INTERNATIONAL CHOICE MODELLING CONFERENCE

The Sebel at Pier One

Sydney

3 July 2013 – 5 July 2013

www.icmconference.org.uk

Conference Chair: **Jordan Louviere**

Conference co-organisers: **Stephane Hess, John Rose, Joffre Swait, Richard Carson, Anthony Marley**

Terry Flynn

Conference Highlights

Wednesday, 9:45am – 10:45am, Water @ Pier One

Keynote presentation by **George Loewenstein**, Herbert A. Simon Professor of Economics and Psychology, Department of Social and Decision Sciences, Dietrich College of Humanities and Social Sciences, Carnegie Mellon University

Emotion and Choice

This presentation will discuss a variety of research projects that examine the implications of an evolutionary account of emotion for understanding the impact of emotion on decision making. According the evolutionary account, emotions are all-encompassing 'programs' that prepare us to react to recurring situations of evolutionary significance. When we are in different emotional states, the evolutionary account suggests, we are so profoundly transformed that we are, in effect, 'different people'. Such an account helps to make sense of research findings I will discuss which show (1) how profoundly emotions affect judgment and decision making, and (2) how little insight we have into our own (and others') behavior in emotional states different from that which we are currently experiencing

Thursday, 10:00am – 11:00am, Water @ Pier One

Keynote presentation by **Richard Carson**, Professor in and former Chair of the Department of Economics at the University of California, San Diego. He is also a Distinguished Research Professor at the University of Technology, Sydney's Centre for the Study of Choice

The Incentive and Informational Structure of Stated Preference Questions

This talk examines what the neoclassical economic framework has to say about how respondents should answer stated preference questions. The issue of whether different elicitation formats exhibit procedural invariance in the sense of yielding consistent information about preferences is addressed. Consequential and inconsequential preference questions are contrasted. Incentive structures where the dominant strategy is truthful preference revelation are considered. Properties of specific preference elicitation formats are examined in light of empirical evidence on their performance.

Invited presentation, Wednesday 3:30pm – 5:00pm, Water @ Pier One

Choice modelling in transportation and economics: prospects and problems – Professor **David Brownstone**, Department of Economics and Institute of Transportation Studies, U.C. Irvine

In a sweeping review of modern choice modeling, McFadden (2013) describes the history of choice modeling and highlights challenges to the traditional self-interested economic consumer model from cognitive psychology, anthropology, evolutionary biology, and neurology. This talk starts by reviewing these challenges from the lens of a transportation choice modeler interested in policy applications. I will argue that transportation choice modelers have done a very good job developing methods for modeling preference heterogeneity and incorporating stated preference data, but we have not done as well dealing with most of McFadden's other challenges.

The second part of the talk will highlight a problem not mentioned in McFadden's review – measurement error. Econometricians have known for almost a century that using variables subject to measurement errors in regression models always biases inference and frequently leads to inconsistent estimation. Nevertheless disaggregate transportation modelers frequently use variables with substantial measurement error. Route choice, mode choice, and vehicle choice models all require information about non-chosen alternatives, and these data are frequently imputed (e.g. from network skims) with substantial error. I will review work in economics on measurement error in

income (a common exogenous variable in transportation models), and then gives some results from attempts to model the measurement process in route choice and vehicle choice.

Reference: McFadden, Daniel, 2013. The new science of pleasure: consumer choice behavior and the measurement of well-being. Forthcoming in S. Hess and A.J. Daly (eds.), Handbook of Choice Modelling, Edward Elgar. (accessed at http://emlab.berkeley.edu/wp/mcfadden122812.pdf, June 11, 2013)

Choice modelling and environmental valuation – Where have we been, what's up ahead? - Professor **Vic Adamowicz**, Faculty of Agricultural, Life and Environmental Sciences, Department of Resource Economics & Environmental Sociology, University of Alberta

This presentation will examine recent trends in areas of environmental valuation and choice modelling and explore challenging issues (old and new) that arise in the application of choice models to valuation cases. The issues to be explored include: implications of alternative considerations of choice set formation on valuation methods, challenges in passive use valuation, and emerging issues in the valuation of firm's choices. Linkages between these issues and behavioral economics concepts will also be examined.

Invited presentations, Thursday 4:00pm – 5:45pm, Water @ Pier One

Discrete Choice Experiments in Health Economics: Opportunities in a data deluge, Professor **Denzil Fiebig**, Australian School of Business, University of NSW

Health economics is one area of research where stated preference methods and in particular discrete choice experiments (DCEs) have exhibited considerable growth over the last twenty years. In parallel, there has been an explosion in the availability of data from new and varied sources prompting commentators to talk about the "data deluge". The data deluge highlights the dramatic decrease in data collection costs, the ready availability of data from multiple sources and the possibilities for developing novel research designs. In this paper we ask what role do DCEs play in such a data rich environment and discuss some of the opportunities for further developments of DCEs in health economics that arise in such a context.

Antecedent Volition & Process Representation in Models of Choice Behaviour, Professor **Joffre Swait**, CenSoC, University of Technology, Sydney

Marketing has contributed significantly to modelling consumer choice behaviour in many product categories using the basic microeconomic framework of the fully informed and fully optimizing agent. However, it has also contributed significantly to an understanding of the shortcomings of this framework. Unfortunately, marketing choice modellers have not followed up on this by pushing forward better process representations that overcome the recognized limitations of the microeconomic framework. In this talk I exemplify several directions in which better process representation can be incorporated into choice models in an effort to illustrate how marketing can advance choice modelling and its own disciplinary agenda at the same time. I take the perspective that consumers are problem-solvers and make decisions about how to make a choice among alternatives, leading to multi-stage representations of choice processes. Among the approaches to be illustrated are 1) the use of categorization to simplify evaluation, 2) the selection of which information is relevant for identifying the optimal alternative, 3) the adoption of the optimal decision strategy and 4) choice set formation in a spatial-temporal setting.

Invited presentations, Friday 3:00pm – 3:45pm, Water @ Pier One

The best of both worlds: integrating psychological and econometric theories of choice, Professor **Scott Brown**, School of Psychology, The University of Newcastle

Random utility models (RUMs) are useful analytic tools for understanding decision-making behaviour. Among their many benefits, RUMs provide quantification, addressing precise questions about, e.g., how market share might change in response changes in products. RUMs can also support sophisticated statistical approaches, such as multi-level analyses which identify differences between people, and between different stores, different times, and so on. Nevertheless, RUMs have some drawbacks which limit their use and interpretability.

It is not clear how the assumptions of a RUM might correspond to cognitive processes, and nor is it clear how RUMs might operate at a neurophysiological level. RUMs also do not make any predictions about the time taken for decision-making. These limitations have become increasingly important, as neurophysiological data are more often considered in marketing research, and as computerised data collection provides access to precise timing data. A class of decision-making theories from cognitive psychology, called "sequential sampling" or "evidence accumulation" models, solve these problems: they have well-established relationships with neurophysiological data, and they make efficient use of timing data to learn more about the internal processes of decision-making. I describe the application of a cognitive model of decision-making, the "linear ballistic accumulator" (LBA), to marketing data.

The LBA maintains the statistical advantages of conventional RUMs, including multi-level (hierarchical) Bayesian estimation, because the LBA is mathematically simpler than other cognitive theories of decision making. It nevertheless has the cognitive and neurophysiological advantages of other evidence accumulation theories. The LBA-based analyses are illustrated using data from consumer choices, and from patient choices about healthcare. The potential advantages of the LBA over RUMs for making sense of timing and neurophysiological data are also discussed.

