Cal Poly Pomona Statistics Colloquium

Non-deletion Approach to Detect Discordant Subjects in Repeated Measurements

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Repeated measurements can be seen in many fields such as medical research, engineering research, linguistic research, etc, but they have not been studied as much as other types of data, and the diagnostics for repeated measurements is still in its infancy. Some authors have attempted to adjust the typical diagnostic tools in regression to repeated measurements but those modified statistics are mainly based on the change of coefficients. And other diagnostics previously proposed for growth curve data do not generalize well to random effects and nonlinear models.

Repeated measurements is different from the data in regression in the sense that they have patterns as their components. So a potential discordant subject(s) should be dealt in a different manner.

Two types of deviation are taken into consideration and a technique is presented to simultaneously diagnose subjects in more than one sense. The new method re-expresses residual sum of squares at each level and then studentize them. As secondary applications, the proposed method can be facilitated to examine the influence of each observation in a given subject, and can play a graphical measure of goodness-of-fit. This method will be the first to look at two dimensions of the outliers problem at once and promises to reveal more information about the shape and location of discordant subjects.

The performance of the proposed method can be seen in the simulation example and real data from biomedical engineering and orthodontic growth data.

This talk takes place <u>Monday, February 19, 2007</u> from <u>10:45-11:30 in Building 8, Room 250</u>.