

# LECTURE SERIES

## TRENDS IN STATISTICS



Department of Statistics  
and Data Science  
Faculty of Science

10 November 2022  
9–10 AM (Singapore)

Join Zoom (Link)

Meeting ID: 81269011473

Passcode: 564603



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# STATISTICAL INFERENCE FOR HIGH-DIMENSIONAL BLOCK-WISE MISSING DATA

## Abstract

For multi-source data, blocks of variable information from certain sources are likely missing. Most existing methods for handling missing data do not take structures of block-wise missing data into consideration. In this talk, we will describe a Multiple Block-wise Imputation (MBI) approach, which incorporates imputations based on both complete and incomplete observations. Specifically, for a given missing pattern group, the imputations in MBI incorporate more samples from groups with fewer observed variables in addition to the group with complete observations. We propose to construct estimating equations based on all available information and integrate all estimating functions to achieve efficient estimators. In addition, we propose a nearly unbiased estimator for each individual regression coefficient, which is asymptotically normally distributed under mild conditions. Based on these debiased estimators, asymptotically valid confidence intervals and statistical tests about each regression coefficient are constructed. Numerical studies and ADNI data application confirm that the proposed method outperforms existing methods under various missing mechanisms.

## Biography

Dr Fei Xue is an assistant professor of statistics at Purdue University. She was a postdoctoral researcher in the Department of Biostatistics, Epidemiology and Informatics at University of Pennsylvania from 2019 to 2021. She received her bachelor's degree from the School of Mathematical Sciences at Fudan University in 2014 and her PhD from University of Illinois Urbana-Champaign in 2019. Her research interests are data integration, missing data, mediation analysis, personalized modeling, mobile health, and statistical genetics. She is the recipient of the 2019 ICSA New Researcher Award and 2018 ASA Student Paper Award.

