

# THE PRIVATE MARKET FOR ACCOMMODATION: DETERMINANTS OF SMOKING POLICIES IN RESTAURANTS AND BARS

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## INTRODUCTION

Adult smoking prevalence has been falling in the United States, down from 42.4 percent in 1965 to 24.1 percent in 1998, a 43 percent reduction. The percentage of adults who never smoked increased from 44 percent in the mid-1960s to 55 percent in 1997.<sup>1</sup> It is not surprising then that owners of restaurants have responded to changing customer preferences by changing how they allocate their air space between smoking and non-smoking use. Restaurants without non-smoking seating sections have become exceptions. These provisions are not isolated to locations where state or local laws restrict or ban smoking and indicate an active private market in accommodation.

It has been shown that areas with lower adult smoking rates have more smoking laws and bans. It is important to note, however, that such laws have been introduced without much benefit of research on how the private market has dealt with the issue of accommodation of both smokers and non-smokers. Proponents of smoking restrictions often argue that smoking exerts a negative externality on non-smokers and that governments should control smoking through laws and bans. [Campaign for Tobacco Free Kids, 2002] Even if such externalities exist, it would appear to be useful first to ask whether, in the absence of laws, private markets work toward internalizing the externalities. An active market in accommodation might indicate that laws and bans are simply overturning, partially or totally, actions of owners that had successfully dealt with smoking-related externalities.

This paper examines the diversity of private market accommodations in roughly 1,000 restaurants and bars in Wisconsin. We develop a model that predicts which factors determine the share of seating devoted to non-smoking use within the setting of profit-maximization. While it is important to note that the data are limited to Wisconsin, this is likely a reasonable case study for a number of reasons. First, the state has few stringent smoking laws, providing a rich data set to explore how volun-

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tary choices of owners are related to various factors. This analysis examines laws each owner may be subject to and considers this information in the model. Wisconsin is also not an outlier because it does not ban smoking everywhere, as does California, nor does it fail to control its use in restaurants, as does Nevada. Finally, the adult smoking rate in Wisconsin is 23.4 percent, which is well within two standard deviations from the median smoking rate of 22.9 percent of all states. [Cook, 1999]

The paper begins with a literature review summarizing previous studies that address smoking policies. This is followed by a description of the data. An economic model then indicates which factors underlie smoking policies chosen by owners, and determines which factors are important to smoking policies in the absence of government restrictions and which factors are no longer important following the imposition of smoking laws. The conclusion discusses implications about the private market in accommodation and the effects of smoking bans and restrictions on individual owners.

## LITERATURE REVIEW

Only limited research has been conducted on the private market in accommodation. Two studies directly examine seating allocations within restaurants and bars. Boyes and Marlow [1996] examine survey data in San Luis Obispo, one of the first cities to institute a ban on smoking in restaurants and bars. Sixty-four restaurants and bars were surveyed—roughly 65 percent of all affected businesses. The authors suggest that an active market in private accommodation existed prior to the ban because 62 percent of owners had non-smoking sections.

Logit models of support for bans in San Luis Obispo were estimated using data from a random survey of 764 individuals, 84 percent of whom were non-smokers. The empirical evidence indicates that the odds of supporting the smoking ban are significantly lower for respondents who smoke and are male. Age, education, and whether or not a respondent resided in the local community did not significantly influence odds of supporting the ban. Despite widespread support for the bans a significant percentage of the non-smokers (62 percent) also believed that smoking/non-smoking sections dealt effectively with smoking prior to the ban. Apparently, while a majority of non-smokers believed that the private market in accommodation was effective, they nonetheless favored outright bans.

Dunham and Marlow [2000a] also study private market accommodation. They examine national survey data drawn in 1996 from owners/managers of 1,300 randomly selected restaurants (650) and bars/taverns (650) across the United States. Samples were drawn in a statistically random manner and were applicable to all such establishments with a maximum sampling error of approximately plus or minus 4 percentage points. The survey found that, for restaurants, on average, 54 percent of seating was allocated to non-smoking, and for bars/taverns 5 percent was thus allocated. Both restaurants and bars/taverns exhibited cases where smoking was entirely prohibited as well as allowed throughout establishments. The authors conclude that state smoking laws do not influence allocations of non-smoking seating and suggest that laws are passed in states with relatively few smokers and therefore owners had already allocated relatively many seats to non-smoking use prior to

the passage of laws. This hypothesis is supported by their finding that states with relatively many people involved in the tobacco manufacturing industry are significantly less likely to pass smoking laws than those states with relatively few workers. They also find that the percentage of seating allocated to non-smoking is negatively related to the percentage of smokers in the population, is significantly higher for owners affiliated with chains, and is significantly lower for older businesses and for bars.

