The Effects of Weather on Negative Hedonic Consumption: What the Weather Tells the Marketer.

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The research studies the relationship between weather conditions faced by an individual and her propensity to indulge in the consumption of negative hedonic goods. We bring together two streams of literature - the effect of weather on mood and the effect of mood on hedonic consumption to study this relationship. Three methodological approaches, an empirical study, a field study and an experiment are utilized to prove that the consumption of hedonic products is significantly influenced by weather. The experimental study also helps us to ascertain that the relationship is mediated by the mood of the consumers.

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EXTENDED ABSTRACT

Research has substantiated the association between weather and unrelated consumer behaviors. It has linked changes in states of weather to helping behavior (Cunningham 1979), consumer satisfaction (Mittal, Kamakura, and Govind 2004), consumer choice (Fergus 1999), retail sales (Starr-McCluer 2000), and stock returns (Hirshleifer and Shumway 2003) amongst others. In most of the studies in this stream, positive weather (e.g. presence of sunshine) has been linked to positive outcome (e.g. more helping behavior) and vice versa. The underlying assumption in all these studies examining the link between weather and consumption is that affect mediates this relationship. That is, weather manipulates affect which in turn influences behavior.

Recently, researchers have started focusing on the relation between weather and a specific type of consumer behavior – hedonic consumption. Weather has been found to affect aggregate consumption differences across countries for products such as alcohol, and coffee (Parker and Tavassoli 2001); purchase of lottery tickets (Bruyneel et al. 2005); and individual level consumption differences for variety of hedonic goods such as tobacco, food products (chocolate, cookies), and even choice of gift cards for stores varying in their degree of hedonicity (Govind, Garg, and Mittal 2008). In addition to demonstrating the relation between weather and hedonic consumption, Govind et al. (2008) also establish weather-induced affect as the driving force behind the weather-consumption relationship.

Given that hedonic consumption is vulnerable to contextual factors like advertising (Wansink and Ray 1996), packaging (Wansink 1996), and affect (Garg, Wansink, and Inman 2007); and that social marketing is concerned with increasing consumer and societal welfare by controlling (negative) hedonic consumption, it will be insightful to understand the role of weather, an exogenous factor, on consumption and the regional variations in the relationship. Thus, the current research will not only seek to replicate the weather-hedonic consumption association established by prior research but also, extend the literature by examining geographical variations in that relationship. Specifically, the current research will seek to answer questions such as, “will the impact of changes in amount of sunlight on hedonic consumption be the same in the east coast (which displays huge annual differences in temperature) as compared to the west coast (which displays less variance)”? This is important from the perspective of policy makers who spend millions of dollars in resources to manage and curb hedonic consumption.

The analysis utilizes secondary data from the entire continental United States on the consumption of two negative hedonic products, tobacco and alcohol consumption. Weather data consisted of twenty weather variables from The National Oceanic and Atmospheric Administration. In line with the prior literature, negative weather conditions are characterized by lower temperatures, reduced sunlight and increased precipitation. In addition to these factors, we include several unstudied factors such as danger due to hail, tornado and wind. We suspect that an increase in these weather risk factors will also increase hedonic consumption. In addition to the weather variables, we also include socio-economic and demographic factors since prior research has found these variables to have an effect on the consumption of products such as alcohol and tobacco.

We first conduct a factor analysis on the twenty weather variables to reduce the impact of multi-collinearity and to make the subsequent predictions more actionable. The resulting three factors are labeled as, (1) The Temperature Based Factor (2) The Weather-Risk Based Factor and (3) The Precipitation Based Factor. An Ordinary Least Squares (OLS) analysis was then conducted to establish the effect of weather (i.e. the three weather based factors) on hedonic consumption (alcohol and tobacco consumption) across the entire United States with each zip-code acting as a single data point. This analysis controlled for the effects of socio-economic and demographic variables such as income and age, which have been known to impact the consumption of the two hedonic goods. Following this, we explored regional patterns in the effect of weather on hedonic consumption by using Geographically Weighted Regression (GWR). This technique has some important advantages for our current research. For example, the assumption of OLS that the effect of weather on hedonic consumption is homogeneous across the country is not strictly reasonable. GWR addresses this problem by providing one set of coefficients for each zip code area, taking their special characteristics into consideration.

In addition to showing a significant association between weather factors and hedonic consumption, we find evidence of the space varying nature of the relationship across the US. Specifically, as the weather factors deteriorate, consumers become more likely to increase their consumption of tobacco and alcohol. Furthermore, in our analysis of regional patterns in the weather effects on consumption for these negative, hedonic products, we find that regions in the continental United States exhibit distinct spatial patterns in terms of their susceptibility to negative consumption with changes in weather. For example, the effect of changes in temperature on the consumption of alcohol is higher in the North-Eastern United States as compared to the Southern United States.

Although these regional patterns might differ based on the hedonic product being considered, it is clear that they vary significantly with shifts in weather conditions and that policy/ marketing initiatives designed to influence consumption of such products should adequately account for these patterns. Thus, stakeholders can utilize our findings to implement concrete policies based on the specific needs of the regions and consumers’ propensity to succumb to inclement weather factors. Such focused effort can result in enhancing the effectiveness of these initiatives from both, the monetary and the social welfare aspects.

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