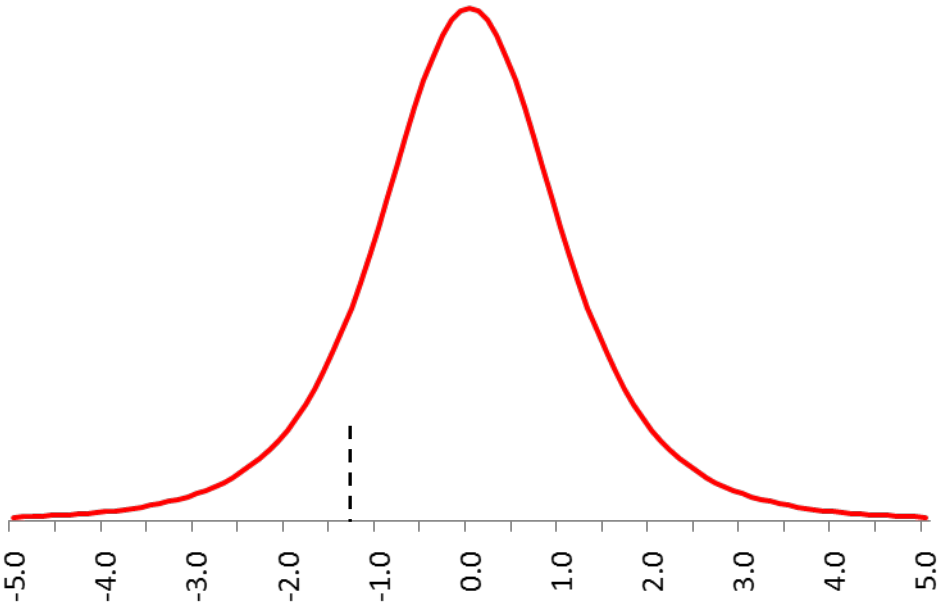

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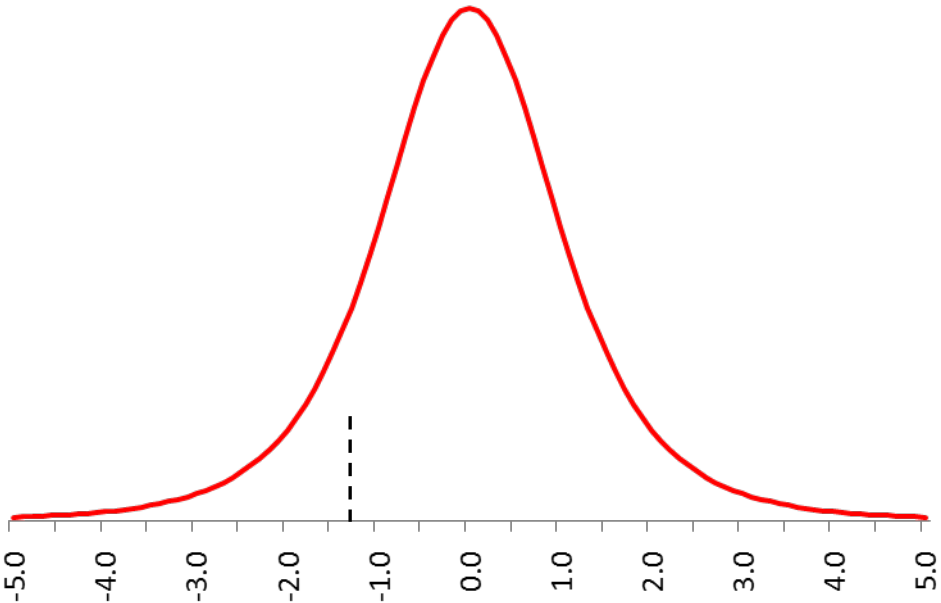

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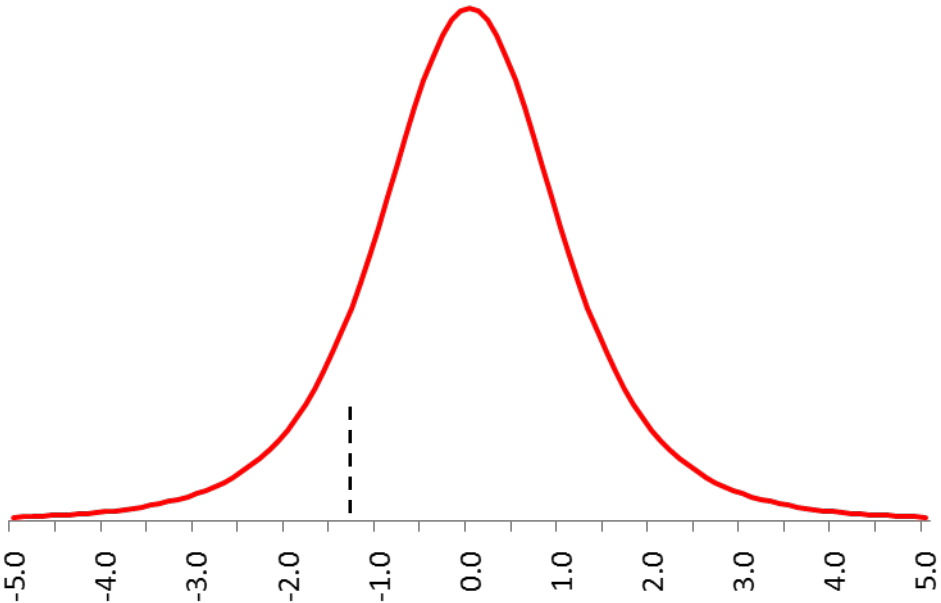

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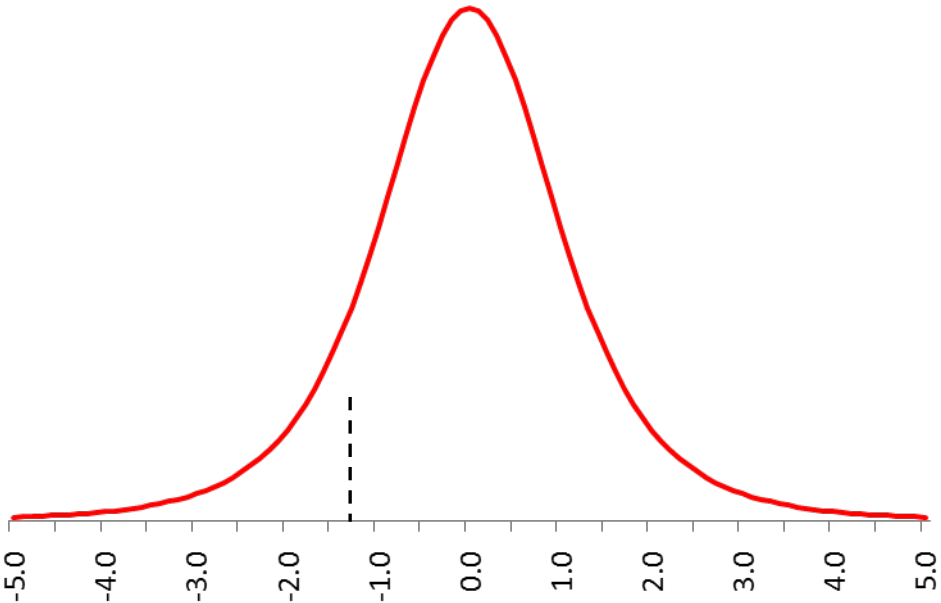

