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Department of Economics  
School of Economics and Management

# A Note on the Impact on Sales from Introducing Healthy Labeled Meals on the Lunch Menu

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# A Note on the Impact on Sales from Introducing Healthy Labeled Meals on the Lunch Menu

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## Abstract

Menu labeling of prepared meals away from home is a policy designed to help consumers make healthier food choices. In this paper, we use a field experiment to analyze if a restaurant benefits from introducing a healthy labeled meal on its menu by experiencing an overall increase in sales. We cannot reject the hypothesis that sales are the same before and after the introduction of a healthy labeled meal on the menu, i.e., our data does not support the idea that restaurants increase their sales from supplying a healthy labeled meal.

**Keywords:** healthy labeled meals; sales; field experiment

**JEL-classification:** D22; D83

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## **1. Introduction**

Diet related illnesses, such as several types of cancer, diabetes, cardiovascular disease, osteoporosis and dental caries, and overweight and obesity – conditions that themselves constitute risk factors for many of the diseases mentioned – have become an important public health issue in many countries. Much of the increase in obesity and overweight rates have been attributed to changes in environmental factors (Binkley et al., 2000; Chou et al., 2004; Boumtje et al., 2005; Binkley, 2006; Rashad et al., 2006), with increased consumption of prepared food away from home as one of the most important changes (Chou et al., 2004; Binkley, 2006; Rashad et al., 2006). In the US, where obesity rates are the highest in the world, prepared food away from home amounts to nearly 50 percent of the total household food budget (Variyam, 2005), and in Sweden, prepared food away from home amounts to around 25 percent of total household food budget (Statistics Sweden, 2010).

The negative effect on health from prepared food away from home is likely to be a result of the lower nutritional quality. Studies have found that prepared food away from home is generally higher in calories, fat, saturated fat, salt and cholesterol, while lower in fibre, calcium and iron (e.g. Lin et al., 1999; 2001; Guthrie et al., 2002).

One way to promote healthy eating may be to increase health awareness and information to consumers that eat food away from home, such as via legislated menu labeling, or private initiatives for menu labeling. For instance, in 2008, New York City implemented mandatory menu labeling, and many states are following suit. In Sweden, the “Keyhole symbol” has been a symbol for healthy food choices in retail for more than 20 years, and is well-known amongst the public. Restaurants may voluntarily obtain “Keyhole certification”, which enables them to serve

Keyhole labeled meals.<sup>1</sup> Hereafter, we will refer to Keyhole labeled meals as “healthy labeled” meals.

In this paper, we analyze what’s in it for the restaurants: does introducing a healthy labeled meal on the menu increase overall sales? We are implicitly assuming that profits increase as sales increase.<sup>2</sup> The idea is that by offering a healthy labeled meal on the menu, restaurants may increase sales by attracting new consumers (who are particularly interested in healthy meals), and/or by creating a “health halo” sales effect – by offering healthy meals, the restaurant may increase its overall appeal to consumers.<sup>3</sup> We use data from a lunch restaurant field experiment to perform our analysis.

## 1. Data and analysis

Our analysis is based on data from a field experiment in a lunch restaurant at an industry company in southern Sweden (see Thunström and Nordström, 2011). Restaurant sales was monitored during the 12 weeks (57 business days) from the 2nd of March to the 29<sup>th</sup> of May in 2010, and the restaurant was Keyhole certified (and introduced a healthy labelled meal on the menu) on the 20<sup>th</sup> of April, i.e. 6 weeks into the study period. Keyhole certification entails training of restaurant staff and communication of the Keyhole to customers. A Keyhole certified restaurant must provide at least one healthy labelled meal per day, where the meal must fulfill certain criteria. The general criteria that applies for a healthy labeled meal are: the meal should

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<sup>1</sup> Certification is granted by the non-profit organization the “KeyHole Restaurant Association,” established in January 2009 and founded by the National Food Administration, the Swedish National Institute of Public Health (FHI), The Swedish Hotel and Restaurant Association (SHR), The Swedish Food Federation (Li), The Swedish Food Retail Federation (DLF), the School of Hospitality, Culinary Arts & Meal Science, Örebro University, Campus Grythyttan and Culinary Arts and Food Sciences, Kristianstad University.

<sup>2</sup> Wagner et al. (2007) show that more nutritious school meals do not necessarily cost more to produce, but that it may be necessary to adjust the production process to attain this result.

<sup>3</sup> For a discussion on health halos, see e.g. Chandon and Wansink (2007).

contain 400-750 calories, max 30 energy percent from fat (more is allowed for seafood), max 3 grams of sugar per 100 gram, max 1 gram salt per 100 gram, be well-balanced and contain at least 100 gram of vegetables (excluding potatoes).<sup>4</sup>

The restaurant was open all workdays, Monday to Friday, and closed at 6pm all weekdays, except Fridays, when it closed at 3pm. Three meals were offered on the menu every day, except April 30th, when only two meals were served. After the 20<sup>th</sup> of April, one of the meals was healthy labelled. The price of all meals was the same throughout the study period (SEK 63). The restaurant is open to the general public, even if it primarily serves contractor employees. Restaurant staff estimates that around 70 percent of customers were male and 80 percent were blue-collar workers. There are a couple of other lunch restaurants within walking distance.

The lunch menu was posted daily outside the restaurant and could be obtained via e-mail: the e-mail list contained approximately 50-60 people.

