

**Data Science Seminar**  
Hosted by Department of Mathematical Sciences

- Date: Tuesday, March 23, 2021
- Time: 12:00pm - 1:00pm
- Room: Via Zoom
- Speaker: Adam Ciarleglio (The George Washington University)
- Title: Multiple imputation in functional regression with applications to EEG data in a depression study.

**Abstract**

Missing data are a common problem in biomedical research. Valid approaches for addressing this problem have been proposed and are regularly implemented in applications where the data are exclusively scalar-valued. With advances in technology and data storage, biomedical studies now frequently collect both scalar and functional data, both of which may be subject to missingness. However, little work has been done to deal with missing functional data. We tackle this problem by proposing extensions of multiple imputation and Rubin's Rules that accommodate both scalar and functional data. We present results from a simulation study showing the performance of our proposed extensions with respect to fidelity and estimation. We also present results from a study in which we apply our proposed extensions in the context of fitting a function-on-scalar regression model relating characteristics derived from electroencephalography to depression status.

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