A limited number of studies build on the information gained from surveys of business owners and patrons and attempt to determine the microeconomic effects of smoking bans. While the detailed analysis of enterprise survey data discussed above finds that smoking bans have differential effects, these studies utilize a factor analysis approach to determine how the bans actually impact business. Dunham and Winegarden [1999] examine the data from the 1996 survey of restaurant owners discussed above and find that customers patronize hospitality establishments to placate the desire to fill three distinct needs: food, social companionship, and status. Smoking bans appear to positively impact restaurants that supply the first need, while harming those that supply the other two. The actual impact of the smoking ban on a particular restaurant will depend on how that establishment meets the three needs. The authors conclude that this is why fast-food type establishments have all restricted smoking, and in part why the aggregate research discussed below shows that bans have little or no impact.

Indirect evidence on the private market for accommodation may be suggested by examining the much larger literature that addresses whether or not smoking bans lower revenues (as a proxy for profits) of owners of restaurants and bars. This literature follows one of two directions. One direction focuses on the impacts on individual owners. Dunham and Marlow [2000b] examine the distribution of expected effects of smoking laws on revenues using the previously discussed data from a nationwide survey of 1,300 restaurants and bars. For restaurants, 6 percent of owners predicted that bans would raise revenues, 39 percent predicted lower revenues, and 55 percent predicted no changes. For bars and taverns, a ban was predicted to raise revenues by 2 percent of owners, lower revenues by 83 percent, and produce no change in revenues by 13 percent. Predictions of gains, losses, and no effects on revenues are found to be consistent with how owners allocate seating within their establishments. That is, the lower the amount of seating allocated to non-smoking use, the higher the probability that an owner predicted that a smoking ban would lower revenues. This result indicates that seating allocations are made on the basis of profits, as is consistent with an efficient private accommodation market. They also conclude that bar owners are more than twice as likely to predict revenue reductions than are owners of restaurants.

The other research direction aggregates all owners into one "community-wide" impact. A number of studies have concluded that businesses do not suffer reduced sales as a result of bans. Glantz and Smith compare 15 cities with smoking laws with 15 matched control group cities. They conclude: "[L]egislators and government officials can enact such health and safety requirements to protect patrons and employees in restaurants from the toxins in second-hand tobacco smoke without the fear of ad-

verse economic consequences” [1994, 1085]. In their study of smoking laws in North Carolina, Goldstein and Sobel conclude: “Even in the number one tobacco-producing state in the U.S., ETS regulations present no adverse economic impact, and there is no need for exceptions to the ordinances based on such fears” [1998, 288]. Sciacca and Ratliff conclude in their study of Arizona firms: “This study seems to indicate that prohibiting smoking in all Flagstaff restaurants has had no effect on total restaurant sales... If these findings are true for communities throughout the United States, then other cities can enact similar laws, which protect patrons and food service workers from tobacco smoke, without concerns that restaurants will lose business” [1998, 184].

In addition to the research discussed above, a number of public opinion surveys [Penn and Schoen, 1996; Biener and Siegel, 1997; Sciacca, 1996] have been conducted to gauge the general public’s response to questions related to smoke-free restaurants. These surveys ask whether or not people would prefer to have smoking sections available in establishments, and who they think should regulate smoking. These survey-based studies do not provide any economic information, nor do they control for whether or not respondents actually frequent the establishments about which they are opining. Generally speaking, surveys conducted by anti-tobacco groups find that the public prefers that smoking be banned in restaurants. Verifying these responses is difficult because the survey instruments are rarely released. Surveys conducted by business groups/governments find that generally people prefer some form of accommodation and suggest that it is up to owners to establish policies.

Even if the “community-wide” approach is considered appropriate for examining the effects of smoking bans on owner revenues, it is not particularly useful when examining the private market for accommodation because the approach cannot separate out those owners who allocate more seating space to non-smoking use prior to bans.<sup>2</sup> Moreover, there is no way to know what percentage of owners experience gains or losses, because all data are aggregated into one community-wide number. That is, there is no information about individual owners. An understanding of differential effects is essential for a comprehensive social welfare analysis and would be necessary when determining appropriate levels of compensation for injured parties within the broader framework of social welfare analysis.<sup>3</sup>

## **ECONOMIC MODEL OF HOW BUSINESS OWNERS HANDLE SMOKING ISSUES**

Problems inherent in government attempts to fully internalize externalities are well known. Turvey [1963] argues that corrective taxation must deal with the following two problems before it undertakes corrective action. One: government must ascertain and then enforce policies whose benefits outweigh costs. That is, corrective policies require knowledge of true levels of externality and then political and administrative processes must set policies in line with that knowledge. Two: corrective action should be pursued only as long as it doesn’t unfavorably affect income distribution. Turvey’s two problems are relevant to our study of smoking bans because they indicate the importance of understanding both benefits and costs for informed debate

regarding the merits of smoking bans. This study focuses on economic costs and therefore adds to the understanding of how bans likely affect income distribution.

