June 2017

YUPENG CHEN

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EDUCATION

The Wharton School, The University of Pennsylvania — **Philadelphia, PA**
Ph.D. Candidate in Marketing — Expected: Jun. 2018
Dissertation Committee: Raghuram Iyengar (Chair)
Eric Bradlow
Christophe Van den Bulte

Columbia University — **New York, NY**
Ph.D., Operations Research — Feb. 2015

Peking University — **Beijing, China**
B.S., Mathematics — Jul. 2009

RESEARCH INTERESTS

Substantive: Referral Programs, Preference Estimation

Methodological: Field Experiments, Machine Learning

JOURNAL ARTICLES

Chen, Yupeng, Raghuram Iyengar, and Garud Iyengar, "Modeling Multimodal Continuous Heterogeneity in Conjoint Analysis – A Sparse Learning Approach", *Marketing Science*, Vol. 36, No. 1, January-February 2017, pp. 140-156

WORKING PAPERS

Chen, Yupeng, "Enhancing Effectiveness of Referral Programs by Promoting Better Matching: Evidence from Field Experiments" (**Job Market Paper**)

WORK IN PROGRESS

"Value-Based Referral Rewards, Motivation Crowding-out, and Opportunistic Referrals"

"A Low-Dimension Learning Approach to Modeling Consumer Heterogeneity in Choice-Based Conjoint Estimation"

"Probabilistic Referral Rewards: Do They Work and Why?" (with Meng Li)

RESEARCH GRANTS

Russell Ackoff Ph.D. Fellowship ($1,500), The Wharton School	2017
George James Travel Fund ($750), The Wharton School	2016
Baker Center Ph.D. Research Grant ($2,500), The Wharton School	2016
Alex Panos Research Fund ($4,000), The Wharton School	2014

HONORS AND AWARDS

AMA-Sheth Foundation Doctoral Consortium Fellow	2017
ISMS Doctoral Consortium Fellow	2015, 2016
Winkelman Fellowship, The Wharton School	2015-2017
Doctoral Fellowship, The Wharton School	2013-2018
Extraordinary Teaching Assistant Award, Columbia University	2011
Doctoral Scholarship, Columbia University	2009-2013

PRESENTATIONS

"A Low-Dimension Learning Approach to Modeling Consumer Heterogeneity in Choice-Based Conjoint Estimation"

ISMS Marketing Science Conference, Shanghai, China	Jun. 2016
Marketing Department, The Wharton School, Philadelphia, PA	Mar. 2016

"Modeling Multimodal Continuous Heterogeneity in Conjoint Analysis – A Sparse Learning Approach"

Trans-Atlantic Doctoral Conference, London, Britain	May 2016
ISMS Marketing Science Conference, Baltimore, MD	Jun. 2015
Marketing Department, The Wharton School, Philadelphia, PA	Mar. 2015

ACADEMIC ACTIVITIES

Ad Hoc Reviewer: International Journal of Research in Marketing, Foundations and Trends in Marketing

Discussant: Trans-Atlantic Doctoral Conference 2016

TEACHING EXPERIENCE

Teaching Assistant, The Wharton School, The University of Pennsylvania, Philadelphia, PA

Marketing Research, Models for Marketing Strategy, Pricing Policy

Teaching Assistant, Columbia University, New York, NY

Stochastic Models for Financial Engineering, Introduction to OR: Stochastic Models, Introduction to Probability and Statistics, Optimization Models and Methods for Financial Engineering, Probability

GRADUATE COURSEWORK

Marketing

Empirical Models in Marketing (Eric Bradlow)
Measurement and Data Analysis (Christophe Van den Bulte)
Econ/OR Models in Marketing (Jagmohan Raju and Ron Berman)
Consumer Behavior: Judgment and Decision Making (Gal Zauberman)
Consumer Behavior: Information Processing (Patti Williams)
Research Methods in Marketing (Wes Hutchinson)

Economics

Microeconomics I (Paolo Siconolfi)
Microeconomics II (Paolo Siconolfi)
Introduction to Econometrics (Charles Jones)
Econometrics (Frank Schorfheide and Xu Cheng)
Microeconometrics (Petra Todd)
Information Strategy and Economics (Lorin Hitt)
Experimental Economics (Jeremy Tobacman)
Industrial Organization of Health Care (Robert Town)

Statistics

Observational Studies (Dylan Small)
Bayesian Methods and Computation (Shane Jensen)
Computational Bayesian Methods (Michael Johannes)

Operations Research

Optimization I (Donald Goldfarb)
Optimization II (Daniel Bienstock)
Convex Optimization (Garud Iyengar)
Dynamic Programming (Awi Federgruen)
Discrete Optimization (Daniel Bienstock)

Stochastic Modeling I (Karl Sigman)
Stochastic Modeling II (David Yao)
Foundations of Stochastic Modeling (Assaf Zeevi)
Modern Topics in Applied Probability (Jose Blanchet)