Special session – 11:30am – 12:00pm, Thursday 4th July

Eye-tracking and Choice Modelling Research: Issues and Applications, Harmen Oppewal, Department of Marketing Monash University

This special session will concentrate on the use of eyetracking for studying individual decision making, in particular in the context of discrete choice experiments (DCE). The DCE research community is displaying an increased interest in describing and understanding the psychological processes that underlie or are related to choice. Eyetracking appears a very suitable tool for obtaining process measures but there is relatively little understanding in DCE and related study areas on how eyetracking studies should be conducted and interpreted.

In particular, discussion and presentations in the workshop will concentrate on the benefits and problems of using eyetracking in decision research, issues around how to plan and conduct eye tracking studies for DCEs, how to deal with bottom-up and top-down effects on attention, and their interactions, how to code eyetracking data and how to extract variables relevant for DCE studied, how to interpret eyetracking findings and last but not least, what insights have been gained from recent research by the presenters that used eyetracking methodologies. The session will consist of five presentations with discussions.

Presentations (* = presenter)

1) **How stimuli presentation format affects visual attention and choice outcomes in choice experiments ,** Simone Mueller Loose and Jacob Lund Orquin* (Aarhus University)

This study analyses visual attention and part-worth utilities in choice experiments across three different choice stimuli presentation formats. Visual attention and choice behaviour in discrete choice experiments are found to be strongly affected by stimuli presentation format. These results suggest that presentation format has strong implications for the external validity of discrete choice estimates.

2) **Exploring visual attention in choice experiments in health,** Emily Lancsar*, Peter Ghijban (Monash University)

The use of eye tracking to complement and enhance our understanding of choice behaviour in DCEs is explored to inform the development of the experiment and also to provide additional data to help explain how respondents make choices, and the information used to do so including an exploration of attribute non attendance. Choice and eye tracking data are triangulated with qualitative data in a study exploring preferences for medication to help prevent stroke

3) **Evidence accumulation within and across repeated discrete choices,** Martin Meißner* (Bielefeld University), Joel Huber and Andrés Musalem (Duke University)

According to the theory of evidence accumulation, discrete choices are made by accumulating noisy evidence in favor of the finally chosen objects. Recent studies using eyetracking found evidence for feature focus within choice tasks showing that people increasingly focus on liked features as the decision approaches. Building on that knowledge, this paper investigates feature and object focus, i.e. an increasing focus on the finally chosen object, across choice tasks. With respect to feature focus, the results show that respondents fixate a smaller percentage of feature information and that they focus attention on the more important attributes in later choice tasks. With respect to object focus, we observe an increased focus to the chosen object in later choice tasks. Feature and object focus therefore enable respondents to answer choice questions with as much precision (measured by the predictability of the response) in substantially less time. Building on these results, we present results of a Bayesian model testing whether feature and object focus effects are less relevant during early choice tasks, i.e. when people learn which attributes are important for their decisions.

4) **A Cracker of a Project: Triangulating Eyetracking and EEG Measures in Discrete Choice Experiments Involving Crackers and Patterns ,** Chelsea Wise*, Rami Khushaba, Jordan Louviere*, Tiago Ribeiro, Barbara Kahn, Claudia Townsend and Sarath Kodagoda – UTS/CenSoC)

We report a series of discrete choice experiments that attempt to triangulate eyetracking and EEG measures with choice outcomes. Results suggest that participants initially spend more time gazing at irrelevant features but over time gradually reduce the amount of time spent on them. The EEG results suggest that the primary activation areas underlying the choices are in the frontal regions of the brain. Eyetracking measures and EEG measures correlate well with traditional DCE model estimates.

5) **Consumers' visual attention during shopping: effects of consumer goals and assortment variation,** Harmen Oppewal* (Monash University), Justin Cohen (University of South Australia), Saman Khajehzadeh (Monash University)

This study investigates how consumer goal states affect visual attention during shopping tasks. It manipulates consumers' shopping goals and the size and composition of the available assortment and observes eyemovements and choice behavior. The presentation will show findings and discuss issues in and implications of the use of eyetracking for studying assortment perceptions and choice behaviour.

Presenter Details

The team of presenters covers a range of disciplines where choice modelling and eye tracking are currently applied. These include marketing, health economics, food science, cognitive sciences, and psychology.

Emily Lancsar, Monash University <Emily.Lancsar@monash.edu>;

Peter Ghijban, Monash University <Peter.Ghijban@monash.edu>

Emily is an economist in the Centre for Health Economics at Monash University. She has published extensively on choice experiments and their use for assessing a range of health policy issues. Peter is a Research Fellow in the same

centre. Emily and Peter are currently conducting several studies using eyetracking to obtain data that complement choice data.

Jordan Louviere, UTS <Jordan.Louviere@uts.edu.au>,

Chelsea Wise, UTS <Chelsea.Wise@uts.edu.au>,

With co-researchers: Tiago Ribeiro, Barbara Kahn, Claudia Townsend and Sarath Kodagoda – UTS/CenSoC

Jordan is a Distinguished Research Professor and Professor of Marketing at the University of Technology, Sydney. He is internationally recognised as the pioneer of the design and analysis of choice experiments. He published more than 200 scholarly articles on the subject.

Chelsea is a lecturer in marketing at UTS and is conducting eyetracking studies at CenSoC.

Martin Meißner, Bielefeld University <mmeissner79@googlemail.com>

Joel Huber, Duke University <joel.huber@duke.edu>

Andrés Musalem, Duke University <amusalem@duke.edu>

Martin is an assistant professor in marketing and published one of the first studies on eyetracking in DCE contexts. He holds a grant from the German Research Foundation (DFG) to study decision sequences using eyetracking.

Joel is the Alan D. Schwartz Professor of Marketing at the Fuqua School of Business. His Ph.D. nearly 40 years ago was under the direction of the late Paul Green. Joel has loved exploring aspects of choice models ever since.

Andrés is an assistant professor of marketing at the Fuqua School of Business and a visiting professor at the University of Chile. He is an empirical researcher interested in the development of Bayesian methodologies to better understand consumer preferences and firm behavior, particularly under limited data situations.

Harmen Oppewal, Monash University <Harmen.Oppewal@monash.edu>

Justin Cohen, University of South Australia <Justin.Cohen@unisa.edu.au>

Saman Khajehzadeh, Monash University < Saman.Khajehzadeh@monash.edu>

Harmen is a professor of marketing. He published choice studies in several leading journals in marketing and related disciplines. His recent work is using eyetracking to investigate choice processes relating to assortments, information search, and sequencing and framing effects.

Justin is a research fellow at the Ehrenberg-Bass Marketing Science Institute where he also completed his PhD specialising in food and wine marketing with applications in choice modelling.

Saman is a research fellow in the Department of Marketing. He recently completed his PhD at Monash University on consumer responsiveness to mobile coupons.

Jacob Lund Orquin, Aarhus University <JaLO@asb.dk>

Simone Mueller Loose, Aarhus University <SimMu@asb.dk>

Jacob is a postdoc researcher with a background in Cognitive Science and Marketing and is using eye tracking experiments to study bottom up and top down processing in visual cognition and how these processes influence and are influenced by decision making.

Simone is a Marie Curie Senior Research Fellow. She published choice studies in marketing and food consumer behaviour. She currently conducts studies of how choice stimuli presentation formats and experimental designs affect attention and choice in choice experiments.

Special Session, 2:00pm – 3:30pm, Thursday 4th July

Large Choice Sets

A substantial number of consumer markets feature choices from large or very large choice sets. These can arise in contexts such as:

- the selection of items from a menu, whether in a restaurant or in contexts, such as purchasing computers, where many options are available;
- in contexts where the attributes are continuous and choices can be many from an effectively infinite number of possibilities;
- where producers are attempting to construct products that will be attractive in the marketplace;
- where modellers are analysing geographic issues in large areas, e.g. residential choice, destination choice or companies' location choice;
- the combinatorial scheduling of activity programmes;
- modelling the purchase of portfolios of products, investments etc.

