

# “How can I plot a Log-Normal Distribution in Excel?”

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## RECOMMENDED CITATION

stats writer (2024). “How can I plot a Log-Normal Distribution in Excel?”. PSYCHOLOGICAL SCALES. Retrieved from <https://scales.arabpsychology.com/?p=156374>

To plot a Log-Normal Distribution in Excel, follow these steps:

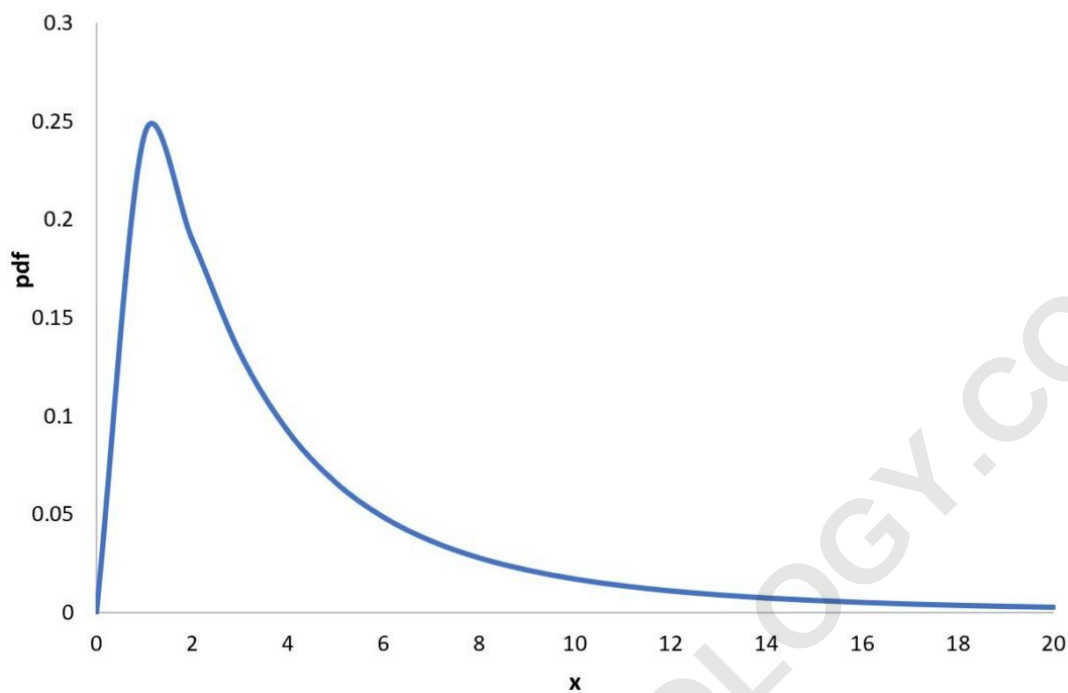
1. Enter your data into a new Excel spreadsheet, with one column containing the values and another column containing the corresponding frequencies.
2. Select the entire data set and click on the "Insert" tab in the menu bar.
3. In the Charts section, click on the "Insert Scatter (X, Y) or Bubble Chart" option.
4. A scatter plot chart will be generated. Right-click on any of the data points and select "Add Trendline" from the drop-down menu.
5. In the Format Trendline window, select the "Logarithmic" option under the "Trendline Options" tab.
6. Click on the "Display Equation on chart" and "Display R-squared value on chart" options to show the equation and R-squared value on the graph.
7. Click "Close" to exit the Format Trendline window.
8. Your scatter plot will now show a curved trendline representing the Log-Normal Distribution.
9. To customize the chart, you can change the axis labels, add a title, and adjust the formatting as desired.

By following these steps, you can easily plot a Log-Normal Distribution in Excel for your data set. This allows for visually representing the distribution and analyzing its characteristics in a clear and organized manner.

