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Impacts of Food Safety Recalls and Consumer Information on Restaurant Performance

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Abstract

Consumer expenditures on purchases of food away from home have risen in recent years to comprise nearly half of consumer food budgets. Using the monthly National Restaurant Association Restaurant Performance Index, we seek to determine the factors influencing restaurateurs' perceptions of their current situation, same-store sales, and customer traffic from July 2002 through March 2017. Macroeconomic variables have little impact on restaurant performance, but concerns about public health perceptions do impact restaurateurs' outlook. Concerns over the link between meat and poultry consumption and cancer also negatively impact restaurant owners' perceptions of performance.

Keywords: food away from home, food safety, health, nutrition, restaurant performance

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Introduction

In recent decades, the U.S. foodservice sector has expanded to provide consumers an array of restaurant options fitting every budget, taste, and sensibility. Over 600,000 restaurants in the U.S. employ approximately 11.1 million individuals (U.S. Department of Commerce, Bureau of the Census, 2017). Growth in the number of U.S. restaurants reflects U.S. consumers' steadily increasing purchases of food away from home (FAFH) since the mid-1990s. Data from the U.S. Census Bureau indicate that annual sales from food services and drinking places has grown by an average of 5% from 2002 through 2016 (Figure 1). Household food expenditures on FAFH exceeded 50% in 2014 (U.S. Department of Agriculture, Economic Research Service, 2016) even though recessions temporarily slowed growth in FAFH expenditures (Figure 2).

The restaurant industry thrives on the principle that consumers have different food consumption patterns at home and away from home (Lin et al., 2003; Davis and Lin, 2005; Lin and Guthrie, 2012). FAFH purchases are more responsive to changes in total food expenditures than are food at home (FAH) purchases (Okrent and Alston, 2012), but—even within FAFH purchases—the type of restaurant is an important factor in explaining FAFH expenditures (McCracken and Brandt, 1987; Jekanowski, Binkley, and Eales, 2001; Binkley, 2006). Thus, factors that are important in aggregate consumer demand studies of food (e.g., Capps and Schmitz, 1991; Piggott and Marsh, 2004; Mutondo and Henneberry, 2007; Tonsor, Mintert, and Schroeder, 2010) may or may not be relatively as important for explaining FAFH expenditures.

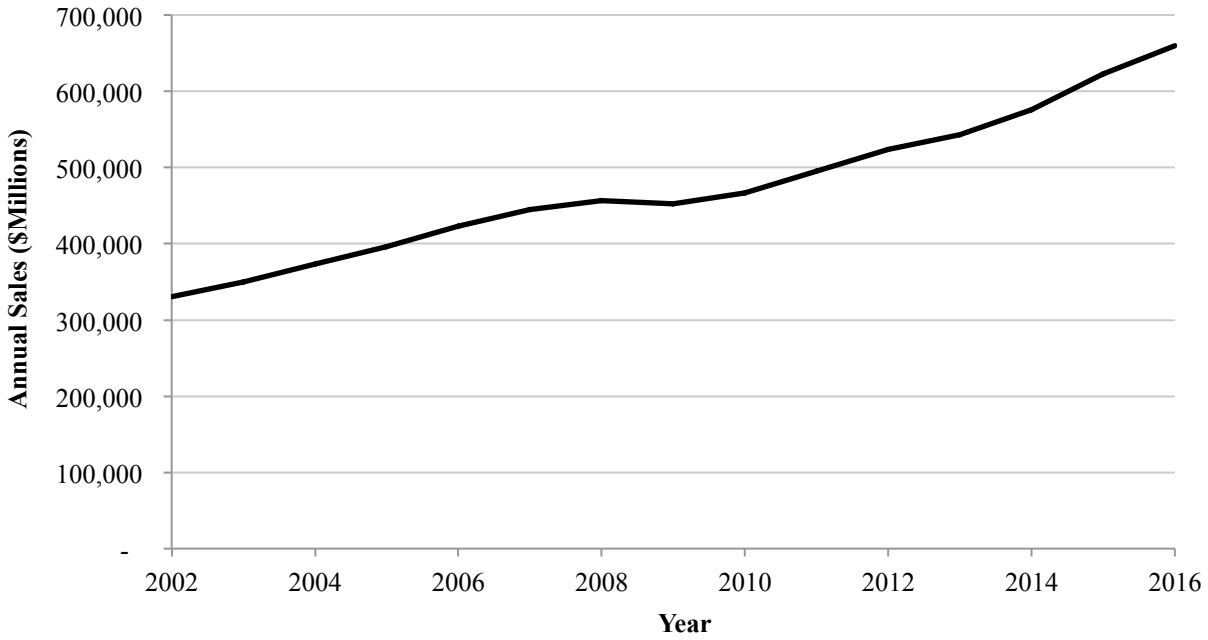
Restaurant owners realize that the motivation for FAFH expenditures extends beyond simply fulfilling nutritional needs and convenience to include various social and recreational factors (McCracken and Brandt, 1987). As a circumstantial example of the link between FAFH and non-nutritional factors, the rise in FAFH expenditures mirrors the rise in U.S. obesity levels and is thought to be a contributing factor to this and other U.S. health issues. However, Lin et al. (2003) speculate that eating habits will change to reflect a greater focus on nutrients as consumers gain increased dietary knowledge, a concept supported by Tonsor, Mintert, and Schroeder (2010).

