

This article represents parts of the PhD research of my former PhD student, Somsri Jamroenpinyo, whose dissertation research I lead over 2008-2012, while she was enrolled at Thammasat University. Somsri is not a university lecturer in Bangkok. Some ideas for this research stemmed out of the course I taught at Thammasat University in Summer 2008 on optimal design.



Thailand Statistician
January 2012; 10(1) : 87-105
<http://statassoc.or.th>
Contributed paper

A New Generalized Ordinal Logit Model for Multicategory Response Data

Somsri Jamroenpinyo [a] *, Timothy E. O'Brien [b], and Chinnaphong Bumrungsup [a]

[a] Department of Mathematics and Statistics, Faculty of Science and Technology, Thammasat University, Pathum Thani, 12121, Thailand.

[b] Department of Mathematical Sciences, Loyola University Chicago, USA.

* Author for correspondence; e-mail: huajam@gmail.com

Received: 7 June 2011

Accepted: 6 February 2012

Abstract

This paper introduces and illustrates a new generalized ordinal logit (GOL) model which connects the four commonly-used multicategory logit models by using two hyper-parameters. The commonly used models in multicategory models are the adjacent-categories logit model (AC), the proportional odds (PO) model, and two variants of the continuation-ratio logit (CR) models. The GOL model generalizes these four models in the sense that each is a special case of the larger GOL model, and this GOL model is used for multicategory response data. In this article, we discuss (maximum likelihood) estimation and testing related to the GOL model, providing SAS/IML computer programs for the same, and illustrating the use of the proposed model with two real datasets.

Keywords: adjacent-categories, baseline-category logits, continuation-ratios, multinomial distribution, nominal responses, ordinal responses, proportional odds