In each of these cases, issues arise in both the estimation of models and their application to derive willingness-to-pay or in making forecasts. For example, for forecasting, some groups use expectations based on modelled probabilities, while others use a random sampling approach to simulate the forecast.

The different groups of workers who have addressed these issues have adopted different approaches, some of which relate to the topic they are studying but others to the background of the researchers themselves.

The objective of the workshop will be to hear and discuss approaches that have been taken by research groups, attempting to see whether there are opportunities for methods to be transferred. We have three resource presentations, by Jordan Louviere, Kay Axhausen and Andrew Daly, which will cover different aspects of the issue, and these will be followed by a general discussion.

Wednesday 3rd July 2013

8:30am – 9.15am	Registration Tea/Coffee					
9:15am – 9:45am	**(Water @ Pier One)** **Introduction – Stephane Hess & Jordan Louviere** **Welcome – Dr Amanda Barnard, Leader, Virtual Nanoscience Laboratory, CSIRO Materials Science & Engineering**					
9:45am – 10:45am	**(water @ Pier One)** **Keynote Presentation** **George Loewenstein- Emotion and Choice** **(Session Chair: Jordan Louviere)**					
10:45am – 11.15am	Morning tea (Dawes Point 6 & 7)					
11:15am – 12:45pm	I-A(1) Dawes Point 1 (advances in models & methods/new ways of modelling decisions) Session Chair: Cam Rungie	I -A(2) Dawes Point 2 (alternative decision models) Session Chair: Sander van Cranenburgh	I-A(3) Dawes Point 3 (choice consistency/ error variance) Session Chair: Dan Rigby	I-A(4) Dawes Point 4 (Health) Session Chair: Jennifer A Whitty	I-A(5) Dawes Point 5 (goals & planning) Session Chair: Michiel Bliemer	1-A(6) Bridge Room (comparisons in experimental practice) Session Chair: Jill Windle,
	Correcting for endogeneity without instruments in discrete choice models: the multiple indicator solution C. Angelo Guevara, Daniel Polanco	*Evaluating Decision Makers' Preferences via Lexicographic Semiorders* Clintin Davis-Stober, Nicholas Brown, Daniel Cavagnaro	*An investigation of individual preferences: stability over time and consistency across incentives* Emmanouil Mentzakis, Jingjing Zhang	*Community preferences for the allocation of donor organs for transplantation* Kirsten Howard, Stephen Jan, John Rose, Michelle Irving, Germaine Wong, Allison Tong, Steven Chadban, Richard Allen, Jonathan C Craig, Alan Cass	*Probabilistic Choice (Models) as a Result of Balancing Multiple Goals* Joffre Swait & Anthony Marley	*Sequential attribute presentation effects in stated choice experiments: A study in the context of holiday destination choice* Harmen Oppewal, Twan Huybers, Geoffrey Crouch
	Emotion in best-worst-discrete choice experiments	*Finding your way out: utility maximisation and regret minimisation in the presence of opt out alternatives*	*Consistency (or lack thereof) between choices in best-worst surveys*	*Estimating health state utility values from discrete choice experiments – a QALY space model approach*	*Does it all come out in the wash? Tales from the laundry room*	*Learning how to choose: effects of instruction choice sets on stated choices*

	Jordan Louviere, Carsten Rasch, Thorsten Teichert	Stephane Hess, Matthew Beck & Caspar Chorus	Marek Giergiczny, Phani Chintakayala, Thijs Dekker, Stephane Hess	Yuanyuan Gu, Richard Norman, Rosalie Viney	Jordan Louviere, Darla Hatton MacDonald, John Rose	Jürgen Meyerhoff, Klaus Glenk
	Review of the application of latent variables to the attributes in discrete choice models Cam Rungie	*Random Regret Minimization: Overview of empirical performance and policy implications* Caspar Chorus, Sander van Cranenburgh	*Choice Consistency and Its Determinants* Dan Rigby	*Comparison of discrete choice and best worst scaling methods to assess Australian public preferences for the funding of new health technologies* Jennifer A Whitty, Julie Ratcliffe, Gang Chen, Paul A Scuffham	*A strategic perspective on work mode choice behaviour: The concept of commuting plans* Joffre Swait, Michiel Bliemer	*The sequencing effects of paired experiments with choice experiments and contingent valuation* Jill Windle, John Rolfe
12:45pm – 1:30pm	Lunch (Water @ Pier One)					
1:30pm – 3:00pm	I – B(1) Dawes Point 1 (Heterogeneity) Session Chair: Olvar Bergland	I – B(2) Dawes Point 2 (information, communication & framing) Session Chair: Kevin P.F. Broecks	I – B(3) Dawes Point 3 (latent variables) Session Chair: Petr Mariel	I – B(4) Dawes Point 4 (bias) Session Chair: Jorge E. Araña	I – B(5) Dawes Point 5 (risk & uncertainty) Session Chair: Benedict G C Dellaert	I-B(6) Bridge Room (spatial) Session Chair: Astrid Kemperman
	Inter-shopping Duration of Seniors and Non-Seniors: A Latent Segmentation AFT-based Duration Model Behzad Karimi, Taha Hossein Rashidi, Abolfazl (Kouros) Mohammadian	*Labelling Effects for Alcoholic Drinks in Australia: Evidence from Three Experimental Designs* Doina Olaru, Wade Jarvis	*A latent variable approach to dealing with missing or inaccurately measured variables: the case of income* Stephane Hess, Nobuhiro Sanko, Andrew Daly, Jeff Dumont	*If you have to eat it, will you tell me the truth?* Darla Hatton MacDonald, John Rose, David N Cox, Haidee Lease	*The use of risk-based discrete choice experiments to capture preferences over health states* Angela Robinson, Anne Spencer, Peter Moffatt	*Methodological and Empirical Challenges in Modelling Households' Residential Location Choices at the Level of Dwelling Units* (being presented by Jacek Pawlak) Alireza Zolfaghari, Aruna Sivakumar, John Polak
	Citizen Preferences for Multifunctional Agriculture in the Watershed Areas of Northern Thailand: A Latent Class Choice Model Chapika Sangkapitux, Pornsiri Suebpongsang, Varaporn Punyawadee,	*Choice models in communication studies: the communication of arguments about Carbon Capture and Storage* Kevin P.F. Broecks, Frank J. van Rijnsoever, Sander van Egmond, Marlies	*Environmental Value Orientations in Discrete Choice Experiments: A Latent Variables Approach* David Hoyos, Petr Mariel, Stephane Hess	*Evidence-based environmental attributes in choice experiments research on experimental & related practice* Marit Kragt	*The incorporation of subjective risks into choice experiments to test scenario adjustment* Simone Cerroni, W. Douglass Shaw, Sandra Notaro, Roberta Raffaelli	*A New Spatial Multiple Discrete-Continuous Modeling Approach to Land Use Change Analysis* Chandra Bhat, Subodh Dubey, Rajesh Paleti