How have the increased government and media focus on health and obesity in recent years influenced restaurant sales and restaurateurs' general business perceptions? The National Restaurant Association's Restaurant Industry Tracking Survey provides monthly information on current and future business conditions. We use data from this survey to evaluate how increased public emphasis on health, food safety, and obesity, as well as macroeconomic variables, influence restaurateurs' outlook on their industry.

Literature Review

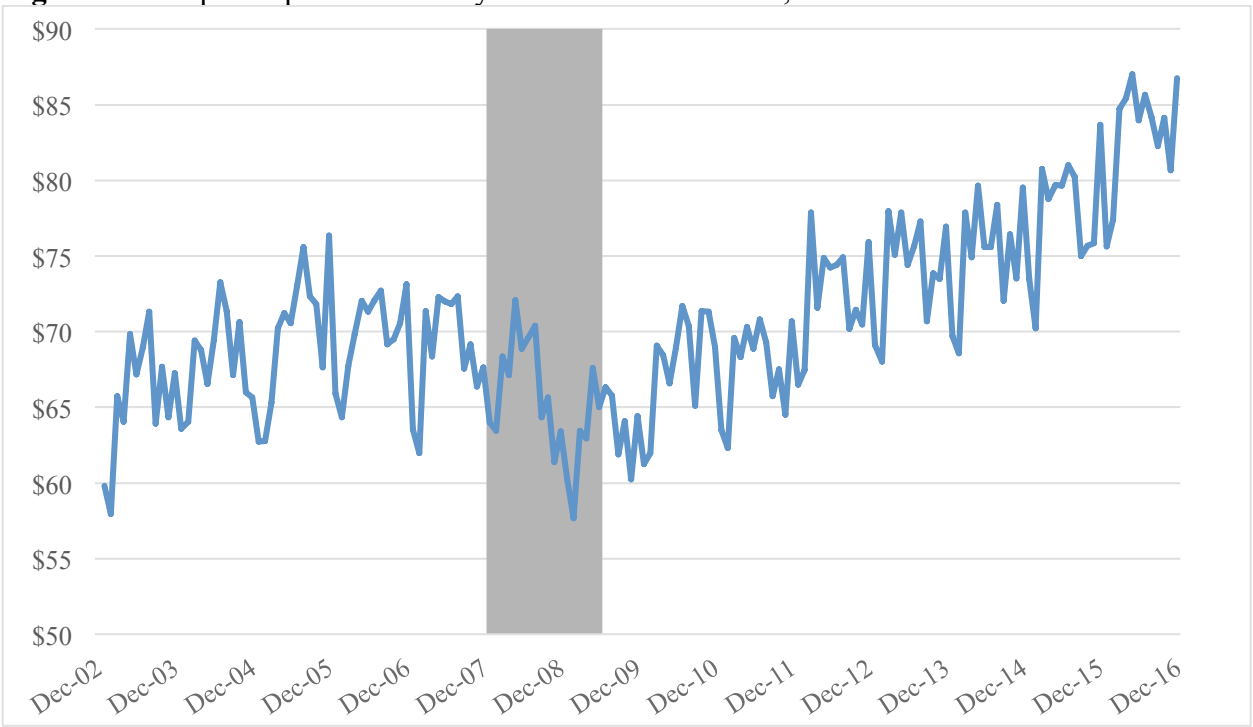
The value of household time and convenience are closely related in explaining increased FAFH expenditures and restaurant industry growth since the 1970s. However, most previous literature deals with consumer FAFH expenditures rather than the operations and perceptions of restaurant owners. Johns and Pine (2002) reviewed literature associated with consumer behavior, segmentation, and geographic aspects of the restaurant industry and noted that most quantitative studies focus on identifying or positioning relative to the segments of the restaurant industry,

