

CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES
COLLOQUIUM

Friday, March 22

3:00 – 4:00 PM

Maria Sanford, Room 101

**CONSIDERATIONS FOR A REGRESSION
MODEL WITH ORDINAL OUTCOMES
USING THE IDENTITY LINK**
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Abstract: This is a continuation of our adventure into building models for odds and probabilities, with a focus on methods in health and medical sciences. Logistic regression (LR) allows data analysts to estimate the odds (and odds ratio) of a binary outcome based on covariates using a logit link. LR can be modified to allow ordinal and nominal outcomes. One consideration in using LR is the potential to misinterpret odds as probabilities. This topic has been discussed previously. We now extend the discussion to other regression models.

Previous talks have focused on bypassing the interpretation issue using the log-cumulative probability model (LCPM) for ordinal outcomes which use the log link instead of the logit link. A strength of this link is the estimation of probability and risk ratios, but the constraints in these models can make statistical inference difficult in certain settings. We will briefly review these discussions.

We will then move toward describing a new model involving the identity link for ordinal outcomes which allows for the estimation of probability and cumulative risk differences.

This talk will start with an introduction to linear models and then bridge to generalized linear models for the estimation of odds and probabilities. The goal is to raise awareness of potential challenges and different approaches of modeling ordinal outcomes. Several results presented are in collaboration with Dr. Gordon H. Fick (Emeritus) from the University of Calgary.

This talk is for an audience with an introductory understanding of probability and linear regression models. Attendance of the previous talks is not required.

To join us online use the following link: <https://ccsu.webex.com/meet/gotchey>
For further information: gotchevi@ccsu.edu; 860-832-2839; <http://mathcolloquium.sites.ccsu.edu/>