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Effects of Restaurant Tax and Price Increases: Implications for Managers, Policy Makers, and Lobbyists

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THESIS

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By

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Lexington, Kentucky

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ABSTRACT OF THESIS

EFFECTS OF RESTAURANT TAX AND PRICE INCREASES: IMPLICATIONS FOR MANAGERS, POLICY MAKERS, AND LOBBYISTS

Legislation has been proposed in Kentucky that would authorize city legislative bodies to levy a tax on restaurant meals of no more than 3%, regardless of the size of the city. The bill has garnered attention from Kentucky Travel Industry Association, the Kentucky Restaurant Association, and local tourism and restaurant organizations and associations that oppose the tax. The Kentucky League of Cities, an organization that represents the interests of city governments, supports the tax. The purpose of this research was to examine how a change in the tax rate on restaurant meals would affect restaurant demand. Effects of changes in restaurant demand were tested using the following independent variables: type of restaurant, menu offering, frequency, expense, and location. Self-administered online surveys were distributed to adult residents in Kentucky, which yielded a sample size of 1,263 individuals. Paired sample t test was applied to make comparison between scenario 1 (current) and scenario 2 (3%) and scenario 1 (current) and scenario 3 (JND). Findings showed that demand patterns in each class of city would be affected by increases in taxes and prices.

KEYWORDS: Restaurant Demand, Customer Behavior, Tax, Dine-Out Frequency, Tourism Policy

Junghee Han

10/15/2013

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Chapter One

Introduction

In July 1992, the Kentucky legislature enacted KRS (Kentucky Revised Statutes) 91A.400, which enabled fourth and fifth class cities to levy a tax on restaurant meal purchases. The Commonwealth of Kentucky categorizes its cities based on population. Kentucky currently has 1 first class city, 13 second class cities, 18 third class cities, 117 fourth class cities, 111 fifth class cities and 160 sixth class cities as designated by the General Assembly in KRS 81.010. Fourth and fifth class are classified as having population ranging from 3,000 to 7,999 and 1,000 to 2,999 respectively (KLC, 2010).

The legislative body in fourth and fifth class cities may levy the restaurant tax not to exceed 3% of the retail sales of all restaurants doing business in the city, according to KRS 91A. 400. All funds collected from the tax authorized by this law shall be turned over to the tourist and convention commission established in that city. However, the Kentucky Legislature is considering amending 91A.400 to allow cities of any size to levy a restaurant tax. This bill, known as HB 368 in 2012 legislation session was championed by the KY League of Cities and opposed by the Kentucky Restaurant Association. A tax of up to 3% would be imposed on the meals people eat in a restaurant or the carryout orders people pick up, on top of the 6% current state sales tax if the proposed legislation is authorized (Kentucky Legislature, 2012).

HB 368 garnered attention from the Kentucky Travel Industry Association and the Kentucky Restaurant Association (KRA). Seventy-five percent of all restaurant tax proceeds would go to the cities for "quality of life expenditures" that support tourism,

recreation and economic development with a minimum of 25% going to the local tourist and convention commission.

KRA believes restaurant demand is sensitive to economic fluctuations, which in general have an almost 30% bankruptcy rate in the first year of operation in general (Lee, Koh, & Kang, 2011). KRA asserts that another tax on restaurant customers is simply more than restaurateurs can bear since they have experienced a significant drop in revenues as customers have reacted to the economic downturn. Moreover, KRA believes restaurant customers should not be responsible for helping cities make up shortfalls in governmental budgeting. To indicate KRA's opposition of the proposed legislation, some members from the association made comments the Governor's Blue Ribbon Commission on Tax Reform hearing on 21st of August, 2012 at Brian Station High School in Lexington. The Blue Ribbon Commission on Tax Reform was formed to make recommendations to the Governor on changes to Kentucky's tax code.

The main subjects of KRA's voice at the Commision hearing were that adding the tax burden on their cutomers is unfair and they encouraged legistators to focus on identifying modifications to Kentucky's tax system that simplify the tax code, thereby both reducing administrative costs for businesses and improving compliance. KRA also suggested that lawmakers should remain focused on reform that supports growth-oriented tax policies that encourage business investment and expansion and that keep Kentucky competitive with other states.

On the other hand, the KY League of Cities (KLC), insists that for any allowable jurisdiction imposing a restaurant tax, the money set aside for tourism promotion will lead to more visitation and therefore more revenue for businesses. In addition, KLC

believes an increase in revenues will occur through the multiplier effect via consumption of services or products by hospitality industry employees' spending.

Other communities have implemented restaurant taxes and much can be learned from their experiences. The following cases are some examples of meal tax on three areas in the United States: Rhode Island, Minneapolis, and Virginia Beach. Each case presents the purpose of meal tax, the opinion of the hospitality business association, and the result of the proposal.

In January of 2012, Governor Lincoln D. Chafee of Rhode Island introduced a new tax plan to increase education funding. The proposal would increase the sales taxes on meals and beverages bought in restaurants from 1% to 3% on top of the current 7% sales tax, for a total tax on restaurant purchases of 10% (Klepper, 2012). The Rhode Island Hospitality Association opposed the proposal, because they believed it would place an undue burden on local businesses and put the state at a competitive disadvantage, lead to a decline of international tourism, reduce restaurant demand, and raise the cost of hosting conventions (RI Hospitality Association, 2012). The Rhode Island Hospitality Association had a campaign across the state called "10% is 2 much. Stop the meals tax increase". In June 2012, the House and Senate approved the new Rhode Island State Budget without the proposal to raise the Meals and Beverage tax to 10% (RI Hospitality Association, 2012).

In the Minneapolis downtown taxing area, whenever food and beverages are sold by restaurants, caterers or 'places of refreshment', an extra 3% on top of the 7.775% sales tax is charged. This law has been in place since 1986. This rate makes it the highest restaurant tax among the nation's 50 largest cities, according to the Tax Foundation

(Henchman, Raut, & Duncan, 2012). The city of Minneapolis announced that approximately $61.4 million, was collected in 2010 and all the tax proceeds are used mostly to fund the debt related to the Convention Center (Minneapolis, 2012).

Since July 2001, an additional meal tax of 5.5% has been levied on the total amount paid for any meal purchased from any food establishment in Virginia Beach, Virginia. According to the Director of Finance for the city of Virginia Beach, the purpose of the meals tax is to support general government operations and special projects such as open space acquisitions, which is considered important to citizens. Therefore, the Virginia Hospitality and Travel Association's voice is that if there were to be any kind of meals tax committed to tourism promotion that would be much more palatable to the restaurant association and hospitality in general. In Virginia Beach, almost 80% of all meal taxes collected were from local customers, not from visitors (Parker, 2011).

The Tax Foundation released a study in March 2012 that ranked combined sales taxes and the growing number of specific municipal taxes on meals. Minneapolis has the highest combined meal tax with a 10.775% tax (7.775% sales tax and 3% meal tax) and Virginia Beach had the third highest tax at 10.5% (5% sales tax and 5.5% meal tax) on the list. At 9%,

Statement of Purpose

The purpose of this study is to examine how a 3% tax on restaurant meals might affect consumer demand for dining out in restaurants and to understand how demand for dining out in restaurants may change, based on a self-reported cost increase threshold.

The foundation of this research is based on the concept of demand elasticity and Weber's Law. Weber's Law involves the notion of *just noticeable difference* (JND), which is the minimum amount by which stimulus intensity must be changed in order to produce a noticeable variation in sensory experience. This study appraises the restaurant demand patterns throughout Kentucky in regards to restaurant price changes.

Only limited number of researches focused on the relationship of restaurant demand and JND. Therefore, this research would help policy makers and restaurant managers to understand of restaurant demand according to taxes and prices increases.

Research Objective, Question, and Hypotheses

The objective of the study is to characterize the effects of increased costs on restaurant demand to determine if the proposed legislation would impact restaurant demand in various classes of cities. The research question of the study is:

> How will restaurant demand patterns in various classes of Kentucky cities be affected by increases in restaurant meal costs?

The research hypotheses of the study are:

> *Hypothesis 1*
>
> Restaurant demand patterns of residents in first and second class cities are influenced by a 3% increase in restaurant meal costs.
>
> *Hypothesis 2*
>
> Restaurant demand patterns of residents in first and second class cities are impacted more at the JND increase than at 3% increase.

Hypothesis 3

Restaurant demand patterns of residents in third class cities are influenced by a 3% increase in restaurant meal costs.

Hypothesis 4

Restaurant demand patterns of residents in third class cities are impacted more at the JND increase than at a 3% increase.

Hypothesis 5

Restaurant demand patterns of residents in fourth, fifth and sixth class cities are influenced by a 3% increase in restaurant meal costs.

Hypothesis 6

Restaurant demand patterns of residents in fourth, fifth and sixth class cities are impacted more at the JND increase than at a 3% increase.

The remaining chapters of this thesis include the literature review, methodology, results, and conclusions. The literature review covers Weber's Law and variables that affect restaurant demand. The methodology chapter describes the online survey that was used to collect data from restaurant consumers in Kentucky. The last two chapters – Results and Conclusions – present analyses of and discussions about the data collected.

Chapter Two

Review of Literature

This research concentrates on the effects of price changes on restaurant demand patterns by class of cities in Kentucky. A statistic from the National Restaurant Association shows that nearly half of American adults consider eating in restaurants an essential part of their lifestyle (Association, 2012). It is necessary to acquire a wide background in the relationship between price and demand not only in the restaurant industry but also in general economics terms. Therefore, previous research was reviewed related to Weber's Law, restaurant menu price elasticity of demand, and restaurant demand variables.

Weber's Law

Weber's Law, the primary concept of which is the *just noticeable difference* (JND), has been applied to consumer behavior relating to marketing and pricing practices since it was developed in the 1800s by Ernst Weber and Gustav Fechner. Weber's Law, the JND, is the minimum amount by which stimulus intensity must be changed in order to produce a noticeable variation in sensory experience. In other words, it is the minimum change necessary for a person to detect a change (Hartnett, 2006).

The key of this concept, when applied to marketing and pricing is that consumers can not intentionally notice the significant increases in the price of a particular product or service unless there is an obvious benefit associated with the price increase (Hartnett, 2006).For instance, when customers notice the increased price of one, they expect to have better quality of the one to accept the price increase. In other words, Weber's Law states a general relationship between the price of a good or service and how much the price can

be increased before consumers are able to tell the price has been increased. Therefore, it is important to find the threshold that can affect customers' purchasing behavior and implement a strategy to increase the price below the *just noticeable difference* threshold.

In the mathematical formula included below, *K* is the constant ratio, *I* is the stimulus, and *ΔI* is the *just noticeable difference*. *K* signifies that the proportion on the left side of the equation remains constant despite variations in the *I* term (Campbell & Diamond, 1990).

$$\frac{\Delta I}{I} = k$$

Suppose you are buying a $5 cheeseburger for lunch. If the cheeseburger's price is increased by 4% ($0.20) the next time you purchase it, you may not notice any difference between the $5 cheeseburger price and the $5.20 cheeseburger price. If the cheeseburger's price continues to increase, you may find that you will only notice the difference when the additional price is equal to 20% ($1). In this example, the increment threshold for detecting the difference from a $5 cheeseburger is 20% ($1). The *just noticeable difference* (JND) is 20% ($1).