Figure 1. Annual Sales of U.S. Food Service and Drinking Places, 2002–2016



Source: U.S. Department of Commerce, Bureau of the Census (2017)

Figure 2. Real per Capita Food Away from Home Purchases, 2003–2014



Note: Shaded area represents periods of recession.
Source: U.S. Department of Agriculture, Economic Research Service (2017)

reflecting restaurant heterogeneity. Binkley and Bales (1998) stated that availability and population density tend to be more important than demographic factors in determining fast food expenditures.

With FAFH expenditures exceeding those for FAH for the first time in 2014 (U.S. Department of Agriculture, Economic Research Service, 2016), studies of consumers' valuations for convenience and household time have been the primary sources of information on FAFH expenditures and their impacts on the restaurant industry. Jekanowski, Binkley, and Eales (2001) suggested that growth in FAFH expenditures is tied to an increasing supply of restaurants (i.e., availability and options), which decreases the effective cost of the food (i.e., distance traveled plus food cost). This results in what they call an "increasing supply of convenience," especially for quick-service restaurants, rather than a change in consumer tastes and preferences that would result in increased demand for FAFH expenditures. Research by Binkley and Bales (1998) and Binkley (2006) supports the importance of convenience from a location and time perspective in explaining the increase in FAFH expenditures.

This increased supply of convenience corresponds to a period in which women have increasingly become part of the U.S. labor force. Female participation in the labor force approached 60% for most of the first decade of the 2000s but declined slightly during the Great Recession. Although women are less likely to dine out (Binkley, 2006), their labor force participation rate has been used to explain shifts in consumer demand for FAFH and meat products in general (Yen, 1993; Tonsor, Mintert, and Schroeder, 2010).

Other factors impacting FAFH demand are general economic conditions, consumer demographics, nutritional knowledge, and eating habits. Lee and Ha (2012) found positive correlations between restaurant industry activity and GDP yet noted that relatively few studies have directly investigated the impacts of economic recessions or key economic indicators on the restaurant industry. Hua, Xiao, and Yost (2013) further noted that the industry "exhibits strong seasonality and cyclical patterns," meaning that restaurant owners must recognize and develop strategies for various seasons and cycles. Nayga and Capps (1992), Jekanowski, Binkley, and Eales (2001), and Binkley (2006) accounted for income but ignored the impact of economic recessions on demand for FAFH. The diversity in demand for FAFH, and the restaurant options catering to those demands, creates challenges for assessing the impacts of economic conditions on the restaurant industry as a whole (Lee and Ha, 2012; Wang, 2012; Hua, Ziao, and Yost, 2013; Liu, Kasteridis, and Yen, 2013).

