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Research Note

Mandatory Calorie Disclosure: A Comprehensive Analysis of Its Effect on Consumers and Retailers

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Abstract

In 2018 restaurants in the United States will need to provide calorie information on their menus as part of the Patient Protection and Affordable Care Act. In the present research, we examine the efficacy of this legislation in reducing restaurant based food calorie consumption. Specifically, we explore the likely effect of the new policy on both the supply and demand side, that is, consumer and retailer behaviors. To achieve this, two studies are included in this research: a meta-analysis of 186 studies investigating the effect of calorie disclosure on calories selected, and a meta-analysis of 41 studies examining the effect of calorie disclosure on calories offered by retailers. Across these two studies we reveal a significant and unequivocal calorie disclosure effect for menu labels; disclosure results in both fewer calories selected (−27 Calories) and fewer calories offered by retailers (−15 Calories).

Keywords: Calorie labels; Mandatory disclosure; Meta-analysis

The increasing prevalence of obesity has become a major cause for concern in the modern world. With more than 30% of American adults aged 20 and over being classified as obese (Clarke et al. 2016), and with the World Health Organization estimating that 2.8 million (5%) of global deaths are attributable to obesity (WHO 2016), innovative approaches in preventing and treating obesity are urgently needed. In addition to a portfolio of interventions focusing on individual and parental education to encourage personal responsibility for food consumption (Dobbs et al. 2014), restaurants and other retail food outlets are the latest conscripts in the fight against obesity.

Experts estimate that Americans spend half (50.1%) of their food dollars on meals purchased outside of the home (ERS Food Expenditure Series 2016), with restaurant food sales valued at $799 Billion (National Restaurant Association 2017), and that food away from home accounts for an average 33% of an individual's total consumed calories (Powell, Nguyen, and Han 2012). Given these figures, the retail food environment is a critical aspect of the built environment that can contribute to the prevalence, and most importantly, the prevention of obesity within a population (Binks 2016).

The World Health Organization has recently called for an emphasis on the provision of supportive retail environments to encourage consumers to make healthier food choices (WHO 2016). Suggested strategies that food retailers can implement in influencing consumers into eating better include: the provision of smaller sized servings (Holden, Zlatevska, and Dubelaar 2016; Zlatevska, Chris, and Stephen 2014); in-store signage, for example drawing attention to healthier choices; structure, for example changing store layout and organization to prompt heathier product selections; and service for example making electronic aids and apps available to consumers (Wansink 2017). Another suggested strategy involves the provision of nutritional information at the point of purchase to enhance a consumer's ability to regulate their own food purchase behavior (Binks 2016).

In response to the call to provide consumers with more nutritional information at the point of purchase in food retail establishments, legislation (part of the Patient Protection and

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Affordable Care Act) was passed in 2010, requiring restaurants in the United States to include calorie information on their menus. Prior to the legislation, some cities (e.g., New York), counties (e.g., King County), and states (e.g., California) had passed their own laws requiring the posting of nutritional information on menu boards in chain restaurants. According to the legislation, menu boards are required to list the name of every menu item on offer, including options like meal combinations, and the calorie counts for each (FDA 2014). Supporters of the legislation argue that consumers are often unaware, or underestimate, the nutritional content of the food they are purchasing. Hence, equipping consumers with caloric information will encourage them to make considered and possibly healthier product selections (Burton et al. 2006; Burton and Kees 2012).

The legislation applies to quick and table service retail establishments that are part of a chain with 20 or more locations. It also covers grocery stores that sell restaurant type food and are part of a chain with 20 or more locations doing business under the same name (FDA 2014). Retailers have until May 2018 to comply with the imposed guidelines. Some retailers have already, voluntarily complied with the legislation. The initial cost of implementing the proposed menu changes is estimated to exceed $388.43 million for food retailers, with an ongoing cost of compliance of $55.13 million (FDA 2014).

