There’s a Fire in the Kitchen!

An Empirical Analysis of Restaurants Burning Money as a Signal of Quality

By

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Abstract:

Economic theory suggests that firms can burn (or waste) money as a signal of high quality. Firms can waste money either through pricing low or through a wasteful, conspicuous initial expenditure, but theory does not say when each strategy is optimal. This thesis uses Zagat Survey restaurant data to test empirically this theory through cross-sectional data sets. It finds that as tourism in a city increases, restaurants are more likely to spend money on décor (conspicuous initial investment) than pricing low to signal their quality. Tourism affects the optimal strategy because as tourism increases in a city, repeat business decreases.

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I. Introduction and Motivation

When starting a restaurant, a restaurateur has many decisions to make. He must decide on the type of cuisine offered, the quality of the ingredients, the luxuriousness of the décor, and the prices of the dishes. Many of these decisions are difficult to answer. Evidence of this is found in the restaurant Babu in Greenwich Village, New York City, where the menu came without prices. Payal Saha, the owner, told diners to pay what they thought the meal was worth (Mead 2005). Such a strategy is not likely to lead to the profit-maximizing outcome because the consumer does not have much incentive to pay a high price. Perhaps economic theory can aid owners like Saha in their pricing decisions. Even economic theory, however, has ambiguous results regarding pricing.

Asymmetric information is a key feature in the relationship between firms and consumers in markets for experience goods. The firm knows what quality it can provide, but the consumer is not aware of the quality until after purchasing the good. This asymmetry allows for strategic decision-making. Consider a simple dichotomous world where only "high" quality and "low" quality firms exist, and these firms can only price "high" or "low." The owner of a high quality firm has two different optimal pricing strategies to choose from in the first period. On one hand, the high quality firm can rationally choose to charge a low price. A high quality firm may want to do so in a setting where this may cause repeat purchases. The high quality firm is more willing to sacrifice current profits than a low quality firm is because it knows that it will be in the market for a long time. The low prices also may draw more consumers to the restaurant. By discerning the true quality of the firm (high), the consumers will increase their willingness to pay. The restaurant-goers will do so because consumers are willing to pay equal to or more than the expected quality of the food. Before trying the restaurant, there is a probability that the restaurant is of low quality, lowering the expected quality of the food. Once the true quality is discovered, the expected quality of the food increases. Then as time passes, the restaurant will be able to increase its prices without losing many customers. A low quality firm may not be willing to duplicate this sacrifice because customers are not worth as much to it. The low quality firm knows that it will not be able to develop a high quality reputation in the future and recoup the losses incurred in the first few periods. It is not profit maximizing for the low quality firm to set low prices. Therefore, a low price in the first few periods may signal high quality. In fact, any large initial expenditure by the firm may prove that it will be in the market for a long time and is truly a high quality firm. These large expenditures may consist of an uninformative advertising campaign or a superfluous sunk cost expense. The key concept here is the idea of "burning money." By either pricing low or spending money on décor, the restaurant is wasting money and that may be used as a signal of high quality because the low quality firm is not willing to mimic the action.

Alternatively, the high quality firm can choose to charge a high price in the first period. By charging the high price, the firm shows that it is not afraid of contracting demand, which differentiates it from the low quality firm that cannot afford to do so. The low quality firm may have a smaller profit margin than a high quality one. As a result, the profit-maximizing strategy for a low quality firm requires a greater number of consumers. In order to reach these marginal consumers, the low quality firm must charge a lower price. The high quality firm is not under such restrictions and can charge a high price; thus, the high price acts as a signal of high quality.

Theory says that different circumstances may lead to the contrasting signaling strategies. In the first period, low prices may correspond to the existence of repeat purchases. In contrast, high prices may point toward situations of informed consumers. A consumer is informed if he knows the quality of the good beforehand, perhaps due to reputation or informative advertising. As the fraction of informed consumers increases, firms are less likely to charge low introductory prices because they can charge high prices to the informed consumers (Tirole 1988).

Theory states that, in place of pricing low, a firm can spend a large amount of money initially. Specifically, a restaurant can spend a lot of money on décor, which is largely a fixed cost as well as a sunk cost. Most restaurant costs are variable such as the ingredients, wages to the wait staff, and, to an extent, the rental price for the building. Many of the fixed costs in the restaurant industry are not sunk. Such items include industrial-grade ovens and refrigerators, which all have salvage value. Thus, spending money on décor is one of the few routes for a restaurant to "burn money" or commit to a conspicuous initial expenditure. An additional way to burn money is through uninformative advertising. Most advertising for experience goods is uninformative because the true quality of the good can only be discerned after use. Many companies that buy advertising time during the Super Bowl do not do so to display their products, but rather to show that they have such a high quality product that they can spend a superfluous amount of money on advertising.

Theory suggests that restaurants in cities with different levels of repeat business or different levels of the effectiveness of reputation mechanisms might use different signaling strategies. Restaurants in a city with high levels of tourism are playing a different game than those in a city with low levels of tourism. To illustrate, take City A as a resort island with no local residents and tourists each stay for one day. A restaurant in City A is playing a one-period pricing game each day. The restaurant cannot easily gain a reputation from repeat diners because each diner leaves after one day. It, therefore, would not be profitable for a high quality restaurant to price low in the first period. If a restaurant is looking to burn money, it is not profitable to do so by pricing low; the restaurant must make a conspicuous initial expenditure through its décor to signal its high quality. Low quality restaurants are not willing to make the same decision making the action a viable signal for the high quality restaurants. This example assumes that there is no tour operator (or other reputation mechanism) who has an incentive to disseminate information from one group of tourists to the next group of tourists. Overall, this situation is very similar to Spence's theory on honest signaling where highly motivated students have a lower cost of attaining education (1973). As a result, employers can use education as a signal of motivation and skill. Here, the high quality restaurant has a higher payoff for increasing its décor to such an extent that in equilibrium the low quality restaurant is not willing to make that same decision.

The high tourism City A can be contrasted to City B, which has no tourists and the residents remain the same each period. A restaurant in this city is playing a repeated game for "N" periods. It now becomes profitable for the high quality restaurant to price low in the beginning periods of the game because it will be able to build a reputation. Primarily, the low price is used as a signal of high quality because the low quality restaurant is unwilling to mimic the action. A secondary effect of the low price is that the high quality restaurant will be able to induce experimental buying in the early periods (due to the low price), and the residents of City B will discover that the restaurant is indeed high quality and be willing to pay more in future periods (Grossman, Kihlstrom and Mirman 1977). Due to the repeated game, the high quality restaurant in City B has no need to spend money on décor as a signal of its quality. While the high quality restaurant does not need to spend money on décor, doing so is still a viable strategy. A firm charging a low price Pareto dominates money spent on décor because consumers gain surplus from the low price and do not gain as much surplus from the increase in décor. As a result, it might be expected that restaurants will burn money through a low price when both are options. The important point is that changing the game to a repeated situation does not eliminate any strategies, but adds an additional rational choice. A high quality restaurant in City A can only signal its quality through its décor, while a high quality restaurant in City B can signal its high quality through décor *or* a low price.

With these stories in mind, I hypothesize that as tourism in a city increases, spending on décor (and consequently the quality of décor) for restaurants will increase due to the different signaling mechanisms as explained via the generic Cities A and B. Additionally, I hypothesize that new restaurants in a low tourism city will have a lower price *ceteris paribus* than new restaurants in a high tourism city. This is because pricing low in the early periods is a viable strategy only in locations of low tourism. To date there have not been any notable empirical studies examining this theory of alternative signaling strategies. No work has been done to confirm or reject the theory linking pricing to signals of quality.

Through two different methods, the data show that the hypotheses are supported. As tourism in a city increases, the level of décor also increases *ceteris paribus*.

Additionally, the data show that new restaurants in Manhattan (where a relatively small share of restaurant patrons are tourists) have lower prices than new restaurants in Las Vegas (where a relatively large share of restaurant patrons are tourists). It is unclear whether restaurants gradually shift their signaling from a low price to décor as tourism increases or there is a threshold level of tourism. At this threshold level, the restaurant might suddenly shift from the low price signal to the décor signal. In the end, however, there is enough support to claim the hypotheses cannot be rejected.

II. Data Sources and Collection

In order to test these hypotheses, I have constructed a unique data set that is well-suited to answer the questions at hand. According to its website, the Zagat Survey is the world's leading provider of consumer survey-based leisure content; it is especially known for its reviews of restaurants worldwide. The company was founded with the idea that the averaged opinions of many "regular" people give greater accuracy in grading food than the single well-versed opinion of a professional food critic. For its restaurant ratings, Zagat's relies on thousands of surveyors rather than a few critics. This is important for this paper because it allows for a much greater breadth of restaurants in terms of both quality and location. This increased breadth augments the number of available data points and increases the variety of the data that helps with identification. The Zagat Survey now includes restaurants in 29 states and the District of Columbia as well as 21 foreign countries, in total rating thousands of restaurants (www.zagat.com 2006).

Ginsburgh and Weyers (1999) show that consumers (common opinion) are more consistent over time in their evaluations than critics (expert opinion) are. They analyze movies from the 1950s-1970s. Movies are similar to restaurants in that their quality (merit) is subjective. While it is difficult to say whether expert or common opinion is more "correct," consistency in ratings over time is an important consideration. Because experts have inconsistent opinions over time, reviews like Zagat's, which rely on consumer opinion, may prove to be more reliable. This finding gives further credence to the validity of the Zagat Survey. Additionally, common opinion more accurately reflects demand than the singular opinion of a professional food critic.

I bought a one-year subscription to www.zagat.com, which allows me to view the most recent year's data for each restaurant organized by city. Ten different locations were included in the data set: Atlanta, Boston, Chicago, Las Vegas, Manhattan, Miami, Philadelphia, San Francisco, Seattle, and Washington DC.[1] These cities were chosen for two reasons. The practical reason for picking these cities is they each had a large representative sample of restaurants. Surprisingly, other large cities such as Houston and Detroit do not have many restaurants rated, and the ones that were rated were not representative of all the restaurants in the area. As a result, they were not added to the data set. For the ten cities in the sample, the rated restaurants seemed representative of all the restaurants in the city. The theoretical reason for picking these ten cities is they all have varying levels of tourism, which will be discussed in more detail. The Zagat Survey has seven pieces of information for each observation (restaurant). They are: restaurant name (including address and phone number); neighborhood; type of cuisine; cost; and

[1] For simplicity, I will call each a "city" despite the term not being technically correct for Manhattan (a borough of New York City).

ratings for food quality, service, and décor. Each restaurant has one to four types of cuisine listed that describes the ethnicity of the food (such as Afghan, German, or Greek) or the predominant atmosphere (such as coffeehouse, steakhouse, or noodle shop). The ratings for quality, service, and décor are based on a 0-30 scale with the quantitative to qualitative correspondences listed in Table 1.

Table 1 Quantitative to Qualitative Correspondences for Zagat Survey

Quantitative Score	Qualitative Meaning
26-30	Extraordinary to Perfection
20-25	Very Good to Excellent
16-19	Good to Very Good
10-15	Fair to Good
0-9	Poor to Fair

The cost rating reflects the surveyor's estimate of the average price of a meal including one drink and tip. Table 2 shows the summary statistics for the data organized by city. The ratings for quality, décor, and service are relatively consistent for the different cities and have similar variances. No city has either the highest or the lowest average rating across all categories. The greatest differences are in the costs, which have far higher standard deviations and relatively divergent means.

A key feature of Zagat's survey data is that the surveyors can rate any restaurant they have frequented. It is most common, however, that surveyors will rate the restaurants in the cities where they live because they are most familiar with them (www.zagat.com 2006). This leads to a potential bias in analysis. Surveyors who live in

Table 2 Summary Statistics

City	Number of Restaurants	Number of Cuisine Types	Quality Mean Rating	Quality Standard Deviation	Décor Mean Rating	Décor Standard Deviation	Service Mean Rating	Service Standard Deviation	Cost Mean Rating	Cost Standard Deviation
Atlanta	410	62	20.10	3.21	16.33	4.75	18.42	3.18	$ 23.05	$ 12.40
Boston	292	57	20.97	3.25	17.49	4.60	18.93	3.06	$ 31.64	$ 13.32
Chicago	565	71	20.10	3.09	16.33	4.42	17.94	3.06	$ 28.20	$ 15.59
Las Vegas	327	43	21.14	3.36	17.36	4.85	19.20	3.28	$ 30.67	$ 17.18
Manhattan	1554	106	20.20	2.94	15.62	4.86	17.46	3.37	$ 35.64	$ 18.55
Miami	391	63	20.80	2.82	16.71	4.89	18.73	3.03	$ 33.00	$ 14.40
Philadelphia	684	84	20.32	3.22	16.32	4.56	18.48	2.89	$ 28.90	$ 21.05
San Francisco	456	83	20.88	2.91	16.35	5.09	17.98	3.24	$ 30.99	$ 14.75
Seattle	240	60	22.48	2.26	16.79	5.11	19.06	3.35	$ 26.15	$ 13.03
Washington DC	261	54	20.61	3.07	17.50	4.88	18.54	3.25	$ 34.24	$ 14.38

Manhattan might be fundamentally different from those who live in Las Vegas or Seattle. For example, it could be the case that people in Manhattan are on average more critical of food than those in Seattle. Thus, the exact same restaurant, if located in two different cities, would get disparate ratings based on this fundamental difference. As a result, the ratings as such are not comparable across markets.

Taking a cue from Berry and Waldfogel (2004), I use chain restaurants with more than one location to standardize these ratings. I assume that chains desire a diner to have the exact same eating experience regardless of location. Chains can be either corporately owned restaurants or franchises. Corporate chains have a desire to standardize their product across all restaurants because they have the same ownership. Franchised chains, however, also have their products standardized. Michael (2000) explains that most franchised restaurants have an extensive network of field representatives and other means to monitor quality on-site. Additionally, the franchisor can terminate the franchise if quality standards do not meet the proper caliber. The prevalence of chain restaurants on the side of highways illustrates this point. When traveling, a diner knows the type and quality of food he will receive from a chain. He will be more likely to frequent a chain than chance a restaurant of which he knows very little *ex ante*. As a result, the chain has an incentive to maintain uniform quality. In order to do so, chains buy their ingredients from the same sources and train their chefs in similar fashions. It is more plausible that the quality of food will be standard across different locations than the quality of service due to the greater variability of personalities than ingredients.

In order to standardize the quality ratings, I find the chain restaurants that occur in at least four of the ten locations. There are 19 such restaurants: ten chains are present in either four or five different locations and three chains have establishments in at least eight cities (the Cheesecake Factory, Morton's Steakhouse, Ruth's Chris Steakhouse). A list of the chains and their quality ratings in their respective cities can be found in Table 3. One concern about these specific restaurants is that only specific types of restaurants will have chains in many locations. For instance, if there were a high prevalence of cheap chain Italian restaurants, then the use of chains would not help standardize the ratings. The method for finding the correction modifier would be flawed if these Italian restaurants were fundamentally different from other restaurants. However, there is a wide variety of types of restaurants in this set of chains. There are steakhouses (McCormick & Schmick's, Morton's, Outback, Ruth's Chris, Shula's, Smith & Wollensky), Asian restaurants (Benihana, Penang, PF Chang's), Italian restaurants (Il Fornaio, Maggiano's), traditional American restaurants, and even a restaurant specializing in exotic pizzas (California Pizza Kitchen). Because a wide variety of cuisine types are represented, the multiplier is likely to capture systematic differences in quality ratings across cities.

I calculate the correction multiplier for each city that minimizes the following expression

$$\Sigma_n \Sigma_i \left((Q_{in})(C_i) - \bar{Q}_n\right)^2$$

where Q_{in} is the food quality score for chain n in city i, $\bar{Q}_n$ is the average score for a chain over all cities, and C_i is the correction multiplier that is unique for each city. In other words, the correction multiplier minimizes the mean squared deviation summed over all cities and chains. Ideally, the desire is to derive multipliers so that when each restaurant's quality rating is adjusted, the typical chain has the same quality rating for each city. In practice, any given chain is unlikely to have the same adjusted quality rating

Table 3 Quality Ratings of Chains Across Cities

	Atlanta	Boston	Chicago	Las Vegas	Manhattan	Miami	Philadelphia	San Francisco	Seattle	Washington DC
Benihana	20		18	20	16					
California Pizza Kitchen		19	17	19	15		19			
The Capital Grille	23	26	25			25	25			23
The Cheesecake Factory	18	18	20	22		20	20	16		19
Fado Irish Pub	16		15				15			15
Hard Rock Café	14		12	16	12		13	12		
Il Fornaio				20	19			18	19	
Maggiano's	20	19	20				19			19
McCormick and Schmick's	21	21	21	22			20		20	21
Morton's	24	25	26	24	23	24	24	23	24	25
Outback	18			19	15	18				
PF Chang's	21	21	20	22		21	21		19	
Palm	22	22		25	24	24	22			23
Penang		22	19		19		22			19
Roy's	24		24	26			23	22		
Ruth's Chris	23		25	23	23	25	21	23	24	24
Seasons		24	28					24		24
Shula's Steakhouse			22		20	21	19			19
Smith and Wollensky		21	21	23	23	23	21			21

Table 4 Quality Correction Multipliers

Correction Multipliers										
	Atlanta	Boston	Chicago	Las Vegas	Manhattan	Miami	Philadelphia	San Francisco	Seattle	Washington DC
	1.001	0.993	0.977	0.939	1.037	0.969	1.012	1.065	1.018	1.019

for each city because the multiplier is forced to be the same for all chains within a city. Table 4 shows the quality correction multipliers for each city based on this method.