	Nucharee Pimpaoud, Jiraporn Konsurin, Andreas Neef	Verlinde-van den Berg, Marko P. Hekkert				
	A Bayesian Approach to Latent Heterogeneity of Preferences in Travel Mode Choice Models Olvar Bergland, Markus Flügel	*Choice models in communication studies: the framing of communication about Carbon Capture and Storage* Kevin P.F. Broecks, Sander van Egmond, Frank J. van Rijnsoever, Marlies Verlinde-van den Berg, Marko P. Hekkert	*Using a latent variable choice model to capture heterogeneous attitudes and preferences toward the landscape externalities of wind power generation* Petr Mariel, Jürgen Meyerhof and Stephane Hess	*Hypothetical Bias or Model Misspecification?: Evidences from the field* Jorge E. Araña, Simon Fifer, Carmelo J. León and John Rose	*Using Preferred Outcome Distributions to Estimate Value and Probability Weighting Functions in Decisions under risk* Bas Donkers, Carlos Lourenco, Benedict G C Dellaert, Daniel G Goldstein	*What drives active transportation choices among the aging population? Comparing a Bayesian belief network and mixed logit modeling approach* Astrid Kemperman, Harry Timmermans
3:00pm - 3:30pm	Afternoon tea (Dawes Point 6 & 7)					
3:30pm – 5:00pm	**(water @ Pier one)** **Invited presentations** **Choice modelling in transportation and economics: prospects and problems – David Brownstone** **(Session Chair: Stephane Hess)** **Choice modelling and environmental valuation – Where have we been, what's up ahead? - Vic Adamowicz** **(Session Chair: Richard Carson)**					

6:30pm	**(Water @ Pier One)** **Welcome function and poster presentations**

Thursday 4th July 2013

	II-A(1) Dawes Point 1 (activities)	II-A(2) Dawes Point 2 (structural choice modelling)	II-A(3) Dawes Point 3 (advanced applications)	II-A(4) Dawes Point 4 (survey comparison effects)	II-A(5) Dawes Point 5 (latent variables)	II-A(6) Water @ Pier One (advances in models & methods/new ways of modelling decisions)	II-A(7) Bridge Room (novel applications)
9:00am – 10:00am	Session Chair: Andrew Daly	Session Chair: Ann Wallin	Session Chair: Truong Truong,	Session Chair: Mark Morrison,	Session Chair: A.H.M. Mehbub Anwar,	Session Chair: Juan de Dios Ortuzar	Session Chair: Mara Thiene
	Introducing relations between activities and goods consumption in microeconomic time use models Sergio Jara-Diaz, Sebastian Astroza and Chandra Bhat	*Predictive validity across product categories with similar attributes* Abou Bakar, Richard Lee, Cam Rungie	*Equilibrium in Traffic Networks: Is it Pure, Mixed or Quantal Response?* Vinayak Dixit, Laurent Denant-Boemont	*Modeling cross-category Country-of-Origin effects by combining multiple DCEs from the same respondents: A structural choice modeling approach* Jasha Bowe, Cam Rungie, Larry Lockshin and Richard Lee	*Multilevel (ML-ICLV) & single level integrated discrete choice and latent variable (ICLV) models using alternative factorial structures' conceptualizations* George Chryssochoidis	*Analysis of Drivers' Route Choice Behavior Considering Probabilistic Choice Set* Gang Xu, Tomio Miwa, Takayuki Morikawa	*Acceptance of life-threatening hazards among young tourists: a stated choice experiment* Igor Sarman, Stefano Scagnolari, Rico Maggi
	Impact of household time constraints on person travel demand: the notion of family priority time in activity based models Goran Vuk, John L Bowman, Stephane Hess; Andrew Daly	*Testing Consumer Decision Strategies in Comparative and Non-Comparative Choice Tasks: A Structural Choice Modelling Formulation of the Evaluability Thesis* Ann Wallin, Len Coote	*Linking Discrete Choice to Continuous Demand in a Computable General Equilibrium Model* Truong Truong, David Hensher	*Investigating Differences between Internet and Mail Implementation of a Stated-Preference Study While Controlling for Differences in Sample Frames and Self-Selection Effects* Mark Morrison, Darla Hatton MacDonald, Kevin Boyle, John Rose, Roderick Duncan	*Analysing the Merit of Latent Variables over Traditional Objective Attributes for Traveller Mode Choice Using RPL Model* A.H.M. Mehbub Anwar, Kiet Tieu, Peter Gibson, Khin Than Win, Matthew Berryman	*Modelling mode and time-of-day choice with joint RP and SC data* Pedro Lizana, Julian Arellana, Juan de Dios Ortuzar, Luis Ignacio Rizzi	*The influences of individuals in joint decisions: recreation in the Alps in Italy* Mara Thiene, Cam Rungie, Riccardo Scarpa
10:00am – 11:00am	**(Water @ Pier One) Keynote presentation**						

	Richard Carson - The Incentive and Informational Structure of Stated Preference Questions (Session Chair: John Rose)					
11:00am – 11:30am	Morning tea (Dawes Point 6 & 7)					
11:30am – 1:00pm	II-B(1) Dawes Point 1 (attribute non attendance) Session Chair: Seda Erdem	II-B(2) Dawes Point 2 (choice consistency/error variance) Session Chair: Malte Oehlmann	II-B(3) Dawes Point 3 (spatial) Session Chair: Chandra Bhat	II-B(4) Dawes Point 4 (novel applications) Session Chair: Andrey Vasnev	II-B(5) Dawes Point 5 (best worst response methods) Session Chair: Andrew Heathcote	II-B(6) Bridge Room *Eye-tracking and Choice Modelling Research: Issues and Applications* (Session Chair - Harmen Oppewal)
	On the Influence of Dimensionality of Stated Choice Experiments on Attribute Non-attendance Priska Weller, Malte Oehlmann, Jürgen Meyerhoff *Stated attribute cut-offs in choice experiments: do they affect the variance of choices?* Riccarda Moser, Roberta Raffaelli *Attribute-level non-attendance in a choice experiment investigating preferences for health*	*The perceived unreliability of rank-ordered data: an econometric origin and implications* Hong il Yoo *The influence of design dimensions on stated choices: an example from environmental valuation using a design-of-designs approach* Malte Oehlmann, Priska Weller, Jürgen Meyerhoff	*Does Social Networking Substitute for or Stimulate Teenagers' Travel? Findings from a Latent Class Model* Maria Kamargianni, Amalia Polydoropoulou *Making productive use of the wasted: a behavioural model of activity choice for business travel time and implications of ICT use for in-travel productivity* Jacek Pawlak, John W. Polak, Aruna Sivakumar *The Formulation and Estimation of a Spatial Lag Ordered-Response Model with Non-*	*A Nested Logit Model of Green Electricity Consumption in Western Australia* Chunbo Ma, Michael Burton *Designing Reasonable and Rational Robot Behaviours: A Choice Theory Approach* Mary-Anne Williams *Forecast combination for discrete choice models: predicting FOMC monetary policy*	*Overcoming Challenges and Improvements in Best-Worst Elicitation: Determining What Matters to Japanese Wheat Millers* Paul F. Burke, Jordan J. Louviere, Edward Wei, T. Gordon MacAulay, Ken Quail, Richard T. Carson *Squeezing More Toothpaste Out of Each Tube: A Test of the Validity of Combining Discrete-Choice and Best-Worst Scaling Data* Reed Johnson *Accepting and Rejecting: Not so Different*	*How stimuli presentation format affects visual attention and choice outcomes in choice experiments* *Exploring visual attention in choice experiments in health* *Evidence accumulation within and across repeated discrete choices* *A Cracker of a Project: Triangulating Eyetracking and EEG Measures in Discrete Choice Experiments Involving Crackers and Patterns* *Consumers' visual attention during shopping: effects of consumer goals and assortment variation*

