

Regional and Categorical Patterns in Consumer Behavior: Revealing Trends[☆]

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Abstract

We offer a method of analysis that allows for an “unbundling” of the data to a disaggregate household level, and then “rebundling” it in a manner designed to identify patterns and relationships which are otherwise masked. Applying the method in the context of ‘healthy’ products and using census block group level data, we study consumption over several categories in two locations. The analyses show that studies involving geographically dispersed data must test for, and take into account when required, conceptually sound spatial effects in order to accurately assess impact. We also show that while both location and the product category have a significant impact on the proportion of healthy products purchased, the degree to which consumers choose healthier alternatives is a function of the category as well as the location. Finally, we provide preliminary evidence from survey data that supports the variations we find, and further explores attitudinal differences as well. There are rich implications for retailers in that new products introduced to benefit from popular trends (such as ‘healthy’ alternatives) may not succeed for all categories or locations. Retailers would benefit from understanding the spatial, demographic and attitudinal effects that play into consumption behavior, and such effects can be better understood when studying choice at the category and region level. Finally, public policies aimed at promoting healthier purchasing habits may have greater impact if special attention is given to specific categories and regions.

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Introduction

Quantitative research studying consumption behavior in marketing has often explored empirical and theoretical issues using aggregate level data, usually from households or retailers. In both cases, the data may be aggregated in several ways. The common practice has been to collect data at the individual or store level and subsequently sum it over various stores, chains and households/neighborhoods for aggregate level analyses – often some form of regression. This gives rise to two issues. Firstly, any trends or consumption patterns that are specific to a product category over neighborhoods may become unobservable at the aggregate level when data is thus summed. For example, the baby food market in 2006 saw a fairly flat sales growth from 2005 to 2006 and only a 3.1% increase in 2007. Over these years,

new product introductions were also fairly flat in the baby food category.

A closer look at the disaggregated data reveals however, that in the same time period, the growth of organic baby food sales saw a 16.4% jump followed by a 21.6% jump in 2007 (Martinez 2010). Note that the popularity of the ‘organic’ attribute in baby food did not spill over to potato chips or other snack foods (Cabbage Patch Kids 2007; Zegler 2006). Thus, even as manufacturers and retailers recognize consumer demand for certain types of products, analysis using the traditional aggregations over products or categories may fail to offer insights which would otherwise be observed.

The second issue is methodological in nature. Traditionally, such data analysis rarely required information of a spatial nature (that is, relating to the ‘spatial arrangement’ or the distance between observation points). While such a spatial thrust is quite common to modeling in the study of epidemiology or agriculture, it has received far less attention in marketing (Allaway, Berkowitz, & D’Souza 2003; Bradlow et al. 2005; Gonzalez-Benito, Munoz-Gallego, & Kopalle 2005). In fact, models using distance based data such that spatial autocorrelation is explicitly accounted for, may not have been an option in the past, when

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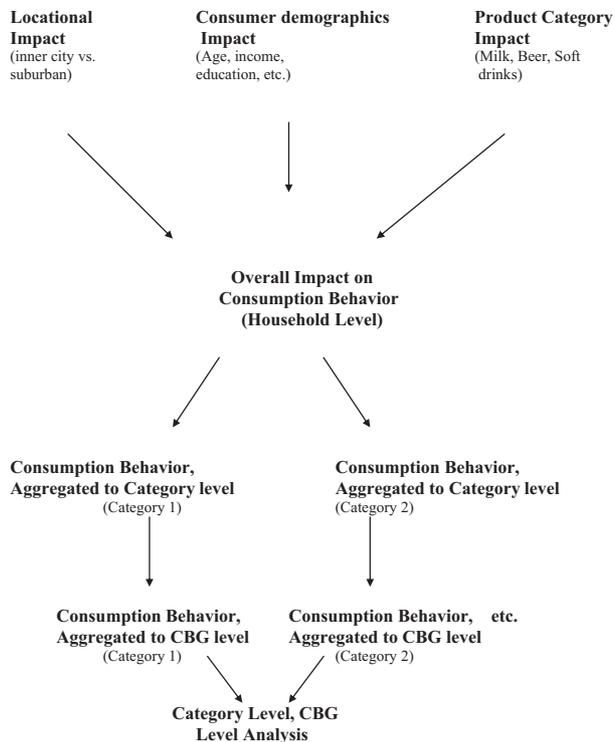