The correction multipliers are very close to one with Las Vegas and San Francisco being the most different from unity with correction multipliers of .939 and 1.065, respectively. As a result, no city needs to have its quality ratings adjusted more than 6.5%, which is about a 1.3 unit increase in quality ratings for an average restaurant. This means, for the most part, surveyors nationwide have very similar perceptions of food quality. There are not large fundamental differences among the rating tendencies of residents of the different cities.

Zagat does not release data for all cities at the same time, but at non-regular intervals. Data was first gathered from Zagat Online in September 2005, which refers to data collected in 2004. In early January 2006, Zagat released a new set of data for two of the cities in the sample, Manhattan and Las Vegas. This was fortunate because Zagat Online only shows the most recent year's data, so the only way to collect multiple years' worth of data is to collect data as they are released.[2] The additional year's worth of data allowed new restaurants to be pinpointed so the second hypothesis about the different pricing methods of new restaurants depending on the city can be tested. Further details about this process appear in Section V.

The other key piece of data that is needed to test the hypothesis is a measure of tourism. The ideal measure of tourism would be the number of tourist restaurant patrons divided by the total number of restaurant patrons (both tourists and residents) in the city. As this ratio increases (either due to an increase in tourists or a decrease in residents),

[2] I contacted Zagat to ask about the availability of prior year's data, but it was unwilling to share any data. This forced me to get all of the data via www.zagat.com.

restaurants will be trying to signal their quality in an environment with a greater number of tourists. Unfortunately, these exact data do not exist. Every five years, however, the U.S. Census Bureau surveys American businesses from the local to the national level. The bureau divides its report by industry and location. The industry of interest is "Accommodation and Food Services." Reports from the 2002 census were released for each state during the time period December 2004 to August 2005, so the data are relatively fresh. Each report lists several variables broken down by geographic regions. The geographic locations of interest are those that correspond to the locations of the restaurants in Zagat's Survey. In almost all cases, this location is the metropolitan statistical area of the city because Zagat's lists restaurants by metropolitan area. The one exception is that Zagat's differentiates the borough of Manhattan. The census data on New York County correspond to the Manhattan restaurants.

By creating ratios of different pairs of variables from the census, a ratio can be created that mimics the ideal measure of tourism. Two important variables are the sales from "accommodation" and the sales from "food services." The accommodation industry includes establishments that primarily provide traditional types of lodging services, such as hotels, motels, and bed-and-breakfast inns.[3] The food services industry includes firms that prepare meals, snacks and beverages to customer order for immediate on-premises and off-premises consumption. The measure of tourism is the ratio of sales from accommodation to sales from food services. This measure derives a number that calculates the ideal tourism index because, by and large, any tourist will have to spend

[3] This variable also includes casino hotels. The data source does not differentiate from where the casino hotels derive their revenues, via gaming or accommodation as they are tied together. While casino hotels are a separate category, this data for Las Vegas is omitted "to avoid disclosing data of individual companies."

money on accommodation.[4] The more tourists in a city the more sales will be generated in the accommodation industry. Additionally, the measure of tourism takes into account the ratio of tourists to residents who frequent restaurants. Dividing by the sales generated at food services locations accomplishes the same goal. As more residents dine at restaurants, the sales will increase, thereby decreasing the tourism ratio.

Using sales might be problematic as prices vary across cities, thus biasing the index. If the assumption that price levels of the accommodation and the food services industries are highly correlated within cities holds, then the problem is mitigated because prices have an effect on both the numerator and denominator of the ratio. This eliminates the potential bias. The sales numbers and the calculated ratios for the cities in the sample appear in Table 5. The cities are ranked with the cities with the highest levels of tourism on top.

The Census Bureau did not only take information on sales for these industries, but also the number of paid employees. Dividing these two variables creates another tourism index that should be closely correlated with the ideal measure. A hotel or restaurant will hire more employees only if they are needed to serve more consumers. As a result, as more tourists visit a city and stay in hotels, more employees will have to be hired to serve them. Similarly, as more residents frequent restaurants, more employees will have to be hired to serve them. This ratio also avoids the potential pricing problem completely. If a city has a large pool of cheap labor, however, this measure might become problematic. With this large pool of cheap labor, a hotel might hire more employees per tourist than it

[4] There is error in this calculation, but it occurs in both directions and is independent across cities. On one hand, when tourists stay with friends, this measure does not count them as tourists though they are with respect to their knowledge of local restaurants. On the other hand, business travelers that regularly travel to a specific city are considered tourists by this measure, but they act like residents with respect to their knowledge of restaurants.

Table 5 Tourism Indices

	Accommodation		Food Services		Tourism Index		
City	Sales ($1000s)	Employees	Sales ($1000s)	Employees	Sales	Employees	Ratio Sales/Emp
Las Vegas	13,932,278	159,740	2,223,330	47,493	**6.266**	**3.363**	1.86
Washington DC	1,320,575	13,209	1,622,503	30,091	**0.814**	**0.439**	1.85
Manhattan	4,075,886	36,518	6,155,196	105,343	**0.662**	**0.347**	1.91
San Francisco	1,968,569	23,082	3,371,917	67,824	**0.584**	**0.340**	1.72
Miami	1,450,089	23,711	2,594,795	56,091	**0.559**	**0.423**	1.32
Chicago	3,537,689	41,348	9,733,197	220,281	**0.363**	**0.188**	1.94
Boston	1,078,622	11,852	3,124,218	66,938	**0.345**	**0.177**	1.95
Seattle	1,016,542	13,581	3,242,768	77,055	**0.313**	**0.176**	1.78
Philadelphia	1,102,432	13,738	3,929,657	91,544	**0.281**	**0.150**	1.87
Atlanta	1,709,493	21,897	6,142,692	145,985	**0.278**	**0.150**	1.86

otherwise would. A restaurant, however, is also likely to hire more employees per patron in such a situation. If these two effects are the same across industries then the ratio is not biased. The employee figures and the calculated ratios also appear in Table 5. Because the sales ratio and employee ratio are measuring the same variable (level of tourism), it is no surprise that the correlation between them is very high (.999). I have calculated the ratios of the two indices to help show that the correlation is high. Other than Miami, all of the ratios are very close to 1.85. Miami might be an outlier due to its large immigrant population and large unskilled labor pool.

A quick check of the ratios confirms many common notions about the relative degrees of tourism of the sample cities. For instance, the city with the highest ratio is Las Vegas; this conforms to expectations that Las Vegas is a highly common tourism destination. The next highest city also makes sense: Washington DC has many tourist attractions and is a common vacation destination for Americans. On the other end of the spectrum are Atlanta and Philadelphia, neither of which generally is considered a hot spot for travel. In fact, recently Philadelphia has been trying to change its reputation to a destination city. In this push, Philadelphia has been named National Geographic Traveler's America's Next Great City (Zucker 2005). City leaders hope that this press will lead to an increase in the number of tourists who visit the land of the cheese steak sandwich. The one city that is slightly anomalous is Miami. It is the only sample city that has a slightly significant change of tourism index from the sales ratio to the employee ratio. Additionally, the general conception of Miami is that it has more tourism than these ratios suggest. One potential reason is that many tourists who visit Miami do not spend money on accommodations as defined by the U.S. Census Bureau but on time-shares. These expenditures do not show up in the census reports, biasing the data.

A different measure of tourism can be created, which is based on the number of overseas travelers visiting top U.S. cities in 2003, which is from the Statistical Abstract of the U.S. (2004). The benefit of this measure of tourism is that it comes from one source, so the method of calculation is the same for every city. The drawback of this data source is that the hypothesis requires that the tourism variable reflects total tourism for a city, not just foreign visitors. Overall, this measure seems incomplete, as it is unreasonable to assume that international tourists visit cities in the same proportion as American tourists. A city like New York may have relatively more appeal to foreigners than to Americans, for instance. This absolute number can best be used if scaled. Dividing the number of international visitors by the city population standardizes the measure, but is flawed. This method of standardization is less applicable than the methods I used earlier with the accommodation and food sales figures. While the number of people that live in a city is correlated with the amount of money spent on restaurants by residents, it allows some bias to creep in. The Statistical Abstract does not explain the borders of the cities for its measure of tourism. As a result, it is difficult to match up properly the tourism measure with the restaurants. Also, this measure is unable to differentiate Manhattan from New York City, which the other measures of tourism were able to do. This is another source of potential bias. In the end, this is a tourism index, which takes the number of overseas tourists divided by the population of the city. The results are then multiplied by 100 to create a more user-friendly number. See Table 6 for a list of the cities in the sample and their relative tourism ratings via this measure.

Table 6 Overseas Traveler Tourism Index

City	Population (1000s)	Overseas Travelers (1000s)	Tourism Index
Miami	376.815	2073	**550.14**
Las Vegas	517.017	1298	**251.06**
San Francisco	751.682	1694	**225.36**
Washington DC	563.384	865	**153.54**
Boston	581.616	757	**130.15**
Atlanta	423.019	379	**89.59**
Seattle	569.101	306	**53.77**
New York City	8085.742	3984	**49.27**
Chicago	2869.121	775	**27.01**
Philadelphia	1479.339	397	**26.84**

The tourism index list conforms to a priori expectations of tourism. The tourism index measure finds Miami and Las Vegas to be the most common destination spots, which matches their reputations as vacation hot spots. Philadelphia has the lowest measure of tourism, which matches the previous measures of tourism. New York City has a relatively low tourism index compared to the other measures, which is probably due to the inability of this data set to differentiate Manhattan from the other boroughs. Most travelers probably visit Manhattan, but in this measure those tourists are being standardized by the entire population of New York City, not just Manhattan. A benefit of this measure is that the index has greater variation in it compared to the other measures of tourism. As a result, Las Vegas is no longer the clear outlier of the data set. In the end, this measure has too many flaws to be considered a primary data source, but it can be used to check the robustness of the results.

When specifying the model, an additional concern about using data on these cities is that these cities are different in more ways than just tourism. I do not want the estimates of the effect of tourism to be biased by these other characteristics. One way to mitigate this problem is to introduce city characteristic variables. Two important such variables are the cost of living and office rents. These are important because in order to specify the model precisely I must hold other costs of the restaurants constant. One of the large variable costs in the restaurant industry is the cost of rent. The consulting firm CB Richard Ellis is a leading commercial real estate services firm and has collected data on office occupancy costs worldwide semi-annually for seven years. The numbers they gather reflect the cost in dollars per square foot of office space in the given city and include total occupancy costs, not just the cost of the lease. This measure includes costs such as utilities. See Table 7 for the values of the relevant cities.

Table 7 Office Rents and Franchise Restaurant Price Index

City	Office Rents ($/sq.ft)	Franchise Restaurant Price Index	Ratio Rents / Price Index
Atlanta	20.89	0.918	22.76
Boston	39.65	0.982	40.38
Chicago	24.06	1.007	23.89
Las Vegas	27.40	1.020	26.86
Manhattan	42.38	1.094	38.74
Miami	29.77	1.059	28.11
Philadelphia	20.63	0.984	20.97
San Francisco	25.18	1.010	24.93
Seattle	24.71	0.955	25.87
Washington DC	41.84	0.986	42.43

Another reason for variation among the different sample cities is the cost of living in each location. The U.S. Bureau of Labor Statistics creates the consumer price index (CPI), which measures the prices paid by urban consumers for a representative basket of goods and services. The government measures this index for a variety of locations including specific cities and more sprawling regions. At first thought, this seems to be an excellent measure for the varying levels of prices in the cities. However, there is no city-specific number for some large cities, most notably Las Vegas in the sample. Without the proper measure, this CPI will bias the results. To get the correct measure, I once again rely on the franchise and chain data that I used to adjust the quality ratings. This assumes that the differences in prices experienced by customers at a chain or franchise in different cities is due to differences in the costs of living of those cities. As service staff or ingredients become more expensive, the restaurateur must compensate by raising the average level of prices. The prices for an average meal at the chains across different cities appear in Table 8. There is no variation for the prices of the same chains within cities. For example, every California Pizza Kitchen location in Manhattan has the same price, while that price is different from the locations in Boston. This occurs for every chain. Going through the exact same process as before, the correction multiplier can be calculated for each city, which minimizes the differences between the corrected prices and the mean prices for each chain across each city. Then the reciprocal of the correction multiplier is taken to derive the franchise restaurant price index. This is done so the numbers mimic other cost-of-living variables. If a city is more expensive, the city's correction multiplier will be less than one, whereas most cost- of-living variables show more expensive cities with higher numbers. Taking the reciprocal solves this problem. Table 7 includes the franchise restaurant price indices and the ratio of the two measures of price.

A quick perusal of the numbers confirms common perceptions about the costs of living in the various cities. By far the most expensive city is Manhattan (1.094), generally considered one of the most expensive cities in which to live. Conversely, Atlanta (.918) and Seattle (.955) are calculated to be the two least expensive cities in the sample in terms of prices. The correlation between the office rents and the price index is .47, which implies they are measuring different price effects. However, Washington DC

Table 8 Franchise Prices (in $) Across Cities

	Atlanta	Boston	Chicago	Las Vegas	Manhattan	Miami	Philadelphia	San Francisco	Seattle	Washington DC
Benihana	30		31	39	37					
California Pizza Kitchen		19	19	20	22		19			
The Capital Grille	49	53	53			57	53			54
The Cheesecake Factory	24	24	24	25		26	26	25		25
Fado Irish Pub	20		21				22			21
Hard Rock Café	21		24	24	28		23	25		
Il Fornaio				32	29			35	30	
Maggiano's	27	30	28				29			30
McCormick and Schmick's	34	38	40	43			40		34	38
Morton's	52	57	56	59	62	59	57	59	57	58
Outback	24			25	32	27				
PF Chang's	23	28	26	27		29	28		24	
Palm	54	55		55	60	61	53			56
Penang		22	20		28		23			27
Roy's	44		47	47			49	46		
Ruth's Chris	48		50	54	59	56	53	56	51	53
Seasons		58	77					61		61
Shula's Steakhouse			50		60	54	47			49
Smith and Wollensky		58	51	56	60	61	53			53

and Boston appear to be the anomalous cities because they each have relatively high rents and low price indices. Excluding the two cities, the correlation jumps to .85.

III. Theoretical Background and Literature Review

In a seminal work in 1986, Milgrom and Roberts present a signaling model where both the introductory price and the level of uninformative advertising might be used to signal an initially unobservable quality of a good. Although their paper generally has been seen as very influential, little empirical work has been performed to test their theoretical model. This paper aims to do so, but before testing it, I show that the Milgrom and Roberts world is the same as the restaurant universe previously described.

The first key feature of the Milgrom and Roberts world is that the good must be an "experience" good rather than a "search" good. The characteristics of a search good are evident on inspection, and as a result, advertising can be directly informative. Essential aspects of experience goods, however, can only be verified through use of the product. Both high and low quality firms can claim high quality in advertisements and thus these advertisements become useless in differentiating the goods. When repeat purchases are involved, there is a situation where low quality firms will not want to mimic the high quality firms in their level of advertisements. High quality firms will have more repeat business and thus are willing to spend more to gain the initial purchase. This then provides the basis of the separating equilibrium. My restaurant world fits this aspect of the Milgrom and Roberts model because the quality of a restaurant meal is unobservable before purchase; it is clearly an experience good. Additionally, the restaurant industry has a high potential for repeat business. While there are plenty of firms in the restaurant industry, many consumers show great brand loyalty, eating at the same establishments repeatedly.

The second key feature of the Milgrom and Roberts world is the concept of advertising. In their paper, they refer specifically to advertising; they also point out that the analysis applies to any observable expenditure that does not directly provide information about the product. This paper analyzes décor, which is an observable expenditure but does not shed any light on the quality of the food. The important feature of this expenditure is that it can be viewed as "burning" money. An uninformative advertising campaign and fancy décor are both methods of burning money because neither enlightens the consumer about the actual quality of the food. Admittedly, décor, as a part of the dining experience, can be valuable to the consumer in a way that uninformative advertising is not.

Another assumption of the theory is that quality is not a choice variable, but exogenously given. This assumption might be slightly problematic for the restaurant example. Quality might be a choice variable for restaurants. On one hand, in any given period restaurateurs can decide to buy lower quality ingredients or decide to prepare meals in a lower quality manner. On the other hand, the skills and talents of a chef are fixed. A poorly trained chef cannot produce the same quality food as a chef who has attended a culinary institute successfully. Additionally, a well-trained and creative chef might be unable and, more important, unwilling to produce poor quality meals. Anecdotally, restaurants do not seem to have purposefully varying food quality. An additional feature of the restaurant industry is that there are many different niches. Some restaurants fall into the trendy, expensive restaurants niche, while others cater to the quick lunch crowd. While a fast food restaurant has no desire to mimic a high quality nouveau French restaurant, it does want a reputation for being the best fast food restaurant. It would like to signal that it is a high quality fast food restaurant, not necessarily an overall high quality restaurant. It is with this thinking that the restaurant industry does fit the Milgrom and Roberts world.

Tirole (1988) simplifies the profit equations and equilibrium conditions of Milgrom and Roberts. Tirole's analysis is suitable as the starting point for this paper. For the full proof, see Milgrom and Roberts (1986).