Significant reductions in the adult smoking population do not indicate that all owners face customers with identical preferences regarding smoking.<sup>4</sup> Preferences are likely to vary by income, age, marital status, occupation, and other factors. Some owners cater to relatively many customers who smoke and others serve relatively few. Some owners may have many customers who find non-smoking sections a viable method of dealing with the smoking issue, and other owners may serve many customers who prefer smoking to be forbidden.

Cost factors should also influence smoking policies chosen by owners. Some buildings are relatively easy to modify for non-smoking use because ease of modification may be affected by age, size, climate, and other factors. Larger spaces may be more easily modified than smaller spaces and older spaces may be more difficult to modify than newer spaces. Variations in smoking policies reflect the fact that individual owners allocate their resources to highest-valued uses. In our example, smoking policies establish allocation of air space resources within businesses.

Coase [1960] provides the general framework for understanding how private markets might deal efficiently with the allocation of air space in restaurants and bars [Boyes and Marlow, 1996]. An efficient solution requires that owners be allowed to make all decisions regarding the use of their resources, which includes air space within their establishments, and transactions costs must not be prohibitive. The first condition is met when owners establish smoking policies within their establishments without interference from restrictive laws. Owners may forbid smoking, allow smoking throughout, or provide a mix of smoking and non-smoking seating as they freely allocate air space to highest-valued customers.

Further discussion of transactions costs is in order. Transactions costs are likely to be prohibitive if smoking policies were determined at the start of each business day. For instance, smokers and non-smokers could bid against each other every day, with the winner determining the extent to which smoking would be allowed. This conceivably would result in a wide variety of smoking policies over time, but is an unlikely event when customer bases (and their preferences regarding smoking) are stable. That is, it is more cost-effective for owners to establish permanent smoking policies as a means of lowering transactions costs as they cater to their customers. While this practice is unlikely to establish a complete internalization of externalities, it should be remembered that neither the private sector nor the government is likely to internalize externalities fully. A better question is: "Which one does a better job?" Our study focuses on how the private sector meets customer preferences by designing smoking policies that cater to various customer and business attributes.

The second condition then appears to be met because owners act as intermediaries between demanders of air space: smoking and nonsmoking customers. While transactions costs of agreement on smoking policies between these two sets of consumers would be prohibitive if the consumers were to negotiate before each meal, negotiations actually take place in another manner. Owners have an incentive to effectively deal with these divergent sets of demanders by offering differing smoking environments. To do otherwise not only reduces their ability to meet customer preference

but also lowers profits. It is predictable that, just as some restaurants will serve Mexican food while others feature steak, some owners will allocate all air space to non-smoking uses, others will find it more effective to not prohibit smoking anywhere, and still others will divide their seating place between smoking and non-smoking uses.

Owners may also invest in physical separations of smokers from non-smokers as well as air filtration equipment as they cater to customer preferences within their individual cost constraints. For instance, bar owners may find it cheaper to invest in air filtration equipment than to designate non-smoking sections. These may be substitute policies within the context of pleasing their customers. Restaurant owners operating large spaces may find it cheaper to insert walls separating smoking and non-smoking seating than owners with small spaces. The point is that policies will vary because of variation in customer preferences and cost constraints and that such variation is consistent with owners maximizing long-term values of their businesses and meeting preferences of their customers.

Predictably, owners will offer more smoking options in markets dominated by smokers than in markets dominated by non-smokers. As previously discussed, however, other factors may influence allocations of seating into smoking/non-smoking designations. These may include such variables as the size of investments in smoking patios and air filtration equipment, the size of the firm (particularly when scale economies exist in catering to both smoking and non-smoking populations), whether an establishment is a member of a corporate chain or an independent firm, the number of years in business, and the age of buildings.

