# **Exponential Continuous Distribution**

Definition:

The Exponential distribution is a continuous probability distribution that often concerns the amount of time until some specific event happens. It is a process in which events happen continuously and independently at a constant average rate.

A blue line graph with numbers

Description automatically generated A blue curve with white text

Description automatically generated

PDF:

A math equations and numbers

Description automatically generated with medium confidence

CDF:

A mathematical equation with numbers and symbols

Description automatically generated

Mean:

A black and white math equation

Description automatically generated

Variance:

A math equation with black text

Description automatically generated

The code:

* The code imports the necessary libraries and modules for performing statistical analysis on data following an exponential distribution.

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* Now, we set Random numbers it’s size 1000

Exponential distribution using expon .rvs() function which scale is set to 2.0 ,which is 𝜆 value is 1/scale=0.5

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* Calculating statistics such as mean , variance, standard deviation and median using function from expon class.

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Output

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Description automatically generated

* Calculating the Cumulative distribution function (CDF) at a given value using functions from the expon

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Output

A number on a black background

Description automatically generated

The code generates plots of the probability density function (PDF) and cumulative distribution function (CDF) of the exponential distribution. It creates an array of x values using np.linspace() 1000 values between 0 and 10 and calculates the corresponding PDF and CDF values using expon.pdf() and expon.cdf().

A screenshot of a computer code

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**PDF:**

A screen shot of a graph

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**CDF:**

A screen shot of a graph

Description automatically generated

Function plot\_cdf :

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Function plot\_pdf :

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