Restaurant Menu Price Elasticity of Demand

The economics law of demand states that as the price of a product increases, consumers will typically purchase less of that product (Mankiw, 2012). To determine consumers' sensitivity to price, price elasticity of demand is the most common measure. Price elasticity of demand is the percentage change in demand resulting from one percentage change in price. It is a measurement to see how a percentage change in price

of a product will affect demand for that product. Using price elasticity of demand, demand can be classified two ways: inelastic and elastic. For instance, gasoline or detergent is considered inelastic because price changes for those products have little effect on the quantity consumers buy. The demand for expensive leisure activities such as cruise vacations is elastic because demand for luxury cruises would decrease when price increases and vice versa. Inelastic products are insensitive to price change since consumers would continue to buy these products in spite of increased price. In contrast, when the products' price changes cause a sharp change in the quantity demand, demand for the products is considered elastic (Mankiw, 2012).

When Price Elasticity of Demand (PED) is equal to 0, that is perfectly inelastic demand which means the consumer demand does not change at all whatever the price of the product. When PED is in between 0 and absolute 1, it is considered relatively inelastic demand meaning demand is relatively insensitive to changes in price. When consumer demand is relatively sensitive to changes in price of product, PED is in between one and infinity and demand is considered relatively elastic (Andreyeva, Long, & Brownell, 2010).

Andreyeva, Long, and Brownell (2010) reviewed 160 US-based studies related to the price elasticity of demand for major food categories to determine mean price elasticity. They considered both price demand elasticity and cross-price elasticity of demand for a product. The cross-price elasticity of demand is the proportional change between two goods - the effect of the change in one good's price on the quantity demanded of the other good. Cross-price elasticity is equal to the percent change in the quantity demanded of one good divided by the percent change in the other good's price.

The authors indicated that since relative prices change caused by taxation can affect demand for other products not regulated by tax policies, it is important to construct the cross-price elasticity from a policy perspective.

Food away from home had a relatively high price elasticity (0.81) compared to demand for food at home (0.59). This means food away from home is inelastic but more elastic and more sensitive to price changes than food at home. As the rule of elasticity was defined previously, greater changes in demand are expected when prices shift for more elastic products (Andreyeva et al., 2010). The authors conclude that it is important to consider how governments use revenues generated by changes in economic policies, for instance taxes (Andreyeva et al., 2010).

Staple foods, necessities for a balanced diet, will continue to be purchased by consumers at the grocery store even if prices rise. Conversely, dining out at restaurants would be viewed more as a luxury. If a family's favorite restaurant raises prices, the family could elect to eat more meals at home or find a less expensive place to dine out.

Previous literature showing the effects from price increases associated with restaurant meals and examples of effects from tax increases in non-restaurant industries has been reviewed and is presented in the following paragraphs.

Hiemstra and Kosiba (1994) focused their research on the important factors associated with changes over time in demand for dining in restaurants. The study found that the price elasticity of demand for food away from home was -0.71 ,(same as 0.71 in absolute value), which means that restaurant sales would decline 0.71% for every 1% increase in restaurant prices (Hiemstra & Kosiba, 1994). Therefore, demand for restaurant meals is inelastic.

Kiefer, Kelly, and Burdett (1994) conducted an experimental study to understand consumers' responses to price changes. The study found that the price does not affect restaurant demand. It seems like Saturday has more affect on demand than Friday has but the amount is statistically small. Therefore, the study concluded that the restaurant demand is inelastic over the price range (Kiefer et al., 1994).

A study from Raab, Mayer, Kim and Shoemaker (2009) measured price-sensitivity of data collected from buffet restaurants in Hong Kong to find price-sensitivity in buffet restaurants. The analysis showed that price sensitivity for dinner buffet guests is relatively low (Raab et al., 2009). Thus, restaurant demand in this case is elastic.

Tax increase would cause demand change in overall hospitality business, according to representative from KRA. Therefore, the following literature covers the effect from tax increases in hotel industry. Mak and Nishimura's (1979) conducted a cross-section expenditure survey on west-bound visitors to Hawaii to measure the impact of a hotel room tax on visitor length-of-stay. The study found that in case of a special hotel room tax, the rate does not influence enough on visitor trip demand and on visitor's length-of-stay (Mak & Nishimura, 1979). A similar study done by Silberman (1985) examined the association between tax increase and length-of-stay in Virginia Beach. The data were obtained from 621 visitors to Virginia Beach to figure out the impact of tax on length-of-stay. The results of the study found that a 2% increase in the meals tax is equivalent to a similar increase in the cost of meals which caused a decrease in length-of-stay for visitors to the destination by 0.1% (Silberman, 1985).

Restaurant Demand Variables

Pantelidis (2010) found that price ranks fourth in the list of most frequently mentioned factors, after analyzing consumer comments on the online restaurant guide www.london-eating.co.uk over the course of roughly 20 months. In other words, price is not the most important factor when people make dining out decisions (Pantelidis, 2010). Thompson's (2010) study identified the decision-based framework of restaurant profitability management containing decisions that affect demand. Also, Parsa, Self, Njite, and King's (2005) research found it is important to understand the customer's quality-of-life issues. The following sections point out the important variables that affect restaurant demand: the type of restaurant, menu offerings, frequency of dining out, meal expenses, and location of the restaurant. Each variable is important to understand the behavior of restaurant customers.

Type of Restaurant

Kim and Kim (2004) found that strong brand equity is significantly correlated with revenues for quick-service restaurants. The study discovered that customers differentiated the high-performing restaurants on several product-quality measures, including knowledgeable employees and food served on time and as ordered. Especially, brand awareness was the most important element affecting restaurants' performance (Kim & Kim, 2004). Jin and Leslie (2009) also mentioned that customers trust more in chain restaurants over independent restaurants because they expect the same quality of services they had previously experienced from restaurants in the same chain (Jin & Leslie, 2009).

Depending on customers' characteristics, the preference of restaurant type would vary. Therefore, it is important to understand market segments. For instance, younger diners, in general, prefer a fast-causal restaurant instead of a full service-dining restaurant. People who are not very sensitive on price changes like to dine out in restaurant serving buffet (Raab et al., 2009). Customers who want to have a family dinner care more about atmosphere of the restaurant than the duration of food served (Raab et al., 2009; Swinyard & Struman, 1986). Furthermore, the service quality is one of the most useful measurements leading to success in the restaurant business. Attentive service have the greatest chance to increase guests' intent to return (Gupta, McLaughlin, & Gomez, 2007; Lynn, 2001; Oh, 2000; Sulek & Hensley, 2004; Susskind & Chan, 2000).

Menu Offerings

Restaurant demand variables associated with the menu offerings are local food, menu variety, portion sizes, and quality of food. Weatherell, Tregear and Allinson's (2003) research describes that consumers' reactions to questions on local food initiatives and likelihood of purchasing local food were positive and consumers' perceptions of local food offer opportunities for hospitality business. Previous studies discovered that menu variety is a significant factor in customers' decision making processes and the intention for dining out can be created from the variety of menu offerings (Knutson, Elsworth, & Beck, 2006; Sill, 1991). By providing differentiated menu offerings compare to other restaurants, the restaurant can increase profit since it is targeting the hidden market in restaurant industry, such as vegan, meat lover or locavore (Quain, Sansbury, & LeBruto, 1999; Wansink, Cordua, Blair, Payne, & Geiger, 2006). Additionally, when the

restaurant offers unique, noticeable menu and appropriate menu labeling, it helps to increase the customers' satisfaction and intention to revisit (Bayou & Bennett, 1992; Oh, 2000; Wansink, Painter, & Van Ittersum, 2001).

Customers have positive attitudes toward a larger availability of portion sizes and pricing strategies. The study also pointed out that value for money is important when customers make decisions to purchase and customers believe that large portion sizes offer more value for money than small portion sizes (Vermeer, Steenhuis, & Seidell, 2010).

Another restaurant demand variable associated with menu offering is quality of food. According to Namkung and Jang (2007), quality of food has a significant affect on customer satisfaction and behavior. This study also revealed that the relationship between food quality and customer behavioral intentions is mediated by satisfaction. Sulek and Hensley's (2004) study also found that food is the most important aspect of full service restaurants for customers' intentions to return.

Frequency of Dining Out

Generally, when price goes up of a product, the demand of it is decrease in economic term. Therefore, it is important to understand how price changes affect how often people choose to dine out demand for various restaurant experiences in the restaurant industry. The price change affects on the frequency of dining out is greater on the full-service segment than on the fast-food segment (Hiemstra & Kosiba, 1994; Pantelidis, 2010). However, the demand change rate relative to the price change rate is not significant in the restaurant business. Therefore, previous studies categorized the demand for dining-out in restaurants to be relatively inelastic (Kiefer et al., 1994).

Meal Expenses

In Maxwell (2002), it was found that customers make purchasing decisions when they believe the presented price is fair . Restaurant demand variables associated with expenses are choosing menu prices, tipping, and special promotions. Russo (1977) found that when unit price information is indicated, it induces a purchasing change toward the less expensive items. In Conlin, Lynn, and O'Donoghue's (2003) research, the percentage of tip is decided not only on service quality but also on a variety of other factors such as repetition, age, group size, the frequency of one's visits to restaurants, and cross-gender interactions. In addition, Lynn and Grassman (1990) found that tipping was related to bill size, patronage frequency, service ratings, and the interaction of bill size with patronage frequency.

Many restaurants provides happy hours or special promotions for customers. The reason for special discounts is to bring in customers during off-peak times (Kimes, Barrash, & Alexander, 1999). Specific to bar businesses, Babor, Mendelson, Greenberg, and Kuehnle (1978), found that the afternoon price reduction in happy hour significantly increased alcohol consumption in general.

Location of the Restaurant

Prior empirical research about cross–border shopping because of local tax rates were reviewed to assess the connection between taxes and distance people are willing to travel in search of value. Ferris (2000) described that taxes play a significant role in border-crossing shopping from Canada to the United States. LeAnn (2004) found people cross-border shop to take advantage of lower tax rates from a neighboring county. In addition, when local governments set their own tax rates, they sometimes do consider competing counties' sales tax rates. Interestingly, according to Cornia, Grimshaw, Nelson, and Walters (2010), in the case of food, tax rates remain a deciding factor when there is a jurisdiction 5 km away with a lower tax rate.

In terms of competitiveness with a neighboring county related to employment effects because of cross-border shopping, recent research from Thompson and Rohlin (2012) focused on how sales taxes affect the local market. The study discovered that a one point increase in the sales tax relative to the cross-border pair results in an employment loss of 5.8% by using county-level quarterly data and a 'border approach' (Thompson & Rohlin, 2012).

