Re: "...the sum of squares removed by fitting..."

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- *From*: kj <socyl@xxxxxxxxxxxxxxxxx>
- *Date*: Wed, 27 Sep 2006 00:47:59 +0000 (UTC)

In <Xns984AC92A71C0Ddwtttttt@xxxxxxxxxxxxxx> David Winsemius <doe_snot@xxxxxxxxxxx> writes:

> kj <socyl@xxxxxxxxxxxxxxxxx> wrote in
> news:efbt8a$be7$1@xxxxxxxxxxxxxxxxx:
>
> > On p. 63 of W. J. Ewens' "Mathematical Population Genetics, v. 1",
> > the author uses the phrase "the sum of squares removed by fitting",
> > which I don't understand. FWIW here's the full sentence, rendered
> > in bright LaTeX:
> >
> > Standard regression theory shows that the sum of squares removed
> > by fitting the α_j values in (2.57), that is the additive
> > genetic variance σ_A^2, is given by
> > \begin{equation}
> > \sigma_A^2 = 2 \sum_u x_u a_u \alpha_u .
> > \end{equation}
> >
> > The context is the computation of a set of coefficients $\alpha_1,
> > ..., \alpha_k$, called the "average effects", by a least−squares
> > procedure.
> >
> > I can *guess* possible meanings for what the author's phrase, but
> > in any can't figure out how to derive the expression above. The
> > author says this stuff is standard, but I can't find it in my stats
> > book (it could be there under a different guise, though). Where
> > can I find a more explicit derivation of this "sum of squares
> > removed by fitting"?
>
> Suggestion: search for a phrase along the lines of "model sum of
> squares" or "regression sum of squares" or "partitioned sum of squares".
> When you fit a model, you get a model_sum_of_squares and an
> error_sum_of_squares which sum to a total_sum _of_squares or the total
> variance. The F statistic is just the expected distribution of the ratio
> of "model sum of squares" to the error sum of squares in a linear model.
> Another phrase for the "error sum of squares" is the "residual sum of

> squares". Your citation suggests (but does not imply) an underlying linear model, but even if it is not using a linear model your searches may be more fruitful with the altermative search phrases. If you want to get a more specific response, you will need to post a link to the article or describe the methods in more detail.

Thanks. Here's a link: