

THE TEN COMMANDMENTS OF MULTIVARIABLE ANALYSIS

With apologies to Mel Brooks, and thanks for editorial assistance to Elizabeth Kirby and for their insights to the following Internet contributors:

Cande Ananth, Univ of Medicine and Dentistry of New Jersey
Greg Alexander, Univ of South Florida
Kimberlea Hauser, Univ of South Florida
Craig Mason, Univ of Maine

R.S. Kirby, February 2007

The Ten Commandments of Multivariable Analysis

Number 10

Thou shalt use statistical methods appropriate to the level of measurement for both dependent and independent variables.

The Ten Commandments of Multivariable Analysis

Number 9

Know thine assumptions!

In particular, know the distribution or measurement of the outcome.

The Ten Commandments of Multivariable Analysis

Number 8

When the risk of interest is at the tail(s) of the distribution, it makes little sense to assess mean differences.

Number 7

Thou shalt not be a control freak.

Control only for those factors known to be associated with or to confound the association between the primary independent variables and the dependent variable.

Number 6

Just because the clothes fit, thou shalt not necessarily wear it.

Or, when seeking the 'best' model for prediction . . .

Yes, the variable is significant but does the model fit the data?

The Ten Commandments of Multivariable Analysis

Number 5

Thou shalt not worship false idols – even when significant, associations may not be meaningful.

Given a large enough sample size, everything will become significant.

The Ten Commandments of Multivariable Analysis

Number 4

Thou shalt not overspecify thine model, no matter how great the temptation. Remember thine degrees of freedom.

When in doubt, send a letter using this format to the newspaper . . .

The Ten Commandments of Multivariable Analysis

Number 4
continued

Dear Abby,
I have 20 independent variables
and 60 cases – is that a problem?
Signed,
Befuddled

The Ten Commandments of Multivariable Analysis

Number 4
continued

Dear Befuddled,
You have no complaint. Stop wishing for miracles and knocking on wood. Collect more data, remove redundant variables and assess multicollinearity in your predictor variables, and always ensure adequate statistical power for the analyses you wish to conduct. When in doubt, ask your mother.

Signed,
Dear Abby

The Ten Commandments of Multivariable Analysis

Number 3

Know thy data.

The Ten Commandments of Multivariable Analysis

Number 2

**Thou shalt formulate thine hypotheses
before thou analyzeth thine data . . .**

or, in modern English:

**Develop your study questions and
hypotheses *a priori* (oops, that's in
classic Latin) . . . before you conduct the
analyses.**

The Ten Commandments of Multivariable Analysis

Number 1

Thou shalt use the correct terminology.

When a single response variable is modeled, the correct term is multiVARIABLE, not multiVARIATE.