The following table includes variables, empirical support, survey instrument statements that were used in survey development. Variables are describing the five restaurant demand categories: type of restaurant, menu offering, frequency of dining out, meal expenses, and location of the restaurant. Empirical support covers literature reviewed to design each survey question. Survey instrument statements were used in the online survey.

Table 2.1 Empirical Support for Restaurant Demand Characteristics

Variables	Empirical Support (Question Number)	Survey Instrument Statement
Section 1. Type of Restaurant		
1. Chain Restaurants vs. Independent Restaurants	Kim & Kim, 2004; Jin &Leslie, 2009 (1)	1. I prefer chain restaurants over independent restaurants.
2. Full-service Restaurants vs. Fast-casual Restaurants	Raab et al, 2009; Swinyard & Struman, 1986 (2-3)	2. I prefer full-service restaurants over fast-casual/quick-service restaurants.
3. Buffets		3. I like restaurants that offer buffets.
4. Service Quality	Gupta, McLaughlin, & Gomez, 2007; Lynn, 2001; Oh, 2000; Stevens, Knutson, & Patton, 1995; Sulek & Hensley, 2004; Susskind & Chan, 2000 (4)	4. I make restaurant choices based on the expected quality of service.
Section 2. Menu Offerings		
5. Local Foods	Weatherell et al., 2003 (5)	5. I prefer restaurants that use local foods in their menu offerings.
6. Menu Variety	Bayou & Bennett, 1992, Knutson et al., 2006; Oh, 2000, Quain et al., 1999; Wansink et al., 2006 (6)	6. I make choice of which restaurant to eat at based on menu variety.
7. Portion Sizes	Vermeer et al., 2010 (7)	7. I make choices of which restaurant to eat at based on the portion sizes offered at the restaurant.
		8. I make choices of which restaurant

		to eat at based on the quality of food.
8. Food Quality	Namkung & Jang, 2007; Sulek & Hensley, 2004 (8)	
Section 3. Frequency of Dining Out		
9. More Frequently	Andreyeva et al., 2010; Elder et al., 2010; Hiemstra et al., 1994; Kiefer et al., 1994 (9-10)	9. I expect to dine out more frequently than I currently do.
10. Substitutions		10. I expect to have more meals at home than I currently do.
Section 4. Meal Expenses		
11. Menu Prices	Maxwell, 2002; Russo, 1977 (11)	11. I order menu items that are less expensive than other options on the menu.
12. Tips	Conlin et al., 2003; Lynn & Grassman, 1990; Maxwell, 2002 (12)	12. I will leave smaller tips for servers, as a percentage of the total check.
13. Promotions	Babor et al., 1978; Kimes et al., 1999 (13)	13. I make restaurant choices based on special promotions, such as discounts or happy hour.
Section 5. Location of the Restaurant		
14. Meal Taxes	Cornia et al., 2010; Ferris, 2000; LeAnn, 2004; Thompson & Rohlin, 2012 (14)	14. I choose in which community to dine based on taxes added to the meal.
15. Distance	Knutson et al.,2006; Parsa et al., 2005 (15)	15. I will travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant.
16. Downtown vs. Suburban	Developed by the researcher (16)	16. I prefer restaurants in downtown areas more than in suburban areas.

Table 2.2 Statement of Each Variable

Variables	Statement
Chain Restaurants vs. Independent Restaurants	I prefer chain restaurants over independent restaurants.
Full-service Restaurants vs. Fast-casual Restaurants	I prefer full-service restaurants over fast-casual/quick-service restaurants.
Buffets	I like restaurants that offer buffets.
Service Quality	I make choices of which restaurant to eat at based on the expected quality of service.
Local Foods	I prefer restaurants that use local foods in their menu offerings.
Menu Variety	I make choices of which restaurant to eat at based on menu variety.
Portion Sizes	I make choices of which restaurant to eat at based on the portion sizes offered at the restaurant.
Food Quality	I make choices of which restaurant to eat at based on the expected quality of food.
More Frequently	I expect to dine out more frequently than I currently do.
Substitutions	I expect to have more meals at home than I currently do.
Menu Prices	I order menu items that are less expensive than other options on the menu.
Tips	I will leave smaller tips for servers, as a percentage of the total check.
Promotions	I make restaurant choices based on special promotions, such as discounts or happy hour.
Meal Taxes	I choose in which community to dine based on taxes added to the cost of the meal.
Distance	I will travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant.
Downtown vs. Suburban	I prefer restaurants in downtown areas more than in suburban areas.

In summary, previous studies have found that restaurant business (food-away-from-home) would not be affected easily from meal cost increases because demand for restaurant meals is generally inelastic. the frequency of dining-out would decline when price increases, and price is one of the most important factors in deciding on cross-border shopping. In addition, restaurant demand variables can be categorized in five sections: type of restaurant, menu offerings, frequency of dining out, meal expenses, and location of the restaurant.

Chapter Three

Methodology

This chapter outlines and describes the methodology involved in this research. This includes operational definitions of dependent and independent variables, description of the sample, a discussion of data collection techniques, and a description of the survey instrument.

Dependent Variables

The dependent variables of this study are 3% increase and JND rate increase in restaurant meal costs to find out the effect of 3% tax increase on restaurant demand based on Kentucky tax proposal. Hypotheses stated that each dependent variable would affect restaurant demand variables differently for residents of various classes of cities. The change in demand for each dependent variable was measured by comparing the current demand pattern for dining out with the increase scenarios. The same Likert format constructed for asking the current demand pattern for individual independent variables was used for 3% and JND increases in restaurant meal costs.

Independent Variables

The independent variables of this study were categorized as type of restaurant, the characteristics of the menu offerings, frequency of dining out, meal expenses, and location of the restaurant based on the literature review for this research. Each category has two to four variables designed for measuring the restaurant demand characteristics (see table 2.1). The majority of variables were developed from previous studies related to

restaurant demand. This study employed a five-point Likert scale, which ranged from strongly disagree=1 to strongly agree=5 about their opinion of each restaurant demand variable statement.

The first category of independent variables was the type of restaurant. These variables were developed from related studies (Alex, Reynolds, & Tsuchiya, 2004; Gupta et al., 2007; Jin & Leslie, 2009; Kim & Kim, 2004; Lynn, 2001; Lynn & Grassman, 1990; Oh, 2000; Raab et al., 2009; Stevens, Knutson, & Patton, 1995; Sulek & Hensley, 2004; Swinyard & Struman, 1986). See Table 2.1, variable numbers 1-4.

The second category of restaurant demand variables was menu offering. Four independent variables were included in the survey to measure the respondents' propensity of choosing a restaurant depending on menu offering (see Table 2.1, variable numbers 5-8). All four variables under menu offering were developed based on previous studies (Bayou & Bennett, 1992; Knutson et al., 2006; Namkung & Jang, 2007; Oh, 2000; Quain et al., 1999; Sulek & Hensley, 2004; Vermeer et al., 2010; Wansink et al., 2006; Weatherell et al., 2003).

Two statements measuring the frequency of dining out were developed (see Table 2.1, Variable numbers 9-10). Both statements were created by the researcher based on literature about price elasticity of demand (Andreyeva et al., 2010; Elder et al., 2010; Hiemstra & Kosiba, 1994; Kiefer et al., 1994).

The fourth section of independent variables in this study concerned expenses relating to dining out. Three independent variables (see Table 2.1, variable numbers 11-13) were adopted from a previous studies (Babor et al., 1978; Conlin et al., 2003; Kimes et al., 1999; Lynn & Grassman, 1990; Maxwell, 2002; Russo, 1977).

The last three independent variables were about the restaurant location (see Table 2.1, variable numbers 14-16). Two out of three variables numbers; 14 and 15 were adapted from previous studies (Cornia et al., 2010; Ferris, 2000; Knutson et al., 2006; LeAnn, 2004; Parsa et al., 2005; Thompson & Rohlin, 2012). The last variable, number 16, was developed by the researcher for this study to estimate the restaurant demand difference caused from restaurant price increase which would be used for tourism purpose such as sport arena development, usually those facility are existing in downtown area, even though there are not many restaurants present nearby the sport arena.

Sampling

The target population for this study was Kentucky adults, aged 18 and older, who dine out in restaurants at least once a month. According to the United States Census Bureau, the population of adults over 18 in Kentucky was 3,315,996 in 2012. The sample group for this research was obtained from individuals with publically available sources, primarily college and university websites throughout Kentucky.

Data Collection

Data were collected for this survey via e-mail survey using Qualtrics. The biggest advantage of e-mail survey research is easier accessibility to most samples than other data collection methods. The usage of the Internet is getting more common and the number of smart phone or tablet PC users are dramatically increasing, therefore approaching the sample by online survey was not as challenging as the researcher expected.

The research method allowed the researcher to collect more responses in a short amount of time than conducting intercept surveys or mail surveys. Fricker and Schonlau (2002) found internet surveys are much faster than conventional survey modes.

For this study, a financial incentive was offered. In the beginning of the survey, it was announced that the first 700 respondents had the chance to enter a drawing for one of seven $50 restaurant gift certificates. After the survey had closed, the seven winners were randomly chosen and the restaurant gift certificates were delivered to them.

Using online surveys has some disadvantages (Wright, 2005). The responses of the study would include self-selection bias. According to Wright, participants in online surveys would be more inclined to report false demographic information than if they were to take the survey via in-person methods. Another major limitation of online survey research is low response rate. This study had a large number of responses (1,695) but compared to the number of surveys distributed (7,746), the response rate was only 21.88%. Out of all respondents, only 1,252 respondent completed the entire survey.

Survey Instrument

This study used the online survey instrument as a self-administered questionnaire consisting of 18 questions that are multiple choice, Likert scale, other questions that could be answered by “yes” or “no”, and open-ended questions. Questions were adopted from previous research or were created by the researcher with the help of the thesis committee. The complete survey instrument is included as Appendix A.

The questionnaire was divided into five major sections include screening questions, measuring the current restaurant demand pattern, influence of restaurant cost

increases compared to current demand patterns in individual independent variables, the tendency of cross-border shopping, and demographics.

The first section included two screening questions. Since the study was conducted for adults aged 18 or over and who tend to dine out at least once a month, questions were asked to gauge the participants' age and whether they dine out at least once a month. If the respondents satisfied the screening test, the survey continued. If the response was either under age 18 or negative on dining out at least once a month, the survey would finish without further questioning.

The second section included questions concerning respondents' average dining out pattern. The questions consisted of average frequency of dining out and average amount they spend for each meal period-breakfast, lunch, and dinner. The last question asked the percentage cost increase that might cause their typical purchasing behavior in restaurants to change. The percentage that the respondent answered would create the comparison in section three. This percentage represented the respondents' JND.

