



# One bad apple spoils the bunch? An exploration of broad consumption changes in response to food recalls



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## ABSTRACT

While it is widely known that food recalls can have large, negative financial and reputational impacts, we know relatively little related to what factors increase consumers' propensity towards broad consumption changes during food recalls. Consequently, we designed a survey instrument to better understand consumer reaction to food recalls, and in particular, uncover the driving influences behind these broad consumption changes. Results were analyzed using hierarchical regression analysis. We find that recall concern, propensity to reduce consumption beyond the recall parameters in the situation of both specific branded and unbranded products, and media reliance hold strong, direct effects on broad consumption changes. Further, recall awareness exhibited a minimal role as a moderating influence, but held a strong, direct relationship with the broad consumption changes dependent measure. In addition, using chi-square tests of differences, we find two distinct points of divergence between Millennials and Non-Millennials. First, Millennials have much lower recall awareness. Secondly, Millennials are more likely to react in ways unwarranted by the recall than older generations for the peanut butter recall scenario. These findings are extremely important as policymakers, commodity processors, food manufacturers, and food retailers develop strategies for minimizing the negative impacts from food recalls.

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## Introduction

Food recalls in the United States pose serious health and economic effects. Reports estimate that in the third quarter of 2012, four food recalls were logged each day, involving nearly 8.5 million food and beverage units (Food Safety News, 2012). In the fourth quarter of 2012, the average rose to six food-related recalls per day (Gelski, 2013). The Center for Disease Control (CDC) (2011) reports that each year approximately 48 million, (i.e. 1 in 6 Americans) are stricken with a foodborne illness. Of those affected by foodborne illnesses, the CDC estimates that 128,000 are hospitalized and 3000 die. The economic effects of the food recalls that stem from foodborne illnesses are likewise considerable. For example, the shell egg recall due to *Salmonella* Enteritidis in 2010, led to an estimated loss of \$100 million to the industry in a single month (Shane, 2010). A recent Grocery Manufacturers Association (GMA) (2011) report indicates that of companies dealing with recalls in the past five years, 77% of respondents indicated the financial loss

to be as much as \$30 million dollars, with the remaining 23% suggesting the costs to be higher than that figure. Firms involved in recalls are not the only entities to shoulder economic losses. A 2010 report indicates that foodborne illness costs the United States \$152 billion annually in healthcare and other associated losses (Scharff, 2010).

Recalls can be quite costly to uninvolved growers and firms as well. For example, in 2008, the tomato industry was wrongly pinned for sickening consumers with *Salmonella* Saintpaul. When the actual source of the problem, jalapeño peppers, was isolated, the tomato industry had already estimated losses of approximately \$250 million from lost sales, costs associated with the recall, and crops left in the fields (Enis, 2008). A *USA Today* report posted 4 months after the spinach *E. coli* outbreak of 2007, indicated that total packaged spinach sales, not just those of the deviant firm, were down 37% from the same period in the previous year and bulk spinach sales were approximately 22% lower (Sullivan, 2007). Packaged salad mixes containing some spinach were down 28% from the prior year, and even packaged salad mixes without spinach were nearly 8% lower than in the previous year. These figures excluded major retailers such as Wal-Mart, Costco, and natural food stores (Sullivan, 2007); thus, the impacts were likely greater than the figures provided.

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Hallman et al. (2009) argue that since consumers typically have minimal knowledge about the magnitude of recalls, they may adjust their purchasing practices in ways beyond those advised in the recall. In their 2008 survey, SteelFisher et al. (2010) found that over 70% of respondents reported they had completely stopped consumption of the food associated with the most recent recall in their memory. In their 2009 follow-up survey, just over 40% of individuals indicated they had completely stopped consumption of peanut butter in light of the 2009 peanut products recall. The findings of Cuite et al. (2007), Hallman et al. (2009), and Kinsey et al. (2009), suggest that the food production and processing industry likely serves as a special case from nonfood products since consumers may not have sufficient motivation (Hallman and Cuite, 2010) or information available (SteelFisher et al., 2010) to differentiate among agricultural products, which are often only lightly branded or unbranded entirely. Jonsson et al. (2009) indicate that when companies share similar characteristics, as they often do in the food industry, if one firm behaves inappropriately, then firms categorized as similar to the culpable firm will likewise face serious legitimacy and economic losses. For example, Brumback (2009) reported that in response to the Peanut Corp. recall in 2009, jarred peanut butter sales sharply declined, even though jarred peanut butter was largely uninvolved in the extensive product recall.