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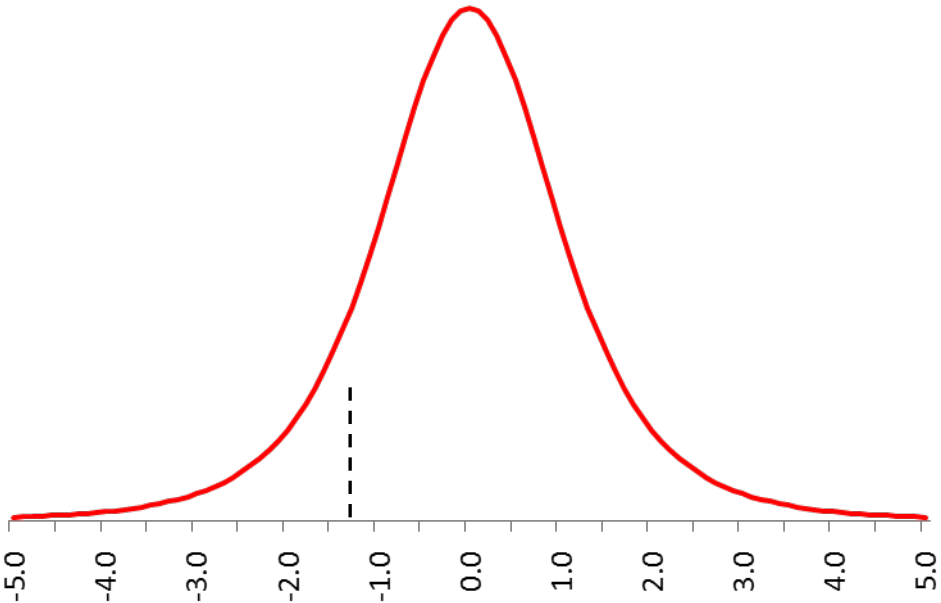

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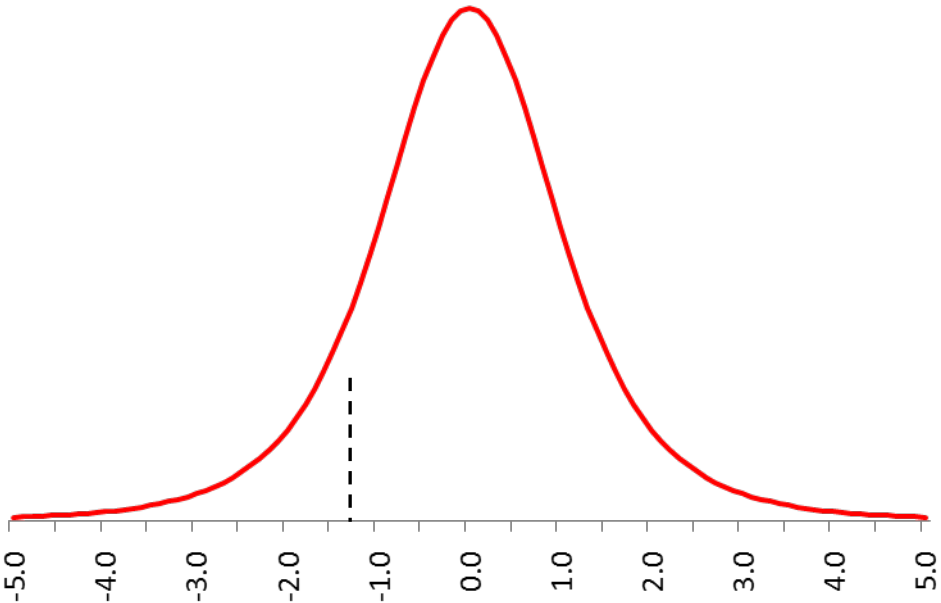

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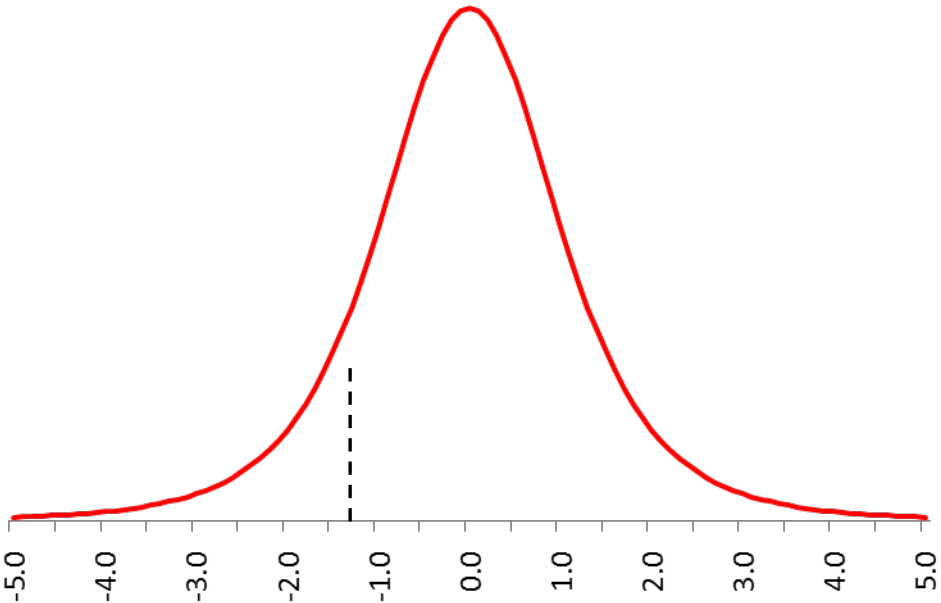

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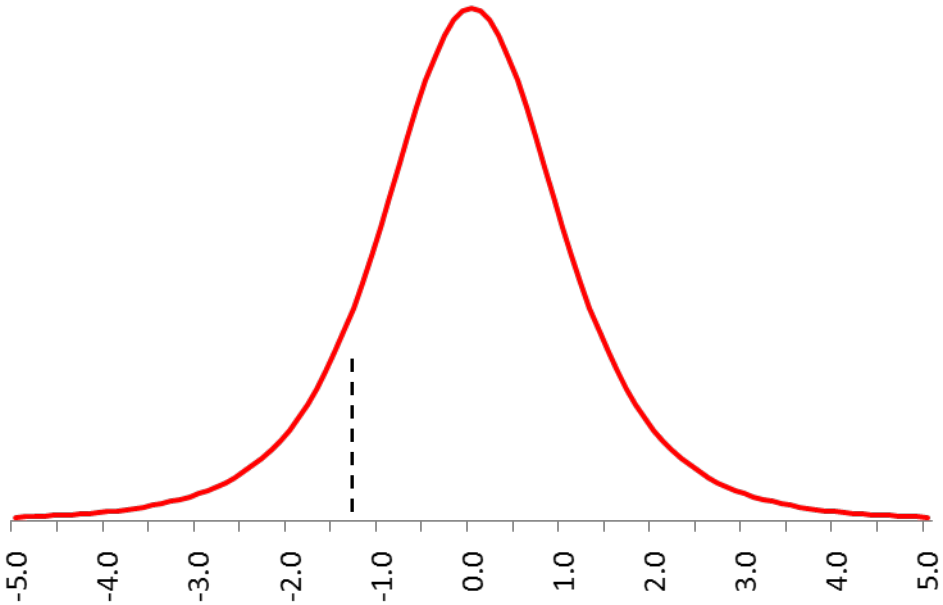

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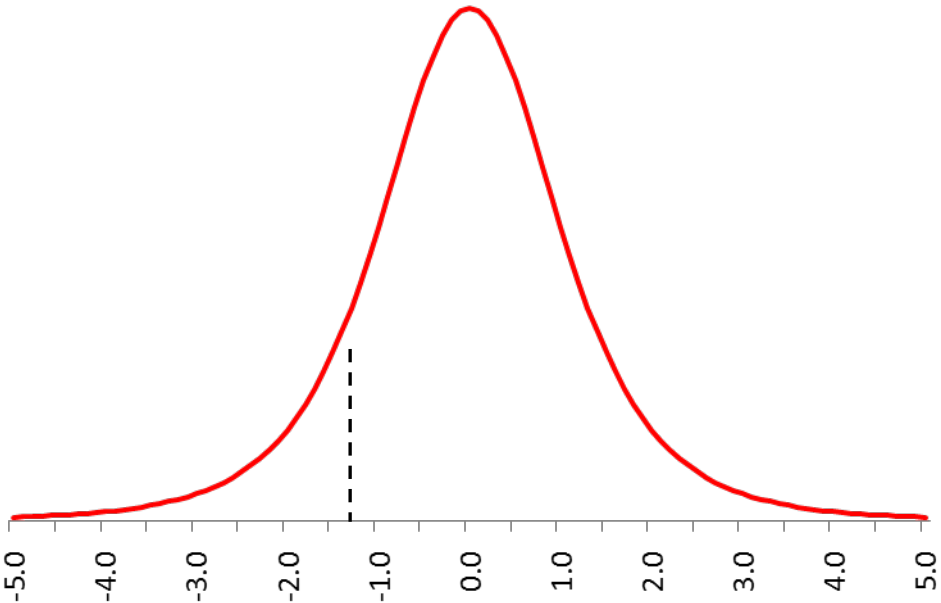