	service innovations Seda Erdem, Danny Campbell, Arne Hole		*Normal Kernel Distribution and Non-Normal Individual Mixing Distribution* Chandra Bhat, Sebastian Astroza, Rajesh Paleti	*decisions* Andrey Vasnev, Laurent Pauwels	Guy Hawkins, Scott Brown, Andrew Heathcote	
1:00pm – 2:00pm	Lunch (Water @ Pier One)					
2:00pm – 3:30pm	II-C(1) Dawes Point 1 (advances in models & methods/new ways of modelling decisions) Session Chair: Marek Giergiczny	II-C(2) Dawes Point 2 (novel applications in transport) Session Chair: David Brownstone	II-C(3) Dawes Point 3 (context and information effects) Session Chair: John Rolfe	II-C(4) Dawes Point 4/5 (WTP) Session Chair: Mikolaj Czajkowski	II-C(5) Bridge Room Session Chair: Andrew Daly	
	The regret of not modelling regret in choice experiments: a Monte Carlo investigation Marco Boeri, Alberto Longo, Riccardo Scarpa	*Modeling car ownership and usage: a dynamic discrete-continuous choice modeling approach* Aurélie Glerum, Emma Frejinger, Anders Karlström, Muriel Beser Hugosson, Michel Bierlaires	*Effects of consumer 'trust in the label' on choice: an empirical study of organic logos in Italy* R. Zanoli, S. Naspetti, M. Janssen, U. Hamm	*Latent Class Choice Models with Feedback through Consumer Surplus* Akshay Vij, Fletcher Foti, Paul Waddell, Joan Walker	Large Choice Sets Andrew Daly Jordan Louviere Kay Axhausen	
	Individual-level models vs. random coefficients sample level models: contrasts and mutual benefits Stephane Hess, Marek Giergiczny, Jeff Dumont	*Modelling Electric Vehicle Adoption in the UK: Does the experience of using an electric vehicle change stated preference?* Aruna Sivakumar, Nicolo Daina, John Polak, Stephen Skippon, Jenny Stannar	*An investigation into the effect of competitive context on brand price elasticities* Steven Dunn, Svetlana Bogomolova, John Dawes	*New Baseline Model for Estimating Willingness to Pay from Discrete Choice Models* Richard Carson, Mikolaj Czajkowski		

		D *Estimating Demand for High Fuel Economy Vehicles* David Bunch, David Brownstone	*Cardinal utility for applied research using situation-specific choice experiments* Daniel Gregg and John Rolfe		
3:30pm – 4:00pm	Afternoon tea (Dawes Point 6 & 7)				
4:00pm – 5:45pm	**Water @ Pier One** **Invited presentations** **"Discrete Choice Experiments in Health Economics: Opportunities in a data deluge" Denzil Fiebig** **(Session Chair: Terry Flynn)** **"Antecedent Volition & Process Representation in Models of Choice Behaviour" Joffre Swait** **(Session Chair: Anthony Marley)**				

7:00pm	**Water @ Pier One** **Conference Dinner**

Friday 5th July 2013

9:00am - 10:30am	III-A(1) Dawes Point 1 (advances in models & methods/new ways of modelling decisions) Session Chair: Adele Diederich	III-A(2) Dawes Point 2 (biases) Session Chair: Linda Salisbury,	III-A(3) Dawes Point 3 (use of additional data) Session Chair: Juan Marcos Gonzalez	III-A(4) Dawes Point 4/5 (end of life) Session Chair: Terry Flynn	III-A(5) Bridge Room (spatial) Session Chair: Marcela Munizaga
	A Multiple Discrete-Continuous Heteroscedastic Extreme Value (MDCHEV) Model: Formulation and Assessment vis-à-vis the Multiple Discrete-Continuous Extreme Value (MDCEV) Model Sujan Sikder and Abdul Pinjari	*Check it out! A Monte Carlo analysis of the performance of selection criteria and tests for Choice Experiment models* Elisabetta Strazzera, Davide Contu, Silvia Ferrini	*Modelling the Effects of Range Uncertainty on Electric Vehicle Users' Charging Behaviour* Nicolo' Daina, Aruna Sivakumar, John Polak	*Developing a new end-of-life instrument for use in economic evaluation* Joanna Coast, Philip Kinghorn, Elisabeth Huynh, Terry Nicholas Flynn	*Random Subspace Proportional Hazard Model (RSPHM) For Inter-shopping Duration* Behzad Karimi, Zahra Pourabdollahi, Abolfazl (Kouros) Mohammadian
	Estimating Mixed Logit Models with Large Choice Sets Roger von Haefen	*A study on bias in logit model estimates caused by self-reported choice sets* Sander van Cranenburgh, Caspar G. Chorus	*Understanding the role of practitioners' and patients' perceptions in treatment choices in the face of limited clinical evidence: A Hybrid Choice Model approach in Health Economics* Mirja Klojgaard, Stephane Hess	*Using stated choice experiments to elicit attitudes towards and preferences for end-of-life care in Australia* Elisabeth Huynh, Terry Nicholas Flynn, Jordan J Louviere, Charlie Corke	*Validating travel behavior estimated from smartcard data* Marcela Munizaga, Flavio Devillaine, Claudio Navarrete, Diego Silva
	The 2N-ary choice tree model for preferential choice with N-alternative multi-attribute choice options Adele Diederich, Lena	*When Random Assignment Is Not Enough: Accounting for Intentional Selectivity in Experimental Research* Yuanping Ying, Linda	*Estimating Conditional Certainty Equivalents using Choice-Experiment Data* Juan Marcos Gonzalez, A	*Cognitive burden in discrete choice experiments: the case of preferences for end-of-life care in Singapore* Marcel Bilger, Chetna Malhotra,	

	Wollschlaeger	Salisbury, Fred Feinberg	Hauber, F Johnson	Eric Finkelstein, Assad Farooqui, Terry Nicholas Flynn	
10:30am – 11:00pm	Morning tea (Dawes Point 6 & 7)				
11:00pm – 12:30pm	III-B(1) Dawes Point 1 (WTP) Session Chair: Ricardo Daziano	III-B(2) Dawes Point 2 (advances in models & methods/new ways of modelling decisions) Session Chair: Taha Hossein Rashidi	III-B(3) Dawes Point 3 (spatial) Session Chair: Sonika Singh	III-B(4) Dawes Point 4/5 (structural choice modelling) Session Chair: Len Coote,	III-B(5) Bridge Room (choice set formation) Session Chair: Paul Markowitz
	How do travellers value their travel time? A study-case for the Madrid-Barcelona corridor Concepción Román, Juan Carlos Martín, Raquel Espino, Elisabetta Cherchi, Juan de Dios Ortúzar, Luis Ignacio Rizzi, Rosa Marina González, Francisco Javier Amador	*A hybrid mode choice model to account for the dynamic effect of inertia over time* Elisabetta Cherchi, Maria Borjesson, Michel Bierlaire	*Considering En -Route Choices in Utility-based Route choice modelling* Dawei Li, Tomio Miwa, Takayuki Morikawa	*Latent variable models for evaluating designs of discrete choice experiments* Spring Sampson & Leonard V. Coote	*Bounding WTP distributions to reflect the 'actual' consideration set* Danny Campbell, David Hensher, Riccardo Scarpa
	A normalization approach to discrete choice models in willingness-to-pay space Ricardo Daziano	*Tolerable Walking Distance to School: Application of a Hazard-based and a Random Utility Method* Alireza Ermagun, Amir Samimi, Taha Hossein Rashidi	*Modelling "on-the-fly" spatial decisions: The case of refuelling* Ari Pramono, Harmen Oppewal	*An Application of Structural Choice Modelling to the Study of Choice Set Size* Thomas Magor, Len Coote	*Efficient stated choice designs allowing for variable choice set sizes* John Rose, Jordan Louviere, Michiel Bliemer
			Consumer Choice and Multi-Store Shopping: An Empirical Investigation Sonika Singh, Ashutosh	*Structural Choice Modeling of Discrete Choice Experiments* Len Coote, Cam Rungie, Jordan	*Dynamic Menu Choice: A New Solution to an Old Problem* Paul Markowitz, Jason Lee

