Pacific Institute *for the* Mathematical Sciences

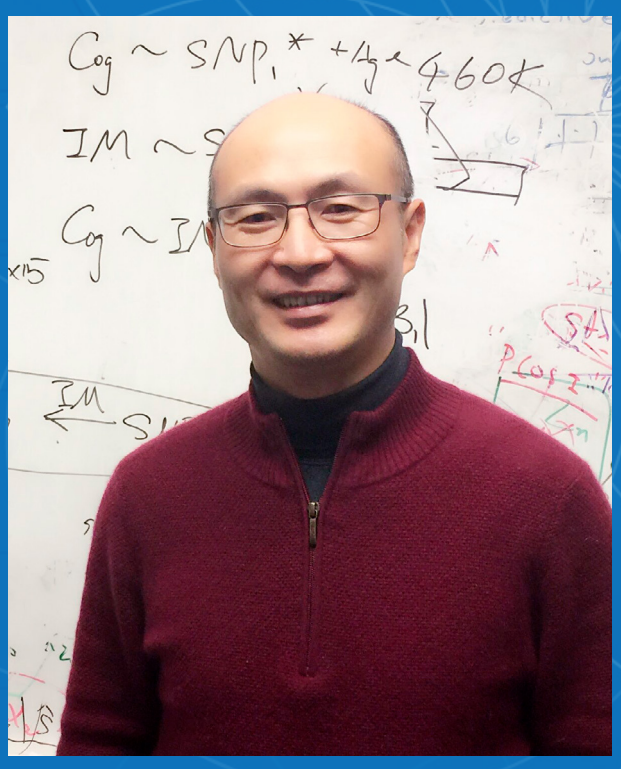
PIMS - CANSSI DISTINGUISHED LECTURE

HEPING ZHANG

Monday, April 29, 2019
3:00 - 4:00 pm

Room: CAB 657
University of Alberta

RESIDUALS AND DIAGNOSTICS FOR GENERALIZED LINEAR MODELS



Heping Zhang

Susan Dwight Bliss Professor of Biostatistics

Yale School of Public Health

Dr. Zhang published over 300 research articles and monographs in theory and applications of statistical methods and in several areas of biomedical research. He directs the Collaborative Center for Statistics in Science that coordinates the Reproductive Medicine Network to evaluate treatment effectiveness for infertility. He is a fellow of the American Statistical Association and a fellow of the Institute of Mathematical Statistics. He was named the 2008 Myrto Lefokopoulou distinguished lecturer by Harvard School of Public Health and a Medallion Lecturer by the Institute of Mathematical Statistics. Heping was the founding Editor-In-Chief of Statistics and Its Interface and he is also editor of the Journal of the American Statistical Association.

Abstract

Ordinal outcomes are common in scientific research and everyday practice, and we often rely on regression models to make inference. A long-standing problem with such regression analyses is the lack of effective diagnostic tools for validating model assumptions. The difficulty arises from the fact that an ordinal variable has discrete values that are labeled with numerical values of no linearity. The values merely represent ordered categories.

In this paper, we propose a surrogate approach to defining residuals for an ordinal outcome Y. The idea is to define a continuous variable S as a "surrogate" of Y and then obtain residuals based on S. For the general class of cumulative link regression models, we study the residual's theoretical and graphical properties. We show that the residual has null properties similar to those of the common residuals for continuous outcomes.

VISIT HERE FOR DETAILS:
HTTPS://WWW.PIMS.MATH.CA/SCIENTIFIC-EVENT/190429-PCDLHZ

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