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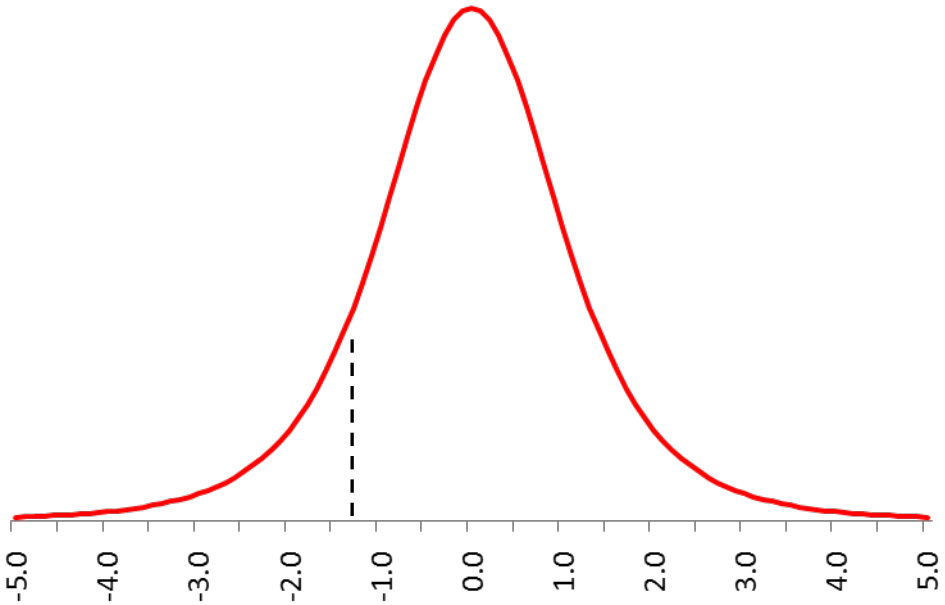

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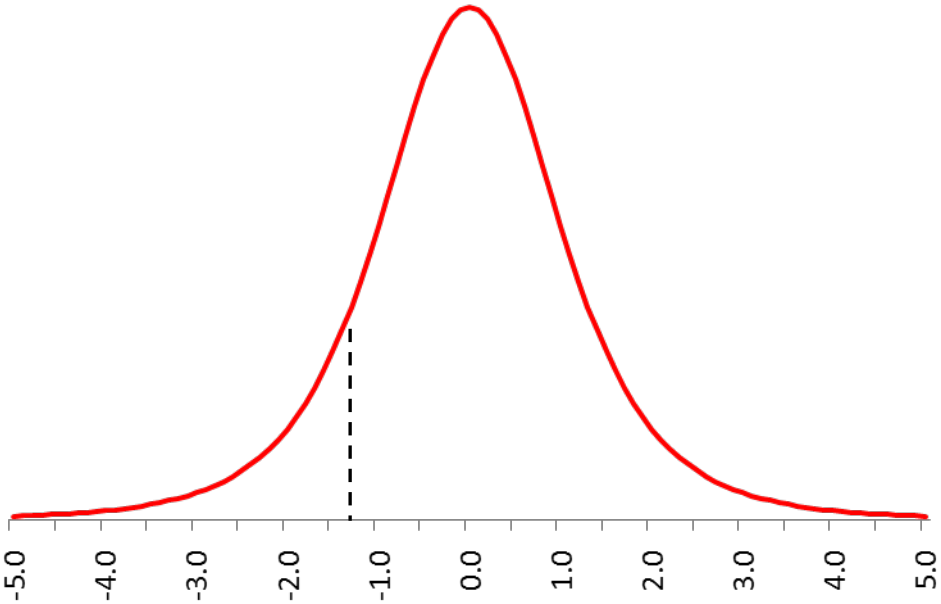

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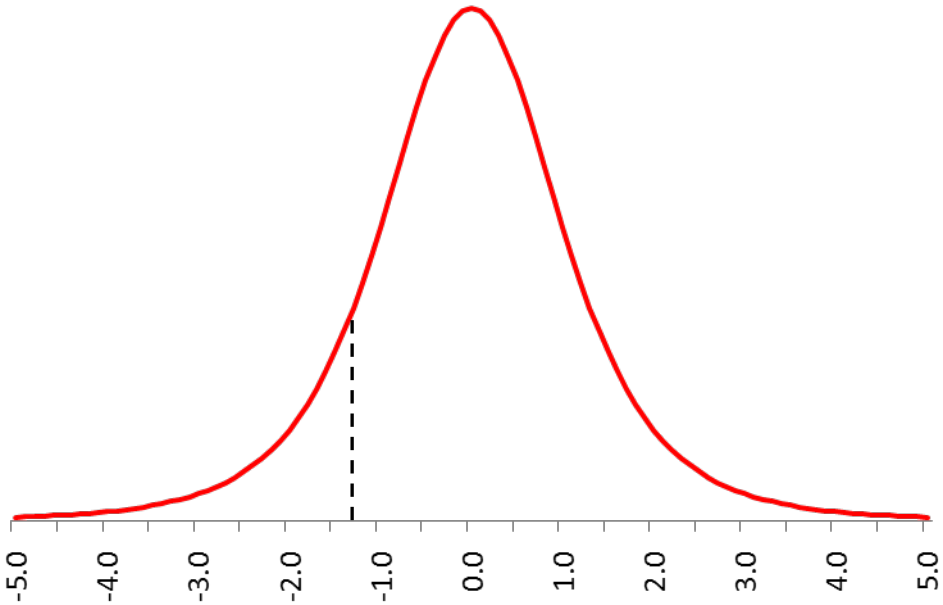

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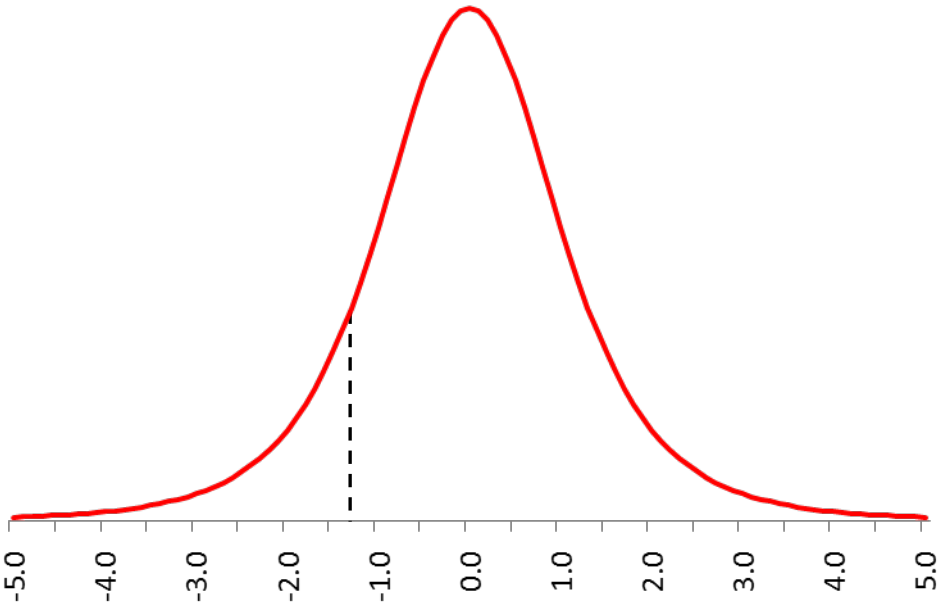