The third section was conducted in a Likert-scale format. The third section was created to measure the change of behavior between regular demand pattern, a 3% cost increase, and the percentage increase that respondents answered from previous section (JND). This section was divided in the five subsections categorizing the 16 individual independent variables that would be affected by each cost increase scenario. The five subsections were type of restaurant, menu offering, frequency of dining out, meal expenses, and location of the restaurant. A five-point Likert scale, ranging from strongly disagree=1 to strongly agree=5 was used to measure each variable (see table 2.1). Participants were asked to click the number that best described their behavior.

To measure the demand difference between current, 3% increase in dining out cost, and the rate that each respondent answered from the previous section (JND) separately, identical variables for different price increase scenarios were used. Scenarios were defined as current price situation (Scenario 1), 3% price increase (Scenario 2), and JND percentage price increase (Scenario 3).

The fourth section included yes or no questions measuring the tendency of cross-border shopping, the perception of price, acknowledgement of tax on the restaurant bill, opinion about the economy, and the perception of using the increased restaurant tax to promote tourism.

The final section included demographic questions related to gender, family size, income, education level, and zip code. The zip code question was used to determine the residency of respondents for analyzing restaurant demand pattern by class of cities. This research project was reviewed and approved by Institutional Review Board (IRB) of the Office for Research Integrity at the University of Kentucky. All instructions and consent information were included in the questionnaire.

Chapter Four

Results

The purpose of this chapter is to present results related to the following research question *How will restaurant demand patterns in various classes of Kentucky cities be affected by increases in restaurant meal costs?* The results are presented in three sections. The first section is descriptive statistics of the sample by two scenarios; current demand and 3% restaurant price increase. Mean differences in demand of each restaurant price scenarios is covered in section two. The final section includes the result of hypothesis testing related to the change of restaurant demand behavior subsequent to increased meal prices in various classes of cities.

Descriptive Statistics

To examine the possible error in the data entry, a descriptive statistical analysis was conducted. Frequency tables were generated to describe the sample in terms of demographics as well as responses related to demand variables under each scenario.

Demographics

Table 4.1 reports demographic characteristics of the sample and the state of Kentucky. The majority of respondents who reported their gender were female (63%) whereas only 37% of respondents were male. Since the percentage difference between female and male were not more than double of each gender percentage, this demographical limitation was not considered to bias results.

The highest portion of age range responses were 51-60 (28%), followed by 41-50 (23%). The largest proportion of the respondents' combined household income was in

between $60,000-$99,999 (31%) followed by $100,000-$109,999 (24%) and $150,000 and more (14%). More than one half (54%) of respondents reported having graduate/professional degrees, followed by 4-year college degrees (25%). Since the majority of data was collected from faculty and staff of universities in Kentucky, the combined household income and education level is skewed higher than the average for the state.

Table 4.1 Demographic Characteristics

Characteristic		n	%	% for KY
Gender	Male	463	37%	49%*
	Female	788	63%	51%*
	Did Not Report	444	(x)	(x)
Age	Under 18	0	0	26%*
	18-30	288	17%	16%*
	31-40	310	19%	13%*
	41-50	380	23%	14%*
	51-60	466	28%	14%*
	61 or more	210	13%	19%*
	Did Not Report	41	(x)	(x)
Combined Annual Household Income	Under $20,000	55	4%	25%**
	$20,000-$29,999	39	3%	12%**
	$30,000-$39,999	73	6%	11%**
	$40,000-$49,999	93	8%	10%**
	$50,000-$59,999	106	9%	7%**
	$60,000-$99,999	384	31%	19%**
	$100,000-$149,999	308	24%	8%**
	$150,000+	175	14%	2%**
	Did Not Report	462	(x)	(x)
Education Attainment	Less than High School degree	2	0%	13%***
	High School degree/GED equivalent	117	9%	34%***
	2-year college degree	148	12%	30%***
	4-year college degree	311	25%	14%***
	Graduate/professional degree	674	54%	9%***
	Did Not Report	443	(x)	(x)

Source: U.S. Census Bureau, 2011 American Community Survey

*n=4,339,367 (total population),

**n=1,672,134 (ages 18 and over)

***n=2,328,389 (ages 25-64)

All survey participants were asked to provide their home zip code at the end of the survey. The total number of valid zip codes was 1,189. Using the collected zip code, place of residence was determined. Each place of residence was categorized by its class of city which is based on the population. As Table 4.1 shows, Kentucky cities are divided into one of six classes, which are based on population size tiers ranging from less than 1,000 to more than 100,000 (KLC, 2010).

Table 4.2 Classification of Kentucky Cities

Classification	**Population Standard**	**Cities by Class**	**Cities by Population**
1st	100,000 or more	1	2
2nd	20,000-99,999	13	16
3rd	8,000-19,999	18	32
4th	3,000-7,999	117	57
5th	1,000-2,999	111	98
6th	Less than 1,000	160	213

City classification continues to be based on population as of 1994 since no new statutory system has been implemented. According to Kentucky League of Cities, one-third of cities are incorrectly classified based on 2010 Census populations estimates. Depending on the class of city, individual city's rights and responsibilities may vary. Classification of a city can be changed only after approval by the General Assembly.

Table 4.3 Sample Size by Class of Cities

Class of City	n	%
1st and 2nd	843	70.9
3rd	116	9.8
4th,5th,and 6th	230	19.3
Did not report	10	(x)
Total	1199	100

Table 4.3 represents the population distribution and the percentage based on the classification of cities of survey respondents. Based on the survey that this study

conducted, the rate of first and second class of cities residents was the majority (70.9%) followed by fourth, fifth, and sixth class (19.3%) and third class (9.8%).

Opinion Questions

There were five questions designed in Yes or No format to observe restaurant customers' perceptions on various issues. Yes or No questions in this survey cover cross-border shopping, price as the most important the factor of choosing restaurant, awareness of tax on the restaurant bill, overall economic outlook, and support for adding a restaurant tax that would be used to promote tourism.

More than half (53%) responded they would not travel to a neighboring community for lower restaurant taxes if the same restaurant options were available in their communities. Interestingly, the result showed that when respondents choose a restaurant, price is not the factor they consider the most (80%). This is consistent with the findings of Pantelidis (2010). Little more than half (52%) of respondents notice all taxes charged when paying a restaurant check. More than half (56%) of survey respondents believed the overall economic outlook is improving. The majority of survey respondents (83%) said that they would vote for adding a tax on restaurant meals in their city if the tax revenue was to be used for promoting tourism or operating an arena.

Current Restaurant Demand Characteristics

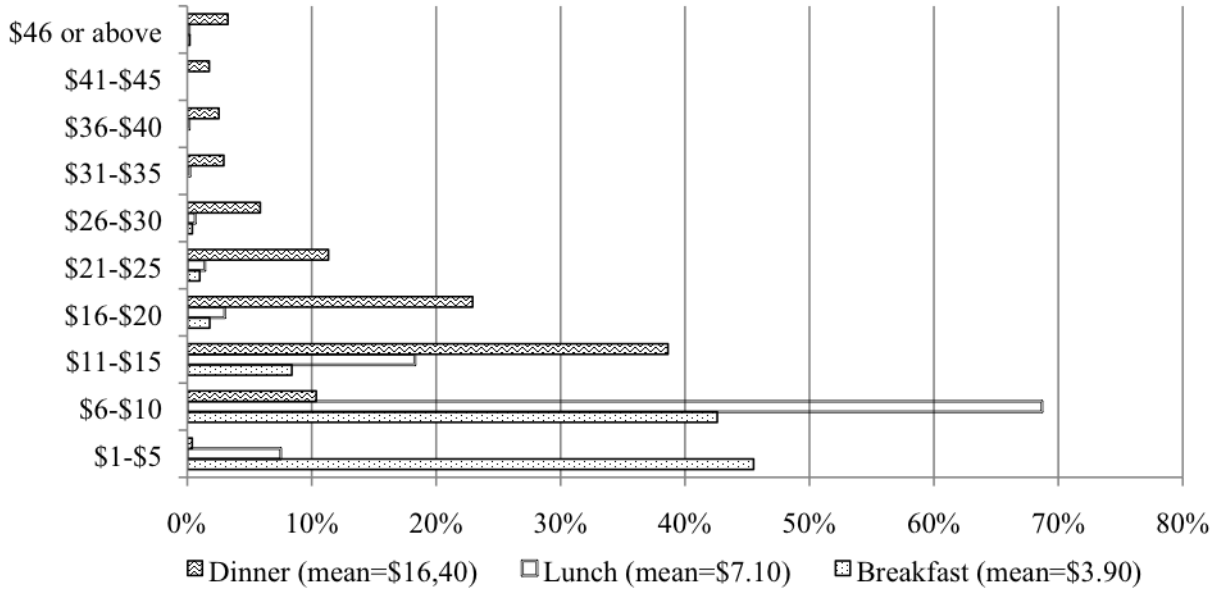
To examine the respondents' current dining out behavior, the survey instrument included questions asking respondents' average dine-out frequency and average meal cost by meal period.

Almost every respondent (94% of 1,552) responded that they eat in restaurants at least once a month.

The highest average value ($\bar{x}$ = 6.37) of frequency of meal period per month was dinner with 4.28 standard deviation, followed by lunch ($\bar{x}$ = 5.86, *sd* = 5.15). The results showed that breakfast is the least frequent meal ($\bar{x}$ = 1.90, *sd* = 3.01) that respondents have in restaurants each month.

According to Figure 4.1, the average restaurant meal cost was varied according to meal type. For breakfast, responses in the price range between $1-$5 were the most common (46%), followed by $6-$10 (43%). In the case of lunch, $6-$10 was the dominant price range (69%), followed by $11-$15 (18%). For dinner, between $11-$15 was the most common price range (39%) that responses reported followed by $16-$20 (23%). Almost 3% of respondents answered that they spend more than $46 for dinner.

Figure 4.1 Average Spending on Meal



Just Noticeable Difference

Based on JND definition mentioned in chapter 2, the survey included a question estimating restaurant customers' JND. The question asked respondents to answer 'By how much would the total cost of restaurant meals have to increase before you would eat in restaurants less frequently or change what you typically purchase in restaurants'. The result showed that the rate of price increase that would affect the survey participants' restaurant demand, on average was 17.82%. Responses ranged from 0% to 60% or more.

Mean Differences in Demand Scenarios

Scenario 1 - Current Restaurant Demand Behaviors

Table 4.4 reports the results of current dining out behavior (Scenario 1) of participants by estimated means which determined the influence of each variable on consumer restaurant purchase behavior. These figures are for the entire combined sample.

In section 1, covering variables related to the types of restaurant, the results showed that respondents agreed the most ($\bar{x}$ = 3.78) that they choose a restaurant based on the expected quality of service. The statement with the lowest mean score ($\bar{x}$ = 2.28) from section 1 was 'I prefer chain restaurants over independent restaurants'.

Under the menu offering section, the highest mean score ($\bar{x}$ = 4.51) was for making choices of restaurant based on the quality of food whereas the portion sizes of menu got the lowest mean score ($\bar{x}$ = 3.02). Also, the resulted showed that respondents tend to eat less at the restaurant then they currently do ($\bar{x}$ = 2.43).

