

## Re: logistic regression

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– here's a wordier answer –

On Thu, 20 Jan 2005 22:34:27 -0600, "raed shatnawi"  
<rshatnaw@cs.uah.edu> wrote:

> *Hi all,*  
>  
> *what is the best book that explains multivariate statistics?*

Where are you starting?

When you browse in a dozen stat textbooks in the library, which ones seemed to make the most sense?

– You might find something good by browsing, but, too often, the best books are already on-loan. IF you say what seems good, someone might say what seems similar, but better.

>  
> *can anyone explain to me the difference between least square regression and logistic regression?*

The "logit" is defined as  $\log(p/q)$  where  $q=(1-p)$ , and  $p$  is the probability for a dichotomous variable which has been observed or estimated for a group.

[You might look up "probit" for comparison.]

You can use  $Y = < 0 \text{ or } 1 >$  as criterion in Ordinary Least Squares.

There's an obvious problem in trying to replace that with a simple transformation for an individual, rather than a group, as  $\log(p/q)$  — "Logistic regression" (LR) has easy solutions (like OLS) when the data are expressed as groups where  $p$  is not 0 or 1. And logistic regression requires a more subtle solution, when the data are presented as individuals whose scores are 0 or 1, since you can't take the log of 0 or infinite.

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Practically speaking, there is often very little difference in tests or prediction between OLS regression on 0/1 outcome, and LR by maximum likelihood methods.

LR usually represents the more appropriate theoretical model. So far as I know, the computer programs for Logistic regression all remain less effective at warnings and diagnostics than what you can get on OLS regression.

<http://www.pitt.edu/~wpilib/index.html>