			Prasad, Brian Ratchford	Louviere	
12:30pm – 1:30pm	Lunch (Water @ Pier One)				
1:30pm – 2:30pm	III-C(1) Dawes Point 1 (advances in models & methods/new ways of modelling decisions) Session Chair: Towhidul Islam	III-C(2) Dawes Point 2 (attribute non-attendance) Session Chair: Arne Risa Hole	III-C(3) Dawes Point 3 (comparisons in experimental practice) Session Chair: Anthony Scott,	III-C(4) Dawes Point 4/5 (risk and uncertainty) Session Chair: Thijs Dekker,	III-C(5) Bridge Room (WTP) Session Chair: Richard T. Carson
	The use of the Multiple Discrete Continuous Extreme Value modeling framework when the budget is latent: two consumer package good examples Jeff Dumont, Stephane Hess, Andrew Daly, Nazneen Ferdous	*Using an ANA Data-Based Dynamic Design to Improve Choice Experiment Design Efficiency: a Simulation Analysis* Alex Kravchenko	*Implications of researchers dubious use of the 'neither' option, and recommendations on the future use of status quo and opt out options in choice experiments* Line Pedersen, Dorte Gyrd-Hansen	*Valuation of small and multiple health risks: A critical analysis of SP data applied to food and water safety* Henrik Andersson, Arne Risa Hole, Mikael Svensson	*Consumer heterogeneity in the willingness to pay for local and organic food* Johanna Hasselbach, Jutta Roosen
	Stated innovation diffusion model from stated preference data: The Case of Photo-Voltaic (PV) Solar Cells for Household Electricity Generation Towhidul Islam	*Inferred vs. stated attribute non-attendance in choice experiments: A study of doctors' prescription behaviour* Arne Risa Hole, Julie Riise Kolstad, Dorte Gyrd-Hansen	*Comparing forced and unforced choices in a choice experiment: the role of reference dependent preferences* Anthony Scott, Julia Witt	*Implicitly or explicitly uncertain? An integrated choice and latent variable model to address decision certainty in stated choice experiments* Thijs Dekker, Stephane Hess, Roy Brouwer, Marjan Hofkes	*Middle-income developing countries may be willing to pay to protect their own tropical rainforests* Richard T. Carson, J. R. DeShazo, Kurt Schwabe, Jeffrey R Vincent
2:30pm – 3:00pm	Afternoon Tea (Dawes Point 6 & 7)				
3:00pm – 3:45pm	**(Water @ Pier One)** **Invited presentation** **The best of both worlds: integrating psychological and econometric theories of choice – Scott Brown** **(Session Chair: Anthony Marley)**				

3:45pm – 4:30pm	**Concluding remarks & announcement of 2015 ICMC host**

Wednesday, 6:30pm, Water @ Pier One

Poster Presentations

Modelling mode choice in freight transport: Efficient vs. orthogonal choice experiments, Concepción Román, Ana Isabel Arencibia, Maria Feo, Leandro Garcia

This paper aims to contribute to research in the field of freight transport both, from applied and methodological perspective. From the applied point of view, we model the mode choice between full road transport and an intermodal alternative consisting in maritime or rail transport in the corridor linking the regions of Madrid with the Netherllands / Belgium / Northerm France / West Germany. This analysis allowed us further debate about rebalancing the modal pattern for freight flows between Spain and Europe.

From the methodological perspective, the research tries to shed some light in the search of the optimal design when dealing with stated preference data. The purpose of our analysis was to use results from estimates obtained using an orthogonal design in the construction of a D-efficient design. To meet this objective, the fieldwork was structured in two separate phases. Firstly, we collected information about the main characteristics of the shipment as well as the decision-maker preferences regarding modal choice, considering an orthogonal stated choice (SC) experiment. Thus, we were able to estimate preliminary models in order to obtain the parameter priors required in the construction of the D-efficient experiment conducted during the second phase of the field work. The comparison of the results provided by the two stated preferences techniques allowed us to assess how efficient designs improve significantly the fitting of data. We also analyze the existence of asymmetries in the preference formation as well as their effect on willingness to pay measures depending on whether we are valuing losses or gains. The specification of a reference dependent utility function allow us for testing loss aversion hypotheses.

A Utility Theory for Logit Models with Repeated Choices, Eric English

Logit models with repeated choices are widely used in empirical applications, but connecting the model to a theory of utility-maximizing behavior has proved difficult. McFadden's random utility maximization (RUM) provides a supporting theory for a single discrete choice, but not for the series of choices that characterizes consumer behavior in many circumstances. We show that a logit model with repeated choices can be viewed as a system of demand equations satisfying integrability conditions for consistency with utility maximization. The proposed approach permits the calculation of theoretically valid, income-adjusted welfare measures for this common form of discrete-choice model.

Providing real economic incentives in Choice Experiments – extending the aim from hypothetical bias mitigation to behavioral benefits in a broader sense, Morten Raun Mørkbak, Søren Bøye Olsen, Sigrid Denver, Danny Campbell

The credibility of stated preference surveys has been questioned substantively in the literature for many years. At the same time, research aiming to investigate and increase the credibility of stated preference methods has emerged parallel to the criticism. One central criticism concerns the hypothetical nature of the methods which has been claimed to instigate respondents to overstate their 'true' willingness to pay (WTP) (List et al. 2006; Lusk and Schroeder 2004). Behavioural explanations offered for such overstatements relate to the fact that since respondents are not asked to actually pay the stated amounts out of their pockets, they have incentives not to answer truthfully – in accordance with their real preferences. Hence, respondents may exert free-riding or strategic behaviour in their responses or they may be susceptible to yea-saying or warm glow effects (Carson et al. 2001; Mitchell and Carson 1989). Covering these different types of behaviour, the term 'hypothetical bias' has been coined and is often referred to as an overarching, all-encompassing label.

The issue of hypothetical bias has been investigated and treated in a number of ways in the literature, for instance by introducing budget reminders and cheap talk scripts or by seeking to decrease interviewer effects or by increasing scenario realism (e.g. Cummings and Taylor 1999; Carlsson et al. 2005). The latter has been accomplished by

introducing valuation techniques where real economic incentives are incorporated. As a result, a number of choice experiment applications have incorporated real economic incentives in the experimental setup (e.g. Alfnes et al. 2006; Carlsson and Martinsson 2001; Chang et al. 2009; Gracia et al. 2011; Johansson-Stenman and Svedsäter 2001; Johansson-Stenman and Svedsäter 2008; List and Shogren 1998; Loomis et al. 2009; Lusk and Schroeder 2004; Mentzakis and Zhang 2012; Neill et al. 1994; Sinden 1988; Volinsky et al. 2009; Yeu and Tong 2009).

Because of this increased interest and acceptance of valuation methods with real economic incentives, there is a need for investigation of potential differences between methods with real incentives and the more traditional purely hypothetical stated choice experiments. Up until now, such differences have mainly been concentrated on WTP differences (an exception is found in Scarpa et al. 2012, who examines attribute non-attendance), where findings have been mixed. For example, Carlsson and Martinsson (2001) do not find any differences on WTP, whereas Johansson and Svedsäter (2008), Taylor et al., (2010); Broadbent et al., (2010) and Ready et al., (2010) find differences on all their WTP estimates. At the same time Cameron et al., (2002) and List et al., (2006) only find differences to some extent, thus results are ambiguous (for a recent more thorough overview of studies see e.g. Ready et al. (2010)). Based on meta-analysis of 28 studies Murphy et al. (2005) find that hypothetical bias tends to be higher for public goods than for private goods. This is partly supported by Mjelde et al. (2012) who conclude that familiarity with the good being valued seems to decrease hypothetical bias and that bias is lower among older and higher educated respondents.