## Plot a Log-Normal Distribution in Excel

**This step-by-step tutorial explains how to plot the following log-normal distribution in Excel:**

### Log-Normal Distribution ( $\mu=1$ , $\sigma=1$ )



#### Step 1: Define the X Values

First, let's define a range of x-values to use for our plot.

|    | A    | B | C | D | E | F |
|----|------|---|---|---|---|---|
| 1  | x    |   |   |   |   |   |
| 2  | 0.01 |   |   |   |   |   |
| 3  | 1    |   |   |   |   |   |
| 4  | 2    |   |   |   |   |   |
| 5  | 3    |   |   |   |   |   |
| 6  | 4    |   |   |   |   |   |
| 7  | 5    |   |   |   |   |   |
| 8  | 6    |   |   |   |   |   |
| 9  | 7    |   |   |   |   |   |
| 10 | 8    |   |   |   |   |   |
| 11 | 9    |   |   |   |   |   |
| 12 | 10   |   |   |   |   |   |
| 13 | 11   |   |   |   |   |   |
| 14 | 12   |   |   |   |   |   |
| 15 | 13   |   |   |   |   |   |
| 16 | 14   |   |   |   |   |   |
| 17 | 15   |   |   |   |   |   |
| 18 | 16   |   |   |   |   |   |
| 19 | 17   |   |   |   |   |   |
| 20 | 18   |   |   |   |   |   |
| 21 | 19   |   |   |   |   |   |
| 22 | 20   |   |   |   |   |   |
| 23 |      |   |   |   |   |   |
| 24 |      |   |   |   |   |   |
| 25 |      |   |   |   |   |   |

## Step 2: Calculate the Y Values

The y values on the plot will represent the PDF values associated with the log-normal distribution.

We can type the following formula into cell B2 to calculate the PDF value of the log-normal distribution associated with an x value of 0.01, a mean value of 1, and a standard deviation of 1:

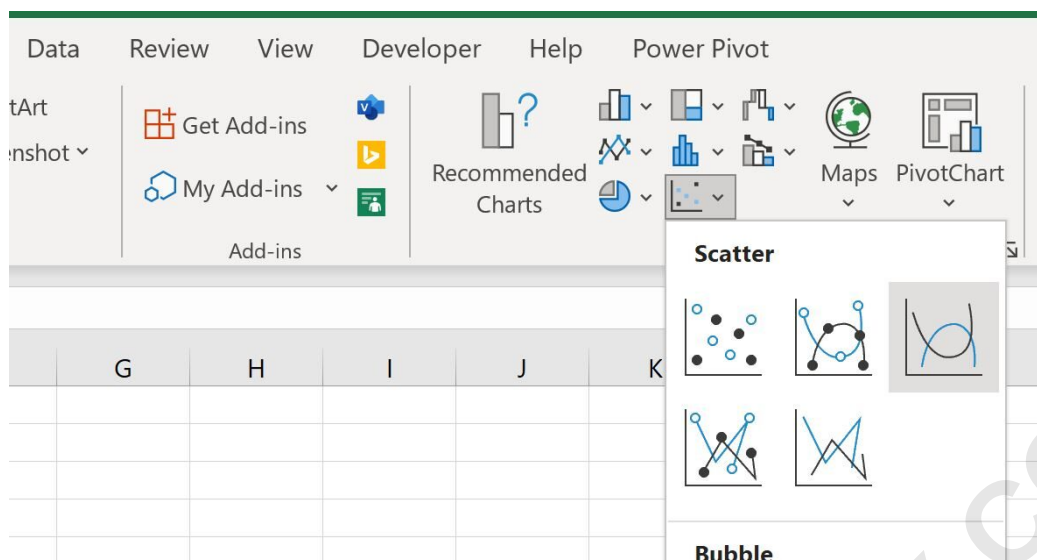
**=LOGNORM.DIST(A2, \$E\$1, \$E\$2, FALSE)**