Coase [1960] argues that successful internalization of an externality doesn't depend upon who has the property right to a scarce resource, as long as it is vested upon a private owner. In the case of the air space within restaurants, the property right is owned by the restaurant owner, who then "sells" it to customers who value the resource the most. Restaurant owners are intermediaries between the two sets of bidders, smokers and non-smokers, who then determine smoking policies on the basis of who values the air space the most. Smoking policies will favor smokers when smokers "bid" the highest for the resource, but favor non-smokers when they "bid" the highest. "Bidding" takes the form of contribution to profits by customers. Customers who contribute more toward profits "out-bid" customers who contribute less toward profits.<sup>5</sup>

As discussed above, Coase [1960] establishes the importance of property rights and low transactions costs in guiding an efficient allocation of resources within the private market in cases of externalities. Turvey argues that, "when negotiation is possible, the case for government intervention is one of justice not of economic efficiency" [1963, 313]. This conclusion suggests the importance of studying whether the private market offers a viable mechanism for internalizing externalities associated with smoking within restaurants and bars.<sup>6</sup>

It is instructive to contrast incentives facing private owners and political authorities regarding decision-making over smoking policies. Profit-maximizing owners cater to a much narrower constituency, or base, than do political authorities. Customer attitudes toward smoking are their clearest guide to optimal smoking policies and it is predictable that owners will not offer one-size-fits-all policies when

customer attitudes are diverse. The bottom line for owners is maximizing the value of their business, and therefore they focus on pleasing paying customers. Smoking policies are then determined at the level of business and, because each owner faces a unique set of customers, smoking policies will vary substantially among businesses.

Constituencies of political authorities are much broader than customer bases of owners and include various special interest groups. These may include, for instance, public health advocates who often favor bans, as well as business advocates such as Chambers of Commerce who often oppose them. Individual voters are also constituents, some of whom will frequent restaurants often and others who do not. The signal flowing to political authorities therefore will be broader than that flowing to owners. It would appear that, while owners set policies that please customers, smoking policies advocated by political authorities will be less related to maximizing the value of individual businesses. Profits for individual owners are therefore likely to suffer when political authorities set policies that are inconsistent with the smoking preferences of customers.

There is widespread agreement that smoking generates negative externalities that may include nuisance to non-smokers and adverse health consequences. An appropriate question, then, is to ask if actions of private owners to allocate resources efficiently by catering to customer preferences regarding smoking are synonymous with a socially efficient resource allocation. The answer is clearly complex and introduces several related issues. One, do customers correctly identify the true levels of externalities?<sup>7</sup> Two, do customers convey smoking preferences to owners that are consistent with correct understanding of externalities? Three, do owners then cater to these preferences of customers in the smoking policies they provide?

It should be understood that many of these same issues arise when we examine how governments provide smoking policies. That is, do policymakers correctly identify externalities and then design and enforce policies that internalize them? As discussed above, Turvey [1963] discusses these issues when addressing whether government or the private sector should attempt to internalize externalities.

The issue is not whether government or private owners can fully internalize externalities, but which one is likely to be more successful given the various complications. This study focuses on how well private owners internalize externalities by empirically examining the extent to which customer preferences, as well as other factors such as accommodation costs, enter into smoking policies chosen by owners. The empirical work offers insights into how well the private sector meets the preferences of customers regarding smoking.

## **DESCRIPTION AND SUMMARY OF SURVEY DATA**

The ETC Institute of Olathe, Kansas surveyed a total of 978 owners of restaurants, bars and taverns in Wisconsin during February and March 2001.<sup>8</sup> The survey data was used to determine general characteristics of restaurants and bars/taverns in Wisconsin. Of those surveyed, 56 percent consisted of restaurant owners (550 owners) and 44 percent consisted of bar and tavern owners (428 owners). This sample represents precision of at least  $\pm 3.3$  percent at the 95 percent level of confidence.

**TABLE 1**  
**Statistics Related to Non-Smoking Seating Allocations**

	<b>All Restaurants percentage</b>	<b>with Restrictions percentage</b>	<b>without Restrictions percentage</b>
Distribution Seating Allocated to Non-Smoking Use			
0-25 percent Non-Smoking	42	15	47
26-50 percent Non-Smoking	16	21	18
51-75 percent Non-Smoking	13	17	15
76-100 percent Non-Smoking	28	47	19
Average Non- Smoking Seating	44	56	34
Smoking Allowed in Bar Area <sup>a</sup>		34	
Separate Smoking Area		31	
Smoking Section		29	
Outdoor Areas		16	
Separate Room		14	
Separately Ventilated Room		4	

a. Multiple responses were allowed.