I assume that all consumers are identical and have the same tastes. They all have the same willingness to pay for a high quality good (denoted by θ) and derive zero utility for a low quality good (and thus are not willing to pay anything for such a good). For this theory, I assume the firm (either high or low quality) has some market power and there are no strategic interactions between firms. In other words, the price and quality choices of a particular firm do not affect the decisions of other firms. This does not require a true monopoly. Restaurants do seem to exert some market power.

Assume all consumers are permanent residents of the city. Let A be the level of conspicuous expenditure (either uninformative advertising or décor), which all consumers can observe. Additionally, let C_0 denote the cost of providing a low quality meal, and C_1 be the cost of providing a high quality meal. I assume $C_1 \geq C_0$. There is a discount factor (δ), which discounts payoffs in future periods.

When every consumer tries the good in the first period, there is full information in the second period. The firm's first period profit is $P_1 - C - A$. Any increase in A is the exact same as a unit-for-unit decrease in P_1. Therefore, in this situation of full information during the second period, lowering the price in the first period is a perfect substitute for increasing the wasteful expenditure.

Consider a case in which the first period price (or wasteful expenditure) can reveal quality or, in other words, a separating equilibrium exists. In this situation, the low quality firm is unable to sell any goods during the first period because consumers derive zero utility from the low quality good and would not buy it for any price. The high quality firm charges a price P_1 in the first period. As quality is revealed in the first period, consumers know the quality of the good during the second period and will buy the good as long as it is less than or equal to their willingness to pay (θ). As a result, the firm charges a price θ in the future periods (since that is the highest amount the firm can charge). Since the firm has some market power, the price does not get driven down to cost C_1. Therefore, the firm makes a total profit of $(P_1 - C_1) + \delta(\theta - C_1)$. For this to be an equilibrium solution, the low quality firm must not be willing to duplicate this strategy. Because the low quality firm does not garner repeat purchases, its profits (if replicating the high quality firm's strategy) are $P_1 - C_0$. In the case of a separating equilibrium, the low quality firm does not sell any goods profitably, which requires $P_1 \leq C_0$.

With these expressions, the condition for the separating / revealing equilibrium can be calculated. This equilibrium exists when $\delta(\theta - C_1) \geq (C_1 - C_0)$ and the high quality firm charges $P_1 = C_0$. Thus, whether the revealing equilibrium exists depends on the relative strength of two effects. The first (left hand side) is the effect that the high quality firm generates repeat purchases with the value of $\delta(\theta - C_1)$. The second is the cost differential in favor of the low quality firm (right hand side). A low first-period price can only be used as a signal of quality when the repeat purchases effect weakly dominates the cost differential effect. When charging the price $P_1 = C_0$, the high quality firm, in fact, is burning money because it is pricing below cost as C_0 is less than C_1 (Tirole 1988).

I now introduce a new feature to this situation. Let α be the fraction of uninformed consumers in the city that I assume is constant across time periods.[5] The first period price and the wasteful expenditure are no longer perfect substitutes.

If the high quality firm used price to signal quality in the first period then the revealing equilibrium changes to $\delta(\theta(1 - \alpha) - \alpha C_0 - C_1) \geq (C_1 - C_0)$. There is not perfect information in the second period because only the informed consumers are aware of the price in the first period and only they learned the quality of the restaurant in the first period. As a result, the high quality firm can charge θ only to the locals, while tourists do not go to this restaurant. In a separating equilibrium, the low quality firm makes no profits. When all consumers are informed in the second period, low quality firms make all their sales in the first period, which is why $P_1 = C_0$. When there are uninformed tourists in the second period, however, the low firm (who mimicked the high quality firm in the first period) has profits from selling to those uninformed consumers. Therefore, in order for a separating equilibrium to exist, the high quality firm must set an even lower first period price so that the low quality firm is not profitable even with sales in the second period to the uninformed consumers.

Analyzing this quantitatively, the low quality firm makes profit equal to $(P_1 - C_0) + \alpha\,\delta(\theta - C_0)$. For a separating equilibrium to exist, this profit must be less than or equal to zero. The high quality firm then charges a price (P_1) of $C_0 - \alpha\,\delta(\theta - C_0)$ in the first

[5] This theory specifically references informed consumers. I use locals as a proxy for informed consumers. Informed consumers are equivalent to locals in this story. I use tourists as a proxy for uninformed consumers.

period. The profit of the high quality firm for the two periods is $C_0 - \alpha\,\delta(\theta - C_0) - C_1 + \delta(\theta - C_1)$. For a separating equilibrium to exist this expression must be greater than or equal to zero. Rearranging the terms, I find that the separating equilibrium exists when $\delta(\theta(1 - \alpha) - \alpha C_0 - C_1) \geq C_1 - C_0$. In the extreme case where $\alpha = 0$ (all informed), the previous condition for a separating equilibrium emerges. As α gets larger, however, it becomes more unlikely that the separating equilibrium will exist.

Alternatively, if the high quality firm used a conspicuous sunk expenditure (A) to signal quality in the first period, the separating equilibrium does not have an α in the expression. In the previous equation, α represented the fraction of people who do not know the quality of the restaurant. When quality is signaled by price only the residents know the quality, whereas when quality is signaled by a conspicuous expenditure all consumers know. In the case of restaurants, décor (A) can be seen by all consumers, locals or tourists, in any period. Therefore, the high quality firm can charge θ to everybody after the first period, not just the residents, and the low quality firm once again cannot make any profits in the second period. The separating equilibrium exists when $\delta(\theta - C_1) \geq (C_1 - C_0)$.

At first thought, it seems that a high quality firm would always prefer to signal its quality via an initial conspicuous expenditure because it always "works" regardless of the percentage of uninformed consumers in the city. Firms, however, might rather signal their quality through a lower price because consumers might derive more utility from a lower price than from a conspicuous expenditure.

In the end, the conditions for a separating equilibrium might not exist. Looking at the separating equilibrium, there are two ways in which the separating equilibrium might not exist. One situation is if the gains from future sales (left-hand side of the expression) are low. If this is the case, then the high quality firm has no incentive to burn money in the first period to signal its quality because it will not gain much in the future through its revealed high quality. A second situation is if the price differential between producing low and high quality goods is high. Signaling high quality then becomes unprofitable because the high quality firm would lose more money in the first period than can be recouped in the future periods. An example of this happening is a "tourist trap," where all the restaurants in a given area (usually near a common tourist attraction) are low quality, and the consumers know they are low quality. No signaling of quality occurs in such a situation.

These different equilibrium conditions suggest several things. As α increases (city becomes a higher tourism location), the conditions suggest that a restaurant is more likely to signal its quality through a conspicuous initial expenditure rather than through price. There are two interpretations for this. First, as tourism increases, the high quality restaurant shifts some of its signaling from price to expenditure. In the extreme, in a city with no tourism, a high quality restaurant only signals via price; in a city with only tourism, a high quality restaurant only signals through décor. As tourism gradually changes, the ratio between the two signals also steadily changes. Second, rather than gradually changing between the two types of signals, these equilibrium conditions also might suggest that there is a critical value for uninformed consumers (α). If the percentage of tourists is greater than the critical value then the high quality restaurant only uses price to signal and if α is less than this critical value, then the restaurants use décor to signal its quality.

There has been other non-theoretical literature that is relevant to this topic. Berry and Waldfogel (2004) analyze how the size of markets affects product quality. They find that in industries where quality is driven largely by variable costs, the range of qualities increases with market size. When quality is produced with variable costs, it is easier to create a wide range of product qualities, which can all exist in the market because they can be offered at different prices. Larger markets will have an easier time fragmenting, creating niches for varying product qualities. The Berry and Waldfogel paper has implications for this study because the authors use the restaurant industry as the example of an industry that is driven by variable costs. While the theory they investigate is based on the variable costs of the restaurant industry, I am focusing on a fixed and sunk cost of owning a restaurant, décor. They use Zagat's survey ratings for their data on restaurant quality and standardize the ratings through chains. As explained earlier, a similar method is employed to standardize quality ratings for the present study.

This study also rests on some theories behind reputation in game theory. Dellarocas (2003) presents an overview of how a firm forms a reputation. A necessary feature for the formation of a reputation is that the consumer is uncertain about some property of the producer, such as quality, in a repeated game setting. It is also necessary that the initially uninformed consumers can learn about a particular producer's outcomes over some period. This can be either through the consumer repeating business himself or through another mechanism such as word of mouth. A producer can convince a consumer that they are of a specific type (say high quality) by repeatedly choosing the actions associated with that type. A crucial aspect for reputation effects to occur is that the uninformed consumer has some doubt about the property initially. The restaurant industry fulfills all of these major requirements for the creation of a reputation in locations where there is repeat business. As explained earlier, restaurants are an experience good, thus consumers are in doubt about the true quality of the good until they actually try it.

Additionally, restaurants continually try to establish a certain reputation by serving the same quality of food repeatedly. It can be argued whether the quality of food in a restaurant is endogenous. On one hand, chefs may have immutable qualities that prevent them from creating meals that are anything but of the true quality of the chef. In order for reputation to be meaningful chefs must have variable talents and can change the quality of food from one period to the next or there must be imperfect monitoring of the quality the chefs produce. The former assumption is defended easily because one of the most important components of the quality of a meal is the quality of the ingredients. Ingredients are a variable cost: a chef can order food of a different quality level from one period to the next. Also, this quality variation from period to period does not necessarily have to be intentional. A chef may aim to serve only high quality products but may have received a shipment of bad fish. This uncertainty creates complexity in the reputation model because it introduces probabilities. After having a high quality meal at a restaurant, the consumer, in the simple case, knows the restaurant is high quality. In the uncertain real world, however, having a high quality meal only increases the probability that the producer is of high quality.

The main focus of the Dellarocas paper is the digitization of feedback mechanisms. A feedback mechanism is some structure that collects reviews about a given firm or product and gives this accumulated information out to other consumers.

The growing prevalence of such mechanisms might blur the distinction between locals and tourists. As a result, tourists might not be uninformed (Dellarocas 2003). I claim that in cities with high levels of tourism, the restaurants are playing many one-period games because these tourists are not repeat buyers. In the limit, I described City A as a resort island with no repeat customers. This claim was easier to make before the emergence of the Internet. Before the Internet, there were two types of costs associated with finding out information about restaurants in other cities. One was the actual cost of purchasing a guidebook to get the information; the other was the non-monetary search costs of taking the time to find the proper and accurate information. For instance, it was costly to find out what restaurants were located near a hotel. The emergence of the Internet has reduced dramatically both costs. Web sites like Epinions.com allow consumers to post and read about the experiences at a variety of businesses such as hotels and restaurants. This service both decreases search costs and the monetary costs that used to be associated with such information gathering. Additionally, CitySearch.com allows consumers to map their hotels and show which restaurants are close. A consumer can access quickly and inexpensively copious information about the qualities of restaurants. This turns the one-period games that restaurants play in tourist cities into a repeated game because the history of the restaurants' previous actions is available. The Internet levels the playing field for consumers by allowing all consumers to access information that once was held privileged by those who lived in a particular city. This suggests that if I am able to show any significant results with these reputation mechanisms in place then my results would be even stronger without them.

I claim, however, that even with the cheaper manner of accessing information, the proportion of "informed" consumers in tourist cities is still far less than the proportion in cities without much tourism. Additionally, the information available on these websites is somewhat suspect because there is no substitute for discerning the quality yourself. Furthermore, before the Internet, consumers still had access to friends, family, and concierges who passed on information in much the same way as current feedback mechanisms. While these certainly were not efficient mechanisms, the increased prevalence of the Internet has not completely changed the landscape. This claim is based on Bolton, Katok and Ockenfels' (2004) experiment that compared online feedback mechanisms to traditional partner market relationships (person to person). They found that online feedback systems provide fewer incentives to trust or to be trustworthy than partner markets where the long-term relationship is more important. Consumers end up trusting themselves more than other feedback mechanisms because of the personal element. This suggests that the growing prevalence of internet opinion sites may not have a major impact on restaurants' incentives to burn money to signal quality. Also, Dellarocas claims that current online feedback mechanisms still leave much to be desired in terms of their efficacy. As these mechanisms become better at replicating personal experience and become the norm for tourists, the restaurants in tourist cities might begin to play a different game that might converge to the type of repeated game that is played in non-tourist cities. However, the Bolton, Katok, and Ockenfels experiment suggests that while, in theory, online reputation mechanisms can mimic traditional person to person relationships, in practice, there appears to be a difference.

Moving from the world of the Internet to more old fashioned means of relaying information, Chossat and Gergaud (2003) analyze quality ratings of restaurants from the GaultMillau guidebook. This guidebook claims to rate chefs only on the quality of food rather than other potentially influencing factors such as décor, or as they call it, setting. They find that there are two routes to becoming a highly rated chef. One strategy is to produce high quality food, while the other is to invest in setting, which includes the wine cellar and service in their specification. The authors claim that the existence of both strategies leads some chefs to over-invest in décor. They estimate a model where the grade (which is based supposedly only on food quality) is the dependent variable and a number of variables measuring food quality and a variable describing setting are the main explanatory variables. They find a statistically significant and positive coefficient on the setting variable. This is an important result for the current study because the model I propose includes two variables that measure the same thing, décor and food quality. Chossat and Gergaud claim that setting, or décor, helps explain the food quality grade, while in my model I claim that tourism explains décor while using food quality as another explanatory variable to account for some unobserved bias. The direction of the causal relationship differs in the two models, but Chossat and Gergaud do not propose a theoretical reason for choosing their specification.

IV. Empirical Décor Signaling Model

Earlier I stated the first part of my hypothesis that as the tourism in a city increases, the high quality restaurants in that city will end up investing heavily in décor initially as a signal for its quality. This is in contrast to the high quality restaurants in cities with little tourism. In low tourism cities, restaurants can burn money in the first few periods, not by spending on décor, but by introducing a low price. Once they have signaled their quality and developed a reputation for being a high quality establishment, they can increase their price and not lose much of their customer base. For most cities, I only have access to data for the most current year, which means I cannot observe the dynamics of prices over time. In the model, however, décor will not change from the initial conspicuous expenditure. While some restaurants go through redecorations, most have largely the same décor as in the first few periods.[6] Thus, décor can be used to test the hypothesis. I claim that, *ceteris paribus,* as tourism increases so will décor. This leads to the following model:

$$Décor_{ij} = \alpha + \beta_1 Tourism_j + \beta_2 Adjquality_{ij} + \beta_3 \boldsymbol{Cuisine_{ij}} + \beta_4 PriceIndex_j + \beta_5 Rents_j + \varepsilon_{ij} \quad \textbf{(1)}$$

where *décor* is the Zagat rating of décor, *tourism* is one of the tourism indices, *adjquality* is the Zagat quality rating with the correction using chains, ***cuisine*** is a vector of dummy variables with a value of one for the cuisine type as denoted by Zagat and a value of zero for all of the other cuisine types, *priceindex* is the price index for cost of living correction found using chains, and *rents* is the measure of the cost of renting office space in each city as described earlier. The subscript *i* indexes restaurants, and the subscript *j* indexes cities. I include the city characteristic variables *priceindex* and *rents* to help control for city factors that might influence the decision on how much décor to have.

I include the dummy variables for cuisine type because of the concern that different cities have a different mix of restaurant types that might affect décor ratings.

[6] While many restaurants do have similar décor to when they first opened, such décor might get old after several years, lowering the décor rating. Because I assume that the errors are distributed identically and evenly across cities, this problem is not large enough to affect my results.

For instance, Las Vegas has a higher proportion of Mexican restaurants than Philadelphia (nine percent and four percent of all restaurants, respectively). Furthermore, Mexican restaurants have a lower décor rating than other types of cuisine-specific restaurants even after controlling for quality. Without controlling for cuisine type, the results would show that higher tourism (Las Vegas) leads to lower décor. The model would be picking up the fact that Las Vegas, which happens to be a high tourist city, has more Mexican restaurants than other cities. This can be addressed by adding a dummy variable for each restaurant type. I assume consumers across cities have constant taste preferences for different types of restaurants. In other words, a Mexican restaurant in Manhattan with an adjusted quality rating of 20 would also have an adjusted quality rating of 20 if it were in Seattle. The results reporting coefficients and standard errors on the dummy variables appear in Appendix 1 for every model that is run.

A feature of these data is that the tourism index only varies at the city level. This means that while there are thousands of data points, there is only one unique tourism index number per city in the sample. Every restaurant in Seattle has the same tourism index value because that value holds for the entire city. In one sense, I do not have thousands of independent observations. Ordinary least squares regression assumes independently and identically distributed errors, which will lead to an underestimate of the standard errors if errors within a city are, in fact, not independent, but are correlated. Following Bertrand, Duflo, and Mullainathan (2004) and Moulton (1990), I correct for this by allowing for arbitrary correlation across error terms within a city through clustering. All computed standard errors are robust to this, as well as to arbitrary forms of heteroskedasticity.

In Table 9, I present the results of this model for two specifications. One uses the sales measure for tourism, while the other uses the employee measure for tourism.

