Stats Distributions Overview

Roadmap

Distribution Function Name	Difficulty Level	Priority	Description	Referrence Implementation
Anglit	difficulty: 2	Normal	The anglit distribution is **a continuous probability distribution defined on the interval** Pi/4, Pi/4.	scipy.stats.anglit
Arcsine	difficulty: 2	Normal	In probability theory, the **arcsine distribution** is the probability distribution whose cumulative distribution function involves the arcsine and the square root.	Arcsine Wikipedia
Burr (type III & XII	difficulty: 2	Normal	the **Burr Type III, XII distribution** or simply the **Burr distribution** is a continuous probability distribution for a non-negative random variable. It is also known as the **Singh–Maddala distribution**	Wikipedia & scipy.stats.burr
Chi & Chisquare	difficulty: 2	Normal	**chi distribution** is a continuous probability distribution over the non-negative real line. It is the distribution of the positive square root of a sum of squared	Wikipedia.Chi & Wikipedia.Chisquare
Distribution Function Name	Difficulty Level	Priority	Description	Referrence Implementation

			independent Gaussian random variables. the **χ2 distribution** with k degrees of freedom is the distribution of a sum of the squares of k independent standard normal random variables.	
Dagum	difficulty: 2 difficulty: 3 needs-discussion	Normal	The **Dagum distribution** (or Mielke Beta-Kappa distribution) is a continuous probability distribution defined over positive real numbers.	Wikipedia
Double-Weibull	difficulty: 2 difficulty: 3	Normal	The double Weibull distribution is a flexible probability distribution, often defined as a distribution reflected about 0, extending the standard Weibull model to negative values, or as a combination of two Weibull distributions, sometimes called a bimodal or double-weighted Weibull.	scipy.stats.dweibull
Erlang	difficulty: 2 difficulty: 3 needs-discussion	Normal	The **Erlang distribution** is a two-parameter family of continuous probability distributions with support x∈ (0, ∞). The two parameters are: • a positive integer k, the "shape", and • a positive real number λ, the "rate". The "scale", β, the reciprocal of the rate, is sometimes used instead.	Wikipedia & scipy.stats.erlang
F & Fretchet	difficulty: 2 difficulty: 3 needs-discussion	Normal	The **Fréchet derivative** is **a generalization of the ordinary derivative from real-valued functions of a single real variable to functions acting on normed vector spaces**	Wikipedia.F & Wikipedia.Frechet
Gamma	difficulty: 3 needs-discussion	Normal	The gamma distribution is **a two-parameter family of continuous probability distributions used to model non-negative, skewed data**, such as waiting times until a specific number of Poisson-distributed events	`gamma/*` JS implementation
Distribution Function Name	Difficulty Level	Priority	Description	Referrence Implementation

Gilbrat	difficulty: 2	Normal	Gilbrat Distribution is a continuous distribution being a special case of the log-normal with σ 1 and S 1.0 (typically also L 0.0).	scipy.gilbrat
Hypergeometric	difficulty: 2	Normal	The hypergeometric random variable with parameters counts the number of “good” objects in a sample of size chosen without replacement from a population of objects where is the number of “good” objects in the total population.	scipy.stats.hypergeometric
Log-logistic	difficulty: 2	Normal	**log-logistic distribution** (known as the **Fisk distribution** in economics) is a continuous probability distribution for a non-negative random variable. It is used in survival analysis as a parametric model for events whose rate increases initially and decreases later,	Wikipedia.Log_Logistic
Lognormal	difficulty: 2 difficulty: 3	Normal	**log-normal** (or **lognormal**) **distribution** is a continuous probability distribution of a random variable whose logarithm is normally distributed. Thus, if the random variable *X* is log-normally distributed, then *Y* = ln *X* has a normal distribution.	`lognormal/*` JS Implementations Wikipedia.Lognormal
Poisson	difficulty: 2 difficulty: 3	Normal	**Poisson distribution** is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known constant mean rate and independently of the time since the last event.	scipy.stats.poisson & Wikipedia.Poisson
Distribution Function Name	Difficulty Level	Priority	Description	Referrence Implementation

