**Columbia University**

# Graduate School of Business

**PhD Seminar in Marketing: Empirical Models in Marketing**

**Spring 2018**

# Professor Oded Netzer Course: B9615 - 001

520 Uris Hall, 212-854-9024 Wednesday 2:15pm - 5:30pm – Uris 328

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Office Hours: open door policy

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This seminar will focus on understanding consumer choice process and building formal quantitative models to understand and predict their choices. The course is designed to provide students with an introduction to the basic set of tools and skills needed for marketing empirical modeling. Specifically, the course has two objectives: to acquaint students with the state-of-the-art modeling techniques, and key findings; and to enable students to build their own formal models for marketing problems.

For students who are interested in empirical quantitative methods in marketing, this seminar will prepare you to come up with research ideas and will supply you with the skills and tools to implement your ideas. For students who are interested in other areas, this seminar will provide you a survey and basic understanding of the main research areas associated with quantitative empirical methods in marketing. For each topic considered, a few articles have been chosen. Presentations and discussions are designed to stimulate thinking on the development of new theoretical viewpoints.

The course will take a “hands on” approach to research. Class will be a combination of lectures, discussions of assigned articles, and hands-on empirical analysis. What you get out of this course depends on what you — and your fellow seminar participants — put into it. Each of you is expected to contribute to class discussions. You should actively listen and think critically about the concepts and issues. Reading the required papers for each class is the best way to provide to you with fertile material for class participation. You should be willing and able to present your analysis and viewpoint to the class when the opportunity presents itself.

Also each one of you will be expected to prepare and short critique (2-3 pages) and lead the discussion on paper discussion (the assignment of papers will be arranged during the first week of class). When leading the discussion on a paper you should focus on:

1. A succinct summary of the major contributions of the work and a clear explanation of any potentially confusing aspects (this part should brief and short, we all read the paper).
2. A careful critique of the research, including a discussion of the paper’s major strengths and weaknesses (spend most of the time here).
3. Future research issues in the problem area.

Each student is required to submit and present a research proposal (8-10 pages) by the end of the semester. You can choose a current managerial or academic issue in marketing that uses quantitative methods. The proposal should include three parts: motivation, *brief* literature review, and suggested approaches to address the research problem. You are not required to actually empirically estimate your model. However, the research problem should have the potential to be converted into a publishable paper in top marketing journals if it is solved in future. Presentations of the research proposal are scheduled for the final class (April 25h, 2018).

**Required Book**

Kenneth Train (2009), *Discrete Choice Methods with Simulation*, Cambridge University Press.

The book is available for free from the following web site <http://elsa.berkeley.edu/~train/dcms.html>

**Required Software**

The seminar will include practical exercises; participants should bring a laptop and should download and install the free statistical software R from <http://www.r-project.org/> before the course.

**Student Evaluation**

Class Participation and Discussion 30%

Assignments 30%

Term Paper 40%

The details of these components will be discussed in class.

**Outline of the course\*[[1]](#footnote-1) ,[[2]](#footnote-2):**

**Class # 1, January 24th, 2018: Introduction – Marketing Models**

***Readings***:

* Train, K., [*Discrete Choice Methods with Simulation*](http://elsa.berkeley.edu/books/choice2.html), Cambridge University Press, 2009, Chapters 2 and 3.
* Varian, Hall (1997), “[How to Build an Economic Model in Your Spare Time](http://www.jstor.org/stable/10.2307/25604102),” *The American Economist*, 41 (2), 3-10.
* Varian, Hall (2013), “[Big Data: New Tricks for Econometrics](http://people.ischool.berkeley.edu/~hal/Papers/2013/ml.pdf)”

**Class # 2, January 31st, 2018: Logit, Probit and Nested Logit**

* Train, K., [*Discrete Choice Methods with Simulation*](http://elsa.berkeley.edu/books/choice2.html), Cambridge University Press, 2009, Chapters 4 and 5.

