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STATISTICAL MODEL USING TRANSACTION ATTRIBUTES TO BETTER TARGET MARKETING RESOURCES UNVEILED

SEATTLE, WA, AUGUST 10, 2015 – A new statistical model that businesses can use to approximate an upper limit on the appropriate amount of marketing dollars they should invest in retaining their most important customers was presented today at a session of the 2015 Joint Statistical Meetings (JSM 2015) in Seattle.

Michael Braun, associate professor of marketing at Southern Methodist University's Cox School of Business, unveiled the new model in a presentation titled "Transaction Attributes and Customer Valuation" during a session focused on Big Data and customer analytics.

Braun collaborated on development of the customer valuation model with David A. Schweidel, associate professor of marketing in the Goizueta Business School at Emory University, and Eli Stein, a statistics undergraduate at Harvard University when the study was conducted and the paper written. Braun said the research is the first to identify and quantify how differences in the interactions of customers with a firm affect the long-term value of the customer relationships.

As an example of a transaction attribute, Braun and collaborators use indicators of customer service quality during a purchase. Transaction attributes may also refer to other aspects of the marketing mix, such as the price paid or any information about a customer's transaction the firm has collected.

Marketing return on investment (ROI) should be measured in terms of expected change in customer value that occurs from a marketing intervention. To the extent marketing activities affect a customer's experience, they also change what firms can expect customers to do—and spend—in the future. How to use information about transaction attributes to assess the increased customer value stemming from marketing efforts remains an important area of research.

To fill this need, Braun and his collaborators developed a model grounded in probability theory to estimate how changes in transaction attributes such as service quality influence when a customer might end their relationship with a firm. Estimating this effect is a difficult statistical problem because the firm often does not know when the customer makes that decision. Customers who experienced poor service in the past may still return, and those who received good service may never come back. Also, some

types of customers may be more receptive to marketing efforts than others. This new model helps businesses untangle these competing effects.

"While there is an intuitive relationship between transaction attributes and retention probabilities—and also customer value—current research often fails to differentiate among transactions other than with regard to the times at which the events occur," explained Braun. "As we do in our model, exploiting information about the attributes of each transaction gives firms additional guidance for managing customer relationships compared to the information provided by frequency and recency alone."

Braun explained transaction attribute data can affect business decision-making in the following two ways:

- Ignoring attributes can lead to different estimates of customer value, which can lead to poor decisions based on bad information.
- The expected incremental customer value that comes from increasing investment in retaining a specific customer immediately before a transaction can serve as an upper limit for that investment.

He presented an example analysis using a data set from an online provider of business services that illustrates how to improve the predictive power of the model by including transaction attribute data. "The patterns observed in the analysis suggest falling short of the requested service level has a smaller effect on retaining customers who are either likely to already have churned or who are highly unlikely to have churned, when compared to the effect on customers for whom there is more uncertainty in their status," he said.

"In short, it is more valuable to invest in service quality for some customers than for others," explained Braun while talking about the objective of their model. "Our modeling approach better enables businesses to determine which customers to target with marketing outreach and, at the same time, maximize the impact of their company's limited marketing resources.

"As a firm uses customer base analysis and customer valuation models to score and rank customers according to the value they hold for the firm, managers should be interested in tracking and compiling transaction attributes that may be informative of each customer's future value," advised Braun.

JSM 2015 is being held August 8–13 at the Washington State Convention Center in Seattle. More than 6,000 statisticians—representing academia, business and industry, as well as national, state and local governments—from numerous countries are attending North America's largest statistical science gathering.

About JSM 2015

JSM, which has been held annually since 1974, is being conducted jointly this year by the American Statistical Association, International Biometric Society (ENAR and WNAR), Institute of Mathematical Statistics, Statistical Society of Canada, International Chinese Statistical Association, International Indian Statistical Association, Korean International Statistical Society, International Society for Bayesian

Analysis, Royal Statistical Society, and International Statistical Institute. JSM activities include oral presentations, panel sessions, poster presentations, professional development courses, an exhibit hall, a career service, society and section business meetings, committee meetings, social activities and networking opportunities. Click here for more information about JSM 2015.

About the American Statistical Association

The ASA is the world's largest community of statisticians and the second-oldest continuously operating professional society in the United States. Its members serve in industry, government and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare. For additional information, please visit the ASA website at www.amstat.org.

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