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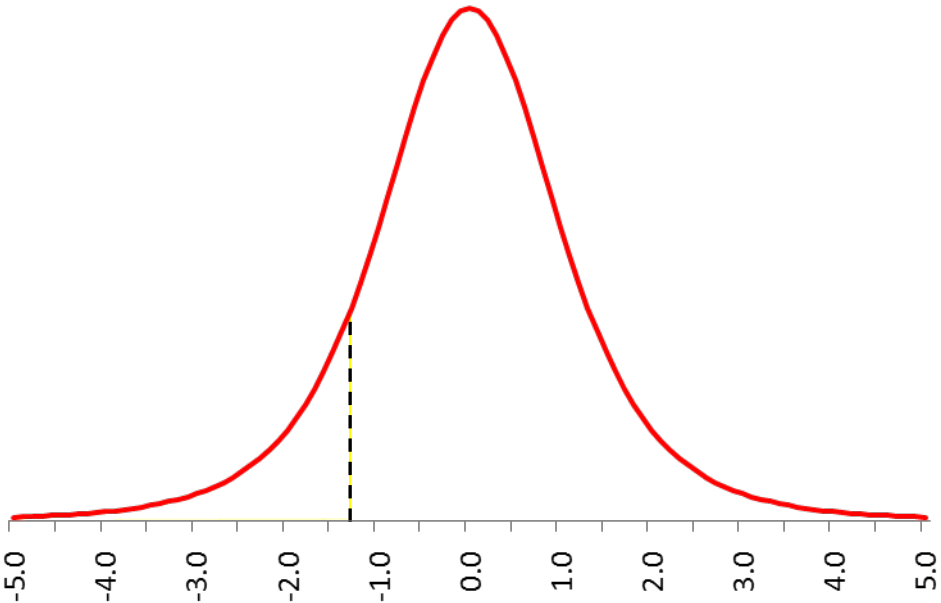

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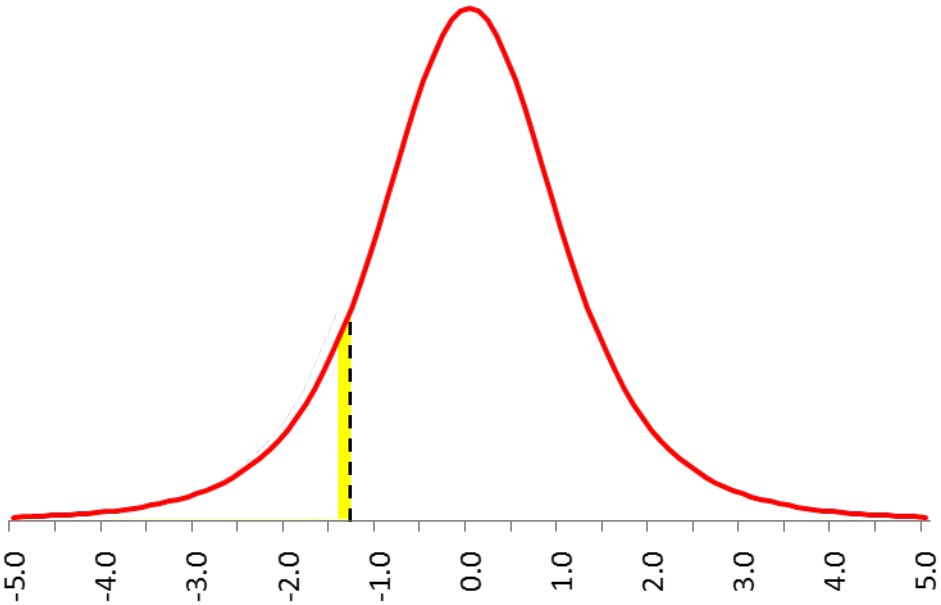

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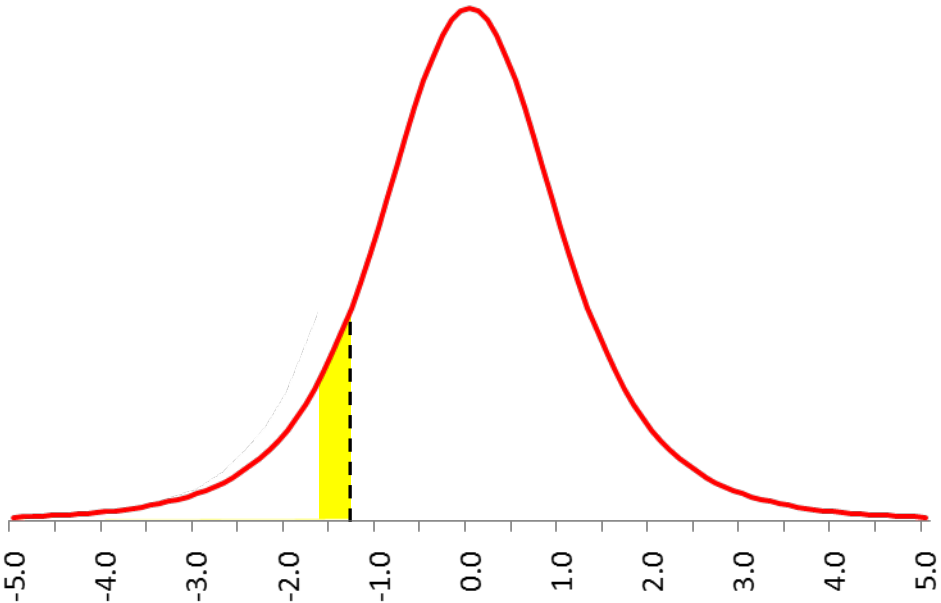

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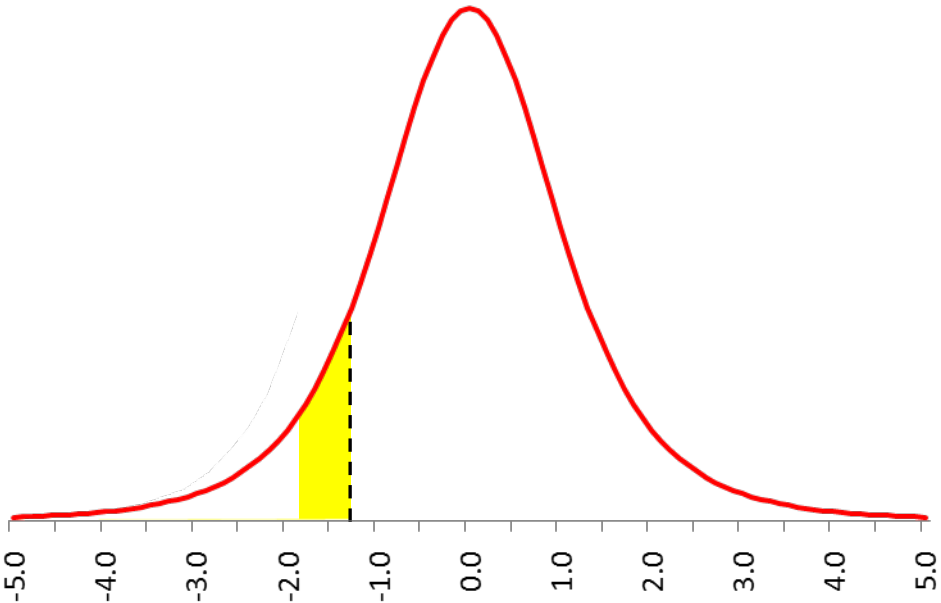

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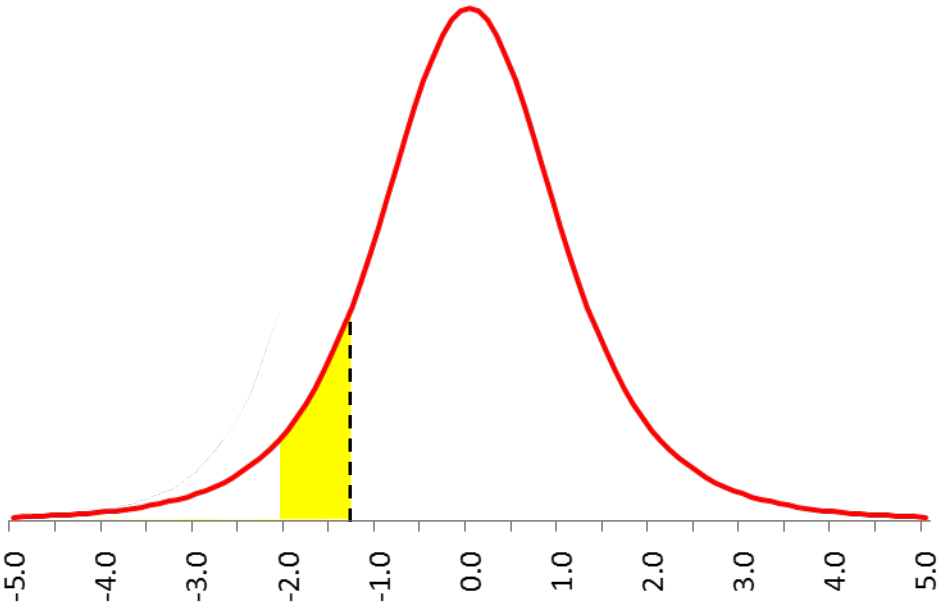