The effect of recalls on consumer health and the economy is firmly established. Despite the general understanding of food recall impacts, the extant literature on food safety perceptions often lacks attention to food recalls explicitly (Patrick et al., 2007; SteelFisher et al., 2010), and instead focuses on food safety concerns such as chemical residues, irradiation, and food terrorism. Fleming et al. (2006) argue that intricate mental and cognitive processes underlie consumers' perceptions of food safety. However, SteelFisher et al. (2010) argue that both policymakers and the academy have little recent information regarding how consumers actually process the information related to recalls to form their reaction. Consumer adoption of or interest in food recall communication ultimately drives the success of initiatives (SteelFisher et al., 2010). Better understanding how consumers think about food recalls and what drives broad consumption changes during recalls is critical to the formation of relevant policies (Wilcock et al., 2004).

Generally, the literature suggests that we know little about how consumers react to food recall situations, and what factors drive such reactions. Prior experiences (e.g., Birch, 1999; Logue et al., 1981; Scalera, 2002), the media (Herrmann et al., 1997; Laestadius et al., 2012; SteelFisher et al., 2010), and overall concern for food safety (Hallman et al., 2009; Wilcock et al., 2004) are purported to influence how individuals react to food recalls. The objective of our study then is to examine what drives consumers to gravitate towards broad consumption changes under food recall situations, such that uninvolved firms and related (yet uninvolved) food segments are influenced. To achieve our objective, we examine recall concern levels, intended reactions to food recall vignettes for both a branded and an unbranded product, and media reliance for their effect on broad consumption changes during a food recall. Additionally, we examine the moderating effect of recall awareness on the relationship between each of these four items and broad consumption changes.

The contribution of our research is to assess factors related to respondents' broad consumption changes during food recalls. In order to analyze these relationships, we have developed and tested measures that are new to the field. The development of these measures provides both an interesting avenue of future research in this area, as well as informs scholars and practitioners about how consumers' concerns, responses to specific recall situations, and reliance on media for information is associated with broad

consumption changes. Additionally, we assess the moderating effect of recall awareness. We empirically confirm both direct and indirect effects for these relationships, which provides insight as researchers move forward in exploring the more complex cognitive processes of consumers in navigating food recall situations. In addition, a growing body of literature suggests that the Millennial Generation has differentiated itself from previous generations on a variety of fronts. Consequently, our research explores generational effects on broad consumption changes.

Our research proceeds as follows. First, we provide a detailed background for consumer awareness of food recalls, concern for recalls, media reliance for recall information, and then reactions to recalls. Next, we highlight our study design and the measures employed in our analysis, and then review the empirical results obtained from these analyses. Finally, we address the implications of our research, and future research opportunities that exist in this realm.

## Background

### *Recall awareness*

A good deal of research has been conducted related to food safety in general; however, consumer awareness of and concern for food recalls as a specific area of study has received relatively little attention in the academy. Pieniak et al. (2013) contend that consumer awareness, or knowledge, is an important element of the consumer decision-making process. Research on food recalls, however, indicates that consumers may not be aware of the frequency or magnitude of food recalls in the U.S. In a survey by Hallman et al. (2009), results showed that 80% of respondents believed food recalls to be increasing in frequency, yet half of the respondents believed that 10 or fewer food recalls occurred each year. This implies that although respondents believe food recalls are on the rise, consumers see food recalls as relatively irregular events. SteelFisher et al. (2010) determined that approximately 90% of Americans had heard of at least one major food recall in the two years prior to taking the survey, with awareness of individual recalls varying widely across their sample. Although a general understanding is emerging related to the level of consumer awareness related to food recalls, the effect that level of awareness has on facilitating or reducing broad consumption changes is an area meriting further consideration.

### *Influences of broad consumption changes*

Concerns regarding food safety issues, such as food recalls, affect consumer behavior (Wilcock et al., 2004). We are interested with the influence of consumer concern for food recalls on the propensity to adopt broad consumption changes. Stinson et al. (2008) indicate that overall consumers are unworried about the food system's vulnerability to natural contaminants. Even so, following well-publicized food recalls, respondents in their study reported they were less confident in the food systems' safety from contamination, both from accidental and naturally occurring sources. Thus, concerns about food safety may arise from well-known recalls and extend to food products not directly related to the recall. Interestingly, despite their indicated concern, research suggests that consumers often suffer from optimistic bias (Webster et al., 2010), or an underestimation of their own vulnerability to food recall hazards (Hallman et al., 2009; Parry et al., 2004; Redmond and Griffith, 2004). Hallman et al. (2009) reported that 12% of respondents in their sample reported having knowingly eaten a recalled food, with 57% of those respondents indicating they ate the food because they did not believe it would harm them.

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