Because of the large mandatory cost imposed on retailers (VanEpps, Downs, and Loewenstein 2016a; VanEpps et al. 2016b) and the opposition by some industries, there is strong interest in whether the benefits of the proposed legislation will outweigh the expenses and required efforts for restaurants to implement menu labels. Furthermore, given that few obesity-related policy changes have actually been implemented in the United States within the last 10 years (VanEpps, Downs, and Loewenstein 2016a; VanEpps et al. 2016b), there is strong public interest in the success of the proposed menu label policy. Academic studies investigating the possible effect of calorie labeling initiatives have provided mixed results. For instance, Long et al. (2015) present summary data revealing that disclosure of calories is correlated with selecting fewer calories, whereas other studies (e.g., Schwartz et al. 2012) suggest that calorie disclosure does not affect food choices. Thus, a critical, outstanding question is: will mandatory calorie disclosure in food retail establishments be successful in changing consumer behavior?

In the present research, we examine the likely efficacy of the new legislation. First, we summarize extant research exploring the effect of calorie labeling initiatives. When reviewing previous efforts of synthesizing the existing literature on menu labeling initiatives, we find that existing research has significant methodological shortcomings. In particular, many reviews are not of a meta-analytic nature (that is, they are qualitative, conceptual reviews), and those that are quantitative, suffer from potential biases. The biases include lack of control for moderating variables in the meta-analysis and strong limitation in synthesized studies resulting in small sample sizes (6–38 studies). These two problems make it difficult to come to conclusions about general effects.

To shed light on the likely overall calorie disclosure effect, we present a meta-analytic approach using multilevel modeling techniques. This meta-analysis method accounts for the potential sources of bias mentioned above and relies on 186 synthesized cases (representing an analysis of 1,677,265 consumption choices). In particular, our meta-analysis accounts for various sources of heterogeneity by including moderators into the model and by capturing dependencies imposed by the nested structure of experiments from the same authors as well as situations where multiple interventions are compared to the same control condition, thus further reducing bias in estimates (Janakiraman, Syrdal, and Freling, 2016; Neumann and Böckenholt 2014). Our findings based on this robust estimation indicate a significant and unequivocal calorie disclosure effect for menu labels on consumer behavior: consumers select fewer calories following disclosure.

Furthermore, we also note that the majority of prior research focuses on consumers' reaction to new labels and less on the actions of the supply side. However, retailers and their menu adjustments play a key role in the ultimate success of any policy, independent of the calorie information disclosure and consumer reactions (Moorman, Ferraro, and Huber 2012). Obligatory incentives often drive the behavior of information providers, sometimes for the better and sometimes for the worse (Loewenstein et al. 2014). Without a comprehensive examination of the effect of calorie disclosure on both the sides of the consumer and the retailer, determining whether or not the legislation will have substantial, broad-based effects is difficult. Following this rationale, we present a second study to investigate likely supply-side adjustments to the new legislation. We perform a meta-analysis of 41 studies (representing an analysis of 33,029 menu items) examining the calories offered by retailers before and after menu changes began to voluntarily be implemented in the United States. Our findings reveal that disclosure of calorie information also significantly leads to lower calorie offerings by food retailers.

The Effect on Consumer Behavior

The implementation of mandatory calorie disclosure on menu boards at the point of purchase is expected to have a positive effect in encouraging consumers to make healthier food choices (Burton et al. 2015). However, although momentum has continued to gather around menu labeling policies with widespread support by consumers (national polls show that between 67% and 83% of people support calorie disclosure (Roberto, Schwartz, and Brownell 2009)), evidence supporting the efficacy of the initiative remains unclear.

Multiple studies have investigated the impact of mandatory calorie disclosure on restaurant menus across many academic disciplines, but have reached little consensus as to the overall effect the legislation will have on consumers. For example, Bollinger, Leslie, and Sorensen (2011), Roberto et al. (2010), and Hammond et al. (2013) conduct experiments illustrating that calorie disclosure reduces energy consumption. In contrast, Schwartz et al. (2012) and Downs, Wisdom, and Lowenstein (2015) perform field experiments and find no significant calo-

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