Unlike previous nationwide studies, this survey provides an in-depth examination of one state, and is the most detailed survey conducted to date and gathers information on numerous factors that might influence smoking policies of owners. For instance, detailed information on the class of occupations of typical customers and whether businesses have liquor licenses provide much clearer examination of factors that might underlie smoking policies. Previous studies of accommodation policies lacked information on local smoking laws and instead focused on only state smoking laws, thus neglecting the possibility that some locations within the same state have much more stringent smoking laws than others. Focus on one state allows examination of local smoking laws without complications that arise from the diversity of state policies.

According to the survey results there are four general types of restaurants in Wisconsin:

- restaurants serving all types of alcohol (62 percent),
- restaurants serving no alcohol (20 percent),
- fast food (12 percent), and
- restaurants serving beer and wine ( 7 percent).

Owners offer a diverse set of smoking policies. For example, 18 percent of restaurants, but only 0.2 percent of bars, provide smoke-free facilities. In other words, roughly one-fifth of restaurants and virtually no bars ban smoking. An additional 45 percent of restaurants, and 2 percent of bars, allow at least some smoking. Of these restaurants, 31 percent of owners are constrained by law and another 28 percent are constrained by corporate policy. Table 1 reports more detail on the various smoking policies.



**TABLE 2**  
**Summary Statistics of Key Variables Regarding Restaurants**

Continuous Variables	Mean	Median	Minimum	Maximum
<i>NS</i> : Percent of Non-Smoking Seating	44.4	50.0	0	100
<i>SMOKERS</i> : Percent of Customers Who Smoke	36.1	30.0	0	99
<i>CHILDREN</i> : Percent of Customers Who Bring Children	18.2	15.0	0	90
<i>AGE</i> : Years in Business	20.8	14.0	9.5	99
<i>BUILDINGAGE</i> : Age of Building (years)	54.7	50.0	1	230
<i>SEATS</i> : Number of Seats	121.8	90	0	1800
Dichotomous Variables	Percent			
<i>FASTFOOD</i> :Percent of Operating Fast Food Restaurants	12			
<i>GENERAL</i> : Percent of Businesses with General Liquor License	62			
<i>CHAIN</i> : Percent of Businesses Affiliated with Chain	11			
<i>COLLEGETOWN</i> :Percent of Businesses in College Town	27			
<i>WHITECOLLAR</i> :Percent of Businesses Whose Typical Customer Holds White-Collar Job	34			
<i>BAN</i> :Percent of Businesses Subject to Government Smoking Ban	7			
<i>RESTRICTION</i> :Percent of Businesses Subject to Government Restriction (less than ban)	22			

### ECONOMETRIC MODEL OF NON-SMOKING SEATING IN RESTAURANTS<sup>9</sup>

A basic regression model is used to predict that restaurant owners base non-smoking seating policies on the basis of four groups of factors.<sup>10</sup> Bars are not included in estimations because they provide virtually no non-smoking seating. The model is shown below in equation 1, where:

*NS* = percentage of seating allocated to non-smoking use,  
*Customer* = demand-related factors,  
*Business* = type of business factors,  
*Cost* = size and cost factors, and  
*Law* = smoking law factors.

$$(1) \qquad NS = f(Customer, Business, Cost, Law)$$

Table 2 displays summary statistics of all variables used in the empirical examination. The first group of variables tested might be defined best as “Consumer Factors” because they represent the demographic and social attributes of the dining public. As discussed earlier, restaurant owners are hypothesized to provide less non-smoking seating as shares of smoking customers (*SMOKERS*) rise because this factor indicates preferences regarding smoking. Other authors including Lilley [1996] show that smoking bans have little impact on restaurant employment in college

towns, therefore we hypothesize that restaurant owners in such locales (*COLLEGETOWN*) will tend to provide more non-smoking seating as casual observation suggests. We hypothesize that restaurant owners provide more non-smoking seating when more patrons are white-collar workers (*WHITECOLLAR*) than blue-collar (*BLUECOLLAR*) based on the expectation that the incidence of smoking falls with income. These job-related variables are defined as dummy variables whereby they equal one if the owner states that either one is their “average” customer, and equal to zero if otherwise. Finally, *CHILDREN* measures the percentage of adult customers accompanied by children aged 18 or less. We hypothesize that non-smoking seating rises as the share of patrons bringing in children rises because this represents a less social environment populated by fewer smokers.

