Syllabus of BIOSTAT 2065 (CRN:19958)

Analysis of Incomplete Data

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Class schedule: 10-11:25am, Tuesday and Thursday.
Location: A215 Crabree.

Office hours: TBA

Course Description: This course will present missing-data problems in statistics and discuss naive methods such as complete-case analysis, available-case analysis and imputation; standard likelihood-based methods, theory and application of multiple imputation, data augmentation, Gibbs sampler, and some recently developed methodologies in the missing-data literature and related fields.

Course Requirements: Calculus, linear algebra, and elementary probability and statistical inference (Biostat 2043, 2044, 2051), knowledge in categorical data analysis or generalized linear models are pre-requisites. There will be homework assignments, one in-class mid-term exam and one final project. The course grade will be a weighted average of homework (30%), mid-term exam (30%) and a final project (40%).

Course Outline

1. Introduction. Missing data problem, patterns and mechanisms of missing data.
4. Maximum likelihood theory. Review for complete data and extend to incomplete data.
5. Factored likelihood methods for special patterns. Applications to normal regression and contingency tables.
6. Maximum likelihood for general missing data.
7. Data augmentation and Gibbs methods.
8. Recent development in the missing-data literature and applications.
**Academic Integrity:**

All students are expected to comply with the University of Pittsburgh’s Policy on Academic Integrity. Any students suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an examination, including dictionaries and programmable calculators.

**Disabilities:**

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and the Disability Resources and Services.