The responses from the meal expense section showed wider mean range than other sections. The result exhibited that respondents will be more likely to order less

expensive items than other menu items ($\bar{x}$ = 3.42), though they would not leave smaller tips as a percentage of the total check ($\bar{x}$ = 1.95).

The last section, location of the restaurant, had the lowest average mean ($\bar{x}$ = 2.58) along other sections. The result discovered that not only the respondents do not tend to choose the restaurant based on the restaurant tax rate ($\bar{x}$ = 2.13) and they do not prefer restaurants in downtown areas more than in suburban areas ($\bar{x}$ = 2.82).

Overall, the highest mean was 4.51, which was that 'I make choices of which restaurant to eat at based on the expected quality of food' and the lowest mean score was 1.95 from the statement about expense saying 'I will leave smaller tips for servers, as a percentage of the total check'. This indicated quality of food and quality of service are important to restaurant customers.

Scenario 2 - Three Percent Meal Cost Increase

Table 4.4 reports the results of dining out behavior of participants by estimated means which determined the influence of each variable on consumer restaurant purchase behavior in scenario 2, 3% restaurant meal cost increase, and estimated mean difference between current demand patterns and 3% cost increase. Under the scenario 2, the highest mean score ($\bar{x}$ = 3.77) regarding the type of restaurant was the quality of service. The lowest mean score ($\bar{x}$ = 2.32) from this section was that they prefer chain restaurants over independent restaurants. The biggest difference between scenario 2 and scenario 1 (-0.1) was the preference of full-service or fast-casual/quick restaurant.

The menu offering section showed that more than half of respondents (53%) answered that they would make a choice of restaurant based on the quality of food if

restaurant cost increased by 3% ($\bar{x}$ = 4.44). The variable with the biggest mean difference between current price and 3% increase was making a choice of restaurant based on the portion size (0.07).

In section 3, frequency of dining out explained that respondents would like to have more meals at home if the restaurant cost increased by 3% ($\bar{x}$ = 3.46). This statement had the biggest mean difference between scenario 2 and scenario 1 (0.22).

The fourth section exhibited that majority (59%) of respondents would like to choose inexpensive items compared to other menu items in case of 3% restaurant meal cost increase ($\bar{x}$ = 3.56). The variable with the biggest mean difference between current restaurant price and 3% increase was ordering menu items that are less expensive than other options on the menu (0.14).

In the final section, location of the restaurant, the majority (64%) of participants were willing to travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant ($\bar{x}$ = 2.80). According to comparison of mean of Scenario 2 and Scenario 1, people prefer more suburban restaurant more than in downtown areas when restaurant price increase by 3% (-0.03).

Overall, the biggest mean difference between scenario 2 and scenario 1 (0.22) was that respondents would have more meals at home. In addition, if the restaurant cost increased by 3%, respondents would not travel more than 20 minutes to dine out with better value than a closer restaurant (0).

Scenario 3 - JND Percent Meal Cost Increase

According to Table 4.4, some variables have higher or lower mean differences compared to other variables when restaurant price increased from current to JND. In section 1, the highest mean score ($\bar{x}$ =3.82) among variables was 'making a choice of which restaurant to eat based on the expected quality of service'. Preference of chain restaurant over independent restaurant had the lowest mean score ($\bar{x}$ =2.37) in the same section. The variable with the biggest mean difference between current restaurant price and JND in this section was preference of full service restaurants over quick-service restaurant (-0.29). In other words, people prefer quick service restaurants over full service restaurants when restaurant meal cost increase by JND.

Under section 2, menu offering, the variable with the highest score ($\bar{x}$ =4.40) was making a choice of restaurant to eat at based on the expected quality of food. On the other hand, the lowest score ($\bar{x}$ =3.28) variable was restaurant choice based on the portion size. However, the same variable, portion size, had the biggest mean difference from current mean (0.26). Therefore, when price increases by JND, people are more willing to make a restaurant choice based on the portion size.

According to section 3, respondents tend to have more meals at home than they currently do ($\bar{x}$ =3.97). The result of comparison of mean of current and JND shows that people are going to have more meals at home than now when price increases by JND (0.73). In addition, people would be more inclined to order menu items that are less expensive than more expensive options on the menu ($\bar{x}$ =3.97) in section 4, meal expense. The lowest mean score in this section, expense, was 'leaving smaller tips'

($\bar{x}$ =2.22). In section 4, ordering less expensive menu items variable resulted in the biggest mean difference from current price mean (0.55). In different words, people are more willing to choose less expensive menu items when they dine out.

In the last section, location of the restaurant, the highest mean score was from traveling more than 20 minutes to go to restaurant for better value ($\bar{x}$ =2.88). The variable with lowest score ($\bar{x}$ =2.38) and the biggest mean difference from current mean (0.25) was choosing a community for dining out based on tax. The result indicates that people are going to consider more which community to dine based on taxes added to the meal.

In general, the mean of JND and the mean difference between current restaurant price and JND was bigger than the mean of 3% price increase and the mean difference between current and 3% price increase.

Table 4.4 Means of Restaurant Demand in Current Restaurant Price, 3% Price Increase and JND increase and Mean Difference between Current and 3%; Current and JND

Dependent Variable	$\bar{x}_1$	$\bar{x}_2$	$\bar{x}_3$	$\bar{x}_2 - \bar{x}_1$	$\bar{x}_3 - \bar{x}_1$
Section 1(The Type of Restaurant)					
1. I prefer chain restaurants over independent restaurants.	2.28	2.32	2.37	0.04	0.09
2. I prefer full-service restaurants over fast-casual/quick-service restaurants.	3.63	3.53	3.34	-0.1	-0.29
3. I like restaurants that offer buffets.	2.52	2.52	2.51	0	-0.01
4. I make choices of which restaurant to eat at based on the expected quality of service.	3.78	3.77	3.82	-0.01	0.04
Section 2 (Menu Offering)					
5. I prefer restaurants that use local foods in their menu offerings.	3.78	3.75	3.67	-0.03	-0.11
6. I make choices of which restaurant to eat at based on menu variety.	3.84	3.81	3.74	-0.03	-0.1
7. I make choices of which restaurant to eat at based on the portion sizes offered at the restaurant.	3.02	3.09	3.28	0.07	0.26
8. I make choices of which restaurant to eat at based on the expected quality of food.	4.51	4.44	4.40	-0.07	-0.11
Section 3 (Frequency of Dining Out)					
9. I expect to dine out more frequently than I currently do.	2.43	2.28	1.94	-0.15	-0.49
10. I expect to have more meals at home than I currently do.	3.24	3.46	3.97	0.22	0.73
Section 4 (Meal Expense)					
11. I order menu items that are less expensive than other options on the menu.	3.42	3.56	3.97	0.14	0.55
12. I will leave smaller tips for servers, as a percentage of the total check.	1.95	2.06	2.22	0.11	0.27
13. I make restaurant choices based on special promotions, such as discounts or happy hour.	3.32	3.44	3.76	0.12	0.44
Section 5 (Location of the Restaurant)					
14. I choose in which community to dine based on taxes added to the cost of the meal.	2.13	2.23	2.38	0.1	0.25
15. I will travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant.	2.80	2.80	2.88	0	0.08
16. I prefer restaurants in downtown areas more than in suburban areas.	2.82	2.79	2.79	-0.03	-0.03

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=1,263

Scenario 1 by class of city

Table 4.5 indicates the mean value of each variable for each city class with current restaurant prices. Respondents from first and second class cities have the strongest agreement making choices of which restaurant to eat at based on the expected quality of food ($\bar{x}$ = 4.57) followed by preferring restaurants that use local foods in their menu offerings ($\bar{x}$ = 3.86). On the other hand, first and second class cities residents show less likely to choose in which community to dine based on taxes added to the cost of the meal ($\bar{x}$ = 1.93).

The third class cities residents have the highest average on choosing a restaurant based on quality of food ($\bar{x}$ = 4.39) followed by making choices of which restaurant to eat at based on menu variety ($\bar{x}$ = 3.88). The lowest average from third class cities is a statement about leaving smaller tips as a percentage of the total check.

The fourth, fifth, and sixth class cities shows that the highest average on the statement about choosing a restaurant based on quality of food ($\bar{x}$ = 4.41). All cities residents from fourth, fifth, and sixth show the second largest number on choosing a restaurant based on menu variety ($\bar{x}$ = 3.78). In addition, those class of cities have the lowest average on leaving smaller tips as a percentage of the total check ($\bar{x}$ = 2.11).

Table 4.5 Means for Dining Out Behavior of Each Class of City (Scenario 1)

Scenario 1	Class of City		
	1st and 2nd	3rd	4th, 5th, and 6th
Chain vs. Independent	2.06	2.44	2.66
Full-service vs. Fast-casual	3.71	3.43	3.69
Buffets	2.23	2.64	2.83
Service Quality	3.77	3.59	3.72
Local Foods	3.86	3.66	3.61
Menu Variety	3.85	3.88	3.78
Portion Sizes	2.96	3.22	3.07
Food Quality	4.57	4.39	4.41
More Frequently	2.46	2.48	2.49
Substitutions	3.22	3.30	3.41
Menu Prices	3.35	3.50	3.50
Tips	1.85	2.08	2.11
Promotions	3.27	3.37	3.30
Meal Taxes	1.93	2.29	2.46
Distance	2.67	3.01	3.26
Downtown vs. Suburban	2.94	2.63	2.71

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=1,189

Scenario 2 by class of city

Table 4.6 reports the mean value of each variable for each city class in 3% price increase in restaurant. Regardless of classification of cities, result shows the highest average on statement 8, choosing a restaurant based on quality of food ($\bar{x}$ = 4.57, 4.39, and 4.41 each) and the lowest average on statement 12, leaving smaller tips for servers ($\bar{x}$ = 1.85, 2.08 and 2.11).

Table 4.6 Means for Dining Out Behavior of Each Class of City (Scenario 2)

Scenario 2	Class of City		
	1st and 2nd	3rd	4th, 5th, and 6th
Chain vs. Independent	2.11	2.42	2.72
Full-service vs. Fast-casual	3.61	3.34	3.54
Buffets	2.29	2.64	2.77
Service Quality	3.75	3.62	3.80
Local Foods	3.81	3.65	3.62
Menu Variety	3.82	3.83	3.80
Portion Sizes	3.03	3.26	3.24
Food Quality	4.49	4.34	4.38
More Frequently	2.34	2.33	2.32
Substitutions	3.43	3.58	3.60
Menu Prices	3.49	3.63	3.76
Tips	1.91	2.20	2.31
Promotions	3.40	3.50	3.42
Meal Taxes	2.01	2.44	2.58
Distance	2.66	2.99	3.15
Downtown vs. Suburban	2.92	2.60	2.69

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=1,189

Scenario 3 by class of city

Table 4.7 indicates the mean value of each variable for each city class in JND rate increase in restaurant. Interestingly, the statement scored the highest ($\bar{x}$ = 4.44, 4.26, and 4.26 respectively) and the statement has the lowest ($\bar{x}$ = 1.94, 2.09, and 1.98 each) were exactly the same no matter what city class it is. The highest scored statement was about choosing a restaurant based on quality of food and the variable about expecting more dine out than current had the lowest score through all class of cities.

