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Subject: Re: L-moments

Posted by [rogass](#) on Mon, 28 Feb 2011 13:22:33 GMT

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On 28 Feb., 13:13, Gray <[grayliketheco...@gmail.com](mailto:grayliketheco...@gmail.com)> wrote:

> On Feb 28, 6:43 am, chris <[rog...@googlemail.com](mailto:rog...@googlemail.com)> wrote:

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>> On 25 Feb., 16:25, Mark Shephard <[mark.w.sheph...@gmail.com](mailto:mark.w.sheph...@gmail.com)> wrote:

>  
>> Hi,  
>  
>> I was wondering if anyone has anyone develope IDL routines for the  
>> method of L-moments?  
>

>>> Thanks,  
>>> Mark

>  
>> Hi Mark,  
>> something like this?

>  
>> function cr\_binomial,n,m  
>>     n1=1d & m1=1d & n1m1=1d  
>>     for i=1d,n do n1\*=i  
>>     for i=1d,m do m1\*=i  
>>     for i=1d,(n-m) do n1m1\*=i  
>>     return,n1/(m1\*n1m1)  
>> end

>  
>> function cr\_l\_moment,dat  
>> n=n\_elements(dat)  
>> l1 = total(dat,/double)/cr\_binomial(n,1)  
>> l2=0d &l3=0d &l4=0d  
>> for i=1d,n do begin  
>>     b1 = cr\_binomial(i-1,1d)  
>>     b2 = cr\_binomial(n-i,1d)  
>>     b3 = cr\_binomial(i-1,2d)  
>>     b4 = cr\_binomial(n-i,2d)  
>>     b5 = cr\_binomial(i-1,3d)  
>>     b6 = cr\_binomial(n-i,3d)  
>>     l2+=(b1-b2)\*dat[i-1]

```

>>     l3+=(b3-2*b1*b2+b4)*dat[i-1]
>>     l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1]
>> endfor
>> l2*=0.5d /cr_binomial(n,2d )
>> l3*=(1d / 3d )/cr_binomial(n,3d )
>> l4*=(1d / 4d )/cr_binomial(n,4d )
>> return,{l1:l2,l2:l2,l3:l3,l4:l4}
>> end
>
>> IDL> r=randomu(seed,5,5)
>> IDL> inf=cr_l_moment(r)
>> IDL> print,float(inf)
>> { -0.000558181 -0.000558181 -0.0111168 0.212071}
>
>> Cheers
>
>> CR
>
> I have no idea what L-moments are, but do you really need to use all
> the FOR-loops?
>
> function cr_binomial,n,m
>   n1 = product(dindgen(n)+1)
>   m1 = product(dindgen(m)+1)
>   n1m1 = product(dindgen(n-m)+1)
>   return, n1/(m1*n1m1)
> end

```

No, it is not necessary, so your suggestion reduces it to:

```

function cr_l_moment,dat
n=double(n_elements(dat))
bin=product(dindgen(n)+1d,/c)
l1 = total(dat)/bin[n-1]
l2=0. &l3=0. &l4=0.
for i=1,n do begin
  b1 = bin[i-1]
  b2 = bin[n-i]
  b3 = b1/2d
  b4 = b2/2d
  b5 = b1/6d
  b6 = b2/6d
  l2+=(b1-b2)*dat[i-1]
  l3+=(b3-2*b1*b2+b4)*dat[i-1]
  l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1]
endfor
l2*=bin[n-1]
l3*=(1./3.)/(bin[n-1]/6d)

```

```
I4*=(1./4.)/(bin[n-1]/24d)
return,{I1:I2,I2:I2,I3:I3,I4:I4}
end
```

Cheers

CR

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