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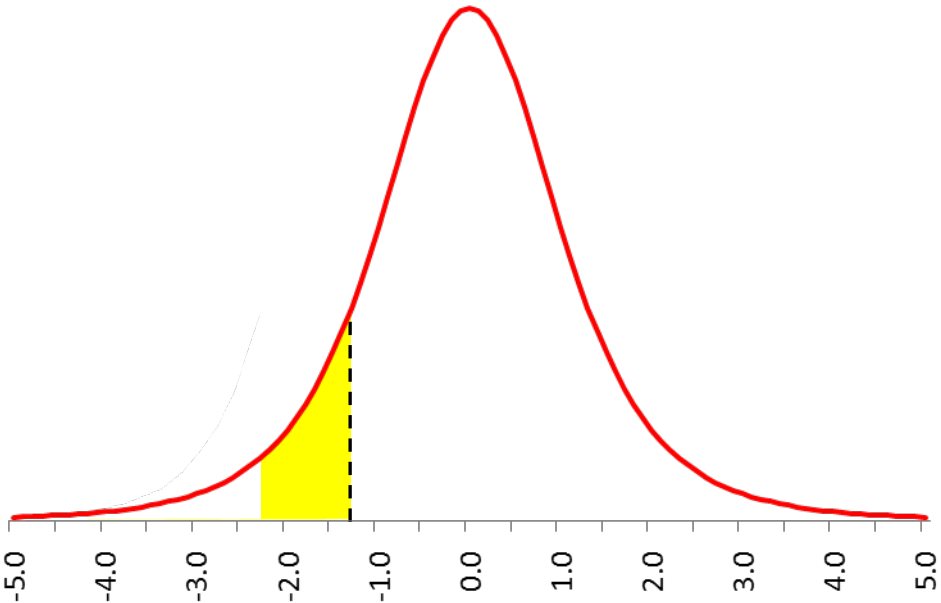

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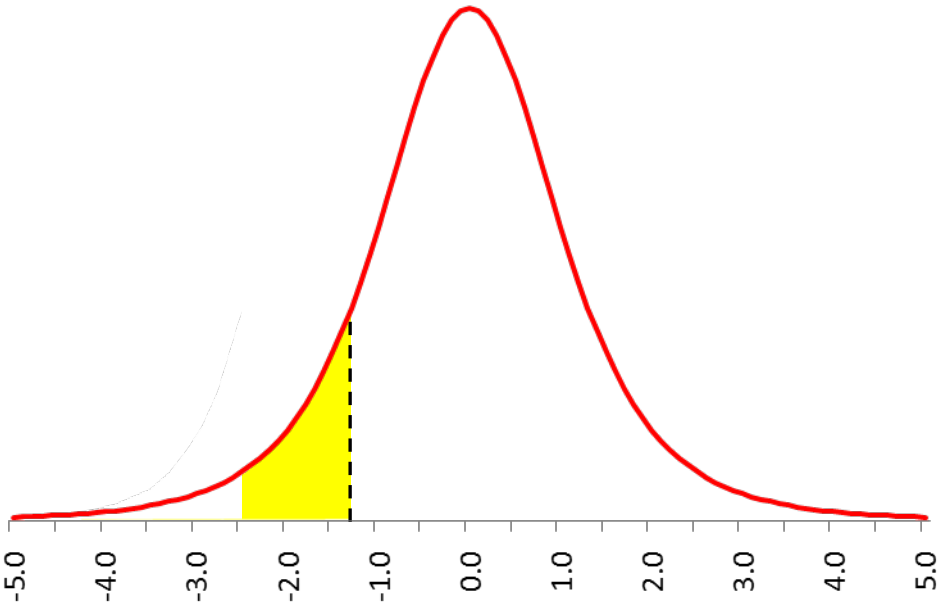

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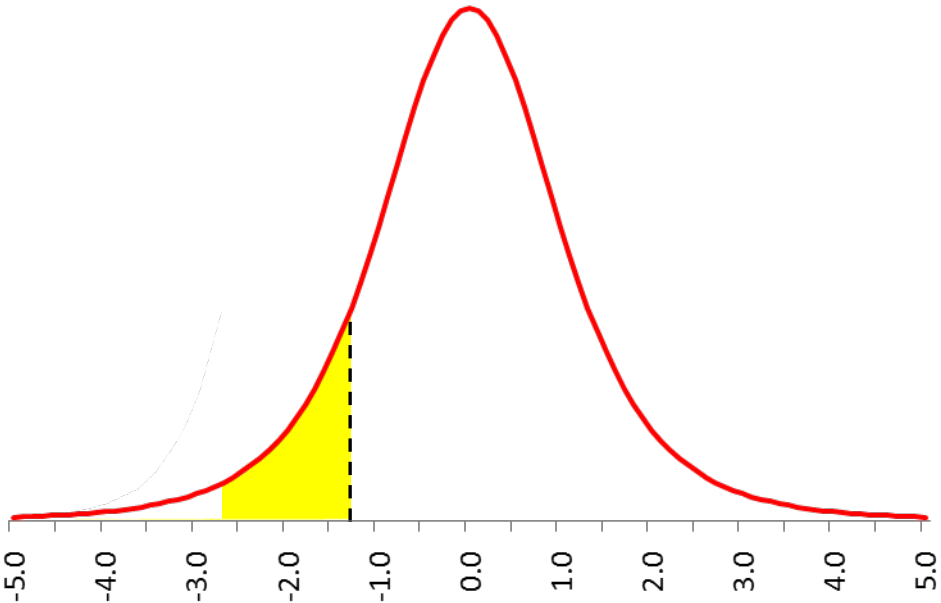

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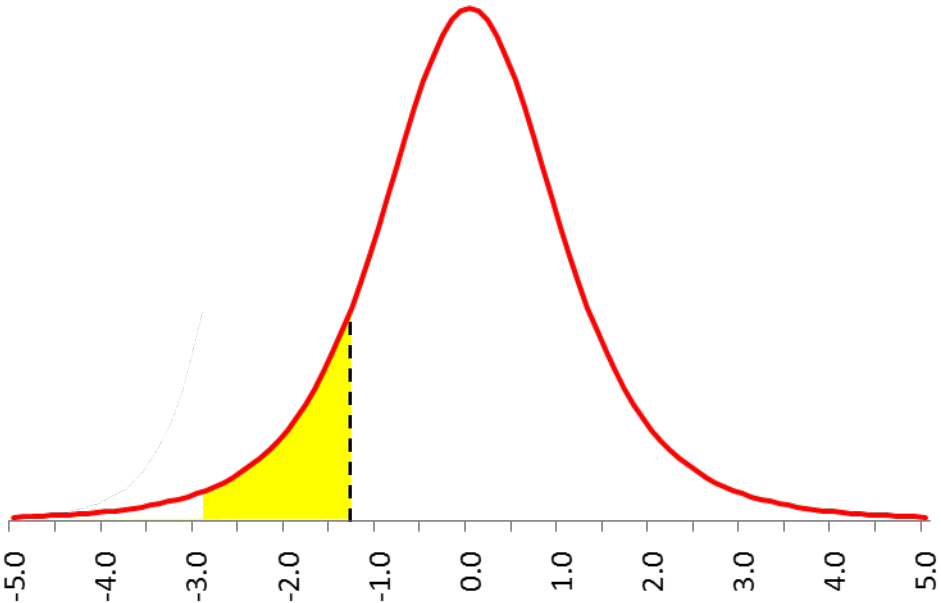