Rademacher	difficulty: 2	Normal	**Rademacher distribution** (which is named after Hans Rademacher) is a discrete probability distribution where a random variate *X* has a 50% chance of being 1 and a 50% chance of being 1.	Wikipedia.Rademacher
Studentized-Range	difficulty: 2 difficulty: 3	Normal	**studentized range distribution** is the continuous probability distribution of the studentized range of a sample from a normally distributed population.	Wikipedia.Studentized_Range
Student's t	difficulty: 2 needs-discussion	Normal	**Student's *t* distribution** (or simply the ***t* distribution**) t_ν is a continuous probability distribution that generalizes the standard normal distribution. Like the latter, it is symmetric around zero and bell-shaped.	Wikipedia.t
Tukey-Lambda	difficulty: 2	Normal	Tukey lambda distribution is a continuous, symmetric probability distribution defined primarily by its quantile function (inverse cumulative distribution function) rather than a simple probability density function. Used largely for data analysis, it uses a shape parameter, to identify or model a variety of distributions (e.g., normal, logistic, Cauchy)	scipy.stats.tukey_lambda
Wald (Inverse-Gaussian)	difficulty: 2	Normal	the **inverse Gaussian distribution** (also known as the **Wald distribution**) is a two-parameter family of continuous probability distributions with support on $(0, \infty)$.	Wikipedia.Wald

Anglit

Difficulty Level	difficulty: 2
Description	The anglit distribution is **a continuous probability distribution defined on the interval** [-Pi/4, Pi/4].
Priority	Normal
Referrence Implementation	scipy.stats.anglit

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10596	Open	`sin`	difficulty: 2	scipy.stats
entropy	#10620	Open	`ln`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started		difficulty: 2	scipy.stats
logcdf	NA	Not Started	`sin` & `log`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `cos`	difficulty: 2	scipy.stats
mean	#10627	Open	NA	difficulty: 2	scipy.stats
median	#10628	Open	NA	difficulty: 2	scipy.stats
mode	#10629	Open	NA	difficulty: 2	scipy.stats
mgf	NA	Not Started	`exp` & `cos`	difficulty: 2	
pdf	#9978	Open	`cos`	difficulty: 2	scipy.stats
quantile	#10176	Open	`asin` & `sqrt`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
stdev	NA	Not Started	`sqrt`	difficulty: 2	scipy.stats
variance	NA	Not Started	`pow`	difficulty: 2	scipy.stats

Arcsine

Difficulty Level	difficulty: 2
Description	In probability theory, the **arcsine distribution** is the probability distribution whose cumulative distribution function involves the arcsine and the square root.
Priority	Normal
Referrence Implementation	Arcsine_Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	Referance
logcdf	#10739	Open	`asin`, `sqrt` & `ln`	difficulty: 2	Wikipedia

Burr (type III & XII)

Difficulty Level	difficulty: 2
Description	the **Burr Type III, XII distribution** or simply the **Burr distribution** is a continuous probability distribution for a non-negative random variable. It is also known as the **Singh–Maddala distribution**
Priority	Normal
Referrence Implementation	Wikipedia & scipy.stats.burr

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#5916	Open	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
entropy	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
kurtosis	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
logcdf	#6394	Draft	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
mean	NA	Not Started	`beta`	difficulty: 2	Wikipedia & scipy.stats.burr
median	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
mode	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
pdf	#5801	Draft	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
skewness	NA	Not Started	`pow` & `sqrt`	difficulty: 2	Wikipedia & scipy.stats.burr
stdev	NA	Not Started	`sqrt` & `pow` or `sqrt` & `burr-type3/variance`	difficulty: 2	Wikipedia & scipy.stats.burr
variance	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr

Chi & Chisquare

Difficulty Level	difficulty: 2
Description	**chi distribution** is a continuous probability distribution over the non-negative real line. It is the distribution of the positive square root of a sum of squared independent Gaussian random variables. the **χ2-distribution** with k degrees of freedom is the distribution of a sum of the squares of k independent standard normal random variables.
Priority	Normal
Referrence Implementation	Wikipedia.Chi & Wikipedia.Chisquare

Chi

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`sqrt` & `gamma/quantile`	difficulty: 2	Wikipedia

Chisquare

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`gamma/quantile`	difficulty: 2	Wikipedia
median	NA	Not Started	`chisquare/quantile`	difficulty: 2	Wikipedia
pdf	NA		`gamma/pdf`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			

