

Longitudinal Data Analysis in Behavioral Medicine Studies

Qianyu Dang

Department of Biostatistics, Graduate School of Public Health,
University of Pittsburgh,
Pittsburgh, Pennsylvania 15213

Abstract

In many behavioral studies, patients are followed over time with their responses measured longitudinally. In our smoking cessation trials, palm-top computers were used to collect real-time data in real-world settings, the resulting dataset yielded a detailed, time-tagged log of smoking events. Different methods for the analysis of longitudinal data such as generalized estimation equations and Cox regression models were applied to evaluate the association between smoking and situation cues. Also, a combination of time series and cluster analysis technique were used to assess the influence of environmental smoking restrictions on daily smoking patterns. Another example is a depression study on elder patients, where the baseline period measurements were consisted of two correlated growth curves. We employed a bivariate mixed model with time series approach to find out the cross correlation between two outcomes. The future research proposal is about combining the longitudinal modeling and survival to reduce the bias of estimation.