## **Statistics Seminar**

Rafiqul Chowdhury, Memorial University

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## Inferences in Multinomial Dynamic Fixed and Mixed Models

## Abstract:

Analyzing categorical data collected over time is an important research topic. Even though there exists numerous studies to analyze categorical data in cross sectional setup, the analysis of this type of data in the longitudinal setup is, however, not adequately addressed. Here, we develop a correlation based model for multinomial (> 2 categories) longitudinal data, namely, Multinomial Dynamic Fixed Logit Model (MDFL); and provide likelihood inferences for category effects, fixed covariant effects and correlations or dynamic dependence parameters. The inferences are done for both complete history and contingency tables based data. For the history based data, we also models the inuences of individual random effects in addition to the fixed covariate effects, which is referred to as the Multinomial Dynamic Mixed logit Model (MDML). Furthermore, as in many practical situations the number of individuals involved in the study may be small, in the thesis, we have examined the finite sample performance of the likelihood estimates both in fixed and mixed model setups.