Of possible equal importance are potential differences in the underlying behavioural decision mechanisms between the two survey methods, such as for instance the use of different decision making processing rules and the incidence of protesting and strategic behaviour. While it is implicitly assumed in hypothetical CEs—as well as CEs with real incentives—that respondents are able to process all information in a fully rational manner, it is by now widely accepted that there are limits to how much information respondents can actually process. While many different attribute processing strategies have been identified in the literature of hypothetical choice behaviour (see e.g. Hensher (2007) and Hensher (2010) for overviews), one that has received increasing attention within the recent hypothetical choice behavior literature is attribute non-attendance, i.e. where respondents ignore one or more attributes of the alternatives when making their choices (e.g. Alemu et al. (2012) Balcombe et al. (2011), Hole et al. (2012), Hensher et al. (2005), Campbell et al. (2008), Hensher and Rose (2009) and Hensher (2010)). As examples of the extension of this behavior, Balcombe et al. (2011) find full attribute attendance by just above 70% of the sample while Hensher and Rose (2009) report that only 55% of the sample attended all attributes. This implies that individuals do not make the assumed trade-offs between attributes and attribute levels (Rosenberger et al. 2003; and Gowdy and Mayumi 2001) which may result in misleading WTP estimates. Hensher and Rose (2009) thereby conclude that WTP for travel time saving is higher when attribute non-attendance is implemented in the model specification. With respect to choices with real incentives, to the authors' knowledge, this behavioral aspect has only been explored partly by Scarpa et al. (2012). They employ a split sample design using two different goods—a beef product (without real incentives) and a chicken product (with real incentives). They find a higher degree of non-attendance in the survey with no real incentives, but unfortunately the results are confounded with the type of meat, since only the chicken sample received such real incentives.

In the present paper we address this specific issue by examining the effect of providing real incentives holding the good in question constant. We examine potential differences in preferences as well as potential differences in respondents' decision making strategies including differences in protest behaviour as well as different degrees of non-attendance strategies both with respect to which attributes are ignored and the degree of non-attendance within each attribute, the latter is done by employing both a stated and an inferred approach, respectively. More specifically the paper explores potential differences in a choice experiment with real incentives and a hypothetical choice experiment with respect to general preference structure, error variance, willingness-to-pay, attribute non-attendance, using a case study on consumers' preferences for apple characteristics.

Modelling premium wine consumers' preferences ?, David Esteban Palma, Juan de Dios Ortúzar, Luis Ignacio Rizzi, Eduardo Agosin, Gerard Casaubon

In many parts of the world people are becoming more wine-involved over time and more consumers are becoming interested in understanding the complexities of this fascinating product. This is also the case in Chile, where premium wine consumption is on the rise but there are almost no studies analysing the characteristics and

preferences of these consumers. The objective of this study was to discover and measure the preferences of premium wine Chilean consumers using a set of visual (extrinsic) attributes of wine.

A web-based stated choice (SC) survey following a D-efficient design was applied to 274 regular wine specialty store consumers, for whom we had available their socioeconomic characteristics and wine consuming habits. Seven wine attributes were considered: grape variety, alcohol level, label design, product recommendation (advice of friends or experts), discounts, and wine class (i.e. reserve or not). The SC experiment simulated a purchase at a retail store for a casual meal with friends and using this data we estimated mixed logit and hybrid discrete choice models.

Our results reveal several particularities of Chilean premium wine consumers, such as a central focus on grape variety (with a particular interest on Carmenere, Chile's flag grape variety) and the importance of their personal grape variety preference ranking; we also found evidence of a dislike for low alcohol content (which was associated with low-quality wine). Finally, from a more methodological standpoint we found evidence of a strong price endogeneity, which is consistent with price being a strong quality indicator for consumers. This problem makes the estimation of willingness to pay more involved, but it is seldom mentioned on the wine preference literature.

Discrete continuous choice model to determine participation in contractual biodiversity conservation by pastoralists in northern Australia, Julie Ballweg

This paper reports key methodological aspects and preliminary results of a choice experiment undertaken with pastoralists across northern Australia. The experiment takes a discrete-continuous expression, combined with choice certainty rating. The objective of the research presented in this paper is to estimate a supply curve for on-farm biodiversity conservation of north Australia's pastoral properties.

Despite almost 200 years of cattle grazing in northern Australia, tropical savannas have retained a treasure of indigenous biodiversity. With only a small proportion of the biodiversity captured within the formal reserve system, landholders play an increasingly important role in safeguarding savanna biodiversity into the future (Woinarski *et al.* 2007). Enterprise diversification into the provision of an array of ecosystem services is increasingly becoming a possibility for landholders in northern Australia (Greiner *et al.* 2009) and a necessity in the face of declining terms of trade and increasing market and institutional risk of particularly the beef industry (Puig and Greiner 2011).

As part of a larger survey, a choice experiment is being conducted of pastoralists. The experiment adopts a willingness-to-accept perspective and uses a combination of discrete choice and best-worst methods. This paper explains the discrete choice component, which involved respondents choosing one of three non-labelled alternatives or a 'none' alternative for six choice situations. Attributes of the alternatives included various levels of cattle exclusion (as a surrogate for level of biodiversity conservation), annual payments per hectare of area subscribed, contract length and contract flexibility. Choice selection is combined with (a) a 'real life certainty' assessment of the choice (Hensher *et al.* 2012) and (b) a continuous component describing area supply contingent on that choice. A Dubin-McFadden (1984) demand model system is applied to predict the type of conservation measure, the amount of land pastoralists would enrol in biodiversity programs and test supply sensitivity to programs in possible future market conditions.

Choice-Modeling of Environmental Trade-offs in Subsistence Economies: Lessons from the Brazilian Coast and Rainforests, James Kahn, Alexandre Rivas, Carlos Rezende

Since Davies (1963) first examined the potential of stated preference models to measure environmental values 50 years ago, there has been tremendous progress in the field. Not only has contingent valuation become more formalized and consistent with economic theory, but conjoint analysis has migrated from the transportation and marketing literature into the environmental and natural resource management literature, with a name change to "choice modeling." Again, there has been tremendous progress with choice modeling in terms of survey design, survey implementation and economic modeling. The number of choice modeling experiments that have been successfully conducted give credence to the validity of the methodology.

Unfortunately, the set of “best practices” that have been developed as a result of this research often do not provide much guidance for implementation of choice modeling in developing countries. First and foremost, the budgets available in developing countries are not at the same level as those in developed countries. For example, a major rule-making case by EPA would have a multi-million dollar evaluation budget, a good portion of which might go to a choice-modeling experiment to ascertain the value that people place on the proposed environmental change. Second, many of these environmental changes in developing countries affect people whose economic activities are partially or mostly subsistence in nature and it is therefore difficult to define payment vehicles. Furthermore the justness of the payment vehicles would always be questioned by those with little or no cash incomes when the surveys specify a payment for environmental preservation or improvements. In addition, there are many implementation issues associated with the choice modeling surveys including the form of the survey (telephone, mail, internet, in person), how to reach the target population without creating sample selection bias, how to write the survey for those with limited formal education, and last but not least, how to ensure the physical safety of the researchers who are implementing the survey on the ground.