Concerns about increasing levels of U.S. consumer obesity have often been a motivating factor for "eating out" studies, due to concerns about the nutritional quality of FAFH (Lin and Frazao, 1997; Jekanowski, Binkley, and Eales, 2001; Young and Nestle, 2002). During the period of 2005–2008, nearly one-third of calories consumed in the United States came from FAFH sources (Lin and Guthrie, 2012). Anderson and Matsa (2011) found that consumers adjust their caloric intake following consumption of FAFH, which is consistent with Binkley (2006) and Yen, Lin, and Davis (2008), who stated that greater nutritional knowledge can impact food choices from FAFH sources.

Increased nutritional knowledge by consumers has the potential to change purchasing behavior for aggregate food expenditures. Changes in U.S. consumers' knowledge are often modeled as indices from popular press or medical journal articles as a proxy for disseminated health and food safety issues. Studies by Capps and Schmitz (1991); Lusk and Schroeder (2002); Rickertsen, Kristofferson, and Lothe (2003); Marsh, Schroeder, and Mintert (2004); Piggott and Marsh (2004); Adhikari et al. (2006); and Tonsor, Mintert, and Schroeder (2010) draw from the meat demand literature, illustrating how health and food safety issues have altered consumer behavior in that area.

This study uniquely contributes to the literature by examining how factors affecting consumer expenditures on FAFH impact restaurant owners' perceptions of their business operations over time. Through a supply-side view of FAFH, this study provides insights into the significance of economic and health conditions/trends on restaurant owners' business expectations.

Conceptual Model and Data

The National Restaurant Association's monthly Restaurant Performance Index (RPI) tracks the current situation and expectations of restaurant owners based on results from their Restaurant Industry Tracking Survey. Factors that influence the current situation components of the RPI are same-store sales, customer traffic, and labor (number of employees and average employee hours) relative to the same month in the previous year and capital expenditures in the most recent three-month period. The RPI reflects restaurateurs' current and expected business conditions.

This study uses RPI data from July 2002 (when the NRA created the index) to March 2017. The study period includes the rise of "cheeseburger laws," which prevent consumers from suing restaurants for their obesity problems; the Atkins Diet (low-carb/high protein diets); and the release of the book *Fast Food Nation* and movie *Food, Inc*. Summary statistics for independent and dependent variables are shown in Table 1.

To our knowledge, the RPI has not been studied to determine the factors that result in restaurant owners' changing opinions on industry profitability and outlook. This provides an opportunity to analyze if the factors impacting consumer demand for FAFH are being reflected in the RPI. The RPI is normalized to 100 so that any value above (below) that level indicates expansion (contraction) of the restaurant industry. The subcomponents that make up the current situation and expectations components are also normalized to 100, with many of the subcomponents relative to the month in the prior year.

Swartz and Strand (1981); Kalaitzandonakes, Marks, and Vickner (2004); Mazzocchi (2006); and Tonsor, Mintert, and Schroeder (2010) examined the impacts of media information on food demand. Using the same approaches, we develop a model to reflect media and scientific information on health, food recalls, macroeconomic factors, and household dynamics present in restaurateurs' current business perceptions, using the following general form:

$$RPI_{t-1} = f(\boldsymbol{V}, \boldsymbol{M}, \boldsymbol{H}, \boldsymbol{HA}, \boldsymbol{R}, \boldsymbol{Q}) \quad (1)$$