Table 9 Effect of Tourism on Décor

Dependent Variable: Décor

Variable	Sales	Employees
Tourism (β1) (sales)	.265*** (.043)	
Tourism (β1) (employees)		.508*** (.076)
AdjQuality (β2)	.376*** (.042)	.376*** (.045)
Cuisine (β3)	See Appendix 1	
Price Index (β4)	-7.61* (3.90)	-7.79* (3.78)
Rents (β5)	.010 (.025)	.011 (.024)
Intercept	13.1*** (3.51)	13.2*** (3.23)
#obs	5180	5180
R2	.41	.41

*Robust clustered standard errors are in parentheses. The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

A number of striking points comes out of this model. Primarily, I am interested in the coefficient on *tourism*. As expected the coefficient on tourism is positive in both specifications with very high levels of statistical significance with p-values at zero. The coefficients are also economically signifcant. For the model with the sales ratio as the tourism measure, the coefficient implies that for every one-unit increase in the ratio, the level of décor rating for the restaurant will increase by .265. A specific case from the sample offers a sense of the size of the coefficient. The difference in the tourism index for sales between the highest tourism city (Las Vegas) and the lowest tourism city (Atlanta) is 5.988. Thus, the model predicts that if the exact same restaurant existed in two cities that were exactly the same except for tourism, the high tourism city restaurant will have a décor rating that is 1.6 units higher. Similarly, using the tourism index for employees, the model also predicts a difference of 1.6 in décor rating for the exact same restaurant in two cities with tourism levels equivalent to Las Vegas and Atlanta. Tthe average décor rating for a restaurant in the sample is 16.4, so an increase from the least to the most tourism location would be approximately a 10% boost in a restaurant's décor rating.

The coefficient on *adjusted quality* is also significant and of the expected sign. The point estimate is unaffected by the measure of tourism. The model predicts that for every one point increase in the food quality rating of a restaurant, *ceteris paribus*, the restaurant will have a décor rating of approximately .4 higher. This conforms to the generally held notion that most high quality restaurants have better décor.[7]

The coefficients on the *price index* also are consistent across the models, and they have the expected negative sign. As a city becomes more expensive, (a higher price index) the décor rating will go down. Also, as the city becomes more expensive, the price of décor presumably rises as well, possibly leading the restaurant to choose less décor. Additionally, the décor rating may pick up the spaciousness (or lack thereof) of the restaurant, which would show up in the coefficient on *rents*. Many restaurants have a

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[7] It is difficult to compare this result to that of Chossat and Gergaud (2003) because the rating system they used does not have much variation. In their data set, there are only three levels for a décor rating.

lower décor rating due to the cramped restaurant floor. As rents increase, it becomes more expensive to have more restaurant space. The restaurant might try to fit in more seats in the smaller space leading to tight eating quarters and a lower décor rating.

The restaurant Aki in Manhattan is an example of a space-constrained restaurant. The Zagat Survey comments that "the 'very cozy' quarters offer barely enough seating to 'fight over.'" Aki has a décor rating of 13, and having dined at the restaurant, I can say that this very low décor rating is mainly due to the cramped space, not the overall decoration. The positive coefficient on *rents* is inconsistent with this idea, but the estimates are not significant to the 10% level.

Most results for the cuisine dummy variables (seen in Appendix 1) are consistent with conventional wisdom about cuisine types. The omitted variable is the cuisine type for Afghan food (it is first alphabetically). The interpretation for each dummy variable is then how the décor rating would change if the restaurant changed its food type from Afghan to a different cuisine. For instance, the point estimate for the cuisine type of "fish and chips" is -3.77. This means that if two restaurants had all the same characteristics except for cuisine type, the fish-and-chips restaurant would have a décor rating of 3.77 points lower than that of one with Afghan cuisine. Most fish-and-chips restaurants are not known for their fancy décor, so the result is unsurprising. On the other end of the spectrum, the point estimate for Tuscan-style restaurants is 4.22. This means that a Tuscan restaurant will have a décor rating of 4.22 points higher than that of an Afghan restaurant. Many of the cuisine dummy variables are not individually statistically significant. The joint significance of all the dummy variables is calculated using an Ftest. The resulting value is .2245, which means that, taken together, the cuisine dummy variables are not statistically significant to the 10% level.

In order to further test for the robustness of my results, I can run the same regressions, but with a subset of the data. The theory, as I have described it, relates most directly to high quality firms and their pricing and décor decisions. I expect the results of the tourism variable be as significant and of the same sign when I only use restaurants of high quality. I perform the analysis limiting the sample to restaurants that are above the median quality rating. I also consider a sample limited to restaurants above the median adjusted quality rating. The samples largely overlap, although there are some differences near the median. The results of these two regressions follow in Table 10. The median quality rating of all the restaurants is 21, and the median adjusted quality rating is 20.74.

These robustness results are heartening for two reasons. One, the point estimates on *tourism* are higher for these higher quality restaurants, which adds to the economic significance of the results. Additionally, these point estimates continue to be significant to the one percent level. The coefficient on *adjusted quality* does not change dramatically when the data is restricted that means there is no change in the effect of quality on décor when only high quality restaurants are analyzed. Altogether, the fact that the results become more significant when the data set is restricted to only high quality restaurants gives further credence that Milgrom and Roberts theory applies to the restaurant industry. It seems that the first part of my hypothesis is correct.

In looking at the tourism variable across the different cities, the values are not evenly distributed. In fact, Las Vegas has so much tourism that it appears as an outlier for the total set of data. I want to make sure that the very high Las Vegas tourism number

Table 10 Effect of Tourism on Décor for High Quality Restaurants

Dependent Variable: Décor

Variable	Above Median Quality		Above Median Adj. Quality	
	Sales	Employees	Sales	Employees
Tourism (β1) (sales)	.309*** (.072)		.333*** (.059)	
Tourism (β1) (employees)		.586*** (.136)		.632*** (.107)
AdjQuality (β2)	.346** (.130)	.347** (.129)	.359*** (.095)	.359*** (.092)
Cuisine (β3)	See Appendix 1			
Price Index (β4)	-5.85 (3.80)	-6.04 (3.91)	-7.71* (3.87)	-7.89* (3.83)
Rents (β5)	-0.007 (.028)	-0.006 (.028)	0.008 (.027)	0.010 (.027)
Intercept	13.8*** (3.72)	13.9*** (3.99)	15.0*** (3.73)	15.1*** (3.99)
#obs	2026	2026	2496	2496
R2	.44	.44	.43	.43

*Robust clustered standard errors are in parentheses. The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

is not alone creating the significant results. One way to correct for this is to use a median regression that regresses to the median rather than to the mean as regular ordinary least squares regression does. By regressing to the median, it will minimize the impact of the high value of tourism for Las Vegas. When calculating averages, the mean can be influenced by a few very high or low data points, while those points do not influence the median. The same occurs with mean and median regressions, respectively. The same specification is used as in equation 1. The results of the quantile regression to the median appear in Table 11.

Table 11 Median Regression for the Effect of Tourism on Décor

Dependent Variable: Decor

Variable	Sales	Employees
Tourism (β1) (sales)	.252*** (.043)	
Tourism (β1) (employees)		.485*** (.101)
AdjQuality (β2)	.482*** (.030)	.482*** (.026)
Cuisine(β3)	See Appendix 1	
Price Index (β4)	-9.22*** (2.55)	-9.26*** (1.80)
Rents (β5)	.011 (.013)	.011 (.009)
Intercept	12.6*** (2.50)	12.6*** (1.51)
#obs	5180	5180
R2	.27	.27

*Bootstrapped standard errors are in parentheses. The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

Once again, these robustness results are heartening. The point estimates on all of the variables remain relatively unchanged when regressed to the median instead of the mean. This signals that the high tourism level of Las Vegas is not necessarily having a disproportionate effect on the results. Overall, the model does not do as good of a job describing the data, which can be seen with the lower R-squared value (.27 from .41).

While the median regression assuages some doubts about Las Vegas disproportionately affecting the results of the model, I do more analysis to confirm this finding. The simplest way to ensure Las Vegas is not solely driving the main results of the model is to exclude the city from the sample entirely. The model I run is the exact same as in equation 1 above. Table 12 presents the results of the model with and without Las Vegas for easy comparison. I only run the regressions with the sales tourism ratio because there has been no discernible difference between the two results in the previous regressions.

By excluding one city from the sample (Las Vegas), all statistical significance on the variable of interest *tourism* is lost. The p-value on *tourism* for the model without Las Vegas is a very high .886, which means that the coefficient on *tourism* is not statistically different from zero. In this case, tourism does not help explain the décor decisions of different restaurants. Additionally, not only is the result not statistically significantly, but the point estimate has the opposite sign from what the theory and my hypothesis predict. The negative sign implies that as a city has more tourism the décor of restaurants, *ceteris paribus*, will be lower. This result runs contrary to the story presented earlier.

One way to continue this analysis is through the plotting of residuals both including and excluding Las Vegas. I want to see the partial association between décor and tourism. I can do so by first regressing *décor* on all of the explanatory variables from equation 1 except for *tourism*. Then I construct the residuals from that regression and call it "residual decor." Next, I regress my tourism index on all of the explanatory

Table 12 Effect of Tourism on Décor with and without Las Vegas

Dependent Variable: Décor

Variable	With LV	W/out LV
Tourism (β1)	.265***	-.233
(sales)	(.043)	(1.57)
AdjQuality (β2)	.376***	.386***
	(.042)	(.040)
Cuisine(β3)	See Appendix 1	
Price Index (β4)	-7.61*	-6.98
	(3.90)	(3.94)
Rents (β5)	.010	.016
	(.025)	(.033)
Intercept	13.1***	12.3***
	(3.51)	(3.46)
#obs	5180	4853
R2	.41	.42

*Robust clustered standard errors are in parentheses. The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

variables except for *tourism*. The residuals from this regression, I call "residual tourism." Finally, I plot residual decor against residual tourism. This plot shows the relationship between residual decor and the variation in tourism that is independent of variation in the other explanatory variables. The scatterplot using all restaurant observations does not lend much information because most residuals are very close to one and there are more than five thousand data points. I run a regression for residual décor against residual tourism. As expected, the coefficients on residual tourism is the exact same as β_1 in Table 12 when Las Vegas is both included and excluded. However, because the scatterplot does not give much insight, I construct a slightly different scatterplot that is easier to read. For each city in my sample, I take the mean for both residual décor and residual tourism and plot the mean residual décor against the mean residual tourism. This diminishes the number of data points from approximately five thousand to nine or ten. I only have unique values of tourism for each city, so in one sense I only have nine or ten observations that are aggregated over all the restaurants in a city. Figure 1 shows the partial association between décor and tourism averaged over cities including Las Vegas, while Figure 2 excludes Las Vegas. The figures also show the linear fit for the data points. The linear fit is weighted by the number of restaurants in each city in order to account for the fact that each point is the average for each city. An unweighted regression using averages is heteroskedastic. The results of the weighted linear fit appear in Table 13.

Table 13 Regression Results of Partial Association when Averaged Over Cities

Dependent Variable: Residual Decor

Variable	With LV	W/out LV
Residual Tourism	.260*	-.125
(sales)	(.118)	(1.83)
Intercept	0	0
	(.153)	(.164)
#obs	10	9
R2	.38	.001

*The number of asterisks refers to the level of significance: 1 for 10%, 2 for 5%, 3 for 1%

Figures 1 and 2 illustrate the results of the analysis. The size for each marker is adjusted to show how much weight the data point receives. In Figure 1, the linear fit line

Figure 1 Partial Association between Residual Décor and Residual Tourism Averaged Across Cities (including Las Vegas)

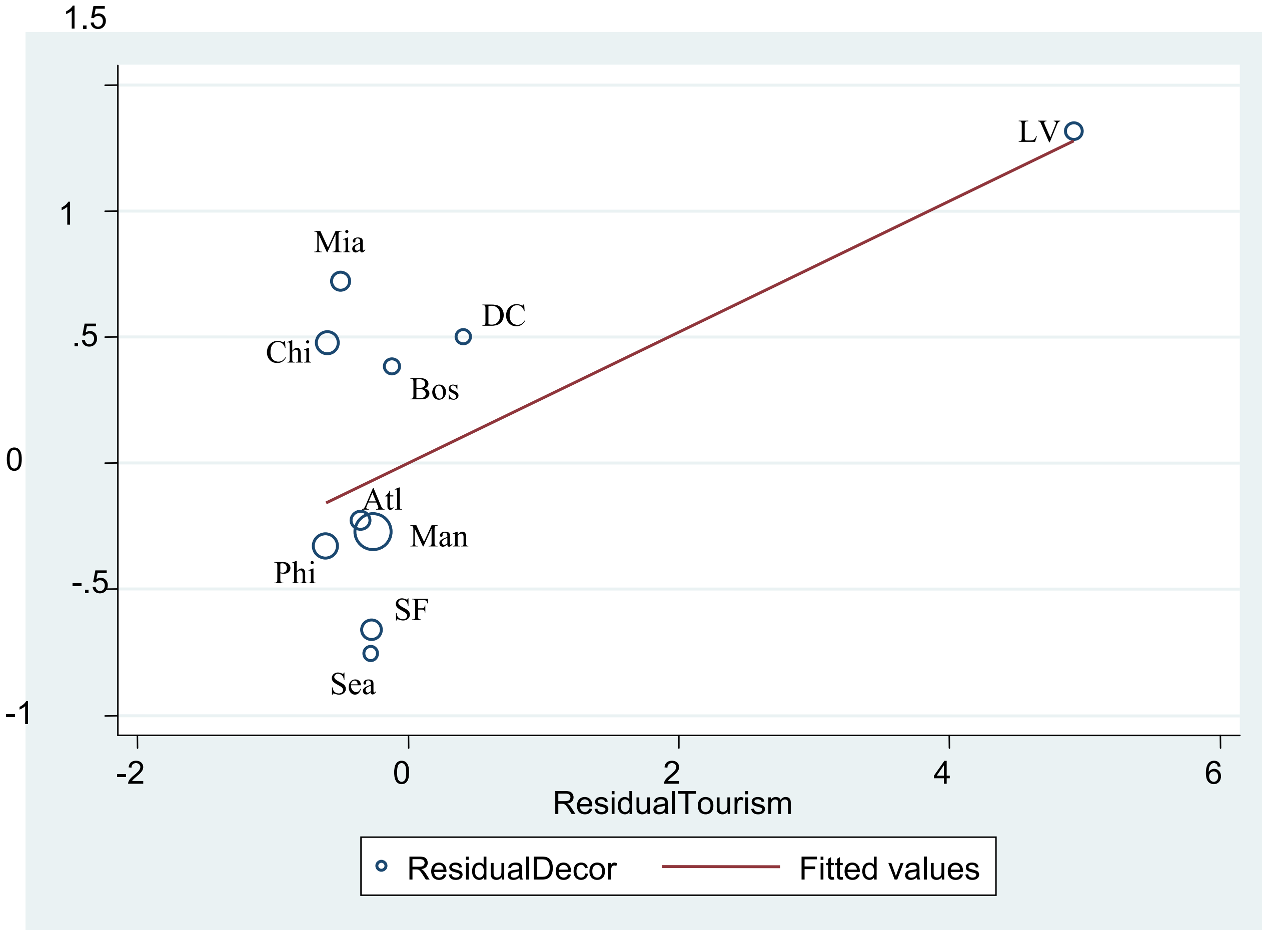
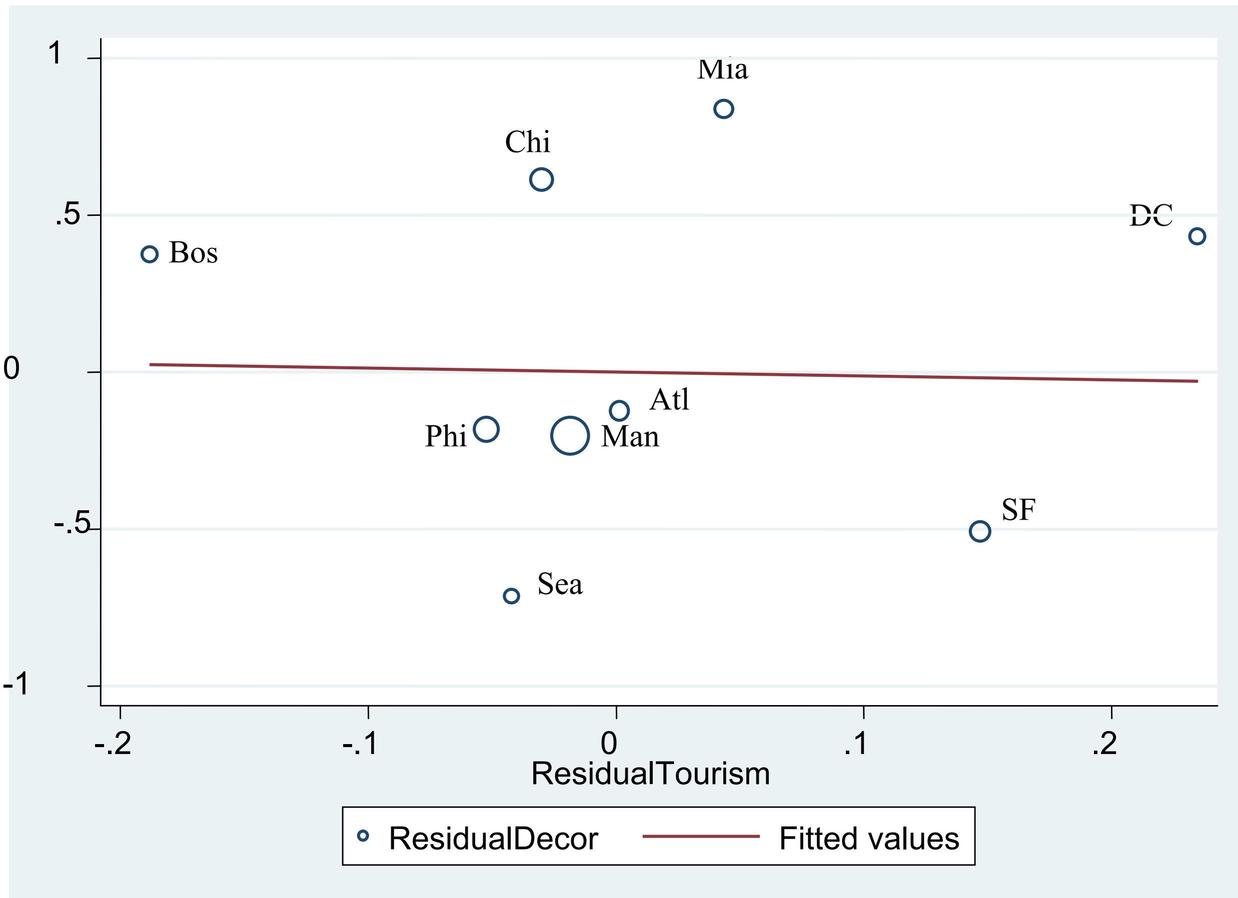


Figure 2 Partial Association between Residual Décor and Residual Tourism Averaged Over Cities (excluding Las Vegas)



splits nine of the data points that are closely bunched together and goes almost directly through the data point referring to Las Vegas, which is a large distance away from the other points. Since the residual tourism of Las Vegas is so much greater than that of the other cities, it seems that Las Vegas is unduly affecting the estimated coefficient. In this case, the data point happens to fall at a place that gives the slope of the line a positive number. Figure 2 shows the plot of points when Las Vegas is excluded from the onset. As suspected, when Las Vegas is excluded the remaining points appear randomly scattered with no clear relationship. This leads to the slope of the line to be about zero.