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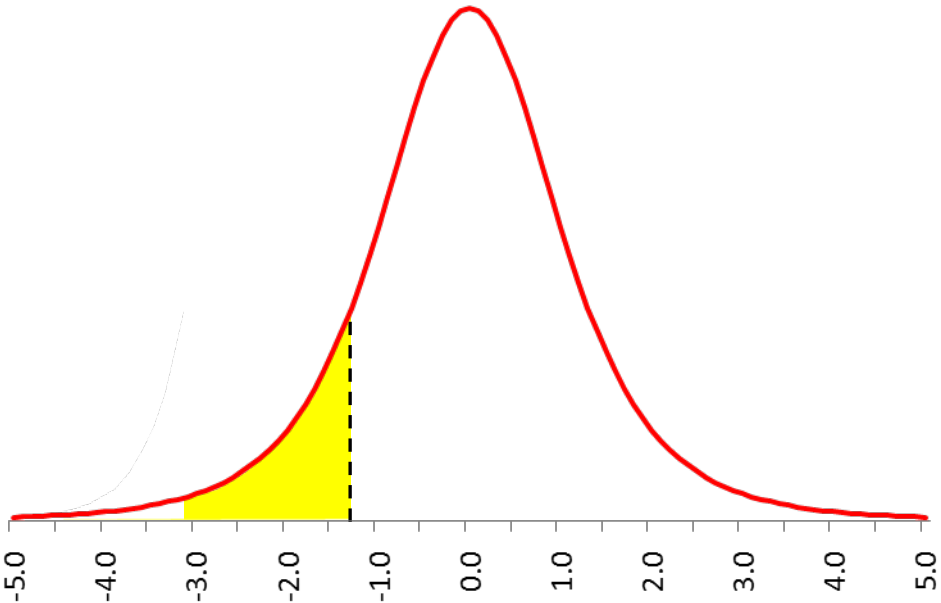

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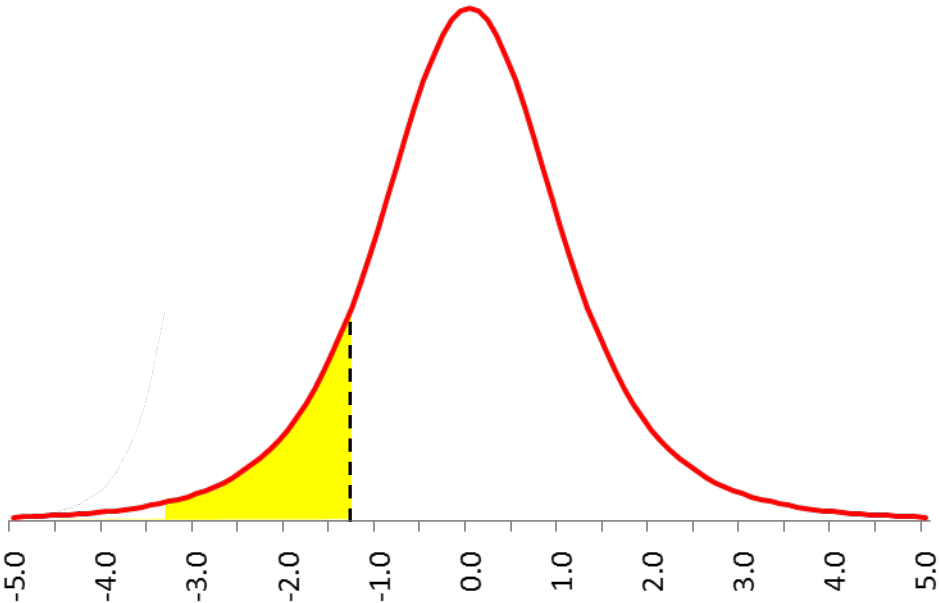

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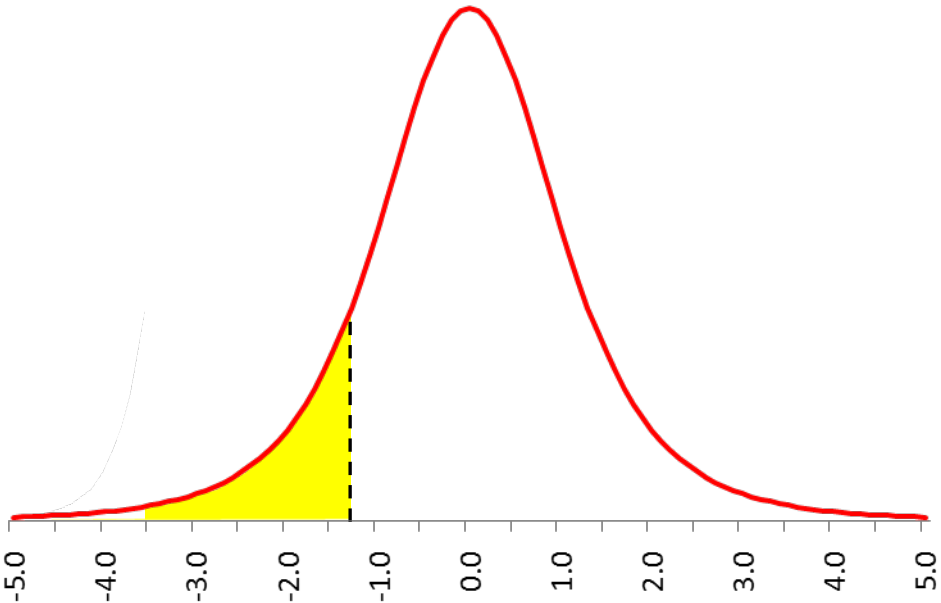

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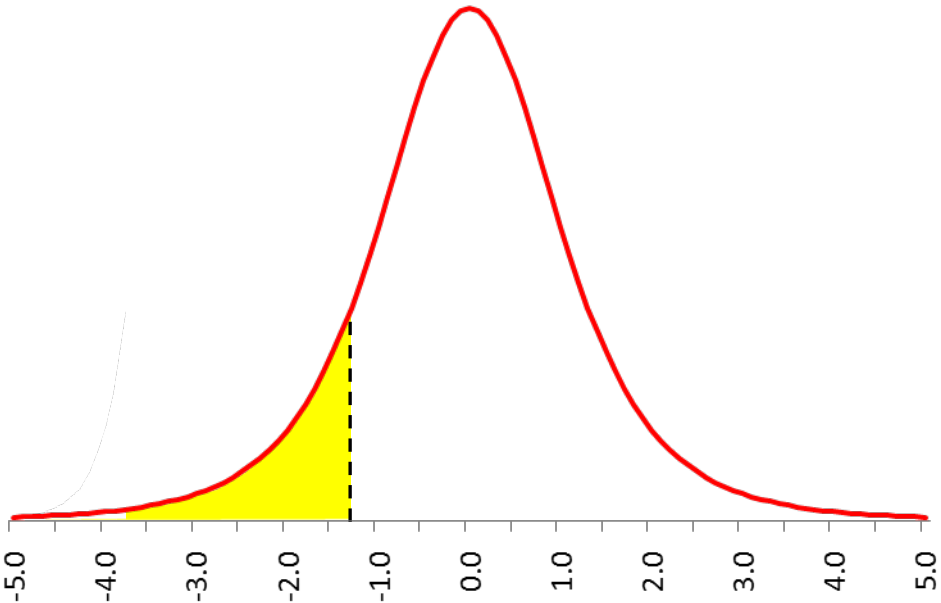

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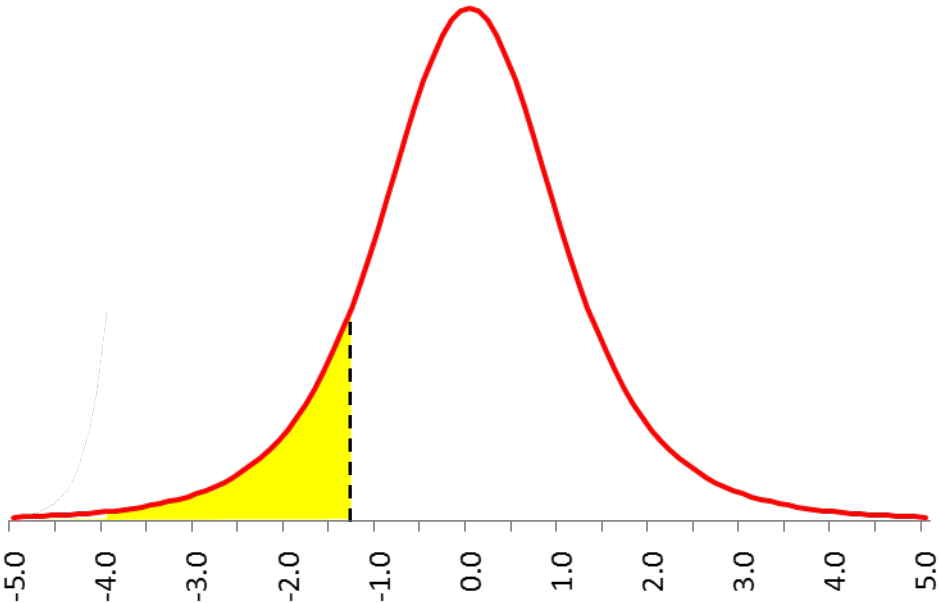

