



THE UNIVERSITY
OF QUEENSLAND

A U S T R A L I A

Julia Stats Reference

For use in STAT2201

By Hayden Klok. Last updated: 09/03/2017

Commands sorted based on packages.

Base

using *package* – Initialises *package* for use.

? *command* – Help for *command*.

typeof(*object*) – Returns the type of *object*.

*comment* – The text *comment* is ignored.

print(“*xxx*”) – Prints the string “*xxx*”.

println(“*xxx*”) – As above but with newline.

readcsv(“*filename.csv*”) – Reads file *filename.csv*.

rand() – Generates a $\text{uni}[0, 1]$ random variable.

rand(*n*) – Generates *n* random variables.

srand(*seed*) – Sets the *seed* for the RNG.

length(*x*) – The length of vector *x*.

sum(*x*) – Sums the elements of *x*.

mean(*x*) – The mean of *x*.

median(*x*) – The median of *x*.

std(*x*) – The standard deviation of *x*.

var(*x*) – The variance of *x*.

cov(*x*, *y*) – The covariance of arrays *x* and *y*.

StatsBase

summarystats(*x*) – Computes statistics of array *x*, including mean, median, min, max, Q1, Q3.

mode(*x*) – The mode of *x*.

weights(*x*) – Creates a vector, *x*, of weights.

mean(*x*, *w*) – The weighted mean of array *x* with respect to weight vector (of same length) *w*.

percentile(*x*, *p*) – The p^{th} percentile of *x*.

iqr(*x*) – The interquartile range of *x*.

quantile(*x*) – Quantiles 0.0, 0.25, 0.5, 0.75, 1.0.

counts(*x*) – Array of occurrence counts for *x*.

sample(*x*, *n*) – Randomly draws *n* items from *x*.

ecdf(*x*) – Creates ECDF function from data *x*.

Distributions

Normal(μ , σ) – Normal distribution, mean μ , standard deviation σ .

Binomial(*n*, *p*) – Binomial distribution for *n* trials with success rate *p*.

DiscreteUniform(*a*, *b*) – Uniform distribution over *a*, *a*+1, ..., *b*.

Exponential(θ) – Exp distribution, mean θ .

TDist(*n*) – t-distribution, *n* degrees of freedom.

pdf(*d*, *x*) – Evaluate pdf of distribution *d*, at *x*.

cdf(*d*, *x*) – Evaluate cdf of distribution *d*, at *x*.

quantile(*d*, *q*) – The q^{th} quantile of distribution *d*.

KernelDensity

kde(*x*) – Constructs a kernel density estimation object from *x*. Use **pdf** on this object.

Hypothesis Tests

OneSampleTTest(*x*, μ_0) – Performs two-sided one sample t-test with data *x* for $H_0: \mu = \mu_0$.

EqualVarianceTTest(*x*, *y*) – Performs a two-sided one sample t-test under the assumption of equal variance for $H_0: \mu_1 = \mu_2$.

UnequalVarianceTTest(*x*, *y*) – Performs a two-sided one sample t-test under the assumption of unequal variances for $H_0: \mu_1 = \mu_2$.

DataFrames

readtable(“*filename.csv*”) – Reads file *filename.csv* and creates a data frame object.

readtable(“*filename.csv*”, *header* = *false*) – Used when the file does not have a header row.

DataFrame(*X*=*a*, *Y*=*b*) – Creates a DataFrame object, “*data*”, with columns *X* and *Y* from vectors *a* and *b*.

GLM

glm($Y \sim X$, *data*, *Normal*() , *IdentityLink*()) – Creates a linear model from DataFrame *data*, of column *Y* in terms of *X*, assuming noise is normally distributed.

glm($Y \sim X$, *data*, *Binomial*() , *LogitLink*()) – Creates a logistic regression model from DataFrame *data*, of column *Y* in terms of *X*.

coef(*model*) – Returns the coefficients of the *glm* model object “*model*”.

stderr(*model*) – Returns the standard errors of the coefficients of the *glm* model object “*model*”.

PyPlot

PyPlot.plot(*x*, *y*) – Plots interpolated line $y(x)$.

PyPlot.scatter(*x*, *y*) – Scatter-plot *y* vs *x*.

PyPlot.stem(*x*, *y*) – Plots discrete points, with stems. Used for pmf’s.

PyPlot.boxplot(*x*) – Creates a boxplot from *x*, plots median, 1st and 3rd quartiles, extremes at $Q1-1.5IQR$ and $Q3+1.5IQR$ (points outside these bounds are ‘outliers’, marked with “o”).

PyPlot.plt[:hist](*x*, *b*, *normed*=“*True*”) – Normalized histogram of data *x*, bin number = *b*.

subplot(*xyn*) – Used to plot multiple figures in a $x \times y$ array, (*n* is plot location index).

xlabel(“*x*”) – Labels x-axis *x*.

ylabel(“*y*”) – Labels y-axis *y*.

title(“*y* vs *x*”) – Labels figure *y* vs *x*.