

**Department of Epidemiology and Biostatistics
Biostatistics Seminar**

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New Methods for Ordinal Data Analysis

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Abstract: Ordinal variables are difficult to work with. They are categorical, but treating them as categorical would ignore the order information. They carry interval information, but treating them as an interval variable by assigning scores impose additional assumptions. Because of these, it is difficult to appropriately include an ordinal predictor in a regression model. It also is difficult to define an appropriate single-valued residual for ordinal outcomes. I will talk about our recent work on these areas (Li and Shepherd, 2010, JASA; Li and Shepherd, 2012, Biometrika). Briefly, (1) we developed a conditional ordinal-by-ordinal test to appropriately test for correlation between an ordinal predictor and an ordinal outcome while adjusting for other covariates. We are working to evaluate this approach on other outcome types. (2) We developed a new residual definition for ordinal outcomes that are single-valued, have a symmetric range, and is unique with respect to a few desirable properties. Our residual is effectively on the probability scale, and can be extended to other outcome types (such as censored outcomes).