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A SERIES OF EVENTS PRESENTED BY
TEMPLE UNIVERSITY'S BIG DATA INSTITUTE

FRIDAY, JANUARY 15, 2016

10:00 TO 11:30AM

ROOM 505, ALTER HALL

TEMPLE UNIVERSITY

CUSTOMER-BASE ANALYSIS IN A DISCRETE-TIME NONCONTRACTUAL SETTING

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Many businesses track repeat transactions on a discrete-time basis. These include (1) companies for whom transactions can only occur at fixed regular intervals, (2) firms that frequently associate transactions with specific events (e.g., a charity that records whether supporters respond to a particular appeal), and (3) organizations that choose to utilize discrete reporting periods even though the transactions can occur at any time. Furthermore, many of these businesses operate in a non-contractual setting, so they have a difficult time differentiating between those customers who have ended their relationship with the firm versus those who are in the midst of a long hiatus between transactions. We develop a model to predict future purchasing patterns for a customer base that can be described by these structural characteristics. Our beta-geometric/beta-Bernoulli (BG/BB) model captures both of the underlying behavioral processes (i.e., customers' purchasing while "alive" and time until each customer permanently "dies"). The model is easy to implement in a standard spreadsheet environment and yields relatively simple closed-form expressions for the expected number of future transactions conditional on past observed behavior (and other quantities of managerial interest). We apply this discrete-time analog of the well-known Pareto/NBD model to a data set on donations made by the supporters of a nonprofit organization located in the Midwestern United States. Our analysis demonstrates the excellent ability of the BG/BB model to describe and predict the future behavior of a customer base.

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