**We can then copy and paste this formula down to every remaining cell in column B:**

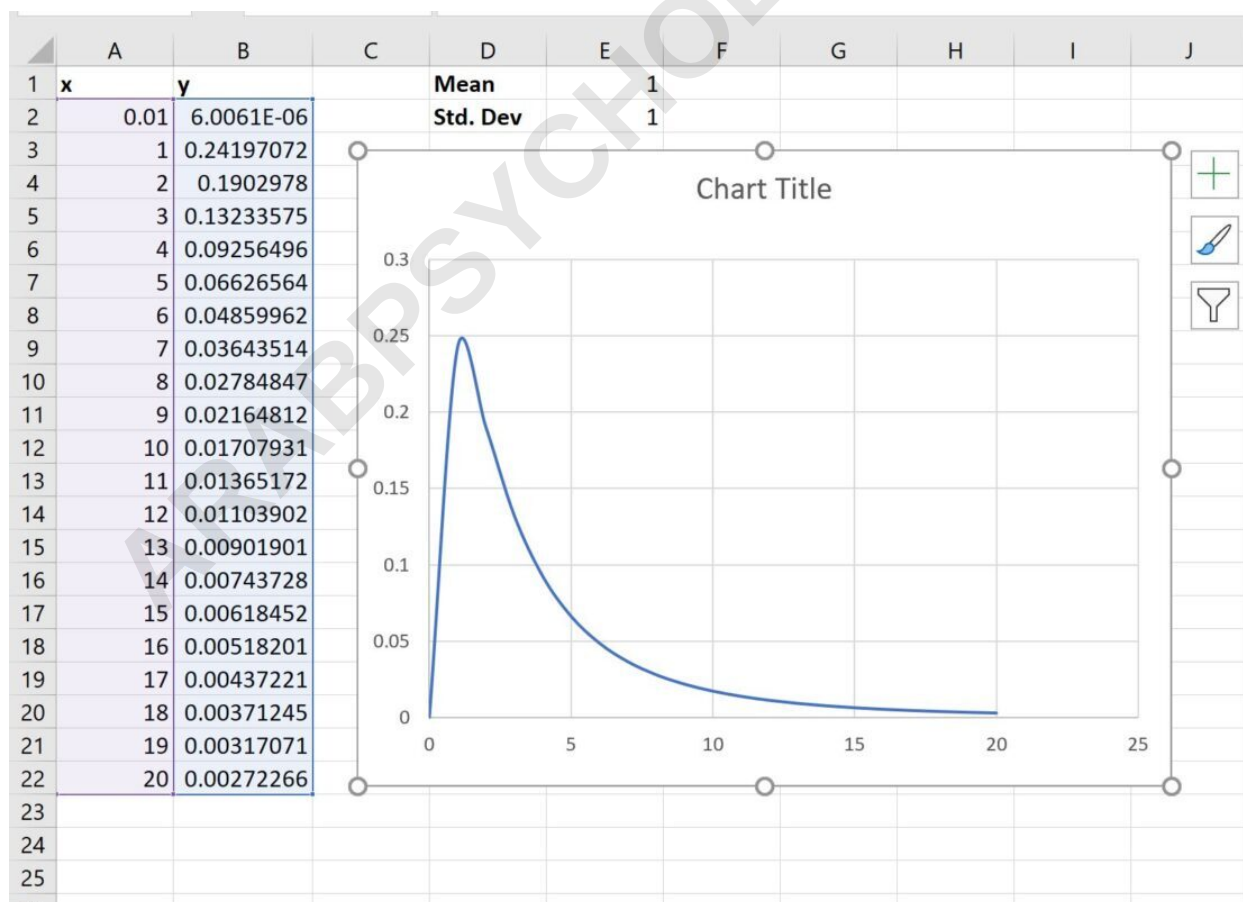
| B2                                      |      |            |   |          |   |   |   |
|-----------------------------------------|------|------------|---|----------|---|---|---|
| =LOGNORM.DIST(A2,\$E\$1, \$E\$2, FALSE) |      |            |   |          |   |   |   |
|                                         | A    | B          | C | D        | E | F | G |
| 1                                       | x    | y          |   | Mean     | 1 |   |   |
| 2                                       | 0.01 | 6.0061E-06 |   | Std. Dev | 1 |   |   |
| 3                                       | 1    | 0.24197072 |   |          |   |   |   |
| 4                                       | 2    | 0.1902978  |   |          |   |   |   |
| 5                                       | 3    | 0.13233575 |   |          |   |   |   |
| 6                                       | 4    | 0.09256496 |   |          |   |   |   |
| 7                                       | 5    | 0.06626564 |   |          |   |   |   |
| 8                                       | 6    | 0.04859962 |   |          |   |   |   |
| 9                                       | 7    | 0.03643514 |   |          |   |   |   |
| 10                                      | 8    | 0.02784847 |   |          |   |   |   |
| 11                                      | 9    | 0.02164812 |   |          |   |   |   |
| 12                                      | 10   | 0.01707931 |   |          |   |   |   |
| 13                                      | 11   | 0.01365172 |   |          |   |   |   |
| 14                                      | 12   | 0.01103902 |   |          |   |   |   |
| 15                                      | 13   | 0.00901901 |   |          |   |   |   |
| 16                                      | 14   | 0.00743728 |   |          |   |   |   |
| 17                                      | 15   | 0.00618452 |   |          |   |   |   |
| 18                                      | 16   | 0.00518201 |   |          |   |   |   |
| 19                                      | 17   | 0.00437221 |   |          |   |   |   |
| 20                                      | 18   | 0.00371245 |   |          |   |   |   |
| 21                                      | 19   | 0.00317071 |   |          |   |   |   |
| 22                                      | 20   | 0.00272266 |   |          |   |   |   |
| 23                                      |      |            |   |          |   |   |   |
| 24                                      |      |            |   |          |   |   |   |