The second group of variables tested can be defined as “Business Type Factors,” as they represent underlying qualities of the restaurants themselves. Owners of fast food restaurants (*FASTFOOD*) are expected to offer more non-smoking seating because they face patrons who are generally in a hurry to eat and leave. *FASTFOOD* equals one for fast food businesses and zero otherwise. Owners of restaurants with general liquor licenses, offering beer, wine and hard liquor, (*GENERAL*) are expected to offer less non-smoking seating because their patrons often linger during meals and tend to be older and seek a more social environment than restaurants that do not serve all types of alcohol. *GENERAL* equals one if the businesses has a general liquor license and zero otherwise. Chain affiliation (*CHAIN*) is hypothesized to raise non-smoking seating as smoking and non-smoking sections are often dictated by corporate ownership. *CHAIN* equals one if the business belongs to a corporate chain and zero otherwise. Finally, the age of the establishment (*AGE*) is measured in years and is expected to be inversely related to non-smoking seating based on the expectation that older businesses have many longtime patrons that reflect generations where smoking was more tolerated.

The third grouping of variables might best be described as “Size and Cost Factors.” These represent the physical attributes of the restaurants and, as discussed earlier, can influence the cost of providing non-smoking space. Building age (*BUILDINGAGE*) is measured in years and is expected to be negatively related to non-smoking seating because older buildings are likely to be more costly to retrofit when accommodating non-smokers with partitions, additions, and air filtration investments.<sup>11</sup> *SEATS* measures number of seats and is hypothesized to be positively related to non-smoking seating because larger numbers of seats makes separation of smokers from non-smokers more likely. Moreover, larger seating may also allow owners to offer relatively larger non-smoking sections.<sup>12</sup>

The last grouping of variables represents “Smoking Laws.” Restaurant owners who are subject to smoking bans (*BAN*) are hypothesized to offer relatively more non-smoking seating simply because the law dictates that they do so. *BAN* equals one when local law provides a ban and zero otherwise. Similar logic suggests that presence of a smoking restriction that is less than a ban (*RESTRICTION*) is associated with more non-smoking seating. *RESTRICTION* equals one when restrictions are present and zero otherwise.

**TABLE 3**  
**OLS Estimates of Non-Smoking Share of Seating**

	All Restaurants	without Restrictions	with Restrictions
Variable	Coefficient ( <i>t</i> -stat)	Coefficient ( <i>t</i> -stat)	Coefficient ( <i>t</i> -stat)
Constant	62.23 (12.65)	57.76 (9.77)	69.61 (6.68)
Customer Characteristics			
<i>SMOKERS</i>	−0.73 <sup>a</sup> (11.03)	−0.76 <sup>a</sup> (9.79)	−0.57 <sup>a</sup> (3.41)
<i>COLLEGETOWN</i>	6.84 <sup>b</sup> (2.17)	6.63 (1.66)	8.53 (1.45)
<i>WHITECOLLAR</i>	14.59 <sup>a</sup> (4.78)	16.85 <sup>a</sup> (4.40)	10.39 (1.79)
<i>CHILDREN</i>	0.17 <sup>b</sup> (2.06)	0.27 <sup>a</sup> (2.74)	−0.11 (0.60)
Business Type Factors			
<i>FASTFOOD</i>	13.20 <sup>b</sup> (2.49)	13.41 (1.85)	20.61 (1.81)
<i>GENERAL</i>	−12.41 <sup>a</sup> (3.87)	−12.83 <sup>a</sup> (3.31)	−2.86 (0.42)
<i>CHAIN</i>	11.18 <sup>b</sup> (2.38)	13.31 <sup>b</sup> (2.03)	11.14 (1.25)
<i>AGE</i>	−0.14 <sup>b</sup> (2.22)	−0.22 <sup>a</sup> (2.75)	0.04 (0.27)
Size and Cost Factors			
<i>BUILDINGAGE</i>	−0.04 (0.33)	0.004 (0.09)	−0.10 (1.29)
<i>SEATS</i>	0.04 <sup>a</sup> (3.46)	0.06 <sup>a</sup> (3.13)	0.02 (1.26)
Smoking Ban Factors			
<i>BAN</i>	30.52 <sup>a</sup> (4.72)		
<i>RESTRICTION</i>	10.04 <sup>a</sup> (3.03)		
Adjusted R <sup>2</sup>	0.47	0.41	0.23
s.e.e.	28.95	29.63	26.43
Mean dependent var.	43.72	33.96	58.85
<i>F</i> -Statistic	36.73 <sup>a</sup>	24.99 <sup>a</sup>	4.25 <sup>a</sup>
Observations	491	344	111

a. Denotes a .01 level of significance. b. Denotes a .05 level of significance.

