

ORDER STATISTICS MEDIANS

PURPOSE

Generate the N order statistics medians from one of the following distributions:

NORMAL
 UNIFORM
 HALF NORMAL
 EV1 (or GUMBEL)
 EV2 (or FRECHET)
 WEIBULL

DESCRIPTION

Given a sample of size N from a distribution, the observations can be ordered from smallest to largest. The smallest value is called the first order statistic and the largest value is called the Nth order statistic. There is an order statistic corresponding to each observation (so there are N order statistics in all). Each of these order statistics has its own sampling distribution with its own statistics (e.g., mean, standard deviation). The order statistics medians command generates the medians of each of the N order statistics.

Order statistics are commonly used in extreme value analysis. In particular, the first (i.e., minimum) and Nth (i.e., maximum) order statistics are of interest.

SYNTAX

LET <resp> = <dist> ORDER STATISTICS MEDIANS FOR I = <start> <inc> <stop>

where <dist> identifies the distribution from which the order statistics are derived (NORMAL, HALF NORMAL, UNIFORM, EV1, EV2, WEIBULL);

<start> is a number or parameter that identifies the first row of <resp> in which the order statistics medians are saved (typically it has a value of 1);

<inc> is a number or parameter that identifies the row increment of <resp> in which the order statistics medians are saved (typically it has a value of 1);

<stop> is a number or parameter that identifies the last row of <resp> in which the order statistics medians are saved; and where <resp> is a variable where the order statistics medians are saved.

EXAMPLES

```
LET Y1 = NORMAL ORDER STATISTICS MEDIANS FOR I = 1 1 100
LET Y2 = NORMAL ORDER STATISTICS MEDIANS FOR I = 1 1 1000
LET Y1 = HALF NORMAL ORDER STATISTICS MEDIANS FOR I = 1 1 100
LET Y1 = UNIFORM ORDER STATISTICS MEDIANS FOR I = 1 1 100
LET Y1 = WEIBULL ORDER STATISTICS MEDIANS FOR I = 1 1 100
LET Y1 = EV1 ORDER STATISTICS MEDIANS FOR I = 1 1 100
LET Y1 = EV2 ORDER STATISTICS MEDIANS FOR I = 1 1 100
```

DEFAULT

None

SYNONYMS

FRECHET for EV1
 GUMBEL for EV2

RELATED COMMANDS

MEDIAN	=	Compute the median of a variable.
MEAN	=	Compute the mean of a variable.
RANDOM NUMBERS	=	Generate a sequence of random numbers.
NORMAL PLOT	=	Generate a normal plot.
WEIBULL PLOT	=	Generate a Weibull plot.
PROBABILITY PLOT	=	Generates a probability plot.
PPCC PLOT	=	Generates a probability plot correlation coefficient plot.

APPLICATIONS

Extreme value analysis

IMPLEMENTATION DATE

91/10 (EV1, EV2, WEIBULL cases added 93/5)

PROGRAM

TITLE MEDIANS FOR NORMAL ORDER STATISTICS
Y1LABEL MEDIANS
X1LABEL ORDER STATISTIC
LET Y2 = NORMAL ORDER STATISTICS MEDIANS FOR I = 1 1 100
PLOT Y2