REFERENCES

Raghuram Iyengar (Advisor)
Associate Professor of Marketing
The Wharton School
The University of Pennsylvania
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Eric Bradlow (Committee Member)
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SELECTED RESEARCH ABSTRACTS

Chen, Yupeng, "Enhancing Effectiveness of Referral Programs by Promoting Better Matching: Evidence from Field Experiments" (Job Market Paper)

We propose that a firm can enhance the effectiveness of its referral program by promoting better matching between new customers acquired through the referral program and the firm. We develop three strategies aimed at promoting better matching, including (1) offering current customers a gift before inviting them to refer friends, (2) notifying current customers about the value that the firm has created for them before inviting them to refer friends, and (3) rewarding referring customers based on the value of their referred customers. We empirically test the effectiveness of the three strategies by conducting two field experiments in collaboration with a leading Chinese online financial services firm. We find that on average all three strategies substantially enhanced the effectiveness of the focal referral program, which is measured for each current customer as the total value of his or her referred customers. We also find that the enhancement was primarily driven by the acquisition of referred customers of higher average value (i.e., those who matched better with the firm), suggesting that the strategies indeed worked by promoting better matching. Moreover, we find considerable heterogeneity in the impact of these strategies across current customers, and use such heterogeneity to explore the mechanisms through which these strategies led to better matching between referred customers and the firm. In particular, we find evidence suggesting that the gift strategy and the notification strategy promoted better matching by inducing reciprocity from current customers.

Chen, Yupeng, Raghuram Iyengar, and Garud Iyengar, "Modeling Multimodal Continuous Heterogeneity in Conjoint Analysis – A Sparse Learning Approach", *Marketing Science*, Vol. 36, No. 1, January-February 2017, pp. 140-156

Consumers' preferences can often be represented using a multimodal continuous heterogeneity distribution. One explanation for such a preference distribution is that consumers belong to a few distinct segments, with preferences of consumers in each segment being heterogeneous and unimodal. We propose an innovative approach for modeling such multimodal distributions that builds on recent advances in sparse learning and optimization. We apply the model to conjoint analysis where consumer heterogeneity plays a critical role in determining optimal marketing decisions. Our approach uses a two-stage divide-and-conquer framework, where we first divide the consumer population into segments by recovering a set of candidate segmentations using sparsity modeling, and then use each candidate segmentation to develop a set of individual-level heterogeneity representations. We select the optimal individual-level heterogeneity representation using cross-validation. Using extensive simulation experiments and three field data sets, we show the superior performance of our sparse learning model compared to benchmark models including the finite mixture model and the Bayesian normal component mixture model.

Chen, Yupeng, "A Low-Dimension Learning Approach to Modeling Consumer Heterogeneity in Choice-Based Conjoint Estimation"

Estimating consumers' heterogeneous preferences using choice-based conjoint data is challenging since the amount of information elicited from each consumer is often limited. Consequently, effective modeling of consumer heterogeneity becomes critical for accurate conjoint estimation. We propose a low-dimension learning approach to estimating consumers' heterogeneous preferences and apply it to choice-based conjoint estimation. The intuition behind the proposed approach is that, by restricting the individual-level preference vectors to a low-dimensional linear manifold, we are able to focus on a small number of important orthogonal directions of preference variations and effectively utilize choice data to recover preference variations along such directions. We develop a convex optimization formulation to operationalize this intuition that builds on recent advances in rank minimization and machine learning. We evaluate the empirical performance of the proposed low-dimension learning approach using both simulation experiments and field choice-based conjoint data sets.

Chen, Yupeng, "Value-Based Referral Rewards, Motivation Crowding-out, and Opportunistic Referrals"

In this project, we study the strategy of rewarding referring customers based on the value of their referred customers. In particular, we investigate the impact of the design of value-based rewards on customer referral behavior and the effectiveness of referral programs. We are particularly interested in understanding whether and when value-based rewards would crowd out customers' intrinsic motivation for referring friends, as well as when and which customers would exploit value-based rewards by making opportunistic referrals. We have secured the cooperation of a Chinese online financial services firm to conduct field experiments to answer these questions.

Chen, Yupeng, and Meng Li, "Probabilistic Referral Rewards: Do They Work and Why?"

Many firms face the challenge to their referral programs that, while modest rewards are not effective in incentivizing referrals, their marketing budgets constrain them from increasing the rewards. We propose probabilistic referral rewards as a potential solution to address this challenge. While standard economic models assuming risk neutrality or risk aversion predict that probabilistic referral rewards cannot be more effective than deterministic referral rewards of the same expected value, a pilot study conducted at a Chinese e-commerce platform suggests that the former could be more effective than the latter. We have secured the cooperation of the e-commerce platform to conduct field experiments of a larger scale to assess the effectiveness of probabilistic referral rewards and explore the underlying mechanisms (e.g., risk-seeking and optimism).