**Class # 3, February 7th, 2018: Logit, Probit and Nested Logit**

***Readings:***

* Guadagni , Peter M. and John D. C. Little (1983), “[A Logit Model of Brand Choice Calibrated on Scanner Data](http://www.jstor.org/stable/184043),” [*Marketing Science*](http://www.jstor.org/action/showPublication?journalCode=marketingscience)2(3), 203-238.\*
* Gupta, Sunil (1988), “[Impact of Sales Promotions on When, What, and How Much to Buy](http://www.jstor.org/stable/3172945),” *Journal of Marketing Research*, 25 (November), 342-355.\*
* Bucklin, Randolph E. and James M. Lattin (1991), “[A Two-State Model of Purchase Incidence and Brand Choice](http://www.jstor.org/stable/183873),” *Marketing Science*, 10 (Winter), 24-40.\*

**Class # 4, February 14h, 2018: Heterogeneity in Choice Models**

***Readings:***

* Train, K., [*Discrete Choice Methods with Simulation*](http://elsa.berkeley.edu/books/choice2.html), Cambridge University Press, 2009, Chapters 6 and 11.
* [Discrete and continuous representation of heterogeneity](http://deepblue.lib.umich.edu/bitstream/handle/2027.42/46977/11002_2004_Article_230988.pdf?sequence=1), *Marketing Letters*, 10 (3), 1999, 217-230, M. Wedel, W.A. Kamakura , N. Arora, A. Bemmaor, J. Chiang, T. Elrod, R. Johnson, P. Lenk, S. Neslin, C.S. Poulsen
* Kamakura, Wagner A. and Gary J. Russell (1989), “[A Probabilistic Choice Model for Market Segmentation and Elasticity Structure](http://faculty.fuqua.duke.edu/~kamakura/My%20Reprints/A%20probabilistic%20choice%20model%20for%20market%20segmentation%20and%20elasticity%20structure.pdf),” *Journal of Marketing Research*, 26 (November), 379-390.\*
* Rossi, Peter E., Robert E. McCulloch and Greg M. Allenby (1996), “[The Value of Purchase History Data in Target Marketing](http://research.chicagobooth.edu/marketing/databases/dominicks/docs/1996_The_Value_of.pdf),” *Marketing Science*, 15, 4, 321-340.\*
* Chintagunta, Pradeep K. , Dipak C. Jain and Naufel J. Vilcassim (1991), “[Investigating Heterogeneity in Brand Preferences in Logit Models for Panel Data](http://www.jstor.org/pss/3172782)*” Journal of Marketing Research*, 28, (4) (Nov), pp. 417-428.\*

***Background Readings:***

* Allenby, Greg, David Bakken and Peter Rossi (2004), “[The HB Revolution](http://www.marketingpower.com/ResourceLibrary/Publications/MarketingResearch/2004/16/2/MRSumm04Allenby.pdf),” *Marketing Research*, Summer, 21-25.

**Class # 5,** **February 21st, 2018: Dynamics in Choice Models**

***Readings:***

* Keane Michael P. (1997), “[Modeling Heterogeneity and State Dependence in Consumer Choice Behavior](http://www.jstor.org/stable/1392335),” [J*ournal of Business & Economic Statistics*](http://www.jstor.org/action/showPublication?journalCode=jbusieconstat) 15 (3), 10-327.\*
* Erdem, Tulin and Michael Keane (1996), “[Decision-Making Under Uncertainty: Capturing Dynamic Brand Choice Processes in Turbulent Consumer Markets](http://www.jstor.org/stable/184181),” *Marketing Science,* 15 (1), 1-20.\*
* Du, Rex and Wagner Kamakura (2012), “[Quantitative Trendspotting](http://www.bauer.uh.edu/rexdu/quantitative%20trendspotting.pdf),” *Journal of Marketing Research*, 49 (4), 514-536.\*