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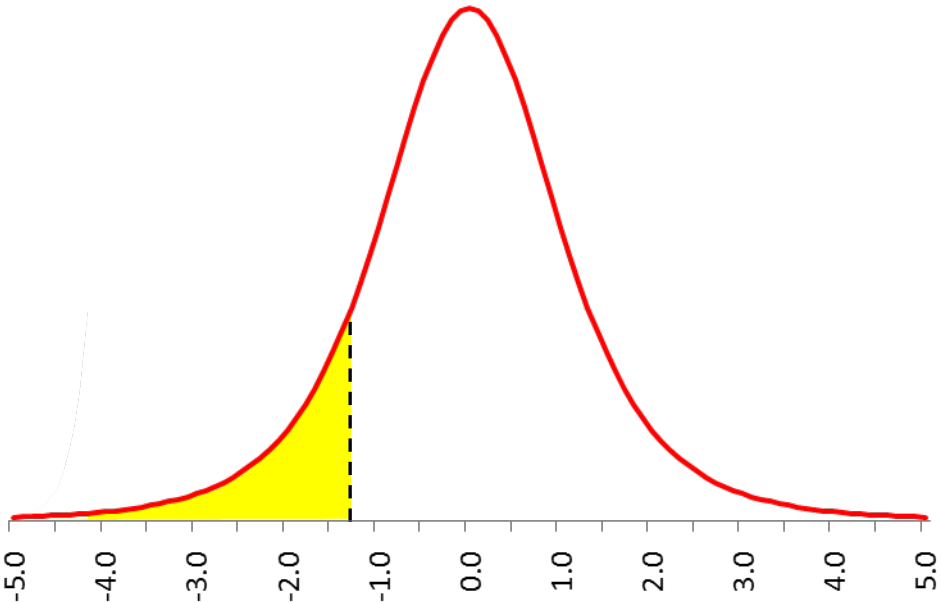

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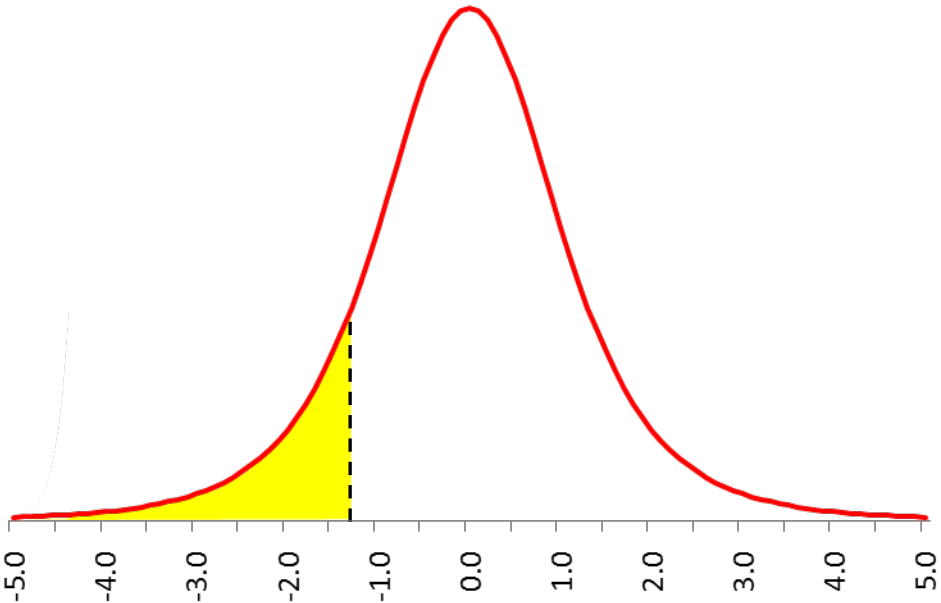

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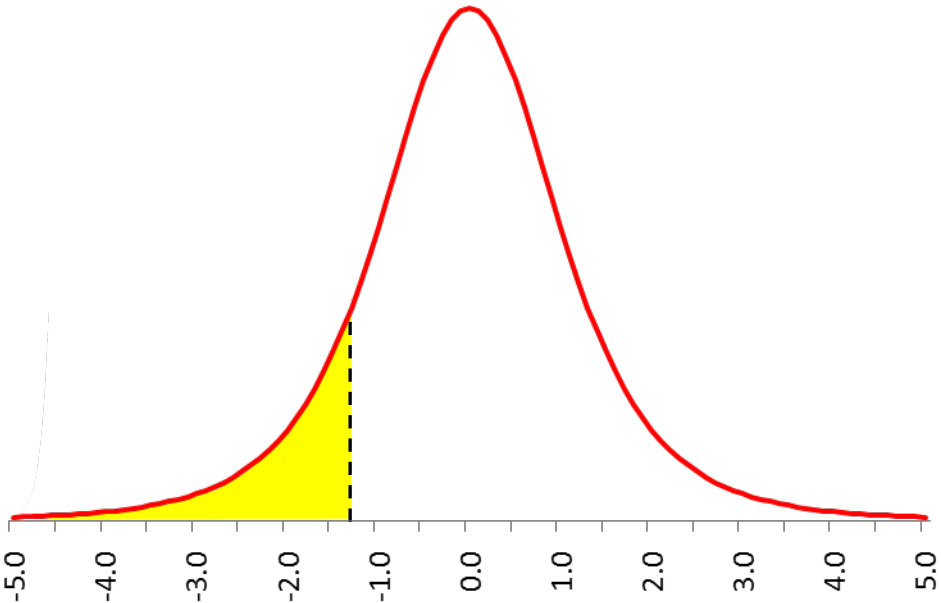

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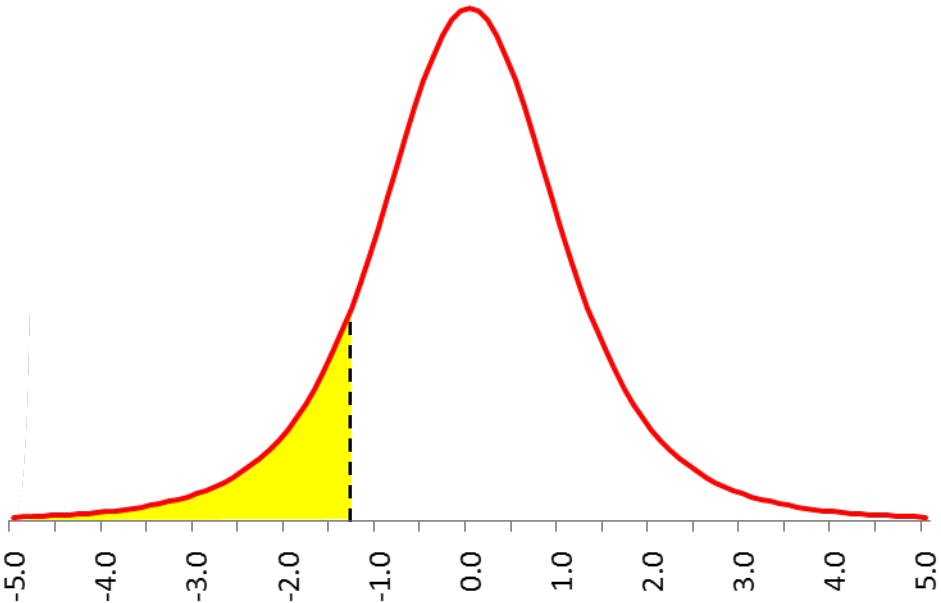