Dagum

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Dagum distribution** (or Mielke Beta-Kappa distribution) is a continuous probability distribution defined over positive real numbers.
Priority	Normal
Referrence Implementation	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	Wikipedia
entropy	NA	Blocked	`ln` , `Harmonic Numbers`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
mean	NA	Not Started	`gamma` or `beta` & `pow`	difficulty: 3	Wikipedia
median	NA	Not Started	`pow`	difficulty: 2	Wikipedia
mode	NA	Not Started	`pow`	difficulty: 2	Wikipedia
pdf	NA		`pow`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia
skewness	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` , `pow` , `gamma` or `dagum/variance` & `sqrt`	difficulty: 3	Wikipedia
variance	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia

Double-Weibull

Difficulty Level	difficulty: 2 difficulty: 3
Description	The double Weibull distribution is a flexible probability distribution, often defined as a distribution reflected about x=0, extending the standard Weibull model to negative values, or as a combination of two Weibull distributions, sometimes called a bimodal or double-weighted Weibull.
Priority	Normal
Referrence Implementation	scipy.stats.dweibull

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`abs` & `exp`	difficulty: 2	scipy.stats.dweibull
entropy	NA	Not Started	`log` , `gamma` & `exp`	difficulty: 2	scipy.stats.dweibull
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats.dweibull
logcdf	NA	Not Started	`log` , `abs` & `exp`	difficulty: 2	scipy.stats.dweibull
logpdf	NA	Not Started	`log` , `abs` , `pow` , `exp` (optional)	difficulty: 2	scipy.stats.dweibull
mean	#10900	Open	NA	difficulty: 2	scipy.stats.dweibull
median	NA	Not Started	NA	difficulty: 2	scipy.stats.dweibull
mode	#1090	Open	NA	difficulty: 2	scipy.stats.dw

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
	2				eibull
pdf	NA	Not Started	`pow` , `abs` & `exp`	difficulty: 2	scipy.stats.dweibull
quantile	NA	Not Started	`pow` & `log`	difficulty: 3	scipy.stats.dweibull
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats.dweibull
stdev	NA	Not Started	`sqrt` & `gamma`	difficulty: 2	scipy.stats.dweibull
variance	NA	Not Started	`gamma`	difficulty: 3	scipy.stats.dweibull

Erlang

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Erlang distribution** is a two-parameter family of continuous probability distributions with support x∈[0,∞). The two parameters are: • a positive integer k, the "shape", and • a positive real number λ, the "rate". The "scale", β, the reciprocal of the rate, is sometimes used instead.
Priority	Normal
Referrence Implementation	Wikipedia & scipy.stats.erlang

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow` & `sum` or `gamma/cdf`	difficulty: 3	Wikipedia & scipy.stats.erlang
logpdf	#10719	Open	`gamma/logpdf`	difficulty: 2	Wikipedia & scipy.stats.erlang
pdf	#10554	Open	`gamma/pdf`	difficulty: 3	Wikipedia & scipy.stats.erlang
quantile	NA	Blocked	`gamma/quantile`	difficulty: 2	Wikipedia & scipy.stats.erlang

F & Fretchet

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Fréchet derivative** is **a generalization of the ordinary derivative from real-valued functions of a single real variable to functions acting on normed vector spaces**
Priority	Normal
Referrence Implementation	Wikipedia.F & Wikipedia.Fretchet

F-distributions

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`betainc` & `beta`	difficulty: 2	Wikipedia
pdf	#10136	Open	`gamma_lanczos_sum_expg_scaled` , `expm1` , `log1p` , `sqrt` , `abs` , `exp` , `pow` , `max` , `min` & `ln`	difficulty: 3	Wikipedia
quantile	NA	Not Started	`kernel-betaincinv`	difficulty: 2	Wikipedia

Frechet-distribution

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
pdf	#10843	Open	`exp`	difficulty: 2	Wikipedia

Gilbrat

Difficulty Level	difficulty: 2
Description	Gilbrat Distribution is a continous distribution being a special case of the log-normal with σ=1 and S=1.0 (typically also L=0.0).
Priority	Normal
Referrence Implementation	scipy.gilbrat

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`erf` & `log`	difficulty: 2	scipy.stats
entropy	NA	Not Started	`log`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started	`pow`	difficulty: 2	scipy.stats
logcdf	NA	Not Started	`erf` & `log`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
mean	#9879	Open	`sqrt`	difficulty: 2	scipy.stats
median	NA	Not Started	NA	difficulty: 2	scipy.stats
mode	NA	Not Started	`exp` or `pow`	difficulty: 2	scipy.stats
pdf	NA	Not Started	`erfinv` & `exp`	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`asin` & `sqrt`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats
stdev	NA	Not Started	`sqrt`	difficulty: 2	scipy.stats
variance	#9987	Open	NA	difficulty: 2	scipy.stats