Table 4.7 Means for Dining Out Behavior of Each Class of City

Scenario 3	Class of City		
	1st and 2nd	3rd	4th, 5th, and 6th
Chain vs. Independent	2.23	2.46	2.72
Full-service vs. Fast-casual	3.42	3.26	3.29
Buffets	2.33	2.59	2.69
Service Quality	3.82	3.61	3.77
Local Foods	3.76	3.54	3.50
Menu Variety	3.77	3.70	3.67
Portion Sizes	3.23	3.37	3.46
Food Quality	4.44	4.26	4.26
More Frequently	1.94	2.09	1.98
Substitutions	3.99	4.03	4.08
Menu Prices	3.91	3.92	4.06
Tips	2.07	2.41	2.55
Promotions	3.80	3.77	3.61
Meal Taxes	2.21	2.57	2.71
Distance	2.77	3.00	3.21
Downtown vs. Suburban	2.88	2.58	2.78

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=1,189

Hypothesis Testing

General Paired Samples t-Test

Paired Samples t-test was used for two separate analyses. Analysis 1 covers the difference in demand between current and 3% price increase. Analysis 2 explains the restaurant demand change from current to JND. In this test, two sets of comparisons were developed to evaluate the change in demand behavior according to price increase scenarios.

The first analysis used demand behavior differences between current restaurant price and 3% increase in restaurant price; scenario 2 – scenario 1. The second analysis to evaluated the difference between current restaurant price and the price increase rate that each participant reported as their JND; (scenario 3 - scenario 1). Using paired samples t-test, in Analysis 1, the result showed that difference between all variables are statistically significant except three: buffet, quality of service, and distance relative to value. For Analysis 2, the difference between two variables is not significant. These variables are buffet restaurants and preference of restaurants in downtown over suburban areas. Other than that variables, all variables have significant difference from current restaurant price to JND. Table 4.8 reports the estimated mean and significance of dining out behavior difference in current and 3% price increase; analysis 1 and current and JND; analysis 2 ($p < 0.05$).

Analysis 1 (The difference between current and 3% price increase)

According to Table 4.8, analysis 1 shows that the demand pattern changes after a 3% cost increase compared to current demand is significant ($p < 0.05$) for all dependent variables of restaurant demand except three variables; buffets ($p = 0.685$), quality of

service (p = 0.414), and distance relative to value (p = 0.956). The variable with the largest gap between current and 3% restaurant price increase was having more meals at home ($\bar{x}$ = 0.22) followed by expecting to dine out more frequently ($\bar{x}$ =0.14) and ordering less expensive menu item ($\bar{x}$ =-0.14).

Analysis 2 (The difference between current and JND)

The analysis 2 shows that the change of restaurant demand between current to JND is significant (p < 0.05) for all dependent variables of restaurant demand except buffets variable (p < 0.942). The biggest difference between current and JND was the frequency of having home meals ($\bar{x}$ = 0.74) followed by ordering menu items that are less expensive than other options on the menu ($\bar{x}$ = 0.53) and dine out frequency ($\bar{x}$ = -0.48).

Table 4.8 Overall Current vs. 3% and Current vs. JND (Paired Samples t-Test)

	Mean		Paired				
	Current ($\bar{X}1$)	3% ($\bar{X}2$)	Mean ($\bar{X}2$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.28	2.32	0.04	0.52	2.43	1261	.015
Full-service vs. Fast-casual	3.63	3.53	-0.10	0.53	-6.48	1261	.000
Buffets	2.52	2.52	0.01	0.49	0.41	1261	.685
Service Quality	3.78	3.77	-0.01	0.48	-0.82	1261	.414
Local Foods	3.78	3.75	-0.03	0.37	-3.26	1261	.001
Menu Variety	3.84	3.81	-0.03	0.40	-2.86	1261	.004
Portion Sizes	3.02	3.09	0.07	0.52	4.61	1261	.000
Food Quality	4.51	4.44	-0.07	0.46	-5.05	1261	.000
More Frequently	2.43	2.28	-0.14	0.55	-9.20	1261	.000
Substitutions	3.24	3.46	0.22	0.64	12.31	1261	.000
Menu Prices	3.42	3.56	0.14	0.54	9.41	1261	.000
Tips	1.95	2.06	0.11	0.49	7.98	1261	.000
Promotions	3.32	3.44	0.12	0.51	8.55	1261	.000
Meal Taxes	2.13	2.23	0.10	0.46	7.58	1261	.000
Distance	2.80	2.80	0.00	0.51	-0.06	1261	.956
Downtown vs. Suburban	2.82	2.79	-0.03	0.32	-2.94	1261	.003

	Mean		Paired				
	Current ($\bar{X}1$)	JND ($\bar{X}3$)	Mean ($\bar{X}3$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.28	2.37	0.09	0.84	3.69	1261	.000
Full-service vs. Fast-casual	3.63	3.34	-0.28	0.97	-10.42	1261	.000
Buffets	2.52	2.51	0.00	0.77	0.07	1261	.942
Service Quality	3.78	3.82	0.05	0.83	2.04	1261	.041
Local Foods	3.78	3.67	-0.11	0.67	-6.00	1261	.000
Menu Variety	3.84	3.74	-0.11	0.70	-5.51	1261	.000
Portion Sizes	3.02	3.28	0.26	0.84	10.85	1261	.000
Food Quality	4.51	4.40	-0.10	0.73	-5.10	1261	.000
More Frequently	2.43	1.94	-0.48	0.94	-18.25	1261	.000
Substitutions	3.24	3.97	0.74	0.99	26.43	1261	.000
Menu Prices	3.42	3.97	0.53	0.86	21.95	1261	.000
Tips	1.95	2.22	0.27	0.75	12.79	1261	.000
Promotions	3.32	3.76	0.44	0.82	19.00	1261	.000
Meal Taxes	2.13	2.38	0.25	0.70	12.46	1261	.000
Distance	2.80	2.38	0.09	0.87	3.50	1261	.000
Downtown vs. Suburban	2.82	2.79	-0.03	0.47	-2.35	1261	.019

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=1,263
Significant ($p < 0.05$)

Paired Samples t-Test By Class of Cities

Paired samples t-tests were performed to find whether any significant difference exists between the current restaurant demand and restaurant demand after price increase of 3% and JND in each class of city classification grouping. In this test analysis, two or three different class of cities were categorized in each group because of current tax regulations difference by class of cities. First and second class of cities does not have a meal tax presently but they have enough budget to support tourism development. In case of fourth, fifth, and sixth class of cities, a meal tax is allowed in those cities for the purpose of creating extra budget for tourism promotion. However, the third class cities can not levy a restaurant tax and also have small tourism promotion budgets because of limited hotel supply in the area. Because of the various situations, it was important to

analyze changes in restaurant demand by class of city. Therefore, there are three different groups analyzed. First and Second class of cities are in one group. Third class of cities is another group, and Fourth, Fifth, and Sixth class cities are in the other group.

Hypothesis 1

Table 4.9 reveals that only three variables, variable 1-'I prefer chain restaurants over independent restaurant' (p=0.322), variable 3-'I like restaurants that offer buffets' (p=0.94), and variable 15-'I will travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant' (p=0.896) have non-significant differences between current and 3% increase in first and second class of cities. The differences associated with all other thirteen variables are significant (p<0.05).

Based on the result of paired samples t-test, there are some variables with significant difference of restaurant demand pattern between current price scenario and 3% price increase in first and second class cities. Therefore, hypothesis 1, restaurant demand patterns of residents in first and second class cities are influenced by a 3% increase in restaurant meal costs cannot be rejected.

Hypothesis 2

In case of JND price increase, Table 4.9 indicates only two out of 16 variables are not significant: variable 3-'I like restaurants that offer buffets' (p=0.535) and variable 4-'I make restaurant choices based on the expected quality of service' (p=0.09).

According to the result of paired samples t-test, there are some variables with significant difference of restaurant demand pattern between current price scenario and

JND price increase in first and second class of cities. The number of variables with significant difference in Analysis 1 is less than the number of significant differences in Analysis 2, therefore hypothesis 2-restaurant demand patterns of residents in first and second class cities are impacted more at the JND increase than at a 3% increase-can't reject.

Table 4.9 First and Second Class of Cities: Current vs. 3% and Current vs. JND (Paired Samples t-Test)

	Mean		Paired Differences						Mean		Paired Differences				
	Current ($\bar{X}1$)	3% ($\bar{X}2$)	Mean ($\bar{X}2$-$\bar{X}1$)	Std.	t	df	*p*- value		Current ($\bar{X}1$)	JND ($\bar{X}3$)	Mean ($\bar{X}3$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.22	2.24	0.02	0.49	0.99	841	.322	Chain vs. Independent	2.22	2.31	0.08	0.82	2.92	841	.004
Full-service vs. Fast-casual	3.66	3.58	-0.08	0.50	-4.60	841	.000	Full-service vs. Fast-casual	3.66	3.38	-0.27	0.96	-8.27	841	.000
Buffets	2.45	2.45	0.00	0.46	-0.08	841	.940	Buffets	2.45	2.47	0.02	0.78	0.62	841	.535
Service Quality	3.80	3.77	-0.03	0.49	-1.98	841	.048	Service Quality	3.80	3.85	0.05	0.81	1.70	841	.090
Local Foods	3.82	3.77	-0.05	0.37	-3.85	841	.000	Local Foods	3.82	3.70	-0.11	0.66	-4.95	841	.000
Menu Variety	3.84	3.81	-0.04	0.41	-2.51	841	.012	Menu Variety	3.84	3.75	-0.09	0.69	-3.82	841	.000
Portion Sizes	2.99	3.06	0.07	0.54	3.67	841	.000	Portion Sizes	2.99	3.26	0.27	0.83	9.50	841	.000
Food Quality	4.53	4.46	-0.07	0.46	-4.28	841	.000	Food Quality	4.53	4.44	-0.09	0.72	-3.60	841	.000
More Frequently	2.43	2.28	-0.15	0.54	-8.06	841	.000	More Frequently	2.43	1.93	-0.49	0.93	-15.45	841	.000
Substitutions	3.19	3.41	0.22	0.64	10.08	841	.000	Substitutions	3.19	3.95	0.76	0.98	22.31	841	.000
Menu Prices	3.40	3.53	0.13	0.54	6.85	841	.000	Menu Prices	3.40	3.95	0.55	0.85	18.58	841	.000
Tips	1.92	2.02	0.10	0.47	5.86	841	.000	Tips	1.92	2.16	0.24	0.71	9.96	841	.000
Promotions	3.32	3.43	0.11	0.51	6.40	841	.000	Promotions	3.32	3.76	0.44	0.78	16.20	841	.000
Meal Taxes	2.04	2.13	0.09	0.47	5.58	841	.000	Meal Taxes	2.04	2.28	0.24	0.71	10.00	841	.000
Distance	2.67	2.67	0.00	0.53	-0.13	841	.896	Distance	2.67	2.78	0.11	0.88	3.57	841	.000
Downtown vs. Suburban	2.88	2.86	-0.02	0.29	-2.40	841	.017	Downtown vs. Suburban	2.88	2.85	-0.03	0.43	-2.15	841	.032

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=843
Significant ($p < 0.05$)

Hypothesis 3

Table 4.10 reveals that even though restaurant prices increase by 3%, the demand pattern would not change in third class of cities for some variables. Only 6 out 16 variables (variable 9,10,11,13,14, and 15) show significant difference ($p<0.05$) from current demand behavior (see Table 4.10).

