Re: r−Squared Question

Source: http://sci.tech−archive.net/Archive/sci.stat.math/2005−07/msg00255.html

- *From*: "Predictor" <predictr@xxxxxxxxxxxxxxx>
- *Date*: 12 Jul 2005 12:40:00 −0700

Let's assume some observed data, which I hope makes my question
clearer:

X Y
1 101
2 102
3 103
4 104
5 105
6 106
7 107
8 108
9 109
10 110

The relationship here is obvious, but bare with me. Assume that some
regression procedure (obviously not least squares) produces a linear
model, YHat:

X Y YHat
1 101 97
2 102 99
3 103 101
4 104 103
5 105 105
6 106 107
7 107 109
8 108 111
9 109 113
10 110 115

YHat has a correlation (r) with Y of 1.0. r−squared is hence 1.0.
What I'm getting at is: the r−squared is at its best possible value,
yet the model is obviously suboptimal. Have I gone wrong somewhere, or
is this a fundamental weakness of r−squared?

Thanks very much,
Will

Radford Neal wrote:
> In article <1121175957.796245.150510@xxxxxxxxxxxxxxxxxxxxxxxxxxxxx>,
> Predictor <predictr@xxxxxxxxxxxxxxx> wrote:
>
> >I am trying to undertand r−squared (the coefficient of determination)
> >of regression lines. If r, which is squared to obtain r−squared, is
> >the correlation between the predicted Y and the observed Y, then
> >doesn't that mean that any regression line whose predicted Y is a
> >perfect linear function of the observed Y has an r (and thus r−squared)
> >of 1?
>
> That's true. You may be a bit confused, however. The only way that
> the predicted and observed Y can be related by a linear function is if
> the predicted and observed Y are identical (ie, the linear function is
> observed=predicted). You may be confusing "predicted value" with
> "predictor" (also known as a covariate or explanatory variable). The
> predicted value is the linear function of the covariates in which the
> coefficients are those found by fitting to the data.
>
> −−−
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- ***Follow−Ups***:
  - ♦ ***Re: r−Squared Question***
    - ◊ *From:* Jerry Dallal
  - ♦ ***Re: r−Squared Question***
    - ◊ *From:* Eric Bohlman
  - ♦ ***Re: r−Squared Question***
    - ◊ *From:* Radford Neal

- ***References***:
  - ♦ ***r−Squared Question***
    - ◊ *From:* Predictor
  - ♦ ***Re: r−Squared Question***
    - ◊ *From:* Radford Neal

- Prev by Date: ***Re: standard deviation for digits***
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