Hypergeometric

Difficulty Level	difficulty: 2
Description	The hypergeometric random variable with parameters counts the number of “good” objects in a sample of size chosen without replacement from a population of objects where is the number of “good” objects in the total population.
Priority	Normal
Referrence Implementation	scipy.stats.hypergeometric

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10341	Open	`trunc` , `max` & `min`	difficulty: 2	scipy.stats
kurtosis	#10360	Open	NA	difficulty: 2	scipy.stats
quantile	#10904	Draft	`max` & `min`	difficulty: 2	scipy.stats

Log-logistic

Difficulty Level	difficulty: 2
Description	**log-logistic distribution** (known as the **Fisk distribution** in economics) is a continuous probability distribution for a non-negative random variable. It is used in survival analysis as a parametric model for events whose rate increases initially and decreases later,
Priority	Normal
Referrence Implementation	Wikipedia.Log_Logistic

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	Wikipedia
entropy	NA	Not Started	`log` & `sin`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	`pow` & `sin`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
mean	NA	Not Started	`sin`	difficulty: 2	Wikipedia
median	NA	Not Started	NA	difficulty: 2	Wikipedia
mode	NA		`pow`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			
pdf	NA	Not Started	`pow`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` , `pow` & `sin`	difficulty: 2	Wikipedia
variance	NA	Not Started	`pow` & `sin`	difficulty: 2	Wikipedia

Lognormal

Difficulty Level	difficulty: 2 difficulty: 3
Description	**log-normal** (or **lognormal**) **distribution** is a continuous probability distribution of a random variable whose logarithm is normally distributed. Thus, if the random variable X is log-normally distributed, then $Y =$ ln X has a normal distribution.
Priority	Normal
Referrence Implementation	`lognormal/*` JS Implementations Wikipedia.Lognormal

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10809 & #10883	Open	`normal/cdf` & `ln`	difficulty: 2	`lognormal/cdf` JS Implementation
logcdf	#10882	Open	`erfc` , `erfcx` , `ln` , `log1p` & `abs2`	difficulty: 3	`lognormal/logcdf` JS Implementation
logpdf	#10881	Open	`pow` & `ln`	difficulty: 2	`lognormal/logpdf` JS Implementation

Poisson

Difficulty Level	difficulty: 2 difficulty: 3
Description	**Poisson distribution** is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known constant mean rate and independently of the time since the last event.
Priority	Normal
Referrence Implementation	scipy.stats.poisson & Wikipedia.Poisson

F-distributions (1)

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
pmf	#10839	Open	`exp` , `factorialln` & `ln`	difficulty: 2	scipy.stats.poisson
quantile	NA	Not Started	`erfcinv` , `round` , `sqrt` , `poisson/cdf` optional(`floor`)	difficulty: 3	scipy.stats.poisson

Rademacher

Difficulty Level	difficulty: 2
Description	**Rademacher distribution** (which is named after Hans Rademacher) is a discrete probability distribution where a random variate X has a 50% chance of being +1 and a 50% chance of being −1.
Priority	Normal
Referrence Implementation	Wikipedia.Rademacher

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#245	Open	NA	difficulty: 2	Wikipedia
entropy	NA	Not Started	`ln`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	NA	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log`	difficulty: 2	Wikipedia
mean	#245	Open	NA	difficulty: 2	Wikipedia
median	#245	Open	NA	difficulty: 2	Wikipedia
mgf	NA	Not Started	`cosh`	difficulty: 2	Wikipedia
mode	NA	Not Started	NA	difficulty: 2	Wikipedia
pmf	#245	Open	NA	difficulty: 2	Wikipedia
skewness	NA		`pow`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			
variance	NA	Not Started	pow	difficulty: 2	Wikipedia

Student’s t

Difficulty Level	difficulty: 2 needs-discussion
Description	**Student's *t* distribution** (or simply the ***t* distribution**) ***tv*** is a continuous probability distribution that generalizes the standard normal distribution. Like the latter, it is symmetric around zero and bell-shaped.
Priority	Normal
Referrence Implementation	Wikipedia.t

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow` & `betainc`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`betainc` , `log1p` , `pow` & `ln`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`kernel-betaincinv` , `sign` & `sqrt`	difficulty: 2	Wikipedia

Studentized-Range

Difficulty Level	difficulty: 2
Description	**studentized range distribution** is the continuous probability distribution of the studentized range of an i.i.d. sample from a normally distributed population.
Priority	Normal
Referrence Implementation	Wikipedia.Studentized_Range

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10106	Open	`gammaln` , `round` , `abs` , `pow` , `ln` & `sqrt`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`studentized-range/cdf`	difficulty: 2	Wikipedia

Tukey-Lambda

Difficulty Level	difficulty: 2
Description	Tukey lambda distribution is a continuous, symmetric probability distribution defined primarily by its quantile function (inverse cumulative distribution function) rather than a simple probability density function. Used largely for data analysis, it uses a shape parameter, to identify or model a variety of distributions (e.g., normal, logistic, Cauchy)
Priority	Normal
Referrence Implementation	scipy.stats.tukey_lambda

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	scipy.stats
entropy	NA	Not Started	`ln` & `erf`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
mean	NA	Not Started	NA	difficulty: 2	scipy.stats
median	NA	Not Started	NA	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
mode	#10304	Open	NA	difficulty: 2	scipy.stats
pdf	NA	Not Started	`pow`	difficulty: 2	scipy.stats
quantile	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats
stdev	NA	Not Started	`sqrt` , `pow` & `gamma` or `sqrt` & `tukey-lambda/variance`	difficulty: 2	scipy.stats
variance	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats

Wald (Inverse-Gaussian)

Difficulty Level	difficulty: 2
Description	the **inverse Gaussian distribution** (also known as the **Wald distribution**) is a two-parameter family of continuous probability distributions with support on (0,∞).
Priority	Normal
Referrence Implementation	Wikipedia.Wald

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#9709	Draft	`exp` & `sqrt`	difficulty: 2	Wikipedia
mgf	NA	Not Started	`exp` , `sqrt` & `pow`	difficulty: 2	Wikipedia
mode	#10205	Open	`pow`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` & `pow`	difficulty: 2	Wikipedia

Anglit

Difficulty Level	difficulty: 2
Description	The anglit distribution is **a continuous probability distribution defined on the interval** [-Pi/4, Pi/4].
Priority	Normal
Referrence Implementation	scipy.stats.anglit

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10596	Open	`sin`	difficulty: 2	scipy.stats
entropy	#10620	Open	`ln`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started		difficulty: 2	scipy.stats
logcdf	NA	Not Started	`sin` & `log`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `cos`	difficulty: 2	scipy.stats
mean	#10627	Open	NA	difficulty: 2	scipy.stats
median	#10628	Open	NA	difficulty: 2	scipy.stats
mode	#10629	Open	NA	difficulty: 2	scipy.stats
mgf	NA	Not Started	`exp` & `cos`	difficulty: 2	
pdf	#9978	Open	`cos`	difficulty: 2	scipy.stats
quantile	#10176	Open	`asin` & `sqrt`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
stdev	NA	Not Started	`sqrt`	difficulty: 2	scipy.stats
variance	NA	Not Started	`pow`	difficulty: 2	scipy.stats

Arcsine

Difficulty Level	difficulty: 2
Description	In probability theory, the **arcsine distribution** is the probability distribution whose cumulative distribution function involves the arcsine and the square root.
Priority	Normal
Referrence Implementation	Arcsine_Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	Referance
logcdf	#10739	Open	`asin`, `sqrt` & `ln`	difficulty: 2	Wikipedia

Burr (type III & XII)

Difficulty Level	difficulty: 2
Description	the **Burr Type III, XII distribution** or simply the **Burr distribution** is a continuous probability distribution for a non-negative random variable. It is also known as the **Singh–Maddala distribution**
Priority	Normal
Referrence Implementation	Wikipedia & scipy.stats.burr

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#5916	Open	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
entropy	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
kurtosis	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
logcdf	#6394	Draft	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia & scipy.stats.burr
mean	NA	Not Started	`beta`	difficulty: 2	Wikipedia & scipy.stats.burr
median	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
mode	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
pdf	#5801	Draft	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr
skewness	NA	Not Started	`pow` & `sqrt`	difficulty: 2	Wikipedia & scipy.stats.burr
stdev	NA	Not Started	`sqrt` & `pow` or `sqrt` & `burr-type3/variance`	difficulty: 2	Wikipedia & scipy.stats.burr
variance	NA	Not Started	`pow`	difficulty: 2	Wikipedia & scipy.stats.burr

