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## An Assessment of When, Where and Under What Conditions In-Store Sampling is Most Effective

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#### Abstract

In-store product sampling is a commonly used promotional technique designed to give prospective consumers an opportunity to experience a product prior to purchase. While prior research has documented a positive relationship between short-term sales and perceptual measures of the customer shopping experience, little is known about the long-term impact of sampling or factors that moderate its success. In this paper, we develop an empirical approach that allows us to study the short-term and long-term effects of in-store sampling on both own and competitive products. We apply our approach to six store-level scanner data sets across four different product categories and show that in-store sampling has both an immediate (short-term) and sustained (long-term) impact on sales. We also show that the impact of sampling on sales is moderated by the characteristics of the store conducting the event, and that repeated sampling for a single product leads to a multiplicative increase in its long-term sales performance. We find that, unlike many types of in-store promotion, sampling results in a category expansion effect as opposed to a pure substitution effect. We contrast the immediate and long-term sales patterns for in-store sampling to those of product displays and discuss managerially relevant differences. Finally, we demonstrate incremental profit implications and store selection scenarios for different incremental costs of conducting the in-store events using constrained optimizations.

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#### Introduction

Manufacturers regularly engage in in-store promotions that involve the distribution of free product samples. This is a common practice in the grocery industry where manufacturers seek to distinguish their products from a myriad of competitors. According to a VSS Communications Industry Forecast, marketers spent \$2.21 billion dollars on product sampling in 2009. In February 2009, Walmart launched a weekly program called "Bright Ideas" that aims to make product sampling and demonstrations an integral part of a customer's in-store experience (Industry Insights 2009). Furthermore, a recent article describes how food product sampling is again on the rise with companies taking advantage of options like SamplingLab (Heneghan 2015).

Sampling provides consumers with an evocative, visceral experience that allows them to touch, taste and smell the product, thus appealing to both hedonic and utilitarian values. As a result, the impact of product sampling on sales has been shown to be larger than that of other forms of marketing activity like advertising Mcguinness et al. 1992(Mcguinness, Gendall, and Mathew 1992). Manufacturers prefer in-store sampling events to price-based promotions like couponing, temporary price reductions (TPR) or rebates, as they add value to a product by encouraging trial without reducing margins or altering consumer expectations of price (Simpson 2006). Retailers also benefit from the use of in-store sampling as it enhances the consumer shopping experience, thus encouraging both increased sales and store loyalty (Dong-Mo 2003; Sprott and Shimp 2004)

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These announcements have generated significant interest among both manufacturers and retailers alike in determining how to optimally execute and measure the success of these events.

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In contrast to at-home sampling promotions where free samples are delivered to consumer households, in-store sampling promotions occur at point-of-purchase and have unique characteristics that require studies of their own (Heilman, Lakishyk, and Radas 2011). Past research on product trial has primarily focused on at-home sampling (Bawa and Shoemaker 2004; Gadenk and Neslin 1999; Rothschild and Gaidis 1981). Research on in-store sampling is more limited (Heilman et al. 2011; Lammers 1991). Although it has been demonstrated that in-store sampling has a positive impact on short-term sales, it is unclear how this effect will evolve over time. In addition, research is needed that addresses several critical aspects of instore sampling promotions.

First, in-store sampling events can be conducted a single time to introduce consumers to a product, or they can be run repeatedly for the same product to reinforce perceptions of the positive benefits of the product. As such, it is important to understand the impact (both immediate and carryover) of sampling and how this effect differs for events that are run once versus multiple times. Second, manufacturers and retailers use other types of promotions like in-store displays that are similar in nature, that is, products placed at a secondary location in addition to their primary location. Unlike in-store sampling events, in-store displays do not provide shoppers with the opportunity to 'experience' the product. It would be of interest to both manufacturers and retailers to understand how sampling events compare to other forms of non-price promotions like in-store display. Specifically, it would be useful to know if instore sampling produces a bigger immediate lift in sales than in-store displays, and how the carryover effects differ for the two types of promotion. Further, it would be useful to know how these effects differ for events that are run once versus multiple times.

Finally, a common goal of in-store sampling is to encourage trial of a new or existing product with the intent of converting the consumer to the product, thus leading to repurchase in the future. Ideally, retailers would like to see repeat purchases in the same store, thus allowing them to grow the category sales. Although manufacturers benefit from sales of their products irrespective of outlet, in the case of new products their interests are also closely aligned with those of the retailers. They would like to establish the prominence of a particular SKU in a given retail location. This is the direct result of current category management practice where assortment decisions are largely based upon sales rankings for both own and competitive stores. If the manufacturer can demonstrate that a product is successful in Retailer A it will increase the probability of Retailer B adopting the product into its assortment, thus increasing its sales potential. Thus, it is imperative to understand the store characteristics and the competitive structure that are conducive to the success of an in-store sampling event.

We approach these research questions by developing a model that allows us to capture both the short-term and carryover impact of in-store sampling. Specifically, we build a sales-response model that (i) incorporates non-geometric decay in carryover effects through the use of a gamma distribution. This

allows us to study not just the immediate effect of in-store sampling but also the shape of its carryover effect; (ii) explicitly accounts for potential endogenous store selection for in-store sampling events; (iii) incorporates the impact of conducting single versus multiple events; (iv) accounts for serial autocorrelation and incorporates store characteristics to learn about competitive and environmental effects that moderate the effect of sampling.

We apply our model to six different data sets containing products from four distinct product categories. We use the results of our model to empirically contrast the effects of in-store sampling to an empirical generalization of the effect of in-store displays. This latter effect is constructed using our model specification (to facilitate an apples-to-apples comparison of effect sizes) and scanner data for similar types of products. We also demonstrate the differences in effect size and decay for products with single versus multiple in-store sampling events.

Our study provides insight about the short-term and longterm impact of in-store sampling events on sales. We find that in-store sampling events have both an immediate (shortterm) and carryover (long-term) effect. This is true in all six of our data sets, thus increasing our confidence in the generalizability of this finding. As expected, the magnitude of the short-term effect is larger than that of the long-term effect. We also find that the short-term effect of in-store sampling vary for different types of products. The effects of sampling are also heterogeneously distributed across stores of varying characteristics. For example, we find that the impact of in-store sampling is more localized and stores with smaller assortment of products have more to gain than stores with larger assortments. In terms of the benefit of conducting a single versus multiple events, we find that the immediate effect of repeated sampling is lower, but that the effect lasts for a much longer period of time. Furthermore, our comparison of in-store sampling events with in-store displays provides important implications for the retailer in terms of the magnitude and decay of sampling effects compared to display effects. Finally, we demonstrate using constrained optimizations that incremental profits can be increased when selecting a subset of the stores compared to a given benchmark scenario. We also find the incremental cost threshold at which sampling event will not be profitable for the manufacturer. Additionally, we also show that if manufacturers have a predetermined incremental profit goal it can be achieved by conducting the sampling event at a much smaller set of stores based on variations in incremental

The remainder of this paper is organized as follows: We begin by reviewing the literature on product sampling and identify key features of the process that should be formally included in our model. We use this theory to develop a general model of in-store sampling and discuss our approach to estimation and inference. We then describe the data used for our empirical application. Results obtained from this analysis are then discussed. We conclude the paper with a discussion of the key managerial implications of our research, as well as limitations and potential extensions.

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