I further evaluate the robustness of the results by using an entirely different measure of tourism. I can run the same regression as stated in equation 1, but use overseas travelers per capita as the tourism index. While there are a few problematic features of this measure as compared to the one I use for the primary analysis, running the regression with this variable might provide some useful information. This measure is clearly measuring a different type of tourism because the correlation between the two measures for the ten cities is only .24. Running this regression will test the robustness of the results for when Las Vegas is both included and excluded. A key feature of this measure of tourism is the spread of the points. No longer is there one data point that is far higher or lower than the others. The results of the model appear in Table 14.

Once again, I am most interested in the magnitude, sign, and significance of the coefficient for *tourism*. When all of the cities of the sample are included, the results show that as tourism increases the level of décor also increases, and it is significant to the 5% level. This result confirms the earlier findings and shows that no matter the measure of

Table 14 Effect of Tourism on Décor with Overseas Travelers Tourism Index

Dependent Variable: Décor

Variable	With LV	W/out LV
Tourism (β1) (overseas travelers per capita)	.0022** (.0010)	.0017 (.0010)
AdjQuality (β2)	.372*** (.047)	.387*** (.042)
Cuisine(β3)	See Appendix 2	
Price Index (β4)	-7.79** (2.60)	-8.20** (2.65)
Rents (β5)	.013 (.022)	.019 (.022)
Intercept	13.2*** (2.60)	13.2*** (2.58)
#obs	5180	4853
R2	.41	.42

*Robust clustered standard errors are in parentheses. The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

tourism, there appears to be a significant effect of tourism on the décor decisions of restaurants as theory predicts. This time, however, when Las Vegas is excluded from the sample, the results are still not statistically significant, but are closer to having significant p-values. The magnitude is slightly lower, but the coefficient remains positive as theory predicts. While the statistical significance is less than when Las Vegas is included, the coefficient on *tourism* is still significant to the 15% level, which is more significant when compared to the model that used the sales ratio measure of tourism. The results are robust to different measures of tourism when Las Vegas is included, but when Las Vegas is excluded the results are sensitive to the measure of tourism. This lack of robustness slightly tempers the concern that Las Vegas alone is driving the main results.

While the large change in results due to the exclusion of Las Vegas is troubling, theory can explain one possible reason for this outcome. As explained in Section III, theory suggests two possible interpretations for how the percent of locals changes the optimal signaling strategies. The first is the "continuous" interpretation. This states that as tourism in a city increases (α decreases), the restaurant shifts its signaling strategy from a low price to conspicuous expenditure smoothly. In other words, for every small change in α there is a change in the allocation of burnt money for every α. The second interpretation is the "tipping point." This interpretation suggests that once α reaches a critical value, the restaurant wholly shifts its signaling tactic from low price to conspicuous expenditure (or vice versa). When α is above this tipping point restaurants burn money either through a low price or a conspicuous initial investment, and when α is below this value restaurants burn money solely through conspicuous expenditure. To the extent that the tipping point interpretation is correct, it is possible that Las Vegas is the only city for which α is below the tipping point and as a result is the only city for which there is any signaling done through décor. Theory does not shed insight into which interpretation is correct. The only way to determine how firms adjust their strategy in response to tourism is by having more locations in the sample with a more evenly distributed tourism levels. Because there is such a large gap in tourism between Las Vegas and the other cities, I cannot evaluate whether there is a critical value of α.

This first empirics section analyzed the effect of tourism on the décor levels of restaurants. Overall, the results are mixed and depend on whether Las Vegas is included in the model. When Las Vegas is included, the results suggest that the Milgrom and Roberts theory does apply to restaurants; when Las Vegas is excluded the results do not provide evidence that restaurateurs make decisions in accordance with the theory. The next section uses a different model to analyze a different a second testable hypothesis of the theory.

V. Empirical Price Signaling Model

While the first model I have presented indicates that the Milgrom and Roberts separating equilibrium might exist, the real question is whether it is the selected equilibrium. In fact, the results presented in Section IV could support a wholly different conclusion. Perhaps it is the case that consumers desire a different dining experience when traveling. For instance, when on vacation, consumers might want elaborate décor and great service because they want to be treated better than they are at home. These same consumers do not care for the same showy experience when dining at home. I call this the "dining experience" hypothesis. Interpreting the earlier results with this line of thinking, one can conclude that as tourism in a city increases, the décor also will increase because tourists have greater demand for elaborate décor and the restaurants respond appropriately. Specifically, Las Vegas is known for its over-the-top décor, neon lights, and flashy signs. In some sense, tourists go to Las Vegas expecting and demanding this environment. Restaurants in Las Vegas may have fantastic décor, not to signal high quality, but because tourists want to dine in places with lavish décor. This alternative story does not involve any signaling behavior. It is possible, however, to differentiate between these two competing hypotheses by running another set of regressions.

The signaling story I have presented does not solely predict that increases in tourism will increase décor, *ceteris paribus*. The story suggests that restaurants in a high tourism city are playing a one-period game each period. Therefore, in order to signal quality, the restaurant must burn money on décor rather than a low price. A new restaurant should not behave differently in its pricing from a well-established restaurant due to the structure of the one-period game. This is different than restaurants in a low tourism city where the firms play a repeated game. In the repeated game setting, a new restaurant has a choice for how to signal its quality. It can spend money on décor as in the high tourism city or it can charge a low price during the first few periods as a way of burning money and develop a reputation for high quality. Thus, the theory predicts that new restaurants will behave differently in terms of pricing decisions than well-established restaurants in period one. The dining experience hypothesis does not predict these results, so we can run a regression to differentiate the two hypotheses. The dining experience hypothesis does not predict any price differences between new restaurants and established restaurants in both tourist and non-tourist cities. The signaling hypothesis predicts that new restaurants in a low tourism city will have a lower price, *ceteris paribus*, than new restaurants in a high tourism city. Alternatively, the dining experience hypothesis predicts that new restaurants will have the same price, *ceteris paribus*, in low tourism cities as high tourism cities.

I am able to pinpoint new restaurants because in early 2006, Zagat released updated rankings for two cities in the sample, Manhattan and Las Vegas. Through comparison of the two data sets, I created a dummy variable "new," which has a value of one for all restaurants that were included in the Zagat Survey for the first time. There is a concern that a restaurant was included for the first time in the Survey, but is not a "new" restaurant and has existed for several years. This restaurant then would be coded as "new," when in actuality it should behave like an established restaurant. I am not worried about this potential bias because the Zagat Survey is exceptionally popular for both Manhattan and Las Vegas, and it has had surveys for an extended period of time. It is unlikely that an established restaurant would not have been rated until 2006. Another potential bias is the existence of "new" chains or franchises that already have establishments in the city. Theory suggests that while the physical location for such a restaurant is new, it is not new from a reputation standpoint. I have coded such restaurants zero because their sister franchises already have developed a reputation.

Las Vegas and Manhattan are the only two cities where there is data to determine new restaurants. These two cities are suitable to test the predictions of the theory because Las Vegas has far more tourism than Manhattan no matter the measure of tourism. Theory then predicts the two following models

$$Price_{Man} = \alpha_{Man} + \beta_{1Man}\, New + \beta_{2Man}\, Quality + \beta_{3Man}\, Décor + \beta_{4Man}\, Service + \beta_{5Man}\, \mathbf{Cuisine} + \beta_{6Man}\, \mathbf{Neighborhood} + \varepsilon \quad \mathbf{(2)}$$

$$Price_{LV} = \alpha_{LV} + \beta_{1LV}\, New + \beta_{2LV}\, Quality + \beta_{3LV}\, Décor + \beta_{4LV}\, Service + \beta_{5LV}\, \mathbf{Cuisine} + \beta_{6LV}\, \mathbf{Neighborhood} + \varepsilon \quad \mathbf{(3)}$$

where the subscript "Man" refers to restaurants in Manhattan; the subscript "LV" refers to restaurants in Las Vegas; *price* is the average price of a meal at the restaurant; *new* is the dummy variable which is one if the restaurant is new; *quality*, *décor*, and *service* refer to the quality, décor, and service ratings for the restaurant; ***cuisine*** is a vector of dummy variables with a value of one for the cuisine type as denoted by Zagat and a value of zero for all the other cuisine types; and ***neighborhood*** is a vector of dummy variables with a value of one for the neighborhood as described by Zagat and a value of zero for all of the other neighborhoods.

I do not need to include any city specific characteristics or be concerned with city specific exogenous shocks because each model only includes those restaurants of a specific city. This allows for a very parsimonious and clean model. I have included quality, décor, and service as explanatory variables because it is expected that as a restaurant changes any of the three, the price of a meal also will change. Similarly, I have included the dummy variables for cuisine type because certain types of restaurants may have higher prices, all other things equal. For instance, a seafood restaurant might be more expensive solely due to the price of seafood and not other factors. The inclusion of cuisine type dummy variables accounts for this possibility. Additionally, I have included neighborhood dummy variables because certain neighborhoods might be more trendy and have higher prices because they are trendy or because rent is more expensive in trendy neighborhoods. This could pose a problem for my model if a disproportionate number of new restaurants are in a particularly trendy or depressed neighborhood. If neighborhood is not taken into account, the *new* variable will pick up this unwanted effect.

I want to test whether being a new restaurant affects price differently in the two cities, *ceteris paribus*. The two key coefficients in these models are β_{1Man} and β_{1LV}. Theory predicts that the coefficient on *new* in equation 2 should be negative and significant, while the coefficient on *new* in equation 3 should be insignificant or close to zero. In other words, new restaurants in Manhattan should have lower prices, whereas new restaurants in Las Vegas should have the same price as comparable establishments. The results of this model appear in Table 15.

Table 15 Effect of Being New on Restaurant Pricing

Dependent Variable: Price

Variable	Manhattan	Las Vegas
New (β1)	-1.94**	.83
	(.88)	(1.21)
Quality (β2)	.71***	.28
	(.15)	(.22)
Décor (β3)	1.47***	1.34***
	(.10)	(.19)
Service (β4)	1.78***	2.11***
	(.18)	(.32)
Cuisine (β5)	See Appendix 1	
Neighborhood (β6)	See Appendix 1	
Intercept	-37.2***	-29.3***
	(7.84)	(7.51)
#obs	1639	382
R2	.72	.87

* The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

The coefficient on the *new* dummy variable for Manhattan is significant at the 5% level and means that if a restaurant is new the price of an average meal will be about $1.94 less than for that same restaurant if it were established, holding all other variables constant. This result conforms to theory that predicts that in a (relatively) low tourism city, a restaurant in the first period can signal its quality by offering a low price. After doing so, the restaurant will gain a reputation for its quality and, over time, can increase its price. The result is of particular interest because theory suggests that a new restaurant can signal its quality through either décor *or* a low price. The ability to observe significantly lower pricing for new restaurants lends credence to the model.

The second prediction from theory is that the new restaurants in Las Vegas will be less likely to have low prices, *ceteris paribus*. The estimated coefficient is smaller, positive, and not significantly different from zero. These results not only lend support to the theory described by Milgrom and Roberts, but also help to dismiss alternative hypotheses that the first empirical model was not able to dismiss.

For both samples, the coefficients on the variables *quality, décor, and service* can all be interpreted similarly. A one-point increase in the rating of one of the three variables will lead to the average price of a meal to increase by the coefficient. For instance, in Manhattan, an increase in the service rating of one point increases the average price of a meal by 1.78 dollars. While the regression results for *new* differ substantially for the two different cities, the coefficients on the other variables are very similar. The largest difference between coefficients is for quality, but the difference is still less than 50 cents for a one-point change in the food quality rating. This suggests that food quality, décor, and service affect price similarly across cities, which makes the substantial difference for the coefficients on *new* more striking.

The difference on the two coefficients on *new* can be analyzed further. Rather than running two separate regressions, the data can be pooled together and interaction terms can be used to mimic equations 2 and 3. First, a dummy variable for Las Vegas is created. This dummy variable is then interacted with each of the variables in the model, which produces the following model

$$Price = \alpha + \beta_1\, New + \beta_2\, Adjquality + \beta_3\, Adjdécor + \beta_4\, Adjservice + \beta_5\, \boldsymbol{Cuisine} + \beta_6\, \boldsymbol{Neighborhood} + \beta_7\, New{*}LV + \beta_8\, Adjquality{*}LV + \beta_9\, Adjdécor{*}LV + \beta_{10}\, Adjservice{*}LV + \beta_{11}\, \boldsymbol{Cuisine}{*}LV + \varepsilon \quad \mathbf{(4)}$$

where the variables are the same as in equations 2 and 3. *LV* is the dummy variable with a value of one if the restaurant is in Las Vegas and a value of zero if it is in Manhattan. The adjusted values for quality, décor, and service must be used now to correct for varying tastes across the two cities. Any other city specific factors are taken into account by the neighborhood dummies since the two cities do not share any neighborhoods. Due to all the interaction terms, Table 16 only highlights the coefficients of note.

As expected the coefficient on *new*LV* is the difference of the coefficient on *new* for the Manhattan model and the coefficient on *new* for the Las Vegas model. The important additional information from the pooled model is the statistical significance of *new*LV*. The point estimate is significant to the 15% level. This supports the hypothesis that new restaurants in Las Vegas do behave differently in their pricing decisions than new restaurants in Manhattan. Additionally, none of the interactions terms for *adjquality*, *adjdecor*, and *adjservice* are significant to the 20% level, which further shows that changes in those ratings do not affect price differently across the two cities.

Table 16 Pooled Effect of Being New on Restaurant Pricing

Dependent Variable: Price

Variable	
New (β1)	-1.94** (.84)
Adjquality (β2)	.70*** (.14)
Adjdécor (β3)	1.42*** (.09)
Adjservice (β4)	1.66*** (.16)
*New*LV* (β7)	2.77 (1.80)
*Adjqual*LV* (β8)	-.41 (.34)
*Adjdec*LV* (β9)	-.02 (.27)
*Adjserv*LV* (β10)	.55 (.46)
Intercept	-27.3** (12.7)
#obs	2021
R2	.75

* The number of asterisks refers to the level of statistical significance: 1 for 10%, 2 for 5%, 3 for 1%.

VI. Conclusion

High quality firms that want to differentiate themselves from low quality ones in the market can do so through signaling. Signaling becomes a viable strategy for high quality firms if low quality firms are not willing to mimic the action. The strategy of signaling becomes even more important for experience goods, which are goods whose quality cannot be discerned before use. Economic theory suggests two different ways a firm can signal high quality in the first period. One is by charging a high price and restricting demand. The low quality firm is not willing to do so because customers are very important to it in the first period. A second strategy is by burning money during the first period. This can be done by pricing low or by committing money toward an initial conspicuous expenditure. Pricing low can act as either as a signal of burning money or to induce experimental demand. One can imagine that the different strategies are optimal in markets with different characteristics. There has been very little empirical work done to determine which strategies firms actually follow. This thesis attempts to answer this question.

The Zagat Restaurant Survey was used for restaurant data because of the breadth of restaurants rated. Ten cities were picked for the sample. I have shown that, as tourism in a city increases, restaurants increase the amount of décor, which is a conspicuous and largely sunk expenditure. Theory suggests that restaurants do so to signal quality. In cities with high levels of tourism, restaurants are not able to build a reputation as easily and must signal quality in a clear and obvious manner.