Chi & Chisquare

Difficulty Level	difficulty: 2
Description	**chi distribution** is a continuous probability distribution over the non-negative real line. It is the distribution of the positive square root of a sum of squared independent Gaussian random variables. the **χ2-distribution** with k degrees of freedom is the distribution of a sum of the squares of k independent standard normal random variables.
Priority	Normal
Referrence Implementation	Wikipedia.Chi & Wikipedia.Chisquare

Chi

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`sqrt` & `gamma/quantile`	difficulty: 2	Wikipedia

Chisquare

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`gamma/quantile`	difficulty: 2	Wikipedia
median	NA	Not Started	`chisquare/quantile`	difficulty: 2	Wikipedia
pdf	NA		`gamma/pdf`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			

Dagum

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Dagum distribution** (or Mielke Beta-Kappa distribution) is a continuous probability distribution defined over positive real numbers.
Priority	Normal
Referrence Implementation	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	Wikipedia
entropy	NA	Blocked	`ln` , `Harmonic Numbers`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
mean	NA	Not Started	`gamma` or `beta` & `pow`	difficulty: 3	Wikipedia
median	NA	Not Started	`pow`	difficulty: 2	Wikipedia
mode	NA	Not Started	`pow`	difficulty: 2	Wikipedia
pdf	NA		`pow`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia
skewness	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` , `pow` , `gamma` or `dagum/variance` & `sqrt`	difficulty: 3	Wikipedia
variance	NA	Not Started	`pow` & `gamma`	difficulty: 2	Wikipedia

Double-Weibull

Difficulty Level	difficulty: 2 difficulty: 3
Description	The double Weibull distribution is a flexible probability distribution, often defined as a distribution reflected about x=0, extending the standard Weibull model to negative values, or as a combination of two Weibull distributions, sometimes called a bimodal or double-weighted Weibull.
Priority	Normal
Referrence Implementation	scipy.stats.dweibull

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`abs` & `exp`	difficulty: 2	scipy.stats.dweibull
entropy	NA	Not Started	`log` , `gamma` & `exp`	difficulty: 2	scipy.stats.dweibull
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats.dweibull
logcdf	NA	Not Started	`log` , `abs` & `exp`	difficulty: 2	scipy.stats.dweibull
logpdf	NA	Not Started	`log` , `abs` , `pow` , `exp` (optional)	difficulty: 2	scipy.stats.dweibull
mean	#10900	Open	NA	difficulty: 2	scipy.stats.dweibull
median	NA	Not Started	NA	difficulty: 2	scipy.stats.dweibull
mode	#1090	Open	NA	difficulty: 2	scipy.stats.dw

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
	2				eibull
pdf	NA	Not Started	`pow` , `abs` & `exp`	difficulty: 2	scipy.stats.dweibull
quantile	NA	Not Started	`pow` & `log`	difficulty: 3	scipy.stats.dweibull
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats.dweibull
stdev	NA	Not Started	`sqrt` & `gamma`	difficulty: 2	scipy.stats.dweibull
variance	NA	Not Started	`gamma`	difficulty: 3	scipy.stats.dweibull

Erlang

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Erlang distribution** is a two-parameter family of continuous probability distributions with support x∈[0,∞). The two parameters are: • a positive integer k, the "shape", and • a positive real number λ, the "rate". The "scale", β, the reciprocal of the rate, is sometimes used instead.
Priority	Normal
Referrence Implementation	Wikipedia & scipy.stats.erlang

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow` & `sum` or `gamma/cdf`	difficulty: 3	Wikipedia & scipy.stats.erlang
logpdf	#10719	Open	`gamma/logpdf`	difficulty: 2	Wikipedia & scipy.stats.erlang
pdf	#10554	Open	`gamma/pdf`	difficulty: 3	Wikipedia & scipy.stats.erlang
quantile	NA	Blocked	`gamma/quantile`	difficulty: 2	Wikipedia & scipy.stats.erlang

F & Fretchet

Difficulty Level	difficulty: 2 difficulty: 3 needs-discussion
Description	The **Fréchet derivative** is **a generalization of the ordinary derivative from real-valued functions of a single real variable to functions acting on normed vector spaces**
Priority	Normal
Referrence Implementation	Wikipedia.F & Wikipedia.Fretchet

