Subject: L-moments
Posted by Mark Shephard on Fri, 25 Feb 2011 15:25:11 GMT
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Hi,

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

Thanks,
Mark

Subject: Re: L-moments
Posted by rogass on Mon, 28 Feb 2011 11:43:17 GMT
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On 25 Feb., 16:25, Mark Shephard <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-1l]
 l3+=(b3-2*b1*b2+b4)*dat[i-1l]
 l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1l]
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
```

Subject: Re: L-moments
Posted by Gray on Mon, 28 Feb 2011 12:13:58 GMT
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On Feb 28, 6:43 am, chris <rog...@googlemail.com> wrote:
> On 25 Feb., 16:25, Mark Shephard <mark.w.sheph...@gmail.com> wrote:
>
>> Hi,
>
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> 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-1l]
> l3+=(b3-2*b1*b2+b4)*dat[i-1l]
> l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1l]
> 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
```

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 <graylikethec...@gmail.com> wrote:
> On Feb 28, 6:43 am, chris <rog...@googlemail.com> wrote:
>
>
>

>
>
>
>
>
>
>> On 25 Feb., 16:25, Mark Shephard <mark.w.sheph...@gmail.com> wrote:
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>> 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-1l]
>> l3+=(b3-2*b1*b2+b4)*dat[i-1l]
>> l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1l]
>> 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)
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>
>> Cheers
>
>> CR
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> I have no idea what L-moments are, but do you really need to use all
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>
> 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-1l]
l2=0. &l3=0. &l4=0.
for i=1l,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-1l]
 l3+=(b3-2*b1*b2+b4)*dat[i-1l]
 l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1l]
endfor
l2*=bin[n-1]
l3*=(1./3.)/(bin[n-1]/6d)
l4*=(1./4.)/(bin[n-1]/24d)
return,{l1:l2,l2:l2,l3:l3,l4:l4}
end
```

Cheers

CR

Subject: Re: L-moments
Posted by rogass on Mon, 28 Feb 2011 13:25:02 GMT
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On 28 Feb., 14:22, chris <rog...@googlemail.com> wrote:
> On 28 Feb., 13:13, Gray <grayliketheco...@gmail.com> wrote:
>
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>
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>
>
>
>
>
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>
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>>>> Mark
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>>> Hi Mark,
>>> something like this?
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>>> 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-1l]
>>>         l3+=(b3-2*b1*b2+b4)*dat[i-1l]
>>>         l4+=(b5-3*b3*b2+3*b1*b4+b6)*dat[i-1l]
>>>  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)
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>  l1 = total(dat)/bin[n-1l]
>  l2=0. &l3=0. &l4=0.
>  for i=1l,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-1l]
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>  endfor
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```

> l3*=(1./3.)/(bin[n-1]/6d)
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> Cheers
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The type of variables(double, long, float) is inconsistent. You have
to change this to double.

Cheers

CR

Subject: Re: L-moments
Posted by Mark Shephard on Mon, 28 Feb 2011 16:05:56 GMT
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On Feb 28, 8:25 am, chris <rog...@googlemail.com> wrote:
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>
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>>>>         return,n1/(m1*n1m1)
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>>>>  l2=0d &l3=0d &l4=0d
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>>>>  end
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```
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>>          l2+=(b1-b2)*dat[i-1l]
>>          l3+=(b3-2*b1*b2+b4)*dat[i-1l]
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>>  l2*=bin[n-1]
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>>  CR
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>  The type of variables(double, long, float) is inconsistent. You have
>  to change this to double.
>
>  Cheers
>
>  CR
```

Hi Chris,

Thanks for the prompt response. I will give it a try.

Thanks again,
Mark