The results are robust to several checks including a median regression and a regression using a wholly different measure of tourism (overseas travelers per capita). The coefficient on *tourism*, however, is sensitive to the inclusion of Las Vegas in the sample. One interpretation of the theory might explain this by saying that restaurants do not shift their signaling strategy until tourism reaches a certain tipping point. Las Vegas might be the only city in the sample with tourism levels high enough for the optimal signaling strategy to change.

These results by themselves do not disprove alternative hypothesis such as the dining experience hypothesis, which states that tourists demand more décor when on vacation and restaurants respond appropriately. A second set of regression were run to attempt to disprove this alternative hypothesis. New restaurants in a relatively low tourism city were found to have lower prices than new restaurants in a relatively high tourism city. This suggests that the best way to signal quality for new restaurants in high tourism cities is through décor, while new restaurants in low tourism cities can signal through décor or a low price. Potentially, the low price may be used to attract customers instead of being used to burn money as a signal. Although no one piece of evidence definitively proves the hypotheses correct, the confluence of all the evidence is consistent with the theoretical predictions.

This study is an important contribution to the literature as it is the first empirical study to analyze signaling through burning money and is the first empirical work testing the influential theory as put forth by Milgrom and Roberts. It is the first step in better understanding if firms behave rationally in their signaling strategies.

This thesis has shown how one factor (tourism) might change the signaling strategy for restaurants. There are a number of potential extensions to this study. A more complete panel set of data on restaurants might further illuminate analysis for the restaurant industry. For instance, one could track the pricing decisions for restaurants over time starting from the "first period." The strategy of burning money then could be compared to the strategy of pricing high in the first period. Additionally, the success of each strategy could be compared by analyzing the rate of failure for restaurants choosing one strategy or another. The development of better measures for uninformed consumers would also improve the study. For instance, duration of residence is an important factor in addition to tourism. A measure of transient populations would lead to a more rich analysis. Also, analyzing tourism on a more specific scale than cities would improve the study. Different areas within cities have varying levels of tourism, which will affect the optimal signaling strategies. This thesis specifically analyzed one particular characteristic that potentially changes the optimal signaling strategy (tourism). A variety of other factors also might influence the decisions of restaurateurs such as concentration of the market, demographic makeup, or type of cuisine.

The research presented here is limited to one industry. Different industries also might differ in signaling strategies. Future research might investigate whether uninformed consumers affects signaling in other industries. Analysis of expenditure on advertising for a variety of products over time might be one approach.

The current study offers a restaurateur of a new high quality restaurant some guidance in deciding on the level of décor and prices. He can find an optimal level of décor and prices to signal the restaurant's high quality depending on the specific city characteristics. Maybe next time Payal Saha opens a new restaurant, she will be able to put prices on her menus!

VII. Appendix 1

Table 9 Effect of Tourism on Décor

	Sales		Employees	
	Coefficient	Std Err	Coefficient	Std Err
Afghan	Omit			
African	1.62	3.32	1.63	3.30
American	4.23	1.61	4.22	1.51
American(new)	6.15	1.40	6.15	1.35
American (Regional)	6.19	1.10	6.19	1.08
American (Traditional)	2.99	1.15	2.98	1.16
American New England	2.55	1.26	2.54	1.24
American Regional Southern	1.37	1.10	1.37	1.02
Argentinean	3.74	1.12	3.72	1.15
Armenian	2.52	1.09	2.53	1.09
Asian	5.12	1.47	5.12	1.50
Asian Fusion	5.47	1.15	4.46	1.07
Australian	3.04	1.30	3.04	1.30
Austrian	9.56	1.21	9.56	1.28
Bakery	0.20	1.00	0.19	0.86
Bangladeshi	-3.42	1.02	-3.43	1.04
Barbeque	-2.02	1.22	-2.03	1.39
Belgian	2.99	1.01	2.99	1.00
Brazilian	3.59	1.45	3.58	1.49
British	4.50	1.60	4.50	1.56
Burmese	-2.72	1.42	-2.73	1.43
Cajun	3.09	0.92	3.08	0.99
Californian	4.12	1.73	4.11	2.16
Cambodian	2.09	2.90	2.08	2.91
Cantonese	-1.58	1.52	-1.58	1.53
Caribbean	3.25	1.06	3.24	1.07
Catalan	3.78	1.07	3.77	1.10
Central American	4.58	1.11	4.57	1.11
Central European	2.22	0.99	2.23	1.07
Cheese Steaks	-6.49	0.63	-6.49	0.64
Chinese	-0.51	1.21	-0.52	1.00
Coffeehouse	2.39	1.40	2.39	1.36
Coffeeshop/Diner	-0.14	0.46	-0.14	0.35
Colombian	0.58	0.81	0.58	0.82
Contemporary Louisiana	10.37	1.46	10.34	1.04
Continental	7.31	1.59	7.29	1.57
Costa Rican	-6.58	1.05	-6.57	1.09
Creole	4.28	1.12	4.27	1.11
Cuban	0.46	1.50	0.42	1.59
Deli	-2.60	1.38	-2.60	1.31
Dessert	2.08	0.95	2.07	0.81
Dim Sum	-0.85	1.65	-0.85	1.70

Dominican	-2.29	1.28	-2.29	1.29
Eastern European	-3.77	1.31	-3.77	1.31
Eclectic/Int'l	3.74	1.40	3.73	1.45
Egyptian	6.01	1.35	6.01	1.33
Emilian	4.08	1.23	4.08	1.28
Eritrean	-1.69	1.76	-1.70	1.77
Ethiopian	-1.78	1.55	-1.78	1.54
European	4.13	2.47	4.13	2.38
Filipino	4.53	1.55	4.54	1.57
Fish and Chips	-3.77	1.31	-3.77	1.31
Florribean	12.14	1.14	12.09	1.17
Fondue	5.77	1.53	5.75	1.03
French	6.13	1.36	6.12	1.46
French(Bistro)	4.07	1.21	4.06	1.24
French(Brasserie)	6.26	1.12	6.25	1.14
French (Classic)	5.79	1.06	5.80	1.09
French(New)	8.23	1.50	8.22	1.56
French Steakhouses	5.11	1.17	5.11	1.12
German	3.38	1.09	3.37	1.08
Greek	3.29	1.79	3.29	1.69
Haitian	7.87	1.17	7.82	1.18
Hamburgers	-0.03	1.26	-0.04	0.74
Hawaii (Regional)	7.23	1.05	7.21	1.11
Hawaiian	4.36	2.12	4.35	2.13
Heath Food	-1.48	3.09	-1.52	3.12
Hot Dogs	-6.03	1.04	-6.03	1.04
Hunan	-3.29	1.23	-3.29	1.24
Ice Cream	-7.33	1.24	-7.33	1.28
Indian	1.13	1.86	1.12	1.95
Indonesian	1.84	1.57	1.81	1.57
Irish	6.29	1.22	6.28	1.01
Israeli	-10.72	1.22	-10.72	1.28
Italian	2.98	0.91	2.97	0.90
Italian Southern	3.12	1.22	3.11	1.21
Jamaican	-2.21	2.54	-2.22	2.56
Japanese	3.53	0.99	3.53	0.98
Jewish	-1.25	0.42	-1.25	0.45
Korean	1.81	2.24	1.80	2.49
Korean Barbeque	0.14	2.93	0.14	2.96
Kosher	-1.14	3.09	-1.15	3.10
Laotian	-1.01	1.01	-1.01	1.05
Lebanese	0.97	2.43	0.95	2.65
Ligurian	3.47	2.01	3.46	2.02
Malaysian	3.30	1.93	3.30	1.75
Mandarin	1.67	2.03	1.67	2.02
Mediterranean	4.05	1.67	4.04	1.71
Mexican	0.90	1.58	0.89	1.66
Middle Eastern	-0.40	1.88	-0.42	1.88

Milanese	5.04	1.28	5.05	1.29
Moroccan	7.46	1.11	7.46	0.89
Neapolitan	1.62	1.49	1.61	1.52
Nepalese	4.78	1.07	4.77	1.10
New World	9.17	1.10	9.12	1.17
Nicaraguan	2.55	1.19	2.50	1.19
None	-0.44	1.75	-0.47	1.70
Noodle Shop	-2.21	1.63	-2.21	1.43
Northern	4.13	1.01	4.12	1.05
Norwegian	3.79	1.06	3.80	1.09
Nuevo Latino	6.25	1.04	6.23	1.04
Pacific Northwest	7.08	1.06	7.07	1.07
Pacific Rim	1.84	3.94	1.83	3.98
Pakistani	-9.02	1.05	-9.03	1.10
Pan-Asian	5.33	1.28	5.31	1.29
Pan-Latin	2.80	1.94	2.79	2.35
Persian/Iranian	-0.30	1.87	-0.31	1.88
Peruvian	-0.24	1.64	-0.26	1.73
Pizza	-2.33	1.14	-2.34	1.10
Polish	0.26	0.66	0.26	0.69
Polynesian	6.99	1.74	6.98	1.73
Portuguese	3.33	1.71	3.31	1.75
Pub Food	3.91	1.74	3.91	1.68
Puerto Rican	-6.77	1.31	-6.77	1.31
Roman	3.52	1.72	3.52	1.74
Russian	2.55	1.38	2.55	1.40
Sandwiches	-2.76	1.72	-2.77	1.72
Scandinavian	2.65	1.28	2.65	1.29
Scottish	3.99	1.16	4.00	1.12
Seafood	3.89	1.43	3.87	1.41
Sicilian	0.84	1.35	0.84	1.36
Soul Food	-6.07	4.91	-6.08	4.95
Soup	-13.11	1.21	-13.11	1.28
South African	3.33	1.04	3.33	1.03
South American	2.93	1.77	2.93	1.77
Southeast Asian	2.57	3.58	2.56	3.60
Southwestern	2.86	1.73	2.86	1.98
Spanish	3.01	1.35	3.01	1.35
Spanish Basque	3.60	1.34	3.59	1.36
Spanish Tapas	4.90	1.51	4.89	1.48
Specialties: Small Plates	3.70	2.78	3.72	3.34
Steakhouse	4.95	1.07	4.94	1.15
Sukiyaki/Shabu-Shabu	0.88	1.18	0.88	1.19
Sushi	1.72	1.12	1.71	1.17
Swedish	10.50	1.20	10.50	1.28
Swiss	2.58	1.11	2.57	1.11
Szechuan	-1.07	2.32	-1.07	2.34
Taiwanese	-4.69	1.26	-4.70	1.25

Tearoom(Specialties)	4.94	1.03	4.94	1.05
Tex-Mex	-1.28	1.20	-1.28	0.99
Thai	0.84	1.21	0.83	1.16
Tibetan	7.23	1.31	7.23	1.31
Turkish	1.68	1.53	1.68	1.54
Tuscan	4.22	1.56	4.22	1.58
Vegan	2.84	1.11	2.84	1.28
Vegetarian	2.10	1.57	2.10	1.56
Venetian	3.63	2.29	3.62	2.33
Venezuelan	-2.29	1.28	-2.29	1.29
Vietnamese	-1.03	1.26	-1.04	1.12
West African	2.19	1.10	2.19	1.08
Yakiniku/Beef	3.18	1.09	3.17	1.10

Table 10 Effect of Tourism on Décor for High Quality Restaurants

Greater than Median Quality

	Sales		Employees	
	Coefficient	Std. Err	Coefficient	Std. Err
Afghan	Omit			
American	2.50	1.47	2.51	1.13
American(new)	5.52	0.72	5.52	0.54
American (Traditional)	-0.60	1.20	-0.60	1.22
American New England	-2.95	0.66	-2.94	0.57
American Regional Southern	0.08	1.17	0.08	0.76
Argentinean	3.78	0.76	3.74	0.67
Asian	3.57	1.41	3.57	1.49
Asian Fusion	4.35	0.86	4.34	0.81
Austrian	8.40	0.64	8.40	0.55
Bakery	-2.42	0.96	-2.42	1.05
Bangladeshi	-4.68	0.64	-4.68	0.70
Barbeque	-4.73	1.79	-4.74	1.63
Belgian	3.59	1.42	3.59	1.42
Brazilian	2.81	1.30	2.81	1.24
British	2.81	0.71	2.82	0.55
Burmese	-2.73	0.62	-2.74	0.62
Cajun	1.19	1.41	1.19	1.40
Californian	4.36	0.69	4.35	0.64
Cambodian	6.22	0.76	6.21	0.75
Cantonese	-2.52	1.13	-2.51	1.10
Caribbean	-0.63	1.98	-0.64	1.97
Central European	0.92	0.69	0.92	0.72
Cheese Steaks	-7.59	0.40	-7.58	0.39
Chinese	-1.21	1.70	-1.21	1.57
Coffeehouse	-0.70	1.29	-0.70	1.29
Coffeeshop/Diner	-4.52	3.26	-4.51	2.90

Colombian	0.97	0.59	0.98	0.59
Contemporary Louisiana	7.73	0.66	7.67	0.54
Continental	6.25	0.95	6.25	1.04
Costa Rican	-7.96	0.59	-7.94	0.56
Cuban	-1.79	2.04	-1.82	2.29
Deli	-6.42	1.15	-6.42	0.97
Dessert	-1.41	1.95	-1.41	1.88
Dim Sum	-1.68	1.73	-1.68	1.70
Eclectic/Int'l	1.80	1.48	1.80	1.52
Emilian	2.87	0.64	2.88	0.51
Eritrean	-1.03	0.59	-1.02	0.59
Ethiopian	1.56	2.86	1.55	2.87
European	4.39	1.03	4.39	1.29
Filipino	1.95	0.66	1.96	0.52
Florribean	10.73	0.66	10.67	0.54
Fondue	7.04	0.59	7.06	0.56
French	5.47	0.55	5.47	0.49
French(Bistro)	3.14	0.69	3.15	0.71
French(Brasserie)	6.43	1.02	6.44	0.94
French (Classic)	4.38	0.61	4.40	0.57
French(New)	7.44	1.14	7.43	1.10
French Steakhouses	3.88	0.73	3.88	0.66
German	7.06	0.65	7.06	0.70
Greek	4.24	1.00	4.25	0.77
Hamburgers	-3.61	2.20	-3.61	2.22
Hawaii (Regional)	5.75	0.63	5.74	0.60
Hawaiian	2.63	2.23	2.62	2.23
Heath Food	1.12	0.62	1.12	0.64
Hot Dogs	-4.27	0.66	-4.33	0.54
Hunan	-5.88	0.62	-5.88	0.64
Ice Cream	-8.55	0.66	-8.54	0.52
Indian	1.22	0.96	1.23	0.95
Indonesian	1.39	0.61	1.33	0.52
Israeli	-11.91	0.64	-11.90	0.52
Italian	1.41	0.61	1.40	0.62
Italian Southern	1.94	0.91	1.95	0.85
Jamaican	-3.19	2.98	-3.19	2.98
Japanese	4.01	0.63	4.01	0.58
Korean	2.15	1.46	2.16	1.42
Korean Barbeque	-1.29	3.67	-1.28	3.69
Kosher	2.81	0.71	2.82	0.55
Laotian	-2.38	0.60	-2.37	0.61
Lebanese	2.99	2.86	2.98	2.85
Ligurian	3.81	0.71	3.02	0.55
Malaysian	2.31	1.59	2.31	1.22
Mandarin	-1.14	1.07	-1.13	1.07
Mediterranean	3.14	1.01	3.14	0.92
Mexican	-0.28	1.08	-0.28	1.13

Middle Eastern	-0.74	0.89	-0.76	0.82
Milanese	4.81	0.71	4.82	0.55
Moroccan	4.09	1.16	4.10	1.16
Neapolitan	0.00	0.75	-0.01	0.71
New World	7.83	0.59	7.77	0.53
None	-4.11	0.48	-4.13	0.46
Noodle Shop	-7.72	1.58	-7.71	1.55
Northern	3.35	6.10	3.35	0.53
Norwegian	2.38	0.61	2.40	0.57
Nuevo Latino	6.78	0.40	6.76	0.35
Pacific Northwest	5.90	0.62	5.89	0.66
Pacific Rim	5.71	0.72	5.70	0.77
Pakistani	-10.36	0.59	-10.37	0.57
Pan-Asian	3.44	1.02	3.42	1.02
Pan-Latin	4.91	2.06	4.89	2.38
Persian/Iranian	-2.92	3.66	-2.93	3.61
Peruvian	0.99	0.98	0.97	0.97
Pizza	-5.03	0.81	-5.03	0.82
Portuguese	2.81	0.71	2.82	0.55
Roman	1.77	0.65	1.78	0.51
Russian	-2.55	0.66	-2.54	0.52
Sandwiches	-8.45	1.51	-8.46	1.55
Seafood	2.43	1.20	2.43	1.06
Sicilian	2.97	0.59	2.98	0.59
Soul Food	-11.58	0.62	-11.59	0.66
Soup	-14.27	0.64	-14.26	0.55
South African	2.02	0.64	2.02	0.69
South American	-0.66	2.54	-0.64	2.58
Southeast Asian	-1.66	5.14	1.66	5.19
Southwestern	2.75	0.85	2.75	1.04
Spanish	-0.11	2.94	-0.12	2.92
Spanish Basque	2.30	1.75	2.29	1.77
Spanish Tapas	3.75	1.03	3.74	0.92
Specialties: Small Plates	3.96	0.60	3.95	0.55
Steakhouse	4.29	0.61	4.28	0.59
Sukiyaki/Shabu-Shabu	0.68	0.78	0.69	0.69
Sushi	0.88	0.79	0.88	0.80
Swedish	9.37	0.67	9.38	0.61
Szechuan	-0.86	0.71	-0.85	0.55
Taiwanese	-5.78	0.76	-5.79	0.75
Tearoom(Specialties)	8.97	0.59	8.98	0.59
Tex-Mex	0.28	0.69	0.26	0.61
Thai	-0.52	0.76	-0.52	0.46
Turkish	1.45	3.56	1.45	3.61
Tuscan	2.94	0.91	2.94	0.82
Vegan	1.63	1.05	1.63	1.00
Vegetarian	2.01	2.38	2.01	2.64
Venetian	2.36	1.56	2.36	1.55