Table 1. Means and Description of Independent and Dependent Variables

	Description	Mean	Std Dev	Min	Max
Dependent Variables					
Change in current situation	Month-to-month change in the average of same-store sales, customer traffic, restaurant labor, and capital expenditures	0.01	1.02	–2.6	3.1
Change in current same-store sales	Month-to-month change in sales volume compared to one year prior	0.01	1.62	–4.4	5
Change in current traffic	Month-to-month change in customer traffic compared to one year prior	0.01	1.66	–5.2	5.2
Independent Variables					
CPI	Consumer Price Index for food and beverages divided by 100	2.18	0.24	1.76	2.51
FCHA	Number of peer-reviewed medical articles per month linking red meat consumption to fat/cholesterol concerns	11.96	7.21	2	37
RMC	Number of peer-reviewed medical articles per month linking red meat consumption to cancer	3.81	2.71	0	18
Obesity	Number of newspaper articles focusing on dining out and connection to obesity	29.26	15.9	2	95
Women	Monthly percentage of women in U.S. labor force	58.39	1.09	56.5	59.9
Recalls	Number of monthly USDA FSIS Class I and II recalls	6.13	3.57	0	26
Savings	Monthly savings rate of U.S. consumers	5.04	1.43	1.9	11
Recession	Whether or not the month was in the Great Recession	0.1	0.3	0	1
Unemployed	U.S. unemployment rate	6.46	1.74	4.4	10

where RPI_{t-1} is the change in the RPI subcomponent in month t from the previous month, $\boldsymbol{V}$ denotes the convenience and value of household time, $\boldsymbol{M}$ is a vector of macroeconomic variables, $\boldsymbol{H}$ is a vector containing health research information, $\boldsymbol{HA}$ is an index of media stories on restaurants, and $\boldsymbol{R}$ is the number of monthly Class I and II recalls issued by the U.S. Department of Agriculture's Food Safety and Inspection Service (USDA FSIS). Quarterly dummy variables, denoted as $\boldsymbol{Q}$, are also included for the first, second, and third quarters to account for seasonality in estimated models.

For this study, the $\boldsymbol{V}$ vector is the percentage of women in the U.S. labor force from the Bureau of Labor Statistics. Inclusion of this variable is consistent with previous literature as a proxy for the value of household time. Included macroeconomic variables in $\boldsymbol{M}$ are the monthly per capita savings rate from the Bureau of Economic Analysis, the Consumer Price Index for food and beverages,[1] the unemployment rate from the Bureau of Labor Statistics, and whether the month was part of a recession according to the National Bureau of Economic Research. These independent macroeconomic variables are consistent with previous literature explaining FAFH purchases. We also include the lagged unemployment rate to capture any lingering effects on restaurateurs' perceptions of current business outlook based on a period greater than the current and previous monthly employment rates.

We seek to examine how factors shown to impact overall food demand impact restaurant owners' perceptions of current restaurant sales and customer traffic, as measured by the RPI's subcomponents. Using Class I or Class II recalls from USDA FSIS is consistent with previous literature (Marsh, Schroeder, and Mintert, 2004; Tonsor, Mintert, and Schroeder, 2010), although previous studies segregated recalls by meat type (beef, pork, poultry), whereas we use an aggregate recall number. These two classes of recalls are used due to the possibility these events may result in a health hazard to consumers. The number of recalls occurring in a month may also undermine consumer confidence in the U.S. food supply and directly impact restaurant performance. We considered including recalls from the Food and Drug Administration (FDA) but ultimately decided against it because of the large number of recalls associated with mislabeling and undeclared allergens. FDA recalls also tend to involve a greater number of smaller suppliers and smaller geographic areas of impact relative to the broad-reaching impacts of large-volume recalls in the highly concentrated meat and poultry sector.

We created three indices: two in the $\boldsymbol{H}$ vector and one in the $\boldsymbol{HA}$ vector. The two indices in the $\boldsymbol{H}$ vector were a fat, cholesterol, heart disease, and arteriosclerosis (FCHA) index and an index measuring the connection of red meat and poultry consumption with cancer. Each of these two indices was created using a monthly count of the number of articles returned in the Medline database for English-language journals. The FCHA index replicates the previous efforts of Rickertsen, Kristofferson, and Lothe (2003) and Tonsor, Mintert, and Schroeder (2010). To coincide with the RPI, our FCHA index is a monthly article count for '{(fat or cholesterol) AND (heart disease or arteriosclerosis) AND (diet)}'. The second index in the $\boldsymbol{H}$ vector was a monthly count of articles in the Medline database of English-language medical journals for the connection between red meat and poultry consumption and cancer (RMC). Search terms used for this RMC variable were '{(red meat or poultry) AND (diet) AND (cancer)}'.

