Applied Choice Analysis

A Primer

Almost without exception, everything human beings undertake involves a choice. In recent years, there has been a growing interest in the development and application of quantitative statistical methods to study choices made by individuals with the purpose of gaining a better understanding both of how choices are made and of forecasting future choice responses. In this primer, the authors provide an unintimidating introduction to the main techniques of choice analysis and include detail on themes such as data collection and preparation, model estimation and interpretation, and the design of choice experiments. A companion website to the book provides practice data sets and software to estimate the main discrete choice models such as multinomial logit, nested logit, and mixed logit. This primer will be an invaluable resource to students as well of immense value to consultants/professionals, researchers, and anyone else interested in choice analysis and modeling.

Companion website www.cambridge.org/0521605776

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CAMBRIDGE
UNIVERSITY PRESS

CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521605779

First published 2005

Printed in the United Kingdom at the University Press, Cambridge

A catalogue record for this book is available from the British Library

ISBN-13 978-0-521-84426-0 hardback
ISBN-10 0-521-84426-6 hardback
ISBN-13 978-0-521-60577-9 paperback
ISBN-10 0-521-60577-6 paperback

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Preface

> I'm all in favor of keeping dangerous weapons out of the hands of fools. Let's start with typewriters. (Frank Lloyd Wright, 1868–1959)

Almost without exception, everything human beings undertake involves a *choice* (consciously or sub-consciously), including the choice not to choose. Some choices are the result of habit while others are fresh decisions made with great care, based on whatever information is available at the time from past experiences and/or current inquiry.

Since the 1970s, there has been a steadily growing interest in the development and application of quantitative statistical methods to study choices made by individuals (and, to a lesser extent, groups of individuals). With an emphasis on both understanding how choices are made and forecasting future choice responses, a healthy literature has evolved. Reference works by Louviere, Hensher, and Swait (2000), and Train (2003) synthesize the contributions. However while these two sources represent the state of the art (and practice), they are technically advanced and often a challenge for the beginner and practitioners.

Discussions with colleagues over the last few years have revealed a gap in the literature of choice analysis – a book that assumes very little background and offers an entry point for individuals interested in the study of choice regardless of their background. Writing such a book increasingly became a challenge for us. It is often more difficult to explain complex ideas in very simple language than to protect one's knowledge-base with complicated deliberations.

There are many discussion topics in this primer that are ignored in most books on the subject, yet are issues which students have pointed out in class as important in giving them a better understanding of what is happening in choice modeling. The lament that too many books on discrete choice analysis are written for the well informed is common and is sufficient incentive to write this book.

This primer for beginners is our attempt to meet the challenge. We agreed to try and write the first draft without referring to any of the existing material as a means (hopefully) of encouraging a flow of explanation. Pausing to consult can often lead to terseness in the code (as writers of novels can attest). Further draft versions leading to the final product did, however, cross-reference to the literature to ensure we had acknowledged appropriate

material. This primer, however, is not about ensuring that all contributors to the literature on choice are acknowledged, but rather to ensure that the novice choice analyst is given a fair go in their first journey through this intriguing topic.

We dedicate this book to the beginners but we also acknowledge our research colleagues who have influenced our thinking as well as co-authored papers over many years. We especially recognize Dan McFadden (2000 Nobel Laureate in Economics), Ken Train, Chandra Bhat, Jordan Louviere, Andrew Daly, Moshe Ben-Akiva, and David Brownstone. Colleagues and doctoral students at the University of Sydney read earlier versions. In particular, we thank Sean Puckett, Kwang Kim and Louise Knowles and the January 2004 graduate class in Choice Analysis at The University of Sydney, who were guinea pigs for the first full use of the book in a teaching environment. Sean Puckett also contributed to the development of the glossary.