F-distributions

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`betainc` & `beta`	difficulty: 2	Wikipedia
pdf	#10136	Open	`gamma_lanczos_sum_expg_scaled` , `expm1` , `log1p` , `sqrt` , `abs` , `exp` , `pow` , `max` , `min` & `ln`	difficulty: 3	Wikipedia
quantile	NA	Not Started	`kernel-betaincinv`	difficulty: 2	Wikipedia

Frechet-distribution

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
pdf	#10843	Open	`exp`	difficulty: 2	Wikipedia

Gilbrat

Difficulty Level	difficulty: 2
Description	Gilbrat Distribution is a continous distribution being a special case of the log-normal with σ=1 and S=1.0 (typically also L=0.0).
Priority	Normal
Referrence Implementation	scipy.gilbrat

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`erf` & `log`	difficulty: 2	scipy.stats
entropy	NA	Not Started	`log`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started	`pow`	difficulty: 2	scipy.stats
logcdf	NA	Not Started	`erf` & `log`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
mean	#9879	Open	`sqrt`	difficulty: 2	scipy.stats
median	NA	Not Started	NA	difficulty: 2	scipy.stats
mode	NA	Not Started	`exp` or `pow`	difficulty: 2	scipy.stats
pdf	NA	Not Started	`erfinv` & `exp`	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`asin` & `sqrt`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats
stdev	NA	Not Started	`sqrt`	difficulty: 2	scipy.stats
variance	#9987	Open	NA	difficulty: 2	scipy.stats

Hypergeometric

Difficulty Level	difficulty: 2
Description	The hypergeometric random variable with parameters counts the number of “good” objects in a sample of size chosen without replacement from a population of objects where is the number of “good” objects in the total population.
Priority	Normal
Referrence Implementation	scipy.stats.hypergeometric

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10341	Open	`trunc` , `max` & `min`	difficulty: 2	scipy.stats
kurtosis	#10360	Open	NA	difficulty: 2	scipy.stats
quantile	#10904	Draft	`max` & `min`	difficulty: 2	scipy.stats

Log-logistic

Difficulty Level	difficulty: 2
Description	**log-logistic distribution** (known as the **Fisk distribution** in economics) is a continuous probability distribution for a non-negative random variable. It is used in survival analysis as a parametric model for events whose rate increases initially and decreases later,
Priority	Normal
Referrence Implementation	Wikipedia.Log_Logistic

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	Wikipedia
entropy	NA	Not Started	`log` & `sin`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	`pow` & `sin`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	Wikipedia
mean	#11221	Open	`sin`	difficulty: 2	Wikipedia
median	#11217	Open	NA	difficulty: 2	Wikipedia
mode	#11224	Open	`pow`	difficulty: 2	Wikipedia
pdf	#11203	Open	`pow`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`pow`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` , `pow` & `sin`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
variance	NA	Not Started	`pow` & `sin`	difficulty: 2	Wikipedia

Lognormal

Difficulty Level	difficulty: 2 difficulty: 3
Description	**log-normal** (or **lognormal**) **distribution** is a continuous probability distribution of a random variable whose logarithm is normally distributed. Thus, if the random variable X is log-normally distributed, then $Y =$ ln X has a normal distribution.
Priority	Normal
Referrence Implementation	`lognormal/*` JS Implementations Wikipedia.Lognormal

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10809 & #10883	Open	`normal/cdf` & `ln`	difficulty: 2	`lognormal/cdf` JS Implementation
logcdf	#10882	Open	`erfc` , `erfcx` , `ln` , `log1p` & `abs2`	difficulty: 3	`lognormal/logcdf` JS Implementation
logpdf	#10881	Open	`pow` & `ln`	difficulty: 2	`lognormal/logpdf` JS Implementation

Poisson

Difficulty Level	difficulty: 2 difficulty: 3
Description	**Poisson distribution** is a discrete probability distribution that expresses the probability of a given number of events occurring in a fixed interval of time if these events occur with a known constant mean rate and independently of the time since the last event.
Priority	Normal
Referrence Implementation	scipy.stats.poisson & Wikipedia.Poisson

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
quantile	NA	Not Started	`erfcinv` , `round` , `sqrt` , `poisson/cdf` optional(`floor`)	difficulty: 3	scipy.stats.poisson