The goal of this paper is to share our experience in the implementation of choice modeling studies in low income and/or subsistence communities in coastal Brazil and the Brazilian Amazon. It might seem strange to speak of low income and subsistence communities in coastal Brazil, where large and wealthy cities such as Rio de Janeiro and Sao Paulo are located. However, there are many resource-dependent communities along the coast of Brazil that rely on mangroves, estuaries and reefs as the source of their primary production. Of course, in the rainforest, people are engaged in extractive activities in a fashion that does not differ much from past generations. In addition, we hope that an examination of the studies that we have implemented and are implementing will show that low income and subsistence communities place a high value on environmental preservation and the recovery of degraded ecosystems. This would argue that more attention should be placed on the impact of policies on these small communities, and that we need to conduct more research to better understand the role of ecosystems in the well-being of these communities.

The organization of this paper proceeds as follows. Section 2 provides a brief overview of the regions in which we are conducting research. Section 3 examines issues involved with the construction of the surveys themselves, such as payment vehicles, payment levels, the definition of attributes, and the conveyance of information. Section 4 examines issues involved in implementation, including the use of focus groups and pilot surveys, the choice of survey mode (telephone, in-person, etc.), and how to avoid (or minimize) sample selection bias. Section 5 provides a brief overview of the results from our previous work and highlights additional lessons to be learned from this experience. Lastly, section IV presents conclusions and future research needs.

A generalized relative utility based choice model with multi-dimensional context dependencies, Junyi Zhang

Representing the context dependence has been attracting more and more attentions in different disciplines of behavioral studies. This study compares six types of context dependence models with in order to clarify the superiority of relative utility (RU). The RU-based models include the RU model with relative interest (RURI model) and the multiple prospects model with relative interest (MPRI model). Comparison models are the random regret minimization (RRM) model and the relative advantage maximization (RAM) model, which are further improved by introducing the relative interest (RRM_RI and RAM_RI models). Conceptually, RU covers all the features of MPRI, RRM, and RAM models in an implicit but comprehensive way.

Theoretically, not only alternative-oriented RU (similar to the concepts of RRM and RAM models), but also time-oriented and decision maker-oriented RU influences choice behavior. Thus, RU is a more general concept and the RU-based models could represent various types of context dependencies in a more general way. Even though RU is originally specified to allow for the alternative-based context dependence, RURI and MPRI models are transformed to explicitly accommodate the attribute-based context dependence for comparison. An empirical study is carried out by using a stated preference (SP) data (1,872 samples) on Beijing drivers’ joint choice of departure time and driving route under the provision of dynamic travel information. It is confirmed that the MPRI model is superior to any of the other five models.

Incorporating relative importance of different alternatives into the RRM and RAM models improves the model performance.

Does familiarity with a choice task increase the use of heuristics? Evidence from a Choice Experiment, Mylene Lagarde

The analysis of stated Choice Experiments is grounded in the economic theory of consumer behaviour which posits a number of axioms about individuals' preferences, and in particular assumes that individuals use compensatory decision-making processes. Psychologists have shown that people often avoid making trade-offs and instead use simple rules, or heuristics, to make their decisions. Research on decision-making processes suggest that heuristics are likely to be influenced by a variety of factors, such as the complexity of the decision problem, cognitive skills of the respondents and familiarity with the choice task.

In this paper, we analyse data from a Stated Choice Experiment (SCE) study, designed to evaluate the preferences of nurses for different career choices. Due to a minor error in data collection administration, 160 South African nursing students completed, within a few weeks, two different blocks of the same SCE, providing a unique opportunity for a quasi test-retest of respondents' heuristics.

Potential bias from memory effect was mitigated by the fact that different blocks were administered and the time between the two data collection points. On the other hand, insufficient time had elapsed for changes in circumstances in respondents' lives or external factors to have affected nurses' job preferences. Using latent class models, we then look specifically at attribute non-attendance in the context of a labelled experiment, studying whether respondents consider all attributes or just the label of an alternative to make their choices.

Overall, we find that in the first data collection wave, 31% of respondents considered all information, against 21% only in the second data collection wave. The second time around, more than a third of respondents (39%) ignored all attributes of the overseas alternative, while only 17% of them had employed that strategy before.

Looking at the posterior individual class membership probability, we were able to evaluate if and how people change their heuristics over time. We find that 22% of respondents use the same decision heuristics to complete the task and about 39% use more simplified heuristic strategies. However, we also find that 30% of respondents pay attention to more information the second time around, while 9% see to have changed their preferences, using totally new heuristics.

Our results provide new insights into the heuristics used by respondents in SCEs. They suggest that a significant proportion of individuals use more simple heuristics as their familiarity with a choice task increases, which might have important implications in the analysis of SCEs where respondents are presented a series of similar choice sets.

The role of altruism in non-market valuation. An application to the Białowieża Forest, Anna Bartczak

The purpose of this study is to investigate the impact of an individual trait of altruism on social preferences and hence willingness to pay (WTP) for changes in forest management strategies in the Białowieża Forest in Poland. We used data from a discrete choice experiment (CE), where attributes described changes in the quality of the forest and recreation and were framed to capture the respondents' non-use and use motivations. Patterns in the individual differences in altruistic behavior were elicited using a self-reported questionnaire developed by Rushton et al. (1981) concerning the frequency of an engagement in different altruistic behaviors. The application of the choice experiment technique allowed for the disentangling of the effect of a trait of altruism with regard to different attributes and their levels. The parameterization we employed in the survey was a WTP-space model (Train and Weeks 2005). Results show that the level of altruism has a significant effect on the valuation of restrictions in the forest visitor numbers; however, the altruism influence on the existence and bequest value from improving nature preservation depends on the current status of the forest.

The comparative efficacy of combining latent class and nested logit (LCNL) to simultaneously account for inter-alternative correlation and taste heterogeneity so as to improve toll route choice forecasts, Collins Teye, Peter Davidson, Rob Culley

Discrete choice estimation is central to all transport models as well as to other models that attempt to forecast people's decision making behaviour. Central to the accuracy of these models is the models' explanatory power and the combined results of academic research in this area have done much to improve our ability to forecast more accurately. Two of these, nesting choices and latent classes have individually done much to offer improvement; however they could be considered to improve accuracy in two different ways. If this is so, what would be their combined effect? This paper seeks to investigate further improvement to forecasting accuracy by combining latent class with nested logit.

Properly accounting for inter-alternative correlation and taste heterogeneity in a choice process is crucial in capturing the underlying choice behaviour. Also a model capable of capturing these two phenomena is expected to have high predictive power. The existence of unobserved inter-alternative correlation is usually accounted for by the use of GEV models with the nested logit model being the modeller's 'workhorse'. However, the assumptions underlying these models imply that all sampled individuals have identical choice process (i.e. are homogeneous). Although each individual makes different choices because of either differences in personal characteristics (e.g., income, age, or gender) or unobserved, but systematic, behaviour (maybe rules) that he/she uses for making judgments about choice alternatives. A common approach for accommodating this unobserved heterogeneity is to use latent class models, in which each market segment (or class) is assumed to follow its own choice rule such that given the actual choices people make, we can infer the most likely values of these segment-level parameters (e.g., price sensitivities for different segments) from the data, i.e. we simultaneously form segments as well as estimate the unknown choice process within each segment.

In this paper we investigate the potential of using Latent Class Nested Logit (LCNL) models to simultaneously account for the above two phenomena, using a Stated Preference (SP) dataset from toll route choice experiments conducted during a recent toll route study in Nigeria. Results reveal the presence of both correlation and different taste heterogeneity. The estimation results for the combined latent class nested logit model is presented compared with individual estimation results for nested logit on its own, latent class on its own and multinomial logit. We also present formulae and values for elasticities.

This paper is unique in that there does not seem to be anything so far published on using a combined latent class and nested logit model to account simultaneously for inter-alternative correlation and taste heterogeneity. This paper opens up this area for investigation and shows the additional explanation we can potentially achieve to improve our models' forecasting ability.


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