Table 3 displays ordinary least squares regression estimations of non-smoking seating shares for restaurants—that is, percentage of seating devoted to non-smoking use. Three estimations are displayed: all restaurants, restaurants without government smoking restrictions, and restaurants with government smoking restrictions (but less than a ban).<sup>13</sup>

Estimation using data on all restaurants indicates that all variables except for the age of building are significant and of the expected sign. Smokers as a share of all

customers exert a negative effect, indicating that owners allocate less space to non-smoking as the share of smokers rises. The positive coefficient on the college town dummy indicates that owners allocate relatively more space when businesses are located in college towns. Owners whose typical customer holds a white-collar job also allocate relatively more space to non-smoking use. Owners allocate relatively more space to non-smoking use as more of their adult customers bring children with them. Fast food restaurants allocate relatively more space toward non-smoking use than other restaurants. Restaurants with general liquor licenses allocate less space toward non-smoking use. Restaurants that are affiliated with a corporate chain allocate relatively more space to non-smoking use. Age of business negatively affects non-smoking allocations and numbers of seats is positively related to non-smoking seating allocations.

Finally, businesses that are subject to smoking bans or other government restrictions allocate relatively more of their seating to non-smoking use. While Dunham and Marlow [2000a] find that smoking laws do not affect seating allocations of owners, their model estimates the relation between state smoking laws on seating allocations. Their finding of no significant relationship is consistent with the hypothesis that states with relatively few smokers are those that tend to pass smoking laws and therefore their owners would offer more non-smoking seating in the absence of laws. This study, however, considers local, not state, laws and is not directly comparable to Dunham and Marlow [2000a]. Since no data exist on the populations of smokers within local jurisdictions it is not possible to control for the likelihood that local laws tend to be passed in jurisdictions with relatively few smokers. This overturns some of the significance of the ban and restrictions variables.

Estimations using data on restaurants without restrictions mirror the results using data on all restaurants and are not separately discussed.<sup>14</sup> Estimation of the model using data on restaurants with government restrictions (but not bans), however, indicates a sharp drop in the number of factors that significantly influence the seating allocations toward non-smoking use. Only one factor exerts significant impacts on seating allocations: smokers as a share of customers (negative influence). It is not surprising that the last estimation, which is based on restaurants with government restrictions, reveals a sharp drop in the number of factors that significantly influence owner decisions regarding seating allocations. This is not surprising since government restrictions provide one-size-fits-all requirements on owners regarding their smoking decisions. As indicated in the other estimations, many factors underlie owner decisions regarding accommodation in the private market. Government restrictions overturn many of these factors, making them irrelevant to the final allocation of seating.

Interestingly, decisions within the constraints of government restrictions remain sensitive to smoking preferences. Specifically, the share of customers who smoke continues to exert a significant and negative influence on seating allocations toward non-smoking use. This result is consistent with the profit-maximization scenario: owners who serve government-mandated minimum requirements for non-smoking seating will provide just that minimum when they cater to relatively many smokers. Alternatively, owners who face relatively few smokers may provide seating allocations that exceed such minimums.

## CONCLUSION

This study finds an active private market in accommodation of smokers and non-smokers in Wisconsin restaurants. Empirical analysis indicates that a large number of factors underlie owner decisions regarding how to allocate seating to non-smoking use. Owners not only base their decision on the number of smokers in their community, but also consider customer occupations, presence of children, and whether businesses are located in college towns, as well as type of restaurant and whether the establishment has a general liquor license. Business age, numbers of seats, and membership in a corporate chain also underlie decisions made in the private market for accommodation.

Government smoking restrictions that are less than bans overturn all of the factors that owners previously found critical to their choices of accommodation policies, except for the number of smokers in their client base.

These findings indicate that an active private market in accommodation is consistent with diversity of smoking policies. This study mirrors previous studies showing that some owners find it profitable to ban all smoking, others to provide a mix of smoking and non-smoking seating, and still others to allow smoking throughout their establishments. Policy diversity is a natural consequence of differences in customer and business factors.

Smoking bans prohibit diversity because owners cannot freely set policies on the basis of customer and business factors. This study predicts that owners are likely to suffer losses when government bans and restrictions significantly overturn smoking policies chosen in the absence of government intervention. In addition, the analysis indicates that government restrictions that are less stringent than bans leave some room for diversity on the basis of the number of smokers in their client population. Predictably, owners who undergo the largest changes in smoking policies will be those who most often experience profit losses.

Finally, smoking bans may also impose losses on consumers as well as owners when customers experience adverse changes following bans. Higher prices and lower menu choice, food quality, and waiting staff service are a few of the many changes that owners may establish as they attempt to shift costs of bans onto customers [Dunham and Marlow, 2003]. Costs imposed on consumers should be included with costs imposed on owners (lower profits) when we examine effects of bans on income distribution.

