

Frequency Distribution ^[1]

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Frequency distribution is a curve that gives us the frequency of the occurrence of a particular data point in an experiment. This is usually the limit of a histogram of frequencies when the data points are very large and the results can be treated to be varying continuously instead of taking on discrete values.

A frequency distribution gives us an idea about how frequently a given data point occurs and how probable it is to occur.

Frequency distribution is related to probability distribution. While a frequency distribution gives the exact frequency or the number of times a data point occurs, a probability distribution gives the probability of occurrence of the given data point. When the number of test cases are large, the frequency distribution and the probability distributions are similar in shape.

For example, consider a fair coin that is tossed four times. We want to derive the frequency distribution for the number of heads that can occur. There are different possibilities, through which these heads might occur, which are summarized in the table below:

No. of Heads	Value of the four coin flips	Total number of ways of getting a head
0	T - T - T - T	1
1	H - T - T - T T - H - T - T T - T - H - T T - T - T - H	4
2	H - H - T - T H - T - H - T H - T - T - H T - H - H - T T - H - T - H T - T - H - H	6
3	T - H - H - H H - T - H - H H - H - T - H H - H - H - T	4

4	H - H - H - H	1
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The frequency distribution is easy to see. On an average, if the number of flips are very high, then out of every 16 coin flips, 1 will end up with 0 heads, 4 will end up with 4 heads, 6 will end up with 2 heads, 4 will end up with 3 heads and 1 will end up as all 4 heads. This of course is assuming that the coin used for the experiment is a fair coin, with an equal probability of a head and tail on any given flip.

In the above case, the coin is flipped only 4 times. If the coin is tossed many more times, like say 100 times, and the frequency distribution drawn, it will be exactly like a normal probability distribution [3] in shape.

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Links

[1] <https://staging.explorable.com/frequency-distribution>

[2] <https://staging.explorable.com/>

[3] <https://staging.explorable.com/normal-probability-distribution>