

3.1 Binomial Distribution using Excel Spreadsheet Provided

Excel Spreadsheet: [Discrete ProbabilityALL.xlsx](#)

Another way to download the Excel Workbook is to [click here](#).

How to use the Excel Spreadsheet Provided

To compute the probability of an event using the Excel spreadsheet provided

- First, download the Excel spreadsheet.
- Then click on the Binomial Probability Distrib tab.
- Then enter the sample size in cell B1, and enter the probability of success in cell B2. Hit the Enter key to recalculate the spreadsheet.

Example 1

Suppose the probability that a customer will purchase your product if they stay more than ten minutes on your website is 0.68. You take a sample of 20 people and you want to know what is the probability that exactly twelve people will make a purchase, $P(X = 12)$.

To compute the probability do the following.

- Enter the sample size (n), 20, in cell B1.
- Enter the probability of success, 0.68, in cell B2.
- Move down column A to $x = 12$, in cell A16.
- Then move to the right to column B16, 0.1354.
- $P(X = 12) = 0.1354$.
- In column C, the $P(X \leq 12)$ is 0.2922. This value is equal to all the probabilities from $x = 0$ to $x = 12$. Sum the probabilities from cells B5 to B17.
- To determine the mean, variance, and standard deviation, look at cells F1 thru F3.
 - The mean is in cell F1, 13.60.
 - The variance is in cell F2, 4.352.
 - The standard deviation is in cell F3, 2.09.

Example 2

Suppose you ten people visited Company ABC's website. In the past, 49% of the people who visited the website made a purchase. Determine the following:

- The average number of people who will make a purchase;
- The standard deviation of the people who will make a purchase;
- The probability that exactly five people will make a purchase;
- The likelihood that less than four people made a purchase; and
- Compute the probability that at least six people make a purchase.

First, click the Binomial Probability Distrib. tab at the bottom of the Excel spreadsheet. Note the following.

- Enter 10 in the sample size cell B1 and hit the Enter key.
- Enter 0.49 in the probability of success cell B2 and hit the Enter key.
 - To delete a value in a cell, double click the cell and hit the backspace button.
- The average number of people who will make a purchase is in cell F1, 4.90.
- The standard deviation of the people who will make a purchase is in cell F3, 1.58.

- $P(X = 5)$ is in cell B10, 0.2456.
- $P(X < 4) = P(X \leq 3)$. The cell with the probability is in cell C8, 0.1888.
- $P(X \geq 6) = 1 - P(X \leq 5)$. Subtract the value in cell C10, 0.6474 from 1. The value is $1 - 0.6474 = 0.3526$

View the video below to see how to use the Excel Spreadsheet provided to compute binomial probabilities.

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