runiform() — Uniform and nonuniform pseudorandom variates

Syntax

real matrix runiform(real scalar r, real scalar c)

string scalar rseed()
void rseed(string scalar newseed)
void rseed(real scalar newseed)

real matrix rbeta(real scalar r, real scalar c, real matrix a, real matrix b)
real matrix rbinomial(real scalar r, real scalar c, real matrix n, real matrix p)
real matrix rchi2(real scalar r, real scalar c, real matrix df)
real matrix rdiscrete(real scalar r, real scalar c, real colvector p)
real matrix rgamma(real scalar r, real scalar c, real matrix a, real matrix b)
real matrix rhypergeometric(real scalar r, real scalar c, real matrix N, real matrix K, real matrix n)
real matrix rnbinomial(real scalar r, real scalar c, real matrix n, real matrix p)
real matrix rnormal(real scalar r, real scalar c, real matrix m, real matrix s)
real matrix rpoisson(real scalar r, real scalar c, real matrix m)
real matrix rt(real scalar r, real scalar c, real matrix df)

Description

runiform(r, c) returns an \( r \times c \) real matrix containing uniformly distributed random variates on \([0,1)\). runiform() is the same function as Stata’s runiform() function.

rseed() returns the current random-variate seed in an encrypted string form. rseed() returns the same thing as Stata’s c(seed); see [R] set seed and [P] creturn.
Remarks and examples

The functions described here generate random variates. The parameter limits for each generator are the same as those documented for Stata’s random-number functions, except for rdiscrete(), which has no Stata equivalent.

In the example below, we generate and summarize 1,000 random normal deviates with a mean of 3 and standard deviation of 1.
The first column of $X$ contains gamma variates with shape parameter 0.5, the second column contains gamma variates with shape parameter 1.5, and the third column contains gamma variates with shape parameter 2.5.

Below we generate a $4 \times 3$ matrix of beta variates where we demonstrate the use of two r-conformable parameter matrices, $a$ and $b$.

The $4 \times 3$ shape-parameter matrices used to generate these beta variates are given below:
Conformability

runiform(r, c):
  r: 1 x 1
  c: 1 x 1
  result: r x c

rseed():
  result: 1 x 1

rseed(newseed):
  newseed: 1 x 1
  result: void

rbeta(r, c, a, b):
  r: 1 x 1
  c: 1 x 1
  a: 1 x 1 or i x 1 or 1 x j or i x j
  b: 1 x 1 or i x 1 or 1 x j or i x j
  result: r x c or ir x c or r x jc or ir x jc

rbinomial(r, c, n, p):
  r: 1 x 1
  c: 1 x 1
  n: 1 x 1 or i x 1 or 1 x j or i x j
  p: 1 x 1 or i x 1 or 1 x j or i x j
  result: r x c or ir x c or r x jc or ir x jc

rchisq(r, c, df):
  r: 1 x 1
  c: 1 x 1
  df: i x j
  result: ir x jc

r discrete(r, c, p):
  r: 1 x 1
  c: 1 x 1
  p: k x 1
  result: r x c
rgamma($r$, $c$, $a$, $b$):

$r$: $1 \times 1$

$c$: $1 \times 1$

$a$: $1 \times 1$ or $i \times 1$ or $1 \times j$ or $i \times j$

$b$: $1 \times 1$ or $i \times 1$ or $1 \times j$ or $i \times j$

result: $r \times c$ or $ir \times c$ or $r \times jc$ or $ir \times jc$

diagonistics

All random-variate generators abort with an error if $r < 0$ or $c < 0$.

rseed(seed) aborts with error if a string seed is specified and it is malformed (was not obtained from rseed()).

rnbinomial($r$, $c$, $n$, $p$), rbeta($r$, $c$, $a$, $b$), rbinomial($r$, $c$, $n$, $p$), rhypergeometric($r$, $c$, $N$, $K$, $n$), and rnbinomial($r$, $c$, $k$, $p$) abort with an error if the parameter matrices do not conform. See r-conformability in [M-6] Glossary for rules on matrix conformability.

rdiscrete() aborts with error if the probabilities in $p$ are not in [0,1] or do not sum to 1.
References


Also see

[M-4] standard — Functions to create standard matrices

[M-4] statistical — Statistical functions