

## **Handling Missing Data in Longitudinal Studies: A Functional Multiple Imputation Approach.**

Abstract:

In longitudinal studies, information from the same set of subjects are collected repeatedly over time. Designed longitudinal studies are often subject to missing data, which imposes a serious impediment to statistical analysis. We propose a functional multiple imputation approach to deal with incomplete longitudinal data. This approach models subjects' response profiles by nonparametric functions and imputes missing values from their posterior predictive distributions using Gibbs sampling algorithm. As an illustrative example, we apply the proposed method to the missing income data from the Panel Study of Income Dynamics (PSID). We also perform Monte Carlo simulations to compare the performance of the proposed approach with the commonly used complete-case and last observed value carried forward methods.