Fig. 1. Re-aggregating data: contextual framework.

the geographical detail required was lacking in the kind of data used typically by marketing researchers. However, as more and more research that studies patterns of behavior over smaller unit areas is undertaken and data is collected from adjoining units, there may very well be effects such as word-of-mouth that lead to patterns in variables such as satisfaction (Mittal, Kamakura, & Govind 2004), resulting in autocorrelation across these areas as a function of distances from each other (note that we undertake a more detailed discussion of the specific factors leading to spatial effects here in the subsequent ‘Modeling’ section). To further complicate matters, a typical marketing data set may also include variables such as product characteristics that are independent of such spatial correlations and impervious to aggregation issues. It becomes essential then, to use a methodology that accommodates such spatial and non-spatial variables so as to avoid potential bias and misleading results.

Indeed, if some trends in the market are only reflected in certain product categories, and if the diffusion of this trend has spatial properties, clearly there is a need for a change in the way such data is analyzed. We thus propose a regeneration of the data by first disaggregating consumption data at the overall household level into consumption at the specific category levels (see Fig. 1). Once the category level sales have been determined, an aggregation by category over census block groups¹ will yield the data set required to study the impact of the different variables on category consumption. It should be noted that this data set

is readily available to retail chains – indeed, they collect this data – the issue arises only with respect to aggregating it in a different way (that is, by category and by census block group). This methodology of disaggregation and then ‘re-aggregation’² of data begins to address the issue of how to use the volumes of scanner data now available to the retailer and can lead to critical implications for retail strategy in several areas such as line extensions, product distribution and promotional strategy.

We apply our methodology to a particularly appropriate trend that has gained momentum over the last 10 years, perhaps as a function of shifting demographics; that is, the health trend. Consumer concern with health and healthy products is at an all time high with various entities involved in this arena. As government agencies and medical associations announce their recommendations for improving quality of life, manufacturers and retailers respond with new product introductions that purportedly follow those recommendations. It should be noted that what constitutes a ‘healthy’ alternative is of course, not always agreed upon. For example, the use of artificial sweeteners in diet drinks may not be seen as a healthy alternative to the regular product. We argue, however, that for individuals concerned with the caloric aspect of consumption, it is indeed touted by the various entities including the media, as a better alternative. We thus focus on the consumer’s point of view – that is, is there an alternative available in a given category that offers a ‘healthier’ – in this case, a lower calorie or fat content – version? While the absolute ‘healthiness’ of these choices may be debatable, they clearly indicate an effort on the part of the consumer to choose what they perceive as a less harmful or ‘healthier’ version of a product. Moreover, with federal guidelines in place regarding the labeling of such products,³ not only do consumers have a clear signal in choosing products, we also have a standard benchmark for tagging the ‘healthy’ alternatives for inclusion in the product definition. (For the purposes of this paper, then, please note that we refer to the lower calorie or lower fat version of the product as the ‘healthy’ alternative.)

Whether the consumer is responding to these messages, or even receiving them, however, is an issue that is much debated by researchers and practitioners alike, and needs further exploration. Thus, while such products appear to proliferate in the market place, researchers also show that this proliferation does not necessarily translate into purchasing and consumption (Balasubramanian and Cole 2002; Krozup, Creyer, & Burton 2003). National health trends, in fact, show an increased incidence of diseases such as diabetes and obesity over the same time period (Amann 2004).

With so many sources, including managers, manufacturers and government agencies, propagating health benefits, it is somewhat of a surprise that there is so little evidence supporting a stronger trend towards healthy consumption (Thompson 2004). It is significant to note, however, that much of the research

¹ A census block group is defined as the smallest unit of area studied by the Census Bureau to collect demographic data once over 10 years. The assumption is that the block group is small enough that demographics within can be considered to be homogenous.

² We are indebted to an anonymous reviewer for this perspective.

³ For example, a ‘low fat’ product must meet certain guidelines regarding the fat content in order to be labeled as such—in this case, that <30% of the calories come from fat.

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