

# Battling obesity epidemic: New look at 'fat tax'

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Small price differences at the point of purchase can be highly effective in shifting consumer demand from high calorie to healthier low calorie alternatives, according to a study in the Articles in Advance section of *Marketing Science*, a journal of the Institute for Operations Research and the Management Sciences (INFORMS).

Low income consumers, who disproportionately suffer the consequences of obesity, are particularly responsive to such small price differences across products. Such differences are important because they mimic a "fat tax." The results are based on a large-scale field study analyzing six years of sales data from over 1,700 supermarkets across the U.S.

The paper, "Will a Fat Tax Work?" is by Professors Romana Khan at Northwestern University, Kanishka Misra at University of Michigan, and Vishal Singh at the New York University Stern School of Business.

The research focuses on a peculiar pricing pattern of milk in the U.S., where relative prices for milk across fat content - whole, 2%, 1% and skim - vary depending on where you live and which store you happen to patronize. At some stores, prices are equal across all fat content; at others, prices decrease with fat content, with whole milk the most expensive and skim the cheapest option.

"The question that comes to mind is whether these different price structures have an impact on people's choices. To put it simply, do people switch to lower fat milk for a price difference as small as 15

cents per gallon?" said Romana Khan, co-author on the study. "The answer to this question is of interest because it relates to the hotly debated issue of whether a 'fat' or 'sugar' tax can be an effective mechanism to curb obesity."

The study finds that in markets where milk prices are equal across fat alternatives, people tend to choose whole milk over lower calorie alternatives, particularly in low income zip codes: at equal prices across fat content, the market share of whole milk is 52% in lower income areas compared to 25% in higher income areas. What happens in markets where whole milk is priced at a premium? Although the average price difference for a gallon of milk is just 14 cents (5%), it causes a significant shift in market share away from whole milk to lower-fat options. This shift to the lower calorie options is significantly more pronounced in low-income neighborhoods.

Besides income, the analysis accounts for other factors such as age profile, racial mix, and educational attainment of the local customer base.

A critical factor in the analysis is that the prevailing price structure—whether prices across [fat content](#) are the same or not—is determined by the chain's policy at the regional level and does not vary with local demographics or competition.

"This provides us with a quasi-experimental setup to analyze how small price differences impact people's choices," said Kanishka Misra. "Studies addressing similar questions are often conducted with small, non-representative populations, often university students. What distinguishes our work is the real-world field setting covering sales across the US and observed over a long time period—mimicking what a potential 'fat-tax' would look like and what the long term consumer choices would be," added Misra.

"Our results have significant implications for health experts and policy makers, since interventions in the form of taxes on high calories foods are highly contentious," according to Vishal Singh of New York University. "The general perception is that these taxes need to be substantial, at least 20% and often as high as 50%, to have a meaningful impact. This would be highly regressive since low-income consumers spend a greater proportion of their disposable income on food. Here, we have compelling field-based evidence that such taxes don't need to be high to be effective," noted Singh. The study finds large shifts in demand toward the lower-calorie option are achieved with a price difference of just 5-10%. Consumers respond to small price incentives; and more importantly, low income consumers who are at higher risk for obesity are particularly responsive.

The authors also examine implications of a [fat-tax](#) and the inherent trade-offs for different segments of society from such interventions: while there are economic losses from taxes to some segments, the health benefits from shifting to the lower calorie option outweighs these costs. The authors' recommendation is a selective taxation mechanism designed to induce substitution within a narrowly defined product category (e.g., baked versus fried chips), rather than to discourage consumption of the category as a whole. This has the additional advantage of mitigating the regressive nature of food taxes since some options within a narrowly defined product category can be made less expensive. Importantly, these taxes should be imposed as an excise tax so that they are reflected in the shelf price at the point-of-purchase, rather than imposed as a post-purchase sales tax where they become less salient in the decision process.

**More information:** Romana Khan et al. Will a Fat Tax Work?, *Marketing Science* (2015). [DOI: 10.1287/mksc.2015.0917](https://doi.org/10.1287/mksc.2015.0917)

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