
Subject: Re: histogram bin edges

Posted by [Josh Sixsmith](#) on Wed, 02 Jan 2013 10:46:32 GMT

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On Sunday, 23 December 2012 13:56:24 UTC+11, Josh Sixsmith wrote:

> Hi, I'm curious about whether IDL is inclusive or exclusive in regards to the final bin. The help documentation describes that the right hand side of a bin is exclusive, but what about the final bin?

>

>

>

> For example, using the following sample data

>

>

>

> a = [0.72244781, 0.20885457, 0.38053078, 0.89579923, 0.93703798,\$

>

> 1. , 0.22754776, 0.11365818, 0.38424101, 0.1741128 ,\$

>

> 0.63094614, 0.00123615, 0.06025917, 0.78652067, 0.1001857 ,\$

>

> 0.80492211, 0.80564817, 0.83369342, 0.94378603, 0.75453023]

>

>

>

> ha = histogram(a, nbins=10, binsize=0.1, min=0, reverse_indices=ria, locations=loca, omax=omaxa, omin=omina)

>

> IDL> print, loca

>

> 0.00000 0.10000 0.20000 0.30000 0.40000 0.50000

>

> 0.60000 0.70000 0.80000 0.90000

>

>

>

> IDL> print, ha

>

> 2 3 2 2 0 0

>

> 1 3 4 3

>

>

>

> This result looks fine and i interpret the locations as

>

>

>

```

> [0,0.1],[0.1,0.2],[0.2,0.3],[0.3,0.4],[0.4,0.5],[0.5,0.6],[0.6,0.7],[0.7,0.8),
>
> [0.8,0.9],[0.9,1.0]
>
>
>
> indicating the last bin as inclusive as the value of 1.0 is included in the histogram.
>
>
>
> However i feel that this might actually be a case of misrepresentation of floating point numbers,
as mentioned in the example given in http://www.idlcoyote.com/math\_tips/razoredge.html
>
>
>
> If array 'a' is double:
>
> ad = double(a)
>
> had = histogram(ad, nbins=10, binsize=0.1d, min=0.0d, reverse_indices=riad, locations=locad,
omin=ominad, omax=omaxad)
>
> print, had
>
>      2      3      2      2      0      0
>
>      1      3      4      2
>
>
>
> which suggests that the last bin is exclusive and that all bins are exclusive
>
>
>
> [0,0.1],[0.1,0.2],[0.2,0.3],[0.3,0.4],[0.4,0.5],[0.5,0.6],[0.6,0.7],[0.7,0.8),
>
> [0.8,0.9],[0.9,1.0)
>
>
>
> For integer data this also seems to be the case
>
> IDL> print, locbHowever, for integer data this doesn't seem to be the case.
>
> b = indgen(11)
>
> hb = histogram(b, nbins=10, min=0, reverse_indices=rib, locations=locb, omax=omaxb,
omin=ominb)

```

```
>
> IDL> print, locb
>
>    0    1    2    3    4    5    6    7    8    9
```

```
> IDL> print, hb
>
>     1     1     1     1     1     1
>
>     1     1     1     1
```

```
> IDL> print, rib
>
>    11    12    13    14    15    16
>
>    17    18    19    20    21    0
>
>     1     2     3     4     5     6
>
>     7     8     9
```

```
> The index '10' for the value 10 is not included
```

```
>
>
> So if i use the max keyword, i would assume that this would be an upper limit of values to be included in the histogram. Does this then make the last bin inclusive, or will it create a bin that will not only include the max value but potentially include values slightly higher than the specified max. This might only occur if the binsize is set.
```

```
>
>
> Any clarification would be greatly appreciated.
```

```
> Cheers
```

```
> Josh
```

Great, thanks for that.

I'll keep that in mind for future use.

Cheers
Josh