We use a linear regression to analyze if the introduction of the healthy labelled meal on the menu had an impact on the restaurant's overall sales, as defined by number of meals sold per day. We control for weekdays. Descriptive statistics of the variables included in the regression are found in Table 1 and our results are reported in Table 2. We use Durbin's alternative test for autocorrelation and cannot reject the null hypothesis of no autocorrelation ( $\text{Chi2}(1)=0.225$ ,  $\text{Prob}>\text{Chi2}=0.6356$ ), but a Breusch-Pagan / Cook-Weisberg test for heteroskedasticity implies that we cannot confirm the null hypothesis of constant variance ( $\text{Chi2}(1)=60.86$ ,  $\text{Prob}>\text{Chi2}=0.000$ ). We therefore estimate the model with White's robust standard errors.

Insert Table 1 here.

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<sup>4</sup> See [www.nyckelhalsrestaurang.se](http://www.nyckelhalsrestaurang.se).

Insert Table 2 here.

Table 2 reveals that we cannot reject the hypothesis that introducing a healthy labelled meal on the menu has no effect on overall restaurant sales: the estimated coefficient for the dummy variable indicating that the restaurant offers a healthy labelled meal is both small and not statistically significant (and negative; - 3 meals per day).

Consumer habits may take time to change, as may consumer perceptions of the restaurant. The lack of impact on sales from introducing a healthy labelled meal suggested by the results in Table 2 could therefore be a result of that it takes time for new consumers to switch to the healthy labelled restaurant, and that it takes some time for a potential health halo sales effect to occur. We estimate an alternative model where we drop the immediate three weeks after the introduction of the healthy labelled meal on the menu, i.e. we analyze if sales during the 6 weeks before the introduction of the healthy labelled meal on the menu is significantly different from sales during the last three weeks of the study period, as a result of the healthy labelled meal introduction, controlling for weekdays. However, our results remain unchanged; we cannot reject the null hypothesis that sales is unaffected by the introduction of the healthy labelled meal.

## **2. Concluding remarks**

In this paper we use a field lunch restaurant experiment to analyze what is in it for restaurants when it comes to providing healthy labeled meals. More specifically, we analyze if a restaurant experiences a sales increase from introducing a healthy labeled meal on the menu. We are implicitly assuming that increased sales also means increased profits. Our results imply that

restaurants do not increase sales from introducing a healthy labeled meal on the menu. This is in line with previous field research showing that calorie information does not change consumer purchasing behavior (e.g. Harnack et al., 2008; Elbel et al., 2009 and 2011; Vadiveloo, 2011, and Thunström and Nordström, 2011).

Why would restaurants introduce healthy labeled meals on the menu, if they do not increase sales? Due to limitations of the data, we cannot directly observe profits. One could therefore speculate if profits increase due to introducing the healthy labeled meal on the menu, even if sales doesn't, which would motivate firms to serve healthy labeled meals. That is unlikely, however, given constant meal prices in the experiment, and, if anything, inputs to healthy food (amount of labor and ingredients) are more costly than those to unhealthy food. However, restaurants may want to position themselves for the future, i.e. expect future pay-offs from offering a healthy labeled meal, given consumer trends. Restaurants targeted at serving meals to employees of certain companies, like the one in our experiment, may also be forced to serve healthy labeled meals by contractors, such that not serving healthy labeled meals means no business.<sup>5</sup> Our results are not surprising, since if restaurants would experience significant profit gains from introducing healthy labeled meals, we would expect to see a lot more of healthy meals and voluntary menu labeling amongst restaurants.

It should be noted that the time period covered in the field experiment reported here is relatively short – 6 weeks before the introduction of a healthy labeled meal on the menu and 6 weeks after. Therefore, a question for future research is if a sales increase may be obtained in the medium or long run. Also, our analysis is based on data from one restaurant alone. Other types of

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<sup>5</sup> Firms may have different motivations to offer their employees healthy food, such as labeling themselves as a health conscious firm, thereby attracting employees with an interest in health, or productivity gains amongst employees from improving their dietary intake (see Jensen, 2011).



restaurants, targeted at other groups of consumers, may experience sales effects from introducing healthy labels on the menu.

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## Tables

Table 1 – Descriptive statistics

Variable	Mean	Std. Dev	Min	Max	No. Obs
Number of meals sold per day	346.930	41.324	82	381	57
Healthy labelled meal on the menu	0.491	0.504	0	1	57
Monday	0.193	0.398	0	1	57
Tuesday	0.211	0.411	0	1	57
Wednesday	0.211	0.411	0	1	57
Thursday	0.193	0.398	0	1	57
Friday	0.193	0.398	0	1	57

Healthy labelled meal on the menu, yes=1;no=0, Monday, yes=1;no=0, etc.

Table 2 – OLS regression results of determinants of restaurant sales

Variable	coefficient	s.e.	t-value	p-value
<i>Dependent variable: Number of meals sold daily</i>				
Constant	362.741***	6.191	58.59	0.000
Healthy labelled meal on the menu	-2.859	10.900	-0.26	0.794
Tuesday	-1.062	6.754	-0.16	0.876
Wednesday	-3.395	5.860	-0.58	0.565
Thursday	-18.805**	8.842	-2.13	0.038
Friday	-50.987**	23.927	-2.13	0.038

No of obs: 57, R-squared = 0.2172, Prob>F=0.0023. \*\*>0.95 statistical significance, and \*\*\*>0.99 statistical significance.