Based on the result of paired samples t-test, there are some variables with significant difference of restaurant demand pattern between current price scenario and 3% price increase in third class of cities. Hypothesis 3- restaurant demand patterns of residents in third class cities are influenced by a 3% increase in restaurant meal costs-cannot be rejected.

Hypothesis 4

The Table 4.10 shows that in JND, 11 out of 16 variables (variable 2 and 5-14) have significant difference ($p<0.05$). The insignificant differences were variable 1-preference chain restaurants over independent restaurants ($p= 0.779$), variable 3-buffets ($p= 0.241$), variable 4, choices of restaurant based on the expected quality of service ($p= 0.828$), variable 15, traveling for a restaurant that provides a better value than a closer restaurant ($p= 0.910$) and variable 16, preference of downtown restaurants ($p= 0.167$).

According to the result of paired samples t-test indicates the number of variables with significant difference in Analysis 1 is less than the number of variables with significant difference in Analysis 2, therefore hypothesis 4-restaurant demand patterns of residents in third class cities are impacted more at the JND increase than at a 3% increase-can't reject.

Table 4.10 Third Class of Cities: Current vs. 3% and Current vs. JND (Paired Samples t-Test)

	Mean		Paired Differences				
	Current ($\bar{X}1$)	3% ($\bar{X}2$)	Mean ($\bar{X}2$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.44	2.42	-0.03	0.54	-0.52	114	.604
Full-service vs. Fast-casual	3.43	3.34	-0.09	0.51	-1.84	114	.068
Buffets	2.64	2.64	0.00	0.44	0.00	114	1.000
Service Quality	3.59	3.62	0.03	0.55	0.51	114	.614
Local Foods	3.66	3.65	-0.01	0.34	-0.28	114	.783
Menu Variety	3.88	3.83	-0.04	0.38	-1.22	114	.227
Portion Sizes	3.22	3.26	0.04	0.52	0.90	114	.371
Food Quality	4.39	4.34	-0.05	0.39	-1.42	114	.158
More Frequently	2.48	2.33	-0.15	0.50	-3.17	114	.002
Substitutions	3.30	3.58	0.28	0.66	4.55	114	.000
Menu Prices	3.50	3.63	0.14	0.58	2.59	114	.011
Tips	2.08	2.20	0.12	0.62	2.09	114	.038
Promotions	3.37	3.50	0.14	0.62	2.41	114	.018
Meal Taxes	2.29	2.44	0.16	0.45	3.72	114	.000
Distance	3.01	2.99	-0.02	0.53	-0.35	114	.725
Downtown vs. Suburban	2.63	2.60	-0.03	0.31	-0.90	114	.368

	Mean		Paired Differences				
	Current ($\bar{X}1$)	JND ($\bar{X}3$)	Mean ($\bar{X}3$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.44	2.46	0.02	0.66	0.28	114	.779
Full-service vs. Fast-casual	3.43	3.26	-0.17	0.78	-2.26	114	.026
Buffets	2.64	2.59	-0.05	0.47	-1.18	114	.241
Service Quality	3.59	3.61	0.02	0.86	0.22	114	.828
Local Foods	3.66	3.54	-0.12	0.56	-2.31	114	.022
Menu Variety	3.88	3.70	-0.17	0.53	-3.49	114	.001
Portion Sizes	3.22	3.37	0.16	0.83	2.01	114	.046
Food Quality	4.39	4.26	-0.13	0.67	-2.09	114	.039
More Frequently	2.48	2.09	-0.39	1.05	-4.00	114	.000
Substitutions	3.30	4.03	0.72	1.07	7.22	114	.000
Menu Prices	3.50	3.92	0.43	0.99	4.61	114	.000
Tips	2.08	2.41	0.33	0.86	4.14	114	.000
Promotions	3.37	3.77	0.41	1.01	4.35	114	.000
Meal Taxes	2.29	2.57	0.28	0.70	4.29	114	.000
Distance	3.01	3.00	-0.01	0.82	-0.11	114	.910
Downtown vs. Suburban	2.63	2.58	-0.04	0.33	-1.39	114	.167

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=116
Significant ($p < 0.05$)

Hypothesis 5

Table 4.11 indicates that the almost half of the variables (7 out of 16) have no significant difference from current ($p>0.05$). Those with no significant differences are: variable 3-'I like restaurants that offer buffets' ($p=0.910$), variable 4-'I make restaurant choices based on the expected quality of service' ($p=0.308$), variable 5-'I prefer restaurants that use local foods in their menu offerings' ($p=0.725$), variable 6-'I make choice of which restaurant to eat at based on menu variety' ($p=0.603$), variable 8-'I make choices of which restaurant to eat at based on the quality of food' ($p=0.096$), variable 15-'I will travel by car more than 20 minutes to go to a restaurant that provides a better value

than a closer restaurant' (p=0.681), variable 16-'I prefer restaurants in downtown areas more than in suburban areas' (p=0.305).

Based on the result of paired samples t-test, there are some variables with significant difference of restaurant demand pattern between current price scenario and 3% price increase in fourth, fifth, and sixth class of cities. Therefore, hypothesis 5-restaurant demand patterns of residents in fourth, fifth and sixth class cities are influenced by a 3% increase in restaurant meal costs cannot be rejected.

Hypothesis 6

When restaurant price increases by JND rate, fourth, fifth, and sixth class of cities would have significant behavior difference (p<0.05) in 11 variables compared to current demand pattern. Difference between five variables, variable 1-'I prefer chain restaurants over independent restaurants' (p=0.234), variable 3-'I like restaurants that offer buffets' (p=0.364), variable 4-'I make restaurant choices based on the expected quality of service' (p=0.880), variable 15-'I will travel by car more than 20 minutes to go to a restaurant that provides a better value than a closer restaurant' (p=0.571), and variable 16-'I prefer restaurants in downtown areas more than in suburban areas' (p=0.570) are insignificant.

Based on the result of paired samples t-test, there are more number of variables with significant difference in Analysis 2 than the number of variables with significant difference in Analysis 1 in fourth, fifth, and sixth class of cities. Therefore, hypothesis 6-restaurant demand patterns of residents in fourth, fifth and sixth class cities are impacted more at the JND increase than at a 3% increase cannot be rejected.

Table 4.11 Fourth, Fifth, and Sixth Class of Cities: Current vs. 3% and Current vs. JND (Paired Samples t-Test)

	Mean		Paired Differences				
	Current ($\bar{X}1$)	3% ($\bar{X}2$)	Mean ($\bar{X}2$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.42	2.50	0.08	0.60	2.00	228	.047
Full-service vs. Fast-casual	3.66	3.49	-0.17	0.60	-4.05	228	.000
Buffets	2.65	2.66	0.00	0.46	0.11	228	.910
Service Quality	3.79	3.82	0.03	0.45	1.02	228	.308
Local Foods	3.72	3.71	-0.01	0.36	-0.35	228	.725
Menu Variety	3.88	3.87	-0.01	0.36	-0.52	228	.603
Portion Sizes	3.00	3.07	0.07	0.44	2.28	228	.023
Food Quality	4.47	4.44	-0.06	0.45	-1.67	228	.096
More Frequently	2.44	2.28	-0.17	0.55	-4.85	228	.000
Substitutions	3.34	3.60	0.24	0.65	5.67	228	.000
Menu Prices	3.44	3.66	0.22	0.51	6.49	228	.000
Tips	1.97	2.11	0.16	0.48	4.87	228	.000
Promotions	3.30	3.44	0.14	0.45	4.73	228	.000
Meal Taxes	2.34	2.45	0.11	0.43	3.84	228	.000
Distance	3.02	3.02	-0.01	0.48	-0.41	228	.681
Downtown vs. Suburban	2.73	2.71	-0.03	0.38	-1.03	228	.305

	Mean		Paired Differences				
	Current ($\bar{X}1$)	JND ($\bar{X}3$)	Mean ($\bar{X}3$-$\bar{X}1$)	Std.	t	df	*p*- value
Chain vs. Independent	2.42	2.50	0.07	0.94	1.19	228	.234
Full-service vs. Fast-casual	3.66	3.23	-0.42	1.08	-5.90	228	.000
Buffets	2.64	2.60	-0.05	0.87	-0.91	228	.364
Service Quality	3.79	3.81	0.01	0.87	0.15	228	.880
Local Foods	3.72	3.61	-0.11	0.75	-2.30	228	.022
Menu Variety	3.88	3.74	-0.14	0.78	-2.72	228	.007
Portion Sizes	3.00	3.22	0.23	0.84	4.07	228	.000
Food Quality	4.47	4.36	-0.13	0.76	-2.60	228	.010
More Frequently	2.44	1.91	-0.55	0.93	-8.92	228	.000
Substitutions	3.34	4.07	0.73	0.93	11.89	228	.000
Menu Prices	3.44	4.01	0.56	0.86	9.92	228	.000
Tips	1.97	2.32	0.37	0.84	6.64	228	.000
Promotions	3.30	3.77	0.46	0.87	8.04	228	.000
Meal Taxes	2.34	2.62	0.27	0.68	5.95	228	.000
Distance	3.02	3.07	0.03	0.93	0.57	228	.571
Downtown vs. Suburban	2.73	2.70	-0.02	0.58	-0.57	228	.570

Scale values: Strongly Disagree=1 to Strongly Agree=5. n=230
Significant ($p < 0.05$)

Table 4.12 reports the result of significant difference tests and mean difference between current price and 3% price increase and current price and JND price increase of all class of cities in Kentucky.

