

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

Source: <http://sci.tech-archive.net/Archive/sci.stat.math/2004-09/0157.html>

From: Roland (*roland_at_nospam*)

Date: 09/10/04

Date: Fri, 10 Sep 2004 07:14:48 +0200

Many thanks, however I am still at loss regarding how to interpret the matrix. For example, assuming I have 2x2 elements, how can I get the 0.95 critical value? (I know very little about the Mann Whitney test as you can see...)

Assuming I didn't make a mistake translating the algorithm I get:

FRQNCY = 0.2, 0.4, 0.8, 1, 1

Thanks in advance.

"Alan Miller" <amiller@bigpond.net.au> wrote in message news:R%70d.25212\$D7.17652@news-server.bigpond.net.au...
> *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*
>
> --
> *Alan Miller*
> *Retired*
> *Formerly with CSIRO,*
> *Division of Mathematics & Statistics*
>
> *"Roland" <roland@nospam> wrote in message*
> *news:ya6dnc0x8H3n9zcRVn-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
> > 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. (MNI + 1) / 2 + MINMN) RETURN
>> C
>> C Clear rest of FREQNCY
>> C
>> NI = NI + 1
>> DO 2 I = NI, MNI
>> 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
>> NI = 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
>> NI = NI - 1
>> SUM = FRQNCY(J) + WORK(J)
>> FRQNCY(J) = SUM
>> WORK(K) = SUM - FRQNCY(NI)
>> FRQNCY(NI) = SUM
>> 3 CONTINUE
>> C
>> 4 IFAULT = 0
>> 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, MNI
>> C SUM = SUM + FRQNCY(I)
>> C FRQNCY(I) = SUM
>> C 10 CONTINUE
>> C DO 20 I = 1, MNI
>> C 20 FRQNCY(I) = FRQNCY(I) / SUM
>> C
>> RETURN
>> END
>>
>>
>
>

```