Vietnamese	-1.71	0.94	-1.72	0.75

Greater than Median Adjusted Quality

	Sales		Employees	
	Coefficient	Std. Err	Coefficient	Std. Err
Afghan	Omit			
African	3.10	0.69	3.11	0.54
American	2.39	0.91	2.39	0.53
American(new)	5.32	0.67	5.32	0.49
American (Regional)	4.44	0.69	4.44	0.70
American (Traditional)	0.35	0.76	0.35	0.76
American New England	1.31	3.30	1.31	3.31
American Regional Southern	-0.55	1.18	-0.54	0.75
Argentinean	3.36	0.98	3.33	0.91
Asian	4.01	1.23	4.01	1.31
Asian Fusion	4.26	0.75	4.26	0.66
Austrian	8.28	0.53	8.29	0.43
Bakery	-2.49	1.07	-2.49	1.15
Bangladeshi	-4.75	0.66	-4.75	0.72
Barbeque	-5.58	1.04	-5.58	0.60
Belgian	2.92	1.02	2.92	1.00
Brazilian	3.10	0.98	3.10	0.93
British	4.65	1.48	4.65	1.46
Burmese	-2.90	0.78	-2.91	0.77
Cajun	1.09	1.05	1.09	1.04
Californian	4.45	0.66	4.44	0.61
Cambodian	0.73	2.66	0.72	2.67
Cantonese	-2.47	0.98	-2.47	0.95
Caribbean	-0.18	1.68	-0.18	1.70
Catalan	2.41	0.65	2.41	0.61
Central European	0.94	0.66	0.95	0.69
Cheese Steaks	-7.67	0.48	-7.66	0.47
Chinese	-1.66	1.18	-1.67	1.04
Coffeehouse	0.21	0.70	0.21	0.69
Coffeeshop/Diner	-4.51	3.20	-4.50	2.81
Colombian	1.03	0.65	1.04	0.65
Contemporary Louisiana	7.79	0.66	7.72	0.56
Continental	6.66	0.93	6.66	1.04
Costa Rican	-7.91	0.63	-7.90	0.61
Cuban	-0.68	2.19	-0.70	2.48
Deli	-6.50	1.20	-6.50	0.66
Dessert	-0.37	1.48	-0.37	1.44
Dim Sum	-2.19	1.42	-2.19	1.38
Dominican	4.10	0.69	4.11	0.54
Eclectic/Int'l	1.40	1.26	1.40	1.22
Emilian	2.78	0.56	2.78	0.44

Eritrean	-3.05	1.59	-3.04	1.62
Ethiopian	-1.30	1.99	-1.31	1.99
European	2.79	1.96	2.79	1.80
Filipino	1.86	0.58	1.86	0.45
Florribean	10.79	0.66	10.72	0.56
Fondue	7.09	0.63	7.10	0.61
French	5.27	0.60	5.27	0.54
French(Bistro)	2.85	0.67	2.85	0.66
French(Brasserie)	5.60	0.62	5.61	0.50
French (Classic)	4.44	0.65	4.45	0.62
French(New)	7.27	1.06	7.27	1.07
French Steakhouses	3.80	0.71	3.80	0.64
German	2.73	2.26	2.72	2.27
Greek	4.02	0.91	4.02	0.68
Hamburgers	-2.55	1.94	-2.55	1.69
Hawaii (Regional)	5.70	0.64	5.69	0.60
Hawaiian	1.65	1.86	1.64	1.85
Heath Food	1.07	0.65	1.07	0.67
Hot Dogs	-8.06	2.78	-8.08	2.75
Hunan	-5.43	0.70	-5.43	0.68
Ice Cream	-8.64	0.58	-8.64	0.45
Indian	0.87	0.96	0.87	0.93
Indonesian	1.44	0.63	1.38	0.54
Israeli	-12.01	0.55	-12.01	0.43
Italian	1.30	0.59	1.29	0.59
Italian Southern	1.84	0.86	1.85	0.79
Jamaican	-3.35	2.98	-3.35	2.99
Japanese	3.53	0.64	3.53	0.56
Korean	2.09	1.41	2.09	1.38
Korean Barbeque	-0.83	2.97	-0.83	2.98
Kosher	-0.76	3.25	-0.75	3.19
Laotian	-2.34	0.64	-2.32	0.65
Lebanese	1.06	2.87	1.05	2.87
Ligurian	3.04	0.95	3.04	0.89
Malaysian	1.11	1.81	1.11	1.58
Mandarin	-0.26	1.50	-0.25	1.49
Mediterranean	3.05	0.93	3.04	1.00
Mexican	0.21	1.14	0.21	1.17
Middle Eastern	-2.96	1.49	-2.97	1.43
Milanese	4.73	0.63	4.74	0.49
Moroccan	4.99	0.82	4.99	0.82
Neapolitan	-0.10	0.73	-0.10	0.70
Nepalese	3.41	0.65	3.41	0.61
New World	7.86	0.59	7.80	0.53
None	-4.89	1.46	-4.90	1.51
Noodle Shop	-6.25	1.74	-6.25	1.71
Northern	2.92	0.59	2.92	0.52
Norwegian	2.44	0.65	2.45	0.62

Nuevo Latino	5.72	0.79	5.71	0.77
Pacific Northwest	5.81	0.62	5.81	0.65
Pacific Rim	0.51	3.95	0.51	3.97
Pakistani	-10.35	0.60	-10.36	0.59
Pan-Asian	3.70	0.79	3.68	0.80
Pan-Latin	2.90	2.50	2.89	2.47
Persian/Iranian	-3.27	3.09	-3.28	3.01
Peruvian	1.16	0.85	1.14	0.83
Pizza	-4.63	0.67	-4.63	0.62
Portuguese	2.73	0.63	2.74	0.49
Roman	1.36	0.86	1.37	0.78
Russian	-0.92	1.43	-0.92	1.40
Sandwiches	-7.96	2.03	-7.98	2.05
Scandinavian	1.10	0.69	1.11	0.54
Seafood	2.60	1.08	2.59	0.93
Sicilian	3.03	0.65	3.04	0.65
Soul Food	-7.40	4.28	-7.40	4.30
Soup	-14.39	0.53	-14.38	0.43
South African	1.97	0.69	1.97	0.74
South American	-0.36	1.59	-0.35	1.63
Southeast Asian	-1.68	5.08	-1.68	5.12
Southwestern	2.55	0.74	2.55	0.91
Spanish	-0.83	2.53	-0.84	2.50
Spanish Basque	1.80	1.26	1.80	1.25
Spanish Tapas	3.49	0.96	3.47	0.86
Specialties: Small Plates	6.53	0.62	6.52	0.59
Steakhouse	4.26	0.59	4.25	0.56
Sukiyaki/Shabu-Shabu	0.53	0.72	0.54	0.65
Sushi	0.67	0.72	0.66	0.72
Swedish	9.24	0.53	9.25	0.46
Szechuan	-0.94	0.63	-0.93	0.49
Taiwanese	-6.02	0.70	-6.02	0.69
Tearoom(Specialties)	9.03	0.65	9.04	0.65
Thai	0.04	0.61	0.03	0.47
Turkish	-0.97	1.84	-0.96	1.88
Tuscan	2.71	0.74	2.72	0.65
Vegan	1.58	1.07	1.58	1.02
Vegetarian	1.98	2.37	1.90	2.64
Venetian	2.31	1.53	2.31	1.51
Venezuelan	-1.90	0.69	-1.89	0.54
Vietnamese	-2.81	0.58	-2.81	0.37
Yakiniku/Beef	1.80	0.69	1.79	0.64

Table 11 Median Regression of Effect of Tourism on Décor

	Sales	Employees
	Coefficient	Coefficient

Afghan	Omit	
African	4.40	4.41
American	4.57	4.57
American(new)	6.06	6.04
American (Regional)	5.58	5.59
American (Traditional)	3.00	3.02
American New England	2.40	2.41
American Regional Southern	0.46	0.48
Argentinean	3.40	3.41
Armenian	2.47	2.49
Asian	5.40	5.41
Asian Fusion	4.97	4.97
Australian	2.90	2.91
Austrian	9.90	9.91
Bakery	-0.43	-0.42
Bangladeshi	-3.99	-3.97
Barbeque	-1.47	-1.45
Belgian	2.40	2.41
Brazilian	3.90	3.88
British	4.26	4.23
Burmese	-2.10	-2.09
Cajun	2.94	2.96
Californian	4.51	4.51
Cambodian	2.54	2.54
Cantonese	-2.10	-2.09
Caribbean	3.39	3.41
Catalan	3.54	3.54
Central American	4.57	4.57
Central European	1.52	1.54
Cheese Steaks	-5.53	-5.51
Chinese	-1.54	-1.52
Coffeehouse	289.00	2.91
Coffeeshop/Diner	0.40	0.42
Colombian	0.94	0.96
Contemporary Louisiana	11.88	11.89
Continental	7.50	7.51
Costa Rican	-6.94	-6.92
Creole	6.57	6.57
Cuban	-0.14	-0.19
Deli	-2.09	-2.07
Dessert	2.05	2.05
Dim Sum	-1.60	-1.59
Dominican	-6.10	-6.09
Eastern European	-3.60	-3.59
Eclectic/Int'l	3.53	3.55
Egyptian	6.40	6.41
Emilian	3.90	3.91
Eritrean	-0.01	0.00

Ethiopian	-2.06	-2.04
European	4.01	4.03
Filipino	5.90	5.91
Fish and Chips	-3.60	-3.59
Florribean	11.99	11.94
Fondue	5.92	5.88
French	5.56	5.57
French(Bistro)	4.40	4.41
French(Brasserie)	6.40	6.41
French (Classic)	5.53	5.55
French(New)	8.40	8.41
French Steakhouses	4.50	4.52
German	3.90	3.91
Greek	3.40	3.41
Haitian	7.92	7.88
Hamburgers	1.40	1.41
Hawaii (Regional)	7.03	7.03
Hawaiian	7.09	7.06
Heath Food	-5.14	-5.19
Hot Dogs	-5.59	-5.57
Hunan	-3.46	-3.46
Ice Cream	-7.60	-7.59
Indian	1.90	1.91
Indonesian	2.52	2.47
Irish	6.89	6.91
Israeli	-11.10	-11.09
Italian	3.40	3.41
Italian Southern	3.40	3.41
Jamaican	-2.55	-2.53
Japanese	3.40	3.41
Jewish	0.40	0.42
Korean	1.40	1.41
Korean Barbeque	-0.17	-0.16
Kosher	0.39	0.34
Laotian	-1.50	-1.48
Lebanese	1.06	1.06
Ligurian	3.55	3.55
Malaysian	4.40	4.41
Mandarin	1.90	1.91
Mediterranean	3.94	3.96
Mexican	0.36	0.37
Middle Eastern	-1.10	-1.09
Milanese	5.90	5.91
Moroccan	7.96	7.98
Neapolitan	0.90	0.91
Nepalese	4.54	4.54
New World	7.59	7.54
Nicaraguan	3.86	3.81

None	-3.00	-3.04
Noodle Shop	-1.06	-1.04
Northern	4.05	4.05
Norwegian	3.53	3.55
Nuevo Latino	6.39	6.34
Pacific Northwest	7.58	7.59
Pacific Rim	-3.46	-3.46
Pakistani	-9.49	-9.49
Pan-Asian	5.07	5.08
Pan-Latin	2.53	2.55
Persian/Iranian	-0.02	-0.01
Peruvian	0.51	0.51
Pizza	-1.64	-1.63
Polish	-1.60	-1.59
Polynesian	9.11	9.11
Portuguese	1.92	1.88
Pub Food	5.89	5.91
Puerto Rican	-6.60	-6.59
Roman	3.40	3.41
Russian	2.05	2.05
Sandwiches	-2.01	-2.01
Scandinavian	2.90	2.91
Scottish	4.36	4.37
Seafood	4.40	4.41
Sicilian	-0.10	-0.09
Soul Food	-10.89	-10.88
Soup	-13.60	-13.59
South African	2.98	2.99
South American	2.88	2.90
Southeast Asian	3.40	3.41
Southwestern	3.26	3.23
Spanish	1.94	1.96
Spanish Basque	3.51	3.51
Spanish Tapas	4.57	4.57
Specialties: Small Plates	4.51	4.51
Steakhouse	4.94	4.95
Sukiyaki/Shabu-Shabu	0.90	0.91
Sushi	1.40	1.41
Swedish	9.90	9.91
Swiss	2.57	2.57
Szechuan	-2.10	-2.09
Taiwanese	-5.04	-5.03
Tearoom(Specialties)	9.99	10.00
Tex-Mex	0.79	0.80
Thai	0.94	0.95
Tibetan	7.40	7.41
Turkish	3.90	3.91
Tuscan	4.39	4.34

Vegan	3.62	3.62
Vegetarian	1.98	1.99
Venetian	5.40	5.41
Venezuelan	-3.10	-3.09
Vietnamese	-1.10	-1.09
West African	2.07	2.08
Yakiniku/Beef	3.05	3.05

Table 12 First Effect of Tourism on Décor without Las Vegas

	Sales	
	Coefficient	Std. Err
Afghan	Omit	
African	1.63	3.30
American	4.31	1.70
American(new)	6.15	1.41
American (Regional)	6.20	1.10
American (Traditional)	3.20	1.10
American New England	2.49	1.25
American Regional Southern	1.46	1.07
Argentinean	3.75	1.13
Armenian	2.52	1.09
Asian	4.97	1.54
Asian Fusion	5.50	1.14
Australian	3.02	1.31
Austrian	9.49	1.22
Bakery	0.06	1.03
Bangladeshi	-3.42	1.02
Barbeque	-2.39	1.23
Belgian	3.01	1.01
Brazilian	3.82	1.45
British	4.61	1.66
Burmese	-2.69	1.50
Cajun	2.72	0.85
Californian	3.99	1.95
Cambodian	2.11	2.85
Cantonese	-1.59	1.52
Caribbean	3.27	1.06
Catalan	3.86	1.14
Central American	4.68	1.17
Central European	2.16	0.98
Cheese Steaks	-6.50	0.63
Chinese	-1.02	1.16
Coffeehouse	2.42	1.40
Coffeeshop/Diner	-0.21	0.42
Colombian	0.57	0.81
Contemporary Louisiana	10.41	1.49

Continental	7.79	1.65
Costa Rican	-6.61	1.05
Creole	4.39	1.17
Cuban	0.63	1.55
Deli	-2.50	1.42
Dessert	1.75	0.91
Dim Sum	-1.58	1.69
Dominican	-2.31	1.30
Eastern European	-3.78	1.32
Eclectic/Int'l	3.87	1.44
Egyptian	6.02	1.36
Emilian	4.02	1.24
Eritrean	-1.69	1.73
Ethiopian	-1.75	1.54
European	4.10	2.48
Filipino	4.51	1.56
Fish and Chips	-3.78	1.32
Florribean	12.16	1.16
Fondue	5.78	1.54
French	5.92	1.41
French(Bistro)	4.02	1.23
French(Brasserie)	6.25	1.13
French (Classic)	5.77	1.06
French(New)	8.09	1.55
French Steakhouses	5.11	1.19
German	3.41	1.09
Greek	3.29	1.79
Haitian	7.90	1.18
Hamburgers	0.20	1.29
Hawaii (Regional)	6.92	1.10
Hawaiian	3.46	1.99
Heath Food	-1.47	3.09
Hot Dogs	-6.02	1.05
Hunan	-3.24	1.18
Ice Cream	-7.38	1.25
Indian	1.11	1.89
Indonesian	1.84	1.57
Irish	6.07	1.14
Israeli	-10.78	1.24
Italian	2.98	0.91
Italian Southern	3.12	1.22
Jamaican	-2.22	2.55
Japanese	3.51	0.99
Jewish	-1.21	0.44
Korean	1.78	2.25
Korean Barbeque	0.12	2.94
Kosher	-1.13	3.10
Laotian	-1.06	1.00

