Revisiting "A Seasonal Model with Dropout …": A Simple Model with Seasonal Effects for Noncontractual Settings

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Abstract

The standard models of buyer behavior in noncontractual settings fail to account for seasonality in the flow of transactions, which can lead to biased parameter estimates. Wünderlich et al.'s (2022) hierarchical Bayesian seasonal model with dropout (HSMDO) overcomes this problem. However, its implementation requires the use of simulation methods, which can be a challenge for many analysts. Looking at their empirical analysis, we see that a nested variant, the seasonal model with dropout (SMDO), performs almost as well as the full HSMDO model. In this paper, we show that it is possible to derive closed-form expressions for a number of quantities that would be of interest to any analyst using the SMDO model. This means we can use standard maximum likelihood methods for parameter estimation. We also show how the model parameters can be estimated using simple summaries of buyer behavior, thereby opening up the model and its application to a broader audience of end-user modelers.

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