
Subject: Bug: HISTOGRAM with reverse indices AND NaN
Posted by [Paul Krummel](#) on Thu, 23 Dec 1999 08:00:00 GMT
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Hi All,
I just submitted this as a bug report to RSI.
I use IDL 5.3 (and 5.2) on a windows NT 4 SP5 platform.
I have been using the histogram procedure with reverse_indices to perform
bin averaging for quite a few years now.
Recently I had some data with NaN's in it so I implemented the NaN keyword.
I started getting screwy results. If there were a large number of NaN's my
averaging routine would fall over due to an incorrect indice in the
reverse_indice itself (see below).
Anyway thought you might be interested in this!
Cheers Paul

I am running IDL 5.3 on the platform mentioned above.
I have discovered what I think is a bug in the histogram function.
It occurs when using the reverse_indices keyword AND the NaN keyword.
The reverse indices that are returned are incorrect if there is missing data
(NaN).
The procedure below should demonstrate this. I also tested this on an SGI
running IRIX 6.5 and IDL 5.2.

```
; ++  
pro hist_ri_fail  
;  
; ++++  
; quick procedure to demonstrate where the  
; histogram reverse indices fail when data  
; contains NaNs. Counter not incremented  
; correctly?.  
;  
; PBK 23 Dec 1999.  
;  
; ++++  
; make an array  
a=findgen(100)  
;  
; Set every 3rd point to NaN  
a[where(a mod 3 eq 0.)]=!values.f_nan  
;  
print,'a:',a  
;  
; do the histogram and return reverse indices.  
count_mid=histogram(a, binsize=10, reverse_indices=r, $
```

```

min=0., max=99., /NaN)
;
; +++++
; find number of Nan's and print some values
zz=where(finite(a,/nan), cnt_nan)
print,'cnt nan:',cnt_nan
print,'cnt mid:',count_mid
print,'n rev ind:',n_elements(r)
print,'rev ind:',r
;
; +++++
end
; ++

a:   NaN   1.00000  2.00000   NaN   4.00000
     5.00000   NaN   7.00000   8.00000   NaN   10.0000
     11.0000   NaN   13.0000   14.0000   NaN   16.0000
     17.0000   NaN   19.0000   20.0000   NaN   22.0000
     23.0000   NaN   25.0000   26.0000   NaN   28.0000
     29.0000   NaN   31.0000   32.0000   NaN   34.0000
     35.0000   NaN   37.0000   38.0000   NaN   40.0000
     41.0000   NaN   43.0000   44.0000   NaN   46.0000
     47.0000   NaN   49.0000   50.0000   NaN   52.0000
     53.0000   NaN   55.0000   56.0000   NaN   58.0000
     59.0000   NaN   61.0000   62.0000   NaN   64.0000
     65.0000   NaN   67.0000   68.0000   NaN   70.0000
     71.0000   NaN   73.0000   74.0000   NaN   76.0000
     77.0000   NaN   79.0000   80.0000   NaN   82.0000
     83.0000   NaN   85.0000   86.0000   NaN   88.0000
     89.0000   NaN   91.0000   92.0000   NaN   94.0000
     95.0000   NaN   97.0000   98.0000   NaN

cnt nan:   34
cnt mid:   6   7   7   6   7
           7   6   7   7   6
n rev ind:  77
rev ind:   11   51   24   31   37
           44   51   57   64   71   77
           0    1    2    3    4    5
           10   11   13   14   16   17
           19   21   24   27   30   33
           36   39   42   45   48   51
           54   57   60   63   66   69
           72   75   78   81   84   87
           90   93   96   99   61   62
           64   65   67   68   70   71
           73   74   76   77   79   80
           82   83   85   86   88   89
           91   92   94   95   97   98

```

From the output you will see that the reverse indices are not correct and quite screwy!
The second number of the reverse indices should be 17 not 51 ($17+34$), so the count of the number of NaN's has been added to this second indice. The rest of the pointer numbers (first 11 elements of r for this case) look fine.
The first 6 actual indices (r[11:16]) are wrong, it appears to be just 0 to 5!
The next 7 indices (r[17:23]) are correct!
Then, most of the NaN indices are listed (r[24:50], $50=24+34-7-1$).
The rest of the indices are correct.
There is no way to recover all the correct indices from this. The output from histogram itself (count_mid in the example) appears to be fine. The total number of reverse indices (77) is also correct, but as shown above the indices themselves are incorrect.

Cheers Paul

Paul Krummel
CSIRO Atmospheric Research - GASLAB
Private Bag #1 Aspendale Victoria 3195 Australia
e-mail: paul.krummel@dar.csiro.au www: <http://www.dar.csiro.au/>
tel: +61 3 9239 4568 fax: +61 3 9239 4444