Rademacher

Difficulty Level	difficulty: 2
Description	**Rademacher distribution** (which is named after Hans Rademacher) is a discrete probability distribution where a random variate X has a 50% chance of being +1 and a 50% chance of being −1.
Priority	Normal
Referrence Implementation	Wikipedia.Rademacher

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#245	Open	NA	difficulty: 2	Wikipedia
entropy	NA	Not Started	`ln`	difficulty: 2	Wikipedia
kurtosis	NA	Not Started	NA	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`log`	difficulty: 2	Wikipedia
logpdf	NA	Not Started	`log`	difficulty: 2	Wikipedia
mean	#245	Open	NA	difficulty: 2	Wikipedia
median	#245	Open	NA	difficulty: 2	Wikipedia
mgf	NA	Not Started	`cosh`	difficulty: 2	Wikipedia
mode	NA	Not Started	NA	difficulty: 2	Wikipedia
pmf	#245	Open	NA	difficulty: 2	Wikipedia
skewness	NA		`pow`	difficulty: 2	Wikipedia

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
		Not Started			
variance	NA	Not Started	pow	difficulty: 2	Wikipedia

Student’s t

Difficulty Level	difficulty: 2 needs-discussion
Description	**Student's *t* distribution** (or simply the ***t* distribution**) ***tv*** is a continuous probability distribution that generalizes the standard normal distribution. Like the latter, it is symmetric around zero and bell-shaped.
Priority	Normal
Referrence Implementation	Wikipedia.t

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow` & `betainc`	difficulty: 2	Wikipedia
logcdf	NA	Not Started	`betainc` , `log1p` , `pow` & `ln`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`kernel-betaincinv` , `sign` & `sqrt`	difficulty: 2	Wikipedia

Studentized-Range

Difficulty Level	difficulty: 2
Description	**studentized range distribution** is the continuous probability distribution of the studentized range of an i.i.d. sample from a normally distributed population.
Priority	Normal
Referrence Implementation	Wikipedia.Studentized_Range

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#10106	Open	`gammaln` , `round` , `abs` , `pow` , `ln` & `sqrt`	difficulty: 2	Wikipedia
quantile	NA	Not Started	`studentized-range/cdf`	difficulty: 2	Wikipedia

Tukey-Lambda

Difficulty Level	difficulty: 2
Description	Tukey lambda distribution is a continuous, symmetric probability distribution defined primarily by its quantile function (inverse cumulative distribution function) rather than a simple probability density function. Used largely for data analysis, it uses a shape parameter, to identify or model a variety of distributions (e.g., normal, logistic, Cauchy)
Priority	Normal
Referrence Implementation	scipy.stats.tukey_lambda

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	NA	Not Started	`pow`	difficulty: 2	scipy.stats
entropy	NA	Not Started	`ln` & `erf`	difficulty: 2	scipy.stats
kurtosis	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats
logcdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
logpdf	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
mean	NA	Not Started	NA	difficulty: 2	scipy.stats
median	NA	Not Started	NA	difficulty: 2	scipy.stats

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
mode	#10304	Open	NA	difficulty: 2	scipy.stats
pdf	NA	Not Started	`pow`	difficulty: 2	scipy.stats
quantile	NA	Not Started	`log` & `pow`	difficulty: 2	scipy.stats
skewness	NA	Not Started	NA	difficulty: 2	scipy.stats
stdev	NA	Not Started	`sqrt` , `pow` & `gamma` or `sqrt` & `tukey-lambda/variance`	difficulty: 2	scipy.stats
variance	NA	Not Started	`pow` & `gamma`	difficulty: 2	scipy.stats

Wald (Inverse-Gaussian)

Difficulty Level	difficulty: 2
Description	the **inverse Gaussian distribution** (also known as the **Wald distribution**) is a two-parameter family of continuous probability distributions with support on (0,∞).
Priority	Normal
Referrence Implementation	Wikipedia.Wald

Sub-package Name	PR Link	PR Status	Dependencies	Difficulty-level	References
cdf	#9709	Draft	`exp` & `sqrt`	difficulty: 2	Wikipedia
mgf	NA	Not Started	`exp` , `sqrt` & `pow`	difficulty: 2	Wikipedia
mode	#10205	Open	`pow`	difficulty: 2	Wikipedia
stdev	NA	Not Started	`sqrt` & `pow`	difficulty: 2	Wikipedia