

## Seminars on Statistics in Marketing and Psychology, Autumn 2005

We will continue holding research seminars in Marketing, Psychology and Statistics on FRIDAYS 2.30-3.50pm this term, beginning on Friday, September 30 in CH212. These seminars will consist mainly of ongoing research presentations and discussions of published papers. You are welcome to join us.

### LIST OF SEMINARS

September 30: Qingzhao Yu, Statistics Department **Fisher 500**  
"Data-Splitting Models for Ozone Data"  
(with Steven N. MacEachern and Mario Peruggia)

#### Abstract

Daily measurements of ozone concentration and eight other covariates were recorded for 330 days in 1976 in the Los Angeles basin (Breiman and Friedman, 1985). We are interested in predicting ozone concentration and in understanding how the measured covariates influence ozone concentration. These data have been analyzed with sophisticated black box routines such as ACE, CART, Random Forests and Smoothing Splines, and it is said that these methods provide superior predictive performance. In this poster we take a different tack, exploring the benefits of subjective (human) modeling. We devise a methodology that allows fully Bayesian subjective modeling while avoiding double use of the data. The data are split into three portions. Each of three analysts independently models one portion of the data, reporting their posterior distribution. Each posterior consists of several models, with distributions assigned both across models and over parameters within models. Each posterior is then updated with the portions of the data that were not used to construct the posterior. The analysts' posteriors are then synthesized via Bayes' Theorem to produce a final posterior distribution. We formally evaluate the predictive ability of the various modelling strategies by examining performance on test data not used to fit the models. Subjective modeling is notably superior to automatic modeling. Combining predictions across analysts is superior to relying on a single analyst.

October 7: Greg Allenby, Marketing Department **Cockins Hall 212**  
Estimating heterogeneous EBA and economic screening rule choice models  
(with Timothy Gilbride)

Pdf of paper can be obtained from  
<http://www.stat.ohio-state.edu/~amd/seminar.html>

October 14: Greg Allenby, Marketing Department **Cockins Hall 212**  
Product Attributes and Models of Multiple Discreteness  
(with Jaehwan Kim, School of Business, Korea University, and Peter Rossi,  
Graduate School of Business, University of Chicago)

Pdf of paper can be obtained from  
<http://www.stat.ohio-state.edu/amd/seminar.html>

October 21: Shiling Ruan, Statistics Department, **Cockins Hall 212**  
(with Steven N. MacEachern, Angela M. Dean, Thomas Otter)  
The dependent Poisson race model and its application in modeling dependence  
in a conjoint choice study.

Abstract

Sequential sampling models have long been employed in modeling response time in experimental psychology such as pattern recognition (Townsend and Ashby, 1983, Van Zandt, Colonius, Proctor, 2000). These models assume the observer's decision is a process of accumulating evidence over time for the various alternatives. As soon as the evidence for one alternative exceeds some criterion value, a response is generated. The race model is a special case of the sequential sampling models. It assumes that there exists a separate internal "counter" for each alternative. The independent race model assumes that these counters are independent and track evidence in favor of its alternative in parallel. The independence assumption is limited and the model does not take into account the dependence among alternatives. In this paper, we propose a dependent race model within the family of Poisson race models. The internal "counter" for each alternative is no longer independent. We show how to introduce the dependence structure through a "shared" counter that tracks evidence shared by all alternatives. The dependent Poisson race model is then applied to conjoint choice data and has demonstrated superior performance in modeling dependence among alternatives, as compared with the independent race model and traditional MNL models.

October 24th: Michael Browne, Psychology and Statistics  
"Dynamic Factor Analysis of Time Series"

November 4th: Thomas Otter, Greg Allenby and Trish Van Zandt  
"An Integrated Model of Discrete Choice and Response Time with Application to Conjoint Analysis".

Pdf of paper can be obtained from  
<http://www.stat.ohio-state.edu/amd/seminar.html>

November 11: NO SEMINAR  
UNIVERSITY CLOSED FOR VETERAN'S DAY

November 18: Trish Van Zandt, Psychology, and Greg Allenby, Marketing  
A discussion on “The Integrated Theory of the Mind”. by Anderson, Bothell,  
Byrne, douglass, Lebiere and Qin.

November 25: NO SEMINAR;  
UNIVERSITY CLOSED FOR THANKSGIVING

December 2: NO SEMINAR