

Re: TDist Formula and Explanation

Source: <http://sci.tech-archive.net/Archive/sci.stat.math/2007-03/msg00703.html>

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 - *Date:* 29 Mar 2007 05:07:24 -0700
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On Mar 28, 4:45 pm, Jack Tomsy <jtom...@xxxxxxxxxxxxx> wrote:

Thanks for the post. It will certainly serve as a good source for reference. However, I'm still struggling with implementing the nuts and bolts of the formula to come up with a valid result. I've tried to use the incomplete beta function to calculate the p-value, but I'm still getting skewed results. Using the results listed below I find that $a = 0.5$, $b=9$, $x'=.894102$ (using the formula: $(df_Regression * F\ Statistic)/(df_Regression * F\ Statistic + df_Residual)$). These values should (I think) be my input to the incomplete beta function. However, when I put these inputs into the formula I get results that are consistently high. Is there something that you see that I'm doing incorrectly? If not, is there some guidance you could provide on how to use the formula?

X	Y
28	5.2
26	5.1
32	5.6
24	4.6
54	11.3
59	8.1
44	7.8
30	5.8
40	5.1
82	18

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42 4.9
58 11.8
28 5.2
20 4.8
42 7.9
47 6.4
112 20
85 13.7
31 5.1
26 2.9

I put your data into Minitab. I get $y = -0.412 + 0.184*x$ as the fitted regression.

The standard error of beta is 0.1493 and $t = 0.184/0.1493 = 12.3$

With 18 degrees of freedom, Excel calculates the right tail probability as $1.64E-10$ if it's a one-sided test and $3.28E-10$ if it's a two-sided test.

If your problem is to calculate small tails (i.e., large t), those expansions in A&S might turn out to be pretty accurate.

BTW, I had a problem downloading A&S online, but I still have the hard copy.

Jack– Hide quoted text –

– Show quoted text –

I have all of the same calculations right up until the p-value. What formula should I use and what inputs should i put in the formula to come up with the two-sided test? That's where I'm getting stuck right now. Thank you for all of your help.

Jason

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