Re: What are the Parameters for Algorithm AS 62 APPL. STATIST. (1973) VOL.22, NO.2

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From: Alan Miller (*amiller_at_bigpond.net.au*)
Date: 09/10/04

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By 'parameters', do you mean the arguments of the routine?
The algorithm was published in the journal Applied Statistics in 1973 in volume 22.
The description of array FRQNCY given is:
Output: the full sampling distribution for the Mann−Whitney U statistic for sample sizes
M and N, stored in the first (M*N + 1) elements. The first element of FRQNCY
holds the sampling frequency for U = 0. Any elements beyond (M*N + 1) are left
unchanged.

Cheers

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Alan Miller
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"Roland" <roland@nospam> wrote in message
news:ya6dnbC0x8H3n9zcRVn−rg@giganews.com...
> Does anyone know what the parameters mean in this one? I do not have
access
> to the original article.
> Specifically, how do I interpret the FRQNCY array (how is it indexed)?
TIA.
>
> Here is the Fortran algorithm (http://lib.stat.cmu.edu/apstat/62):
>
> c AS 62 generates the frequencies for the Mann−Whitney U−statistic.
> c Users are much more likely to need the distribution function.
> c Code to return the distribution function has been added at the end
> c of AS 62 by Alan Miller.   Remove the C's in column 1 to activate it.
> c
>       SUBROUTINE UDIST(M, N, FRQNCY, LFR, WORK, LWRK, IFAULT)
> C
> C     ALGORITHM AS 62  APPL. STATIST. (1973) VOL.22, NO.2
> C
> C     The distribution of the Mann−Whitney U−statistic is generated for
> C     the two given sample sizes
> C
>       INTEGER M, N, LFR, LWRK, IFAULT
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>       REAL FRQNCY(LFR), WORK(LWRK)
> C
> C     Local variables
> C
>       INTEGER MINMN, MN1, MAXMN, N1, I, IN, L, K, J
>       REAL ZERO, ONE, SUM
>       DATA ZERO /0.0/, ONE /1.0/
> C
> C     Check smaller sample size
> C
>       IFAULT = 1
>       MINMN = MIN(M, N)
>       IF (MINMN .LT. 1) RETURN
> C
> C     Check size of results array
> C
>       IFAULT = 2
>       MN1 = M * N + 1
>       IF (LFR .LT. MN1) RETURN
> C
> C     Set up results for 1st cycle and return if MINMN = 1
> C
>       MAXMN = MAX(M, N)
>       N1 = MAXMN + 1
>       DO 1 I = 1, N1
>     1 FRQNCY(I) = ONE
>       IF (MINMN .EQ. 1) GO TO 4
> C
> C     Check length of work array
> C
>       IFAULT = 3
>       IF (LWRK .LT. (MN1 + 1) / 2 + MINMN) RETURN
> C
> C     Clear rest of FREQNCY
> C
>       N1 = N1 + 1
>       DO 2 I = N1, MN1
>     2 FRQNCY(I) = ZERO
> C
> C     Generate successively higher order distributions
> C
>       WORK(1) = ZERO
>       IN = MAXMN
>       DO 3 I = 2, MINMN
>         WORK(I) = ZERO
>         IN = IN + MAXMN
>         N1 = IN + 2
>         L = 1 + IN / 2
>         K = I
> C
> C     Generate complete distribution from outside inwards
> C
>         DO 3 J = 1, L
>           K = K + 1
>           N1 = N1 - 1
>           SUM = FRQNCY(J) + WORK(J)
>           FRQNCY(J) = SUM
>           WORK(K) = SUM - FRQNCY(N1)
>           FRQNCY(N1) = SUM
>     3 CONTINUE
> C
>     4 IFAULT = 0
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> C
> C     Code to overwrite the frequency function with the distribution
> C     function.   N.B. The frequency in FRQNCY(1) is for U = 0, and
> C     that in FRQNCY(I) is for U = I − 1.
> C
> C     SUM = ZERO
> C     DO 10 I = 1, MN1
> C       SUM = SUM + FRQNCY(I)
> C       FRQNCY(I) = SUM
> C  10 CONTINUE
> C     DO 20 I = 1, MN1
> C  20 FRQNCY(I) = FRQNCY(I) / SUM
> C
>       RETURN
>       END
>
>
```