STATISTICS COLLOQUIUM

MONDAY, DECEMBER 10, 2007
TALK: 4:00 PM — SCIENCE CENTER RM. 309
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"A New Family of Link Functions Extending Logistic Regression"

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ABSTRACT

The logistic regression link function is approximately linear for predicted probabilities between 0.2 and 0.8, but not when fitted values are very small or very large, as happens when modeling the occurrence of rare events. In the latter case, it is advantageous to have a model that can fit situations both where the effects of multiple predictors are more nearly additive or more nearly multiplicative. This paper introduces an extension of logistic regression with a continuous family of sigmoid link functions, including the standard logistic as a special case that allows selection of an arbitrary region of near linearity (fitted probability at the point of inflection). The utility of this extended family is illustrated with analyses of the adverse drug reaction database, AERS, maintained by the U.S. Food and Drug Administration.