
Subject: Help with the F-test. mpftest.pro in particular.
Posted by [cgguido](#) on Fri, 06 Apr 2007 15:55:15 GMT
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Hi all,

I am trying to figure out how the F-test works.

I created two fake datasets with 1e6 elements and a variance of 4

```
n = 1e6
s = 4
i1 = randomn(sss, n)*s
i2 = randomn(sss, n)*s
```

I then calculate the f value as the ration of the largest variance to the smallest (the two sets have the same number of degrees of freedom, n)

```
var = [variance(i1), variance(i2)]
vv = max(var, min=v)
f = vv/v
```

Then I print the probability that the variances are similar due to pure chance (should be close to zero because the variances are *set* to be th same)

```
print, mpftest(f, n, n)
--> 0.47958397
```

I must be doing something very wrong :-(

Can somebody help please?

Thanks,
Gianguido

Subject: Re: Help with the F-test. mpftest.pro in particular.
Posted by [news.verizon.net](#) on Fri, 06 Apr 2007 18:49:28 GMT
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On Apr 6, 11:55 am, "Gianguido Cianci" <gianguido.cia...@gmail.com> wrote:

> Then I print the probability that the variances are similar due to
> pure chance

This is not what mpftest computes -- instead "The function MPFTEST() computes the probability for a value drawn from the F-distribution to equal or exceed the given value of F."

```
> print, mpftest(f, n, n)
> --> 0.47958397
>
```

So for the null hypothesis, one would expect to obtain a value larger than the observed value of f about half the time, i.e. the null hypothesis (that the two variances come from the same distribution) is consistent with the data.

For comparison, suppose the variance from the second dataset had been 1% larger

```
IDL> print,mpftest(f*1.01,n-1,n-1)
2.6478877e-07
```

then the null hypothesis could be rejected with very high confidence. (Then sensitivity to the value of f comes because of the large number (1e6) of degrees of freedom in your example.) -- Wayne

P.S. For those not in the know, MPFTEST is not an intrinsic IDL function, but part of Craig Markwardt's great library <http://astrog.physics.wisc.edu/~craigm/idl/idl.html>

Subject: Re: Help with the F-test. mpftest.pro in particular.
Posted by [cgguido](#) on Fri, 06 Apr 2007 18:57:24 GMT
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Hello again,

little mistake:

On Apr 6, 11:55 am, "Gianguido Cianci" <gianguido.cia...@gmail.com> wrote:

```
> I created two fake datasets with 1e6 elements and a variance of 4
>
> n = 1e6
> s = 4
> i1 = randomn(sss, n)*s
```

```
> i2 = randomn(sss, n)*s
```

actually in this case the variance is 16 for each of the datasets.

Still, I have no idea what I am doing wrong... :-(
Any insights?

Thanks,
Gianguido

Subject: Re: Help with the F-test. mpftest.pro in particular.
Posted by [cgguido](#) on Wed, 18 Apr 2007 21:49:54 GMT
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Thanks fo ryour help, and yes, the description is *in* the code :-(

I still don't understand what it all means and have been looking for
an understandable text on statisitcs :-(

I might have a more intelligent question once I read up on this.

Thanks,

G

On Apr 6, 2:49 pm, "Wayne Landsman" <vze49...@verizon.net> wrote:

```
> On Apr 6, 11:55 am, "Gianguido Cianci" <gianguido.cia...@gmail.com>  
> wrote:
```

```
>
```

```
>> Then I print the probability that the variances are similar due to  
>> pure chance
```

```
>
```

```
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> computes the probability for a value drawn from the F-distribution to  
> equal or exceed the given value of F."
```

```
>
```

```
>> print, mpftest(f, n, n)
```

```
>> --> 0.47958397
```

```
>
```

```
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> than the observed value of f about half the time, i.e. the null  
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> consistent with the data.
```

```
>
```

> For comparison, suppose the variance from the second dataset had been
> 1% larger
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> confidence. (Then sensitivity to the value of f comes because of
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>
> P.S. For those not in the know, MPFTEST is not an intrinsic IDL
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library<http://astro.physics.wisc.edu/~craigm/idl/idl.html>