[1] We thank a reviewer for this suggestion.

The third index reflects the increased prevalence and concern about obesity levels in the United States, as indicated by monthly U.S. newspaper articles on these topics for the ***HA*** vector. Using the Lexis-Nexis database, we searched for '{(restaurant or fast food or dining out) AND (obesity) AND NOT (editorial)}' to determine the total number of articles expressing concern about restaurants and their contribution to obesity. We include the 'AND NOT (editorial)' to exclude editorials and letters to the editor, following pre-testing of this search term. Reviews of restaurants and books were also excluded from our final count. Duplicate articles were also removed from the final monthly count.

We did not address the monthly change in the RPI value, as the aggregate RPI value is a simple average of the current and expectations components. Furthermore, we do not discuss models for the aggregate expectations index component or the subcomponents of the expectations index due to a lack of significance among independent variables aside from the quarterly dummy variables. The fact that several of the expectations subcomponents are for six months in the future, relative to that month one year prior, may be contribute to a lack of significance among explanatory variables. Additionally, restaurateurs' future expectations may be based more on hope than true expectations of future business conditions.

Results

Initial models were estimated in ordinary least squares, but autocorrelation was detected. Subsequent estimations employed maximum likelihood in the PROC AUTOREG module of SAS 9.4. The appropriate number of autocorrelated errors was determined using the "backstep" feature in SAS as well as by testing for conditional heteroskedasticity.

Results of the monthly change in the current situations model are shown in Table 2. There is evidence of some seasonal influences in restaurant owners' business expectations, as the owners' views of business conditions are statistically significantly higher in the first and second quarter of each year than in the fourth quarter. Including the CPI food and beverage variable resulted in the expected negative impact on restaurant performance, but it was insignificant.

Increased medical article counts on the link between red meat and poultry consumption and cancer had a negative impact on the month-to-month change in the current situation of restaurant owners. The number of recalls also had a negative impact on the current restaurant situation, while the number of newspaper articles linking obesity concerns and restaurants also had a small but statistically significant negative impact on the current situation perceptions of owners.

Same-Store Sales Volume

The results for month-to-month change in same-store sales volume were similar to the results for month-to-month change in aggregate current situation. First quarter expectations for sales and customer traffic were also statistically significantly higher than fourth quarter RPI measures. This may be due to the prevalence of at-home holiday meals and expenditure shifts to holiday shopping that impacted FAFH expenditures and overall restaurant patronage of consumers in the fourth quarter.

Table 2. Regression Results for Month-to-Month Changes in Restaurant Owners' Perceptions of Current Business Situation, Same-Store Sales, and Customer Traffic