**Class # 6, March 7th, 2018: Hidden Markov Models in Marketing**

***Readings:***

* Chapter 2, and 3, from *Hidden Markov Models for Time Series: An Introduction Using R. MacDonlad and Zucchini (2009).*
* Bijmolt, Tammo, Peter Ebbes and Oded Netzer (2016), [HMMs in Marketing](http://www.columbia.edu/~on2110/Papers/Hidden_markov_models_in_marketing_chapter_final.pdf) *– Handbook of Marketing Models*
* Netzer, Oded, James M. Lattin and V. Srinivasan (2008), “[A Hidden Markov Model of Customer Relationship Dynamics](http://mktsci.journal.informs.org/cgi/reprint/27/2/185),” *Marketing Science*,” 27 (2), 185-204.\*
* Ascarza, Eva and Bruce Hardie (2013) “[A Joint Model of Usage and Churn in Contractual Settings](https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/4587/Ascarza_JointModel.pdf),” *Marketing Science*, 32 (4), 570-590.\*

**Class # 7, March 14th, 2018: Customer Base Analysis**

***Readings:***

* David C. Schmittlein, Donald G. Morrison and Richard Colombo (1987), “[Counting Your Customers: Who-Are They and What Will They Do Next?](http://www.jstor.org/stable/2631608),” *Management Science,* 33 (1), 1—24
* Fader, Peter S., and Bruce G. S. Hardie (2009), “[Probability Models for Customer-Base Analysis](http://marketing.wharton.upenn.edu/documents/research/Fader_hardie_jim_09.pdf),” *Journal of Interactive Marketing*, 23 (2009) 61—69.
* Fader, Peter S., Bruce G.S. Hardie, and Ka Lok Lee (2005), “[RFM and CLV: Using Iso-Value Curves for Customer Base Analysis](http://marketing.wharton.upenn.edu/documents/research/Rfm_clv_2005-02-16_accepted.pdf),” *Journal of Marketing Research*, 42 (November), 415–30.\*
* Fader, Peter S., Bruce G. S. Hardie, and Jen Shang (2010), “[Customer-Base Analysis in a Discrete-Time Noncontractual Setting](http://marketing.wharton.upenn.edu/documents/research/Fader_et_al_mksc_10.pdf),” *Marketing Science*, 29 (November–December), 1086—1108.\*

**Class # 8: March 28th, 2018, Field Experiments in Marketing**

***Readings:***

* Duncan Simetser(2015) *“*Field Experiments in Marketing*,” in Handbook of Field Experiments.*
* Anderson, Eric and Duncan Simester (2004), “[Long-Run Effects of Promotion Depth on New versus Established Customers: Three Field Studies](https://pubsonline.informs.org/doi/pdf/10.1287/mksc.1030.0040),” *Marketing Science*, 23 (1), 4-20.\*
* Blake, Thomas, Chris Nosko, and Steven Tadelis (2015), "[Consumer Heterogeneity and Paid Search Effectiveness: A Largescale Field Experiment,"](http://faculty.haas.berkeley.edu/stadelis/BNT_ECMA_rev.pdf)*Econometrica*83.1 (2015): 155-174.\*
* Gordon, Brett, R., Florian Zettelmeyer, Neha Bhargava, and Dan Chapsky (2017), “[A Comparison of Approaches to Advertising Measurement: Evidence from Big Field Experiments at Facebook](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3033144),” Kellogg Working paper.\*

