

# Re: r-Squared Question

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- *From:* Jerry Dallal <[gdallal@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx](mailto:gdallal@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxx)>
  - *Date:* Thu, 14 Jul 2005 21:23:30 -0300
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Reef Fish wrote:

Jerry Dallal wrote:

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Jerry Dallal wrote:

$$\begin{aligned} \text{Netter et al., latest ed: } R^2 \\ = \text{RegSS/TSS} = 1 - \text{ResSS/TSS} \end{aligned}$$

I've taught from Neter et al (several editions) and  $R^2$  was always DEFINED as RegSS/TotSS. Yours must've been some "Netter". :-)

Need a big net to catch a big fish.

LOL! <http://www.ivydenel.co.uk/doug/dive/images/grouper.gif>

I am copying verbatim from the third edition, (the latest is at the office)

## Re: r-Squared Question

As you know, I am recalling EVERYTHING from my big Soft Disk as I had given away all my statistics books to 10 libraries in China years ago.

p 100:

"Thus SSTO is a measure of uncertainty in predicting Y when X is not considered. Similarly, SSE measures the variation in the Y(i) when a regression model using the independent variable X is employed. A natural measure of the effect of X in reducing the variation in Y, i.e., the uncertainty in predicting Y, is therefore:

$$(3.71) \quad r^2 = (SSTO - SSE) / SSTO = SSR / SSTO = 1 - SSE / SSTO$$

I must have recalled the MUCH BETTER definition of R<sup>2</sup> in the 1st and 2nd editions, as SSR/SSTot.

Also, p 241:

"The coefficient of multiple determination, denoted R<sup>2</sup>, is defined as follows:

$$(7.35) \quad R^2 = SSR / SSTO = 1 - SSE / SSTO$$

That's better, as the definition.

Ah, this came FIRST, didn't it? (7.35). You were putting (7.71) first in this post as if it were the definition when Neter et al were just relating some of the ANOVA table entries to little r<sup>2</sup>, in the SIMPLE regression chapter, I presume, because the relation applies ONLY to simple regression.

No, not a typo. The page numbers and equation numbers are correct. r<sup>2</sup> is

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defined for simple linear regression;  $R^2$  for multiple regression.

It measures the proportionate reduction of total variation..."

That's an odd way to put it. To use the parallel of "% of variation explained", but correcting the two errors, the better expression would have been,

"It measures the proportion of total variation fitted by the regression".

That's why I like your suggestion of "variation fitted". No text that I've read has an equally suitable replacement for "explained by". It's all mumbo-jumbo.

So, what happened to this:

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JD> Kleinbaum et al,, latest: (RegSS-ResSS)/TotSS
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RF> IMPOSSIBLE! It's WRONG. That's not  $R^2$  at all. I assume it's  
RF> your copying error.
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or how YOU and the others got the  $R^2 = -.03$  ?

I assume it's typo and carelessness respectively, but wanted to know if otherwise.

-- Bob.

## Re: r-Squared Question

Typo, yes; but not completely careless because I posted a correction right after I'd sent the initial message. On my site the original is stamped 5:21 pm, the correction at 5:33, and your question about it 7:12 pm. Perhaps you missed the 5:33 post. It *\*was\** in the same thread, a reply to my own post.

--Jerry

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