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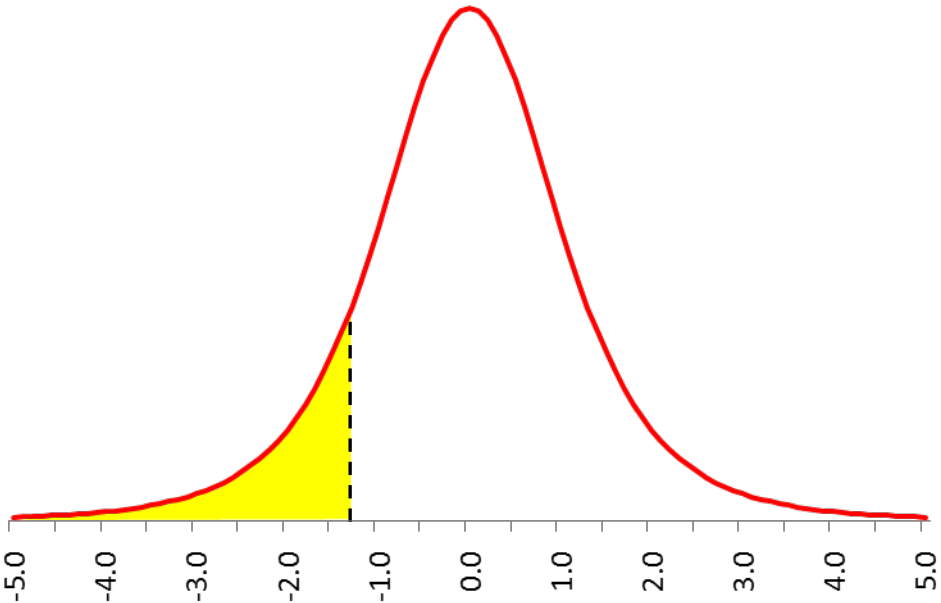

The *t* Distribution, T.DIST function

Syntax:

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=T.DIST(x, df, TRUE)
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=T.DIST(1.3, 21, TRUE)
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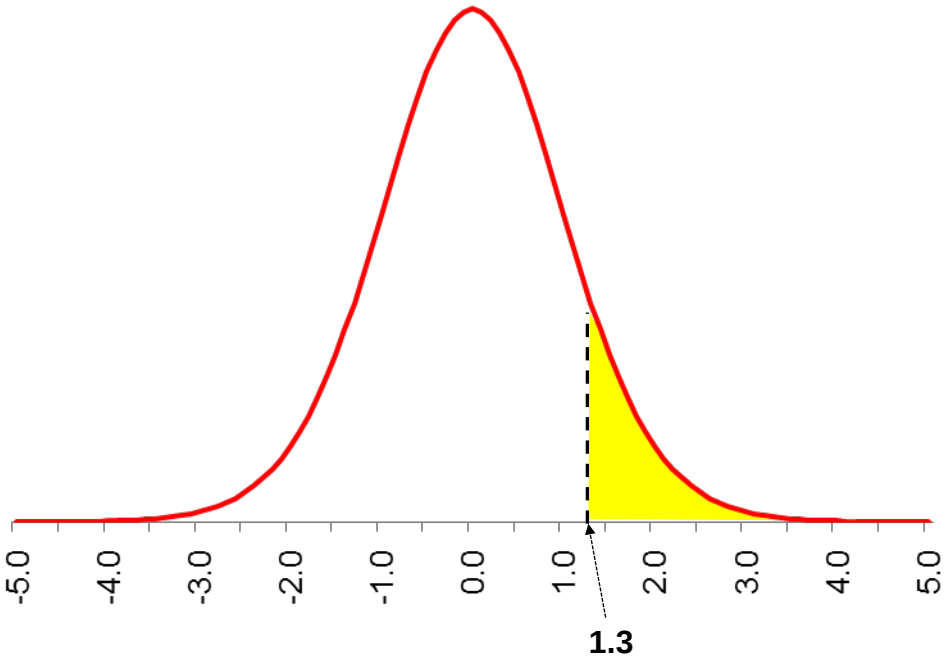

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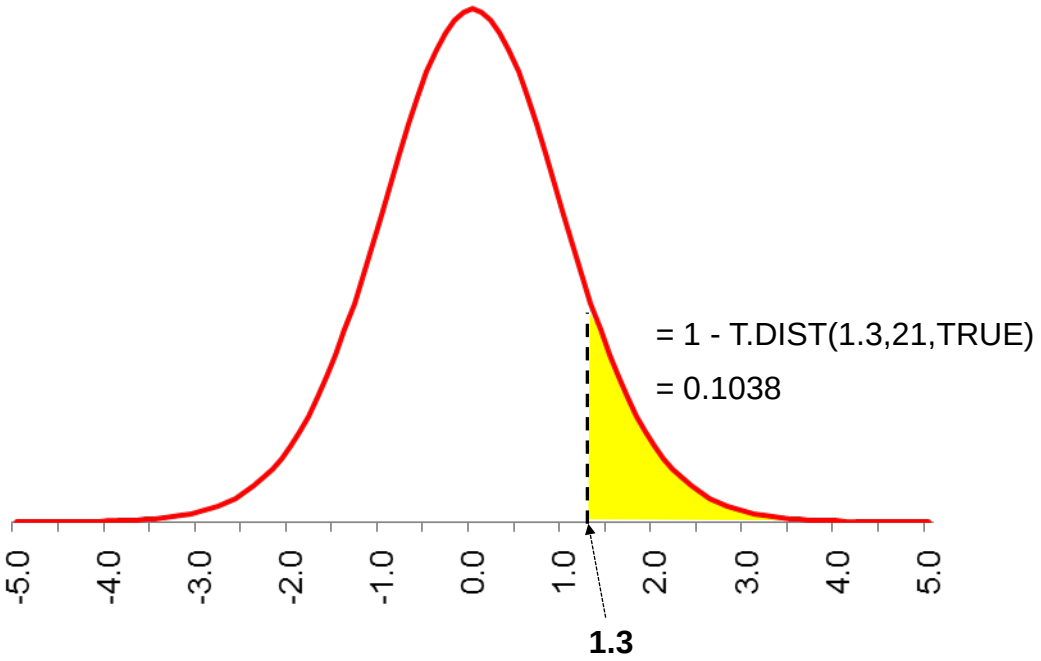
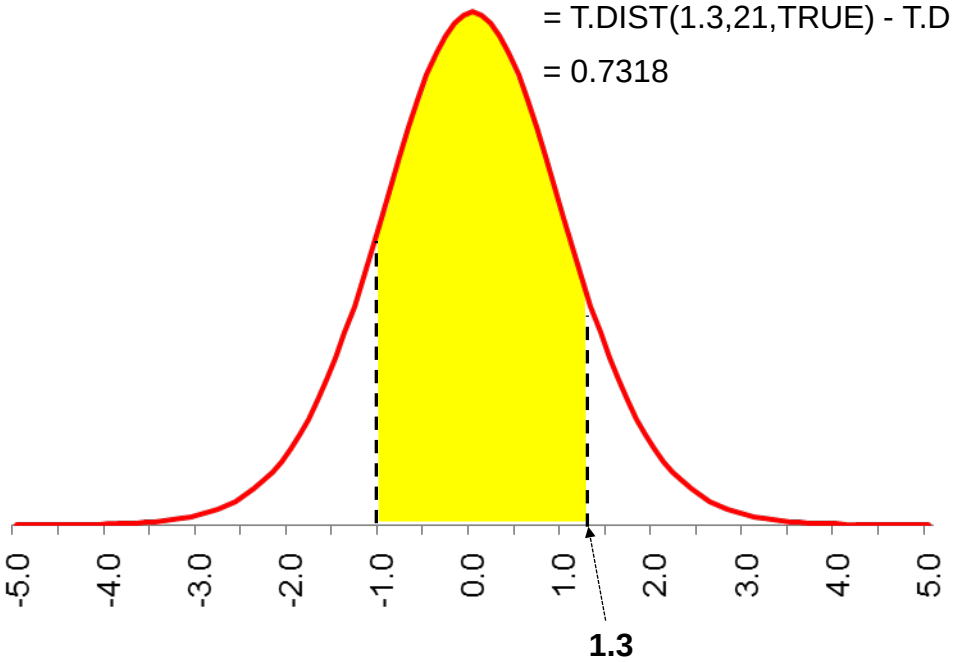


The *t* Distribution, T.DIST function

= T.DIST(1.3,21,TRUE) - T.DIST(-1,21,TRUE)

= 0.7318



The *t* Distribution, T.DIST function

Syntax:

```
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```

We will **never** use the T.DIST function with the "FALSE" option

The *t* Distribution, degrees of freedom

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- It is the parameter of the t-distribution

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- It is the parameter of the t-distribution

- A mathematical constraint imposed by the data
  - linked to size of data being used
  - larger set of data would have greater degrees of freedom
  - as degrees of freedom increase the t-distribution becomes closer and closer to the standard normal distribution