**Class # 9, April 4th, 2018: Text Mining in Marketing** (Guest Speaker Alain Lemaire)

***Readings:***

* Moe, Wendy, Oded Netzer, and David Schweidel(2016), *“*[*Social Media and User Generated Content Analysis*](http://www.columbia.edu/~on2110/Papers/Moe%20Netzer%20Schweidel%20Chapter%20Revised.pdf)*,” in Handbook of Marketing Decision Models.*
* Blei, David M., Andrew Y. Ng, and Michael I. Jordan (2003) "[Latent Dirichlet Allocation](http://machinelearning.wustl.edu/mlpapers/paper_files/BleiNJ03.pdf)." *the Journal of machine Learning research* 3, 993-1022.
* Netzer, Oded, Ronen Feldman, Jacob Goldenberg and Moshe Fresko (2012), “[Mine Your Own Business: Market Structure Surveillance through Text Mining](https://www0.gsb.columbia.edu/mygsb/faculty/research/pubfiles/4468/Mine_own_business.pdf),” *Marketing Science*,31 (3),521-543.\*
* Tirunillai, Seshadri, and Gerard J. Tellis. "[Mining Marketing Meaning From Online Chatter: Strategic Brand Analysis of Big Data using Latent Dirichlet Allocation](http://gtellis.net/Publications/LDA.pdf)." *Journal of Marketing Research* 51.4 (2014): 463-479.\*

**Class # 10, April 11th, 2018: Networked Marketing**

***Readings:***

* Chapters 2+3 in the 2007 MSI book, *Social Networks and Marketing,* Christophe Van den Bulte.
* http://www.msi.org/books/social-networks-and-marketing/
* Manski Charles (1993) “[Identification of Endogenous Social Effects: The Reflection Problem](http://fisher.osu.edu/~schroeder.9/AMIS900/Manski1993.pdf),” Review of Economic Studies 60(3): 531–542.\*
* Harikesh Nair, Puneet Manchanda and Tulikaa Bhatia. (2010). “[Asymmetric Social Interactions in Prescription Behavior: The Role of Opinion Leaders](http://web.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=c312537c-8359-494f-998f-116659ad2207%40sessionmgr112&vid=2&hid=126),” *Journal of Marketing Research*, Vol. 47 (5), 883-895.\*
* Godes and Mayzlin (2004), “[Using Online Conversations to Study Word-of-Mouth Communication](http://www.jstor.org/stable/10.2307/30036688),” *Marketing Science*, 23 (4), 545-560.\*

**Class # 11, April 18th, 2018: Structural Models in Marketing**

* Train, K., [*Discrete Choice Methods with Simulation*](http://elsa.berkeley.edu/books/choice2nd/Ch13_p315-346.pdf), Cambridge University Press, 2009, Chapter 13.
* Nevo, Aviv (2000), "[A Practitioner's Guide to Estimation of Random Coefficients Logit Models of Demand](http://onlinelibrary.wiley.com/doi/10.1111/j.1430-9134.2000.00513.x/abstract)," *Journal of Economics & Management Strategy* 9(4), 513-548.
* Rossi, Peter (2014), “[Even the Rich Can Make Themselves Poor: A Critical Examination of IV Methods in Marketing Applications](https://pubsonline.informs.org/doi/pdf/10.1287/mksc.2014.0860),” *Marketing Science*, 33(5), 655-672. \*
* Villas-Boas, Miguel and Russell S. Winer (1999), “[Endogeneity in Brand Choice Models](http://www.jstor.org/stable/10.2307/2634842)”, *Management Science*, 45 (10), 1324-1338.\*
* Manchanda, Puneet, Pradeep K. Chintagunta, and Peter E. Rossi (2004), “[Response Modeling with Nonrandom Marketing-mix Variables](http://www.jstor.org/stable/30164711),” *Journal of Marketing Research,* 41 (4), 467-478.\*
* Misra, Sanjog and Harikesh Nair (2011), ''[A Structural Model of Sales-Force Compensation Dynamics: Estimation and Field Implementation](http://faculty-gsb.stanford.edu/nair/documents/MisraNair_StrucuralSalesforceEstimationFieldImplementation.pdf)”**.** *Quantitative Marketing and Economics,* 9 (3), September, 211-225.\*

**Class # 12, April 25th**, **2018**: **Summary and Project** **Presentations**

1. . Subject to change. [↑](#footnote-ref-1)
2. . See links to the papers in the PDF. Most of the papers are also downloadable from JSTOR or ABI/INFORM accessible from Columbia University library, or the websites of the journals accessible from Columbia University library web site. [↑](#footnote-ref-2)