



Multinomial Distribution

[< Previous](#)[Next >](#)

Multinomial Distribution

Multinomial distribution is a generalization of binomial distribution.

It describes outcomes of multi-nomial scenarios unlike binomial where scenarios must be only one of two. e.g. Blood type of a population, dice roll outcome.

It has three parameters:

n - number of possible outcomes (e.g. 6 for dice roll).

pvals - list of probabilities of outcomes (e.g. [1/6, 1/6, 1/6, 1/6, 1/6, 1/6] for dice roll).

size - The shape of the returned array.

Example

Draw out a sample for dice roll:

```
from numpy import random

x = random.multinomial(n=6, pvals=[1/6, 1/6, 1/6, 1/6, 1/6, 1/6])

print(x)
```

Try it Yourself »

Note: Multinomial samples will NOT produce a single value! They will produce one value for each **pval**.

Note: As they are generalization of binomial distribution their visual representation and similarity of normal distribution is same as that of multiple binomial distributions.

◀ Previous

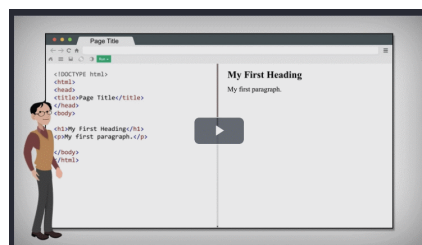
Next ▶



ADVERTISEMENT

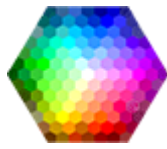
NEW

We just launched
W3Schools videos



[Explore now](#)

COLOR PICKER



Get certified
by completing
a Python
course today!



Get started

CODE GAME



Play Game

ADVERTISEMENT



[Report Error](#)

[Spaces](#)

[Pro](#)

[Get Certified](#)

Top Tutorials

[HTML Tutorial](#)
[CSS Tutorial](#)
[JavaScript Tutorial](#)
[How To Tutorial](#)
[SQL Tutorial](#)
[Python Tutorial](#)
[W3.CSS Tutorial](#)
[Bootstrap Tutorial](#)
[PHP Tutorial](#)
[Java Tutorial](#)

[C++ Tutorial](#)
[jQuery Tutorial](#)

Top References

[HTML Reference](#)
[CSS Reference](#)
[JavaScript Reference](#)
[SQL Reference](#)
[Python Reference](#)
[W3.CSS Reference](#)
[Bootstrap Reference](#)
[PHP Reference](#)
[HTML Colors](#)
[Java Reference](#)
[Angular Reference](#)
[jQuery Reference](#)

Top Examples

[HTML Examples](#)
[CSS Examples](#)
[JavaScript Examples](#)
[How To Examples](#)
[SQL Examples](#)
[Python Examples](#)
[W3.CSS Examples](#)
[Bootstrap Examples](#)
[PHP Examples](#)
[Java Examples](#)
[XML Examples](#)
[jQuery Examples](#)

Get Certified

[HTML Certificate](#)
[CSS Certificate](#)
[JavaScript Certificate](#)
[Front End Certificate](#)
[SQL Certificate](#)
[Python Certificate](#)
[PHP Certificate](#)
[jQuery Certificate](#)
[Java Certificate](#)
[C++ Certificate](#)
[C# Certificate](#)
[XML Certificate](#)

[FORUM](#) | [ABOUT](#)

W3Schools is optimized for learning and training. Examples might be simplified to improve reading and learning. Tutorials, references, and examples are constantly reviewed to avoid errors, but we cannot warrant full correctness of all content. While using W3Schools, you agree to have read and accepted our [terms of use](#), [cookie and privacy policy](#).