### Step 3: Plot the Log-Normal Distribution

**Next, highlight the cell range A2:B22, then click the Insert tab along the top ribbon, then click the Scatter option within the Charts group and click Scatter with Smooth Lines:**



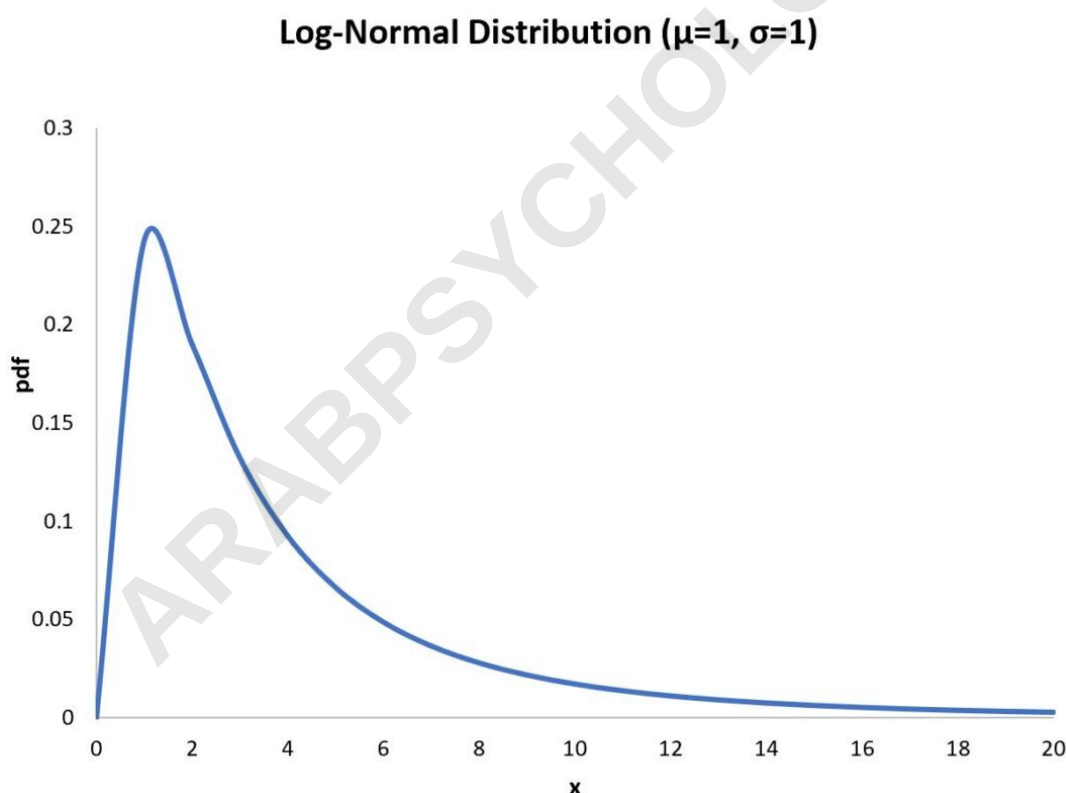
The following chart will be created:



The x-axis shows the values of a that follows a log-normal distribution with a mean value of 1 and a standard deviation of 1 and the y-axis shows the corresponding PDF values of the log-normal distribution.

#### Step 4: Modify the Appearance of the Plot

Feel free to add a title, axis labels, and remove the gridlines to make the plot more aesthetically pleasing:



#### Additional Resources

The following tutorials explain how to plot other

## common distributions in Excel:

ARABPSYCHOLOGY.COM