	Current Situation	**Same-Store Sales**	**Customer Traffic**
Intercept	11.216	14.719	14.808
	(12.483)	(19.301)	(17.594)
First Quarter	0.433***	0.416**	0.352**
	(0.116)	(0.182)	(0.164)
Second Quarter	0.223**	0.112	-0.029
	(0.105)	(0.166)	(0.149)
Third Quarter	-0.063	-0.112	-0.151
	(0.109)	(0.171)	(0.154)
CPI	-0.686	-0.857	-0.686
	(0.952)	(1.474)	(1.346)
FCHA	0.002	0.003	0.005
	(0.012)	(0.019)	(0.018)
RMC	-0.067***	-0.089**	-0.091**
	(0.025)	(0.039)	(0.036)
Obesity	-0.008**	-0.012**	-0.011**
	(0.003)	(0.005)	(0.005)
Women	-0.166	-0.218	-0.223
	(0.181)	(0.279)	(0.254)
Recalls	-0.017	-0.023	-0.033
	(0.017)	(0.026)	(0.023)
Savings	-0.016	-0.053	-0.052
	(0.046)	(0.070)	(0.064)
Recession	-0.062	-0.082	-0.109
	(0.223)	(0.343)	(0.313)
Unemployed	-0.099	-0.108	0.310
	(0.437)	(0.682)	(0.629)
$Unemployed_{t-1}$	0.1752	0.232	-0.196
	(0.428)	(0.668)	(0.617)
Lag1	0.664***	0.673***	0.780***
	(0.075)	(0.073)	(0.072)
Lag2	0.313***	0.361***	0.394***
	(0.076)	(0.073)	(0.072)
Lag13	0.190***	0.165**	0.186***
	(0.072)	(0.069)	(0.067)
N	177	177	177
Log-likelihood	-212.490	-292.835	-287.504

Notes: ***, **, and * asterisks denote significance at 0.01, 0.05, and 0.10 levels, respectively. Standard errors in parentheses.

Medical articles linking red meat and poultry to cancer and the number of USDA FSIS recalls had a negative impact on month-to-month changes in same-store sales. The obesity index variable had a stronger, negative impact on sales volumes compared to the aggregate current situation variable. We cannot explain why the fat, cholesterol, and arteriosclerosis (FCHA) index had a small but positive impact on explaining changes in same-stores volume, although the parameter estimates were not statistically significant. Collectively, these findings are consistent with Binkley (2006) and Yen, Lin, and Davis (2008), who stated that greater nutritional knowledge can impact FAFH patterns of consumers.

Monthly Customer Traffic

As with changes in owners' current situation assessments and same-store sales, seasonal differences were apparent in customer traffic. Similar to same-store sales, changes in monthly customer traffic were significantly higher during the first quarter than in the fourth quarter. As previously stated, this may be due to the propensity of fourth-quarter holiday meals at home impacting restaurant patronage.

The change in monthly customer traffic was negatively impacted by the number of monthly medical articles linking red meat and poultry consumption with cancer. Newspaper articles mentioning the link between restaurants and obesity also exhibited a negative correlation with month-to-month changes in customer traffic. As with the change in the same-store sales dependent variable, the FCHA index exhibited a small but positive (and insignificant) influence on customer traffic.

Overall Findings for Unemployment and Women in the Workforce

Current unemployment, lagged unemployment, and the percentage of women in the workforce did not significantly impact changes in owners' current situation perceptions, same-store sales, or customer traffic. Unemployment percentages may not have provided an accurate measure of overall workforce participation during the evaluation period, as the changes in active job seekers resulting from the Great Recession impacted the "true" unemployment measures.

Increased female participation in the U.S. labor force had a negative impact on changes in owners' current situations, same-store sales, and customer traffic. While the parameter estimates were not statistically significant, the negative sign on the coefficients contradicts previous studies. However, over the evaluation period the total magnitude change in female workforce participation was roughly 3%, even considering the impacts of the Great Recession. That lack of variation may suggest a longer-term sustained level of female workforce participation. With women less likely to dine out (Binkley, 2006), our findings suggest that restaurateurs are not being impacted in their current conditions, same-store sales, or customer traffic by the increased female labor-force participation rate. Stated differently, the female labor participation rate has reached a saturation point such that restaurateurs are not impacted by the small changes in the rate seen during our study period.

Although recalls included in each of the three models were negative, none was significant. As Knight, Worosz, and Todd (2007) have stated, consumers feel that restaurants were "good" on

their commitment to food safety. Furthermore, these authors found that commitment to food safety issues did not impact the frequency of eating at restaurants. This confirms our finding of insignificance of recalls impacting restaurateurs' current conditions, same-store sales, and customer traffic. Similarly, Knight, Worosz, and Todd stated that respondents felt other parts of the supply chain (e.g., processors, manufacturers, and farmers) were more capable of ensuring food safety than restaurants.