Table 4.12 Summary of Restaurant Demand Pattern Difference by Increases in Prices for each class of city

	1st and 2nd Class				3rd Class				4th, 5th, and 6th Class			
	3% (Analysis 1)		JND (Analysis 2)		3% (Analysis 1)		JND (Analysis 2)		3% (Analysis 1)		JND (Analysis 2)	
	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$
Chain vs. Independent	N	0.02	Y	0.08	N	-0.03	N	0.02	Y	0.08	N	0.07
Full-service vs. Fast-casual	Y	-0.08	Y	-0.27	N	-0.09	Y	-0.17	Y	-0.17	Y	-0.42
Buffets	N	0.00	N	0.02	N	0.00	N	-0.05	N	0.00	N	-0.05
Service Quality	Y	-0.03	N	0.05	N	0.03	N	0.02	N	0.03	N	0.01
Local Foods	Y	-0.05	Y	-0.11	N	-0.01	Y	-0.12	N	-0.01	Y	-0.11
Menu Variety	Y	-0.04	Y	-0.09	N	-0.04	Y	-0.17	N	-0.01	Y	-0.14
Portion Sizes	Y	0.07	Y	0.27	N	0.04	Y	0.16	Y	0.07	Y	0.23
Food Quality	Y	-0.07	Y	-0.09	N	-0.05	Y	-0.13	N	-0.06	Y	-0.13
More Frequently	Y	-0.15	Y	-0.49	Y	-0.15	Y	-0.39	Y	-0.17	Y	-0.55
Substitutions	Y	0.22	Y	0.76	Y	0.28	Y	0.72	Y	0.24	Y	0.73
Menu Prices	Y	0.13	Y	0.55	Y	0.14	Y	0.43	Y	0.22	Y	0.56
Tips	Y	0.10	Y	0.24	Y	0.12	Y	0.33	Y	0.16	Y	0.37
Promotions	Y	0.11	Y	0.44	Y	0.14	Y	0.41	Y	0.14	Y	0.46
Meal Taxes	Y	0.09	Y	0.24	Y	0.16	Y	0.28	Y	0.11	Y	0.27
Distance	N	0.00	Y	0.11	N	-0.02	N	-0.01	N	-0.01	N	0.03
Downtown vs. Suburban	Y	-0.02	Y	-0.03	N	-0.03	N	-0.04	N	-0.03	N	-0.02

from strongly disagree=1 to strongly agree=5
$\bar{X}1$=mean of de$\bar{X}$and in scenario 1 (Current Price)
$\bar{X}2$=mean of demand in scenario 2 (3% Price Increase)
$\bar{X}3$=mean of demand in scenario 3 (JND rate Increase)
Significant($p < 0.05$)

In summary, the result shows that when restaurant cost increases restaurant customers dining behavior would change in all class of city. Especially, when restaurant cost increases by JND rate, people change their dining behavior more over 3% cost increase. The next chapter includes conclusion of the research, limitation and recommendations for future research.

Chapter Five

Conclusions

This study was initiated because of proposed tax legislation in Kentucky. The purpose of this study was to examine how a change in the tax rate on restaurant meals or other cost increases affects restaurant demand. The results of this research can help government officials make informed decisions regarding public policy that impacts restaurants and tourism and can help restaurant operators and destination managers better promote their restaurants. The data can also help advocates, who support or oppose the Kentucky proposal and similar tax proposals in other states, make a stronger case when communicating their policy positions.

Discussion

The research question asked how will restaurant demand patterns in various classes of Kentucky cities be affected by increases in costs of restaurant meals. The results of the study suggested restaurant demand patterns would be affected if costs to consumers are increased. Based on general analysis of collected data, respondents would prefer quick service restaurants than full-service restaurants more, they would leave smaller tips for servers, choose less expensive menu item and expect to have more meals home and less likely to dine out.

Overall, the gap between the demand variables of personal JND point and current prices was bigger than the difference for most variables between 3% increase in restaurant price and current price. The result indicated that personal JND has more effect in changing demand behavior in dining out than 3% increase does. This implies a 3% tax increase may be palatable to some consumers.

According to significant test results, if restaurant price increases by either 3% or JND rate, across all class of cities, people would change their restaurant demand patterns. In detail, people would expect to dine out less frequently and expect to have more meals at home than they currently do. Moreover, people would order more menu items that are less expensive than other options on the menu when they do dine out. They would tend to leave smaller tips for servers, as a percentage of the total check if restaurant price increased by 3% or JND rate. In addition, they would make more choices of restaurant based on special promotions, such as discounts or happy hour or be more inclined to choose in which community to dine based on taxes added to the cost of the meal. In contrast, Table 4.12 reports that at either price increase point demand for buffet restaurants will not be affected throughout all class of cities.

When restaurant price increases by 3%, residents from first and second class cities would not change their restaurant demand pattern on preference of chain restaurants over independent restaurants or traveling by car more than 20 minutes to go to a restaurant that provides better value than a closer restaurant.

However, if restaurant price increases by JND rate, their behavior would change in that, people from first and second class of cities would prefer chain restaurants more over independent restaurants but would be more likely to travel by car to go to a restaurant that provides a better value than a closer restaurant than they currently do.

Besides, people from first and second class of cities would change their restaurant demand significantly on making choices of which restaurant to eat at based on the expected quality of service when restaurant price increases by 3% but not by JND. Based on the mean value of 3% price increase scenario and JND scenario of first and second

class of cities, the result indicates that when restaurant price increases by 3%, people would make more choices of which restaurant to eat at based on the expected quality of service but the quality of service in case of JND rate increase because less important.

For residents of third class cities, some variables would not change significantly when price increases by 3% but would in case of JND rate increase. Particularly, when price increases by JND rate, people would more prefer fast-casual/quick-service restaurants over full-service restaurants and less likely to dine out in restaurants that use local foods in their menu offerings. In addition, restaurant customers from third class of cities would be less likely to make choices of which restaurant to eat at based on menu variety or the expected quality of food. However, they would be more likely to change a restaurant to eat at based on the portion sized offered at the restaurant if restaurant price increased by JND rate.

When price increases by 3%, residents from fourth, fifth and sixth class of cities would change their restaurant demand significantly on preference of chain restaurants over independent restaurants but not in JND rate increase scenario. The result indicates that if price increased by 3%, people would be more likely to prefer chain restaurants over independent restaurants.

If price increases by JND rate, people would change their restaurant demand pattern significantly. They would be less likely to prefer restaurants that use local foods in their menu offerings, make choices of which restaurant to eat at based on menu variety, or on the expected quality of food.

Table 5.1 Summary of Restaurant Demand Pattern Difference by Increases in Prices for each class of city

	1st and 2nd Class				3rd Class				4th, 5th, and 6th Class			
	3% (Analysis 1)		JND (Analysis 2)		3% (Analysis 1)		JND (Analysis 2)		3% (Analysis 1)		JND (Analysis 2)	
	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$	Significant	$\bar{X}2-\bar{X}1$	Significant	$\bar{X}3-\bar{X}1$
Variable 1	N	0.02	Y	0.08	N	-0.03	N	0.02	Y	0.08	N	0.07
Variable 2	Y	-0.08	Y	-0.27	N	-0.09	Y	-0.17	Y	-0.17	Y	-0.42
Variable 3	N	0.00	N	0.02	N	0.00	N	-0.05	N	0.00	N	-0.05
Variable 4	Y	-0.03	N	0.05	N	0.03	N	0.02	N	0.03	N	0.01
Variable 5	Y	-0.05	Y	-0.11	N	-0.01	Y	-0.12	N	-0.01	Y	-0.11
Variable 6	Y	-0.04	Y	-0.09	N	-0.04	Y	-0.17	N	-0.01	Y	-0.14
Variable 7	Y	0.07	Y	0.27	N	0.04	Y	0.16	Y	0.07	Y	0.23
Variable 8	Y	-0.07	Y	-0.09	N	-0.05	Y	-0.13	N	-0.06	Y	-0.13
Variable 9	Y	-0.15	Y	-0.49	Y	-0.15	Y	-0.39	Y	-0.17	Y	-0.55
Variable 10	Y	0.22	Y	0.76	Y	0.28	Y	0.72	Y	0.24	Y	0.73
Variable 11	Y	0.13	Y	0.55	Y	0.14	Y	0.43	Y	0.22	Y	0.56
Variable 12	Y	0.10	Y	0.24	Y	0.12	Y	0.33	Y	0.16	Y	0.37
Variable 13	Y	0.11	Y	0.44	Y	0.14	Y	0.41	Y	0.14	Y	0.46
Variable 14	Y	0.09	Y	0.24	Y	0.16	Y	0.28	Y	0.11	Y	0.27
Variable 15	N	0.00	Y	0.11	N	-0.02	N	-0.01	N	-0.01	N	0.03
Variable 16	Y	-0.02	Y	-0.03	N	-0.03	N	-0.04	N	-0.03	N	-0.02

from strongly disagree=1 to strongly agree=5
$\bar{X}1$=mean of deXand in scenario 1 (Current Price)
$\bar{X}2$=mean of demand in scenario 2 (3% Price Increase)
$\bar{X}3$=mean of demand in scenario 3 (JND rate Increase)
Significant($p < 0.05$)

Limitations of the Study

Several limitations exist for this study. The first limitation is the sample group. The sample consisted of higher education and income levels compared to the average of Kentucky population. According to the National Center for Higher Education Management Systems, the highest average of education level of Kentucky residents over 25 years was 'High School degree/GED equivalent' (34.7%) followed by '2-year college degree' (24.9%) and 'less than High School degree' (20.4%) in 2010 (see table 4.3). Moreover, American Community Survey from United States Census Bureau, the median household income for Kentucky was $41,141 in 2011.

Another aspect of the demographics that created a limitation was the population distribution of each class of city. While this study was specifically looking at the restaurant customers from across Kentucky, the majority of respondents were residents in Lexington, a second class city. However, analyzing the data by different grouping of city classes mitigated this limitation.

In addition, in JND, the analysis included all those who had JND at 3% or less. We should have removed those with JND at 3% or less.

A final limitation was the survey design. The repeated survey statements were developed in three different scenarios to compare the change of participants' restaurant demand. This design made some participants lose interest in finishing the survey. By reformatting the survey to a smaller focus, 10 statements instead of 16 and fewer questions overall, the survey would have been reduced and the final questions could have had a smaller probability of being skipped. However, even with the length of the instrument, almost 30% of 1,695 people who began the survey did not complete the entire survey.

Recommendations for Future Research

Additional future research on restaurant demand pattern changes caused by increases in prices would provide endless benefits to any hospitality business exploring their marketing strategy. Being able to understand the opinions of various target markets in regards to restaurant demand differences based on price increases would allow businesses to assess profitable pricing strategies.

The study provided a general picture of the restaurant demand pattern difference by increases in prices in various classes of cities in Kentucky. However, the study did not mention the relationship between restaurant demand pattern differences among demographics variables. Future research should investigate the relationship between restaurant demand differences and demographics, because understanding restaurant demand patterns of various demographic groups, such as middle income earners is important for tourism marketers, researchers, and policy makers. Furthermore, based on Thompson and Rohlin's (2012) study, it will be important to measure the unemployment rate caused by restaurant tax increases in other states or communities.

This study only measured the restaurant demand pattern of customers' home residency. Therefore, it is important to measure the restaurant demand difference in case of restaurant customers traveling. Future research should compare the restaurant demand pattern difference when restaurant customers travel for business or leisure purposes. Future studies could also be applied to other states using a similar research method so that a competitive analysis in different destinations can be explored.

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