## NOTES

John Dunham is President of John Dunham and Associates in New York, and Michael L. Marlow is Professor, Department of Economics, California Polytechnic State University, San Luis Obispo, California. This paper is based in part on a study conducted for Philip Morris Management Corp. The authors thank Jason Enia, Hycyeon Park, Cyrus A. Ramezani, Mike Stojasavljevich, Wayne Winegarden and two anonymous referees for their helpful comments. For further information please contact Michael L. Marlow at [mmarlow@calpoly.edu](mailto:mmarlow@calpoly.edu). Mr. Dunham was a consultant to Altria Corporate Services, Inc. at the time of this article's publication.

1. For persons aged greater than or equal to 18 years see Achievements in Public Health [1999]. See also Centers for Disease Control and Prevention [1998] [www.cdc.gov/tobacco/research\\_data/adults\\_prev/ccmm4939\\_fact\\_sheet.htm](http://www.cdc.gov/tobacco/research_data/adults_prev/ccmm4939_fact_sheet.htm)
2. Dunham and Marlow [2000b] discuss various problems in this methodology and conclude that it yields little useful information about economic impacts of smoking bans on owners of restaurants or bars.
3. Ban proponents argue that taxpayers subsidize higher health care costs of smokers. However, Lee [1991a, 1991b] suggests that bans do not correct this problem, while Allen [1992] argues that society has a right to limit these external costs by imposing bans. See also Gravelle and Zimmerman [1994], which argues that passive smoke risk has been over-estimated by OSHA.
4. The growing importance of meeting customer preferences regarding smoking is evident in trade magazines of the restaurant industry; see, for example, Walter [1994] and Fruchtmann [1992].
5. Dunham and Marlow [2000a] show that, while there is much diversity in smoking policies offered by restaurant owners, most bar owners allow smoking throughout their establishments. This evidence suggests that, in bars, smokers value the air space much more than non-smokers, but there remains a much stronger conflict between smokers and non-smokers in restaurants as they bid for air space.
6. Coase [1960] examined how property rights could provide for efficient allocation of resources. We believe that the market for smoking accommodation is one where the Coase Theorem applies; however, others including Cooter [1994], suggest that forms of market failure are too diverse to be subsumed under its limited definition of transaction costs. It is possible that if the private market for accommodation were to eliminate externalities, other forms of cost might remain, particularly if “negotiation” between smokers and non-smokers fails to provide for agreement. We contend that government imposed smoking bans preclude the possibility for agreement, by eliminating all tobacco smoke, rather than only socially-inefficient smoke levels. Evidence from how the private market allocates air resources between smokers and non-smokers suggests a wide range of agreement points.
7. Viscusi [1992] argues that, while smokers appear to understand risks quite well, non-smokers tend to over-estimate health risks.
8. The research was funded by Philip Morris Management Corp.; however, this fact was not disclosed to respondents at the time of the survey.
9. Other authors including Dunham and Winegarden [1999] have used factor analysis to determine how different sets of variables influence consumer-dining decisions, however, in this analysis a more naïve approach is used to construct groups of variables. This is because the groupings are being used to organize the model and all of the variables are tested individually.
10. Using OLS to estimate our model will predict the dependent variable off support for certain values of independent variables. However, this does not appear to be a particularly serious problem because this occurs in 8 percent of the cases, with median over-prediction value equaling 113 percent and median under-prediction value equaling -8 percent. It is also noted that OLS has been used to estimate a similar model in Dunham and Marlow [2000a, 2000b] with the same dependent variable, though calculated from different data sets.
11. The correlation coefficient between *AGE* and *BUILDINGAGE* is .10, indicating that multicollinearity is not a problem between these two variables.
12. Number of employees was not included because it is highly correlated with numbers of seats.
13. We also ran specifications with and without *SMOKERS* as a precaution regarding possible multicollinearity with the other variables such as *WHITECOLLAR*, *GENERAL*, *BAN* or *RESTRICTION*. The highest simple correlation coefficients were between *SMOKERS* and *WHITECOLLAR* (2.32) and between *SMOKERS* and *RESTRICTION* (2.20). Dropping *SMOKERS* or *WHITECOLLAR* from the model did not appreciably lower the standard errors of the coefficients of the remaining variables. Actually standard errors rose slightly in most cases, suggesting that multicollinearity is not a problem.
14. Dummies for college towns and fast food restaurants are significant at the .10 level rather than .05 as in the estimation using the entire sample.

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