Conclusions

Restaurants continue to be an integral part of U.S. consumers' food consumption patterns due, in part, to the convenience and diversity of menu options offered. However, the factors that impact restaurant owners' perceptions of industry performance are not well understood. This study sought to improve our understanding of the roles that health and nutrition information, food safety recalls, and general economic conditions play in restaurant owners' perceptions of their industry.

We find that the number of medical articles examining links between cancer and red meat and poultry consumption and newspaper articles linking restaurants to obesity have negative impacts on month-to-month current outlook, same-store sales, and customer traffic of U.S. restaurants, as measured by the National Restaurant Association's Restaurant Performance Index. These factors were consistent in their magnitude, regardless of the dependent variable (current situation, same-store sales, or customer traffic). Because restaurants provide entertainment and ambiance in addition to fulfilling consumers' nutritional needs, the impact of obesity warrants further research efforts. However, information on the number of restaurants included in the monthly RPI is necessary for such efforts. Although the models we estimated included a monthly count of obesity-related articles in U.S. newspapers, similar results were found when a three-month moving average of obesity-related articles was included in the models. There was some evidence of seasonality in restaurateurs' responses on their current situation, as evidenced by visual analysis of the data in Figure 2.

Somewhat surprisingly, most of the macroeconomic variables included were not significant in explaining the month-to-month change in restaurant outlook even during the downturn in FAFH purchases that occurred in the Great Recession. This may be a reflection of the dataset spanning fifteen years—a period over which there was significant growth in the restaurant industry (approximately 20% growth in the number of restaurants and over 37% growth in the number of employees, U.S. Department of Commerce, Bureau of the Census, 2017). As the RPI aggregates information for the industry across the spectrum of restaurant types (fast food to full service), these macroeconomic variables would certainly be felt on by individual restaurants but not necessarily when aggregated.

USDA FSIS recalls did not significantly impact the changes in current situation, current same-store sales and customer traffic for restaurants, according to the NRA's survey findings. It may be that large recalls impact consumer confidence in the whole U.S. food supply, and restaurateurs recognize changes in business patterns, even if the recalls do not directly impact their restaurants. Because the NRA does not release information on monthly survey respondents,

it is not possible to know whether recall notices have different impacts on independently operated restaurants and restaurant franchises.

Restaurants have undoubtedly adjusted their offerings and marketing strategies in recent years to align with consumer concerns about health and nutrition issues. Glanz et al. (2007) noted that, in general, restaurants have changed their menu options to appeal to consumers looking for healthier (e.g., low-fat, low-carb, high-fiber) food options. Ellison, Lusk, and Davis (2013) found that calorie labels on restaurant menus can impact the purchasing decisions of consumers, especially those who tend to be less health conscious. Relatedly, Hwang, Lee, and Lin (2016) found that promoting health labels/claims on menus positively impacts consumers' willingness to pay for the items carrying those labels/claims. Chandon and Wansink (2007) suggested that these efforts can lead to consumers' perceptions of "health halos" ascribed to certain restaurants, even if consumers' overall expenditures and caloric intakes are higher at those "health halo" restaurants.

Future research would benefit from more details about the restaurants participating in the RPI surveys to better understand their core operational models and marketing philosophies. The time period for this analysis covered a wide range of food trends and events: the Atkins Diet and overall low-carb movement, the book *Fast Food Nation,* legislation requiring calorie contents restaurant menus, laws banning restaurants from being liable from consumer obesity claims, and increased demand for protein. It is possible that restaurant owners realize their core consumers are self-selecting for restaurants that meet their beliefs about health, food safety, nutrition, and portion control. This study represents a first step in assessing the restaurant industry's self-view as a large and growing nutrition provider for the nation. Subsequent research might focus on the future roles of various restaurant types in meeting the food needs of U.S. consumers.

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