Lebanese	1.01	2.41
Ligurian	3.50	2.02
Malaysian	3.30	1.94
Mandarin	1.67	2.04
Mediterranean	4.12	1.71
Mexican	1.02	1.64
Middle Eastern	-0.39	1.88
Milanese	5.02	1.30
Moroccan	7.06	0.88
Neapolitan	1.63	1.52
Nepalese	4.86	1.14
New World	9.16	1.13
Nicaraguan	2.60	1.21
None	2.20	1.44
Noodle Shop	-2.20	1.65
Northern	3.99	1.03
Norwegian	3.77	1.06
Nuevo Latino	6.26	1.02
Pacific Northwest	7.05	1.06
Pacific Rim	1.85	3.88
Pakistani	-8.96	1.12
Pan-Asian	5.36	1.32
Pan-Latin	2.83	1.94
Persian/Iranian	-0.38	2.01
Peruvian	-0.43	1.79
Pizza	-2.38	1.15
Polish	0.26	0.67
Polynesian	7.06	1.85
Portuguese	3.32	1.71
Pub Food	3.96	1.77
Puerto Rican	-6.78	1.32
Roman	3.50	1.72
Russian	2.56	1.39
Sandwiches	-1.78	1.29
Scandinavian	2.62	1.29
Scottish	4.03	1.16
Seafood	3.89	1.48
Sicilian	0.82	1.36
Soul Food	-3.11	4.94
Soup	-13.18	1.22
South African	3.35	1.04
South American	2.95	1.79
Southeast Asian	2.55	3.59
Southwestern	2.89	1.80
Spanish	3.01	1.36
Spanish Basque	3.61	1.41
Spanish Tapas	4.92	1.46
Specialties: Small Plates	3.34	3.28

Steakhouse	4.98	1.05
Sukiyaki/Shabu-Shabu	0.87	1.18
Sushi	1.53	1.13
Swedish	10.42	1.21
Swiss	2.68	1.17
Szechuan	-1.10	2.33
Taiwanese	-4.80	1.29
Tearoom(Specialties)	4.92	1.03
Tex-Mex	-1.36	1.23
Thai	0.92	1.20
Tibetan	7.22	1.32
Turkish	1.68	1.53
Tuscan	4.21	1.57
Vegan	2.88	1.18
Vegetarian	2.09	1.59
Venetian	3.63	2.26
Venezuelan	-2.31	1.30
Vietnamese	-1.03	1.26
West African	2.20	1.10
Yakiniku/Beef	3.27	1.15

Table 14 Effect of Tourism on Décor with Overseas Travelers Tourism Index

	All		W/Out LV	
	Coefficient	Std Err	Coefficient	Std Err
Afghan	Omit			
African	1.67	3.33	1.69	3.28
American	4.00	1.62	4.09	1.64
American(new)	6.10	1.39	6.06	1.40
American (Regional)	6.18	1.11	6.18	1.13
American (Traditional)	3.03	1.12	3.14	1.09
American New England	2.41	1.24	2.37	1.25
American Regional Southern	1.37	1.10	1.42	1.09
Argentinean	3.23	1.29	3.35	1.24
Armenian	2.60	1.10	2.61	1.12
Asian	5.17	1.48	4.92	1.55
Asian Fusion	5.28	1.07	5.31	1.08
Australian	3.09	1.26	3.05	1.25
Austrian	9.64	1.17	9.51	1.17
Bakery	0.20	1.01	0.00	1.04
Bangladeshi	-3.50	1.04	-3.52	1.07
Barbeque	-2.00	1.28	-2.51	1.26
Belgian	2.91	0.96	2.93	0.94
Brazilian	3.58	1.44	3.69	1.48
British	4.59	1.62	4.61	1.66
Burmese	-2.82	1.44	-2.82	1.45
Cajun	3.28	0.97	2.74	0.85

Californian	3.96	1.75	3.75	1.89
Cambodian	1.82	2.86	1.86	2.84
Cantonese	-1.61	1.52	-1.64	1.52
Caribbean	3.14	1.06	3.16	1.05
Catalan	3.47	1.10	3.56	1.12
Central American	4.27	1.13	4.39	1.14
Central European	2.31	1.02	2.24	1.05
Cheese Steaks	-6.47	0.61	-6.47	0.63
Chinese	-0.44	1.26	-1.09	1.15
Coffeehouse	2.41	1.39	2.43	1.37
Coffeeshop/Diner	-0.12	0.46	-0.22	0.40
Colombian	0.65	0.83	0.65	0.86
Contemporary Louisiana	9.79	1.75	9.97	1.78
Continental	7.45	1.56	7.70	1.67
Costa Rican	-6.49	1.06	-6.53	1.08
Creole	3.96	1.14	4.09	1.15
Cuban	-0.20	1.76	0.11	1.82
Deli	-2.55	1.39	-2.53	1.45
Dessert	2.13	0.99	1.70	0.90
Dim Sum	-0.74	1.70	-1.63	1.68
Dominican	-2.23	1.24	-2.28	1.23
Eastern European	-3.71	1.27	-3.75	1.26
Eclectic/Int'l	3.69	1.33	3.75	1.38
Egyptian	6.06	1.31	6.05	1.30
Emilian	4.15	1.19	4.05	1.18
Eritrean	-1.75	1.80	-1.73	1.79
Ethiopian	-1.82	1.53	-1.84	1.52
European	4.14	2.48	4.11	2.48
Filipino	4.60	1.54	4.55	1.58
Fish and Chips	-3.71	1.27	-3.75	1.26
Florribean	11.10	1.23	11.36	1.25
Fondue	5.44	1.50	5.54	1.51
French	6.11	1.41	5.81	1.45
French(Bistro)	4.03	1.24	3.95	1.25
French(Brasserie)	6.19	1.16	6.18	1.13
French (Classic)	5.87	1.07	5.85	1.09
French(New)	8.22	1.52	7.96	1.56
French Steakhouses	5.10	1.18	5.05	1.20
German	3.14	1.10	3.23	1.09
Greek	3.23	1.83	3.24	1.83
Haitian	6.82	1.25	7.11	1.26
Hamburgers	0.01	1.23	0.15	1.27
Hawaii (Regional)	7.75	1.14	6.81	1.09
Hawaiian	4.51	2.31	3.29	2.11
Heath Food	-2.02	3.49	-1.87	3.49
Hot Dogs	-6.10	1.06	-6.07	1.05
Hunan	-3.47	1.23	-3.42	1.23
Ice Cream	-7.26	1.20	-7.35	1.19

Indian	1.07	1.88	1.02	1.90
Indonesian	1.34	1.30	1.48	1.34
Irish	6.38	1.28	6.07	1.14
Israeli	-10.64	1.18	-10.75	1.18
Italian	2.79	0.87	2.76	0.85
Italian Southern	3.17	1.21	3.13	1.21
Jamaican	-2.19	2.55	-2.24	2.54
Japanese	3.50	0.98	3.46	0.97
Jewish	-1.21	0.40	-1.14	0.38
Korean	1.75	2.29	1.73	2.28
Korean Barbeque	0.10	2.95	0.07	2.94
Kosher	-1.36	3.17	-1.29	3.15
Laotian	-0.94	1.03	-0.97	1.06
Lebanese	0.74	2.45	0.77	2.44
Ligurian	3.46	2.01	3.41	2.01
Malaysian	3.28	1.94	3.24	1.94
Mandarin	1.62	1.98	1.64	2.01
Mediterranean	4.01	1.67	4.03	1.71
Mexican	1.04	1.56	0.98	1.65
Middle Eastern	-0.75	1.88	-0.65	1.87
Milanese	5.11	1.24	5.05	1.23
Moroccan	7.57	1.18	7.07	0.87
Neapolitan	1.53	1.53	1.49	1.53
Nepalese	4.47	1.10	4.56	1.12
New World	8.14	1.21	8.36	1.24
Nicaraguan	1.49	1.27	1.81	1.27
None	0.18	1.47	1.98	1.38
Noodle Shop	-2.25	1.64	-2.25	1.65
Northern	4.15	1.02	3.92	1.04
Norwegian	3.87	1.07	3.85	1.09
Nuevo Latino	5.97	0.96	6.03	0.95
Pacific Northwest	7.08	1.07	7.04	1.09
Pacific Rim	1.69	3.99	1.69	3.98
Pakistani	-9.32	1.08	-9.26	1.10
Pan-Asian	5.09	1.30	5.12	1.32
Pan-Latin	2.64	1.86	2.67	1.88
Persian/Iranian	-0.25	1.90	-0.44	2.02
Peruvian	-0.44	1.82	-0.69	1.93
Pizza	-2.40	1.17	-2.47	1.18
Polish	0.31	0.65	0.32	0.66
Polynesian	6.82	1.71	6.90	1.76
Portuguese	3.03	1.97	3.07	1.92
Pub Food	3.83	1.70	3.89	1.71
Puerto Rican	-6.71	1.27	-6.75	1.26
Roman	3.59	1.69	3.54	1.67
Russian	2.53	1.42	2.52	1.42
Sandwiches	-2.66	1.62	-1.86	1.30
Scandinavian	2.71	1.24	2.65	1.23

Scottish	4.05	1.18	4.12	1.18
Seafood	3.88	1.42	3.73	1.46
Sicilian	0.90	1.35	0.88	1.67
Soul Food	-6.05	4.92	-6.11	4.96
Soup	-13.03	1.17	-13.15	1.17
South African	3.24	1.06	3.25	1.09
South American	2.95	1.74	2.95	1.75
Southeast Asian	2.46	3.56	2.45	3.59
Southwestern	2.97	1.73	2.85	1.83
Spanish	2.88	1.28	2.91	1.29
Spanish Basque	3.50	1.35	3.49	1.37
Spanish Tapas	4.73	1.52	4.74	1.49
Specialties: Small Plates	3.80	2.83	3.20	3.24
Steakhouse	4.96	1.06	4.81	1.04
Sukiyaki/Shabu-Shabu	0.81	1.21	0.79	1.19
Sushi	1.65	1.16	1.39	1.16
Swedish	10.59	1.16	10.45	1.16
Swiss	2.27	1.13	2.39	1.14
Szechuan	-1.00	2.28	-1.06	2.27
Taiwanese	-4.90	1.23	-4.96	1.23
Tearoom(Specialties)	5.00	1.06	5.00	1.08
Tex-Mex	-1.37	1.24	-1.48	1.26
Thai	0.73	1.20	0.80	1.19
Tibetan	7.29	1.27	7.25	1.26
Turkish	1.67	1.53	1.65	1.54
Tuscan	4.16	1.57	4.16	1.55
Vegan	2.74	1.13	2.77	1.14
Vegetarian	2.11	1.57	2.08	1.59
Venetian	3.51	2.35	3.49	2.33
Venezuelan	-2.23	1.24	-2.28	1.23
Vietnamese	-1.21	1.32	-1.19	1.31
West African	2.18	1.11	2.18	0.13
Yakiniku/Beef	2.87	1.11	2.97	1.13

Table 15 Effect of Being New on Restaurant Pricing Manhattan

	Coefficient	Std. Err
Chelsea	Omit	
Chinatown	3.81	2.47
East 40s	4.88	1.78
East 50s	4.52	1.69
East 60s	6.75	1.92
East 70s	2.63	1.80
East 80s	1.78	1.74
East 90s	1.56	2.51
East Harlem	10.00	10.76
East Village	-3.29	1.63

Financial District	1.69	2.25
Flatiron District	1.58	1.99
Garment District	2.40	2.65
Gramercy Park	0.06	1.95
Greenwich Village	-0.22	1.48
Harlem	0.26	3.20
Little Italy	-1.12	3.00
Lower East Side	-2.59	2.47
Meatpacking District	6.94	2.88
Murray Hill	-0.99	1.93
NoHo	-0.69	2.90
NoLita	0.67	3.13
SoHo	-0.72	1.85
South Street Seaport	1.27	5.03
TriBeCa	1.64	1.98
Union Square	0.16	2.94
Washington Hts. & Up	-5.75	4.06
West 100s	-3.98	2.56
West 40s	2.89	1.62
West 50s	4.08	1.59
West 60s	24.87	2.49
West 70s	1.64	1.87
West 80s	-0.39	2.12
West 90s	0.58	3.04
Afghan	Omit	
African	0.60	13.05
American (New)	5.60	7.54
American (Traditional)	2.53	7.54
American New England	6.19	10.57
American Regional Southern	1.63	7.85
Argentinean	3.10	8.46
Asian	-0.26	7.85
Australian	7.88	13.14
Austrian	3.12	9.69
Bakery	-2.79	7.75
Barbecue	8.08	8.00
Belgian	0.68	8.63
Brazilian	2.77	8.61
British	3.01	10.55
Burmese	2.49	10.50
Cajun	4.66	8.37
Californian	7.63	12.87
Cantonese	0.58	8.30
Caribbean	-0.66	8.48
Cheese Steaks	-1.77	8.63
Chinese	2.78	7.60
Coffeehouse	-4.59	7.91
Coffeeshop/Diner	1.60	7.96

Continental	8.34	8.49
Creole	-6.51	16.70
Cuban	-0.88	7.94
Deli	4.80	8.13
Dessert	-7.75	8.63
Dim Sum	-0.50	7.96
Dominican	-0.50	9.74
Eastern European	26.97	13.03
Eclectic / Int'l	-2.08	7.71
Egyptian	6.05	12.94
Emilian	-1.06	9.65
Ethiopian	0.82	8.83
European	1.54	10.57
Filipino	4.18	10.59
Fish and Chips	1.36	10.52
French	4.72	7.72
French (Bistro)	5.16	7.57
French (Brasserie)	7.35	7.92
French (New)	15.42	7.97
German	2.13	9.14
Greek	4.21	7.84
Hamburgers	-0.28	7.96
Hot Dogs	-2.97	8.38
Ice Cream	-14.96	8.87
Indian	-3.18	7.63
Israeli	10.25	12.97
Italian	2.34	7.62
Italian Southern	4.32	7.51
Jamaican	0.26	10.63
Japanese	4.65	7.69
Jewish	6.40	12.89
Korean	-6.29	8.28
Korean Barbecue	1.14	8.76
Kosher	6.95	8.84
Lebanese	4.53	12.90
Ligurian	1.11	9.23
Malaysian	-2.16	8.88
Mandarin	-1.40	13.04
Mediterranean	2.44	7.82
Mexican	-1.65	7.62
Middle Eastern	2.82	9.64
Milanese	8.61	9.15
Moroccan	2.33	10.60
Neapolitan	8.77	9.23
None	-1.04	12.93
Noodle Shop	-0.63	8.01
Northern	6.38	7.53
Nuevo Latino	2.79	9.65

Pan-Latin	-9.89	12.91
Persian / Iranian	0.18	12.85
Peruvian	10.13	8.47
Pizza	-2.55	7.68
Polish	5.74	12.89
Portuguese	2.09	10.57
Puerto Rican	4.47	12.91
Roman	1.72	9.14
Russian	11.99	12.86
Sandwiches	-3.67	7.80
Scandinavian	-2.27	9.16
Seafood	6.58	7.74
Sicilian	-3.87	10.55
Soul Food	2.71	12.93
South American	2.90	12.90
Southwestern	2.23	8.24
Spanish	2.21	8.19
Spanish Basque	4.10	10.55
Spanish Tapas	1.73	8.14
Steakhouse	12.78	7.69
Sukiyaki/Shabu-Shabu	8.25	9.11
Sushi	11.11	7.58
Swedish	5.11	12.94
Szechuan	-0.63	9.61
Tex-Mex	4.35	7.90
Thai	-4.21	7.65
Tibetan	-9.24	12.91
Turkish	-0.54	8.05
Tuscan	6.12	7.86
Vegan	-4.02	9.11
Vegetarian	0.76	8.50
Venetian	2.61	12.96
Venezuelan	-2.58	9.62
Vietnamese	-1.24	7.87

Table 14 Effect of Being New on Restaurant Pricing Las Vegas

	Coefficient	Std. Err
Central	Omit	
Downtown	-6.51	5.91
East of Strip	-5.07	5.81
East Side	-3.21	5.89
Northwest	-5.19	5.78
South of Strip	1.56	7.49
Southwest	3.97	8.27
Strip	1.50	5.56
Summerlin	-5.93	6.66

West of Strip	-3.61	5.84
West Side	-2.47	5.85
American (New)	Omit	
American (Traditional)	-6.43	2.58
American Regional Southern	4.45	6.04
Asian	-6.44	3.80
Bakery	-14.10	5.85
Barbecue	-4.22	3.81
Brazilian	-2.24	5.88
British	-18.29	8.11
Cajun	0.30	4.42
Californian	-2.00	4.91
Cantonese	-4.29	5.88
Caribbean	-3.79	7.98
Chinese	-4.25	2.95
Coffeeshop/Diner	-14.08	5.48
Continental	-1.52	3.48
Cuban	-0.41	9.97
Deli	-5.34	3.78
Dessert	-12.92	3.85
Dim Sum	-6.17	4.03
Eclectic / Int'l	-9.02	3.10
Floribbean	-14.30	8.12
Fondue	2.49	8.18
French	6.59	3.78
French (Bistro)	-3.59	3.76
French (New)	16.41	3.77
Hamburgers	-17.04	5.11
Hawaii (Regional)	-2.17	5.89
Hawaiian	2.93	7.94
Indian	-8.80	5.05
Irish	-15.85	8.09
Italian	-5.34	2.92
Italian Southern	-5.60	3.07
Mediterranean	-7.47	4.07
Mexican	-9.24	2.70
Moroccan	-12.43	8.10
None	-9.47	3.01
Northern	-0.37	3.04
Peruvian	-6.25	8.14
Pizza	-9.57	4.98
Russian	-8.88	8.16
Sandwiches	-7.20	3.60
Seafood	3.73	2.55
Southeast Asian	-11.36	8.00
Southwestern	-5.38	4.15
Spanish Tapas	-15.27	5.93
Specialties: Small Plates	-6.19	7.96

Steakhouse	3.35	2.51
Sushi	1.00	2.93
Tex-Mex	-10.55	8.10
Thai	-14.61	5.11

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