

## Effect of Smoke-Free Laws on Bar Value and Profits

Benjamin Alamar, PhD, and Stanton A. Glantz, PhD

The tobacco industry has claimed that smoke-free bar laws caused bar revenues to decline by 30%. After we controlled for economic variables, we found that bars located in areas with smoke-free laws sold for prices that were comparable to prices for similar bars in areas with no smoking restrictions. Other studies have reported that sales did not decline, and we also found that neither price nor sales declined. Therefore, bar owners' concerns that smoke-free laws will reduce the value of their bars are unfounded. (*Am J Public Health*. 2007;97:1400–1402. doi:10.2105/AJPH.2006.095315)

Many communities and several states and provinces have enacted policies prohibiting smoking in bars. The tobacco industry, working through the hospitality industry, opposes

these laws on the basis of the claim that smoke-free bar laws will reduce profitability of bars.<sup>1,2</sup> Scollo et al.<sup>3</sup> reported that all high-quality studies have found that smoke-free laws have no effect or a positive effect on restaurant and bar revenues, tourism, and employment. Another study<sup>4</sup> found that restaurant profits increased by 16% when smoke-free legislation was enacted.

In our study, we followed the methodology of a previous study<sup>4</sup> we conducted to analyze the effects of smoke-free bar laws on the profitability of bars. We used a database that records the purchase price of bars that are sold and found that bars located in US jurisdictions with smoke-free ordinances sold for prices that were comparable to the prices of similar bars in areas with no restrictions on smoking. Thus, the existence of smoke-free bar laws had no detectable effect on the profitability of bars.

## METHODS

### Data

We obtained data on sales of bars from the BIZCOMPS database<sup>5</sup> for transactions by Standard Industrial Classification codes (defined by the Statistical Policy Division of the US Office of Management and Budget to classify all industries in the US economy)—code 5813 (Drinking Places). BIZCOMPS is a proprietary database that contains information about businesses that are sold and is used extensively by business valuation professionals.<sup>5</sup> BIZCOMPS provides the details of each transaction, including sale price, seller's discretionary cash flow (defined as the reported pretax cash received by the owner from the operation of the restaurant, not including all noncash costs such as depreciation from the year of the sale), annual gross revenues, geographic location, and date of transaction. Given the broad set of uses of this database, there is no reason to believe that the samples were biased in any direction. Should an unrecognized bias exist, however, it would be consistent across all data points and not correlated to smoke-free policies, because the database was established for other purposes.

We searched the online version of the database on May 15, 2006.<sup>5</sup> This search produced 197 sales of bars between January 31, 1993, and December 31, 2005 (Table 1).

**TABLE 1—Summary of Bar Transaction Data, by Smoke-Free Status: United States, 1993–2005**

	Smoke-Free Bars	Bars in Which Smoking Was Allowed
No.	17	180
Median sales price, \$ (interquartile range)	112 000 (89 000–196 000)	115 000 (92 000–183 000)
Gross sales, \$ (interquartile range)	294 000 (236 000–361 000)	264 000 (241 000–359 000)
Median seller's discretionary cash flow/sales (interquartile range)	0.15 (0.12–0.33)	0.20 (0.14–0.31)
Median price-to-sales ratio (interquartile range)	0.40 (0.25–0.58)	0.38 (0.21–0.57)

We used the American Nonsmokers' Rights Foundation Local Ordinance Database (as of May 15, 2006) to determine which businesses were covered by local or state 100% smoke-free bar laws. An ordinance was deemed to be 100% smoke free only if it did not allow smoking in separately ventilated rooms and had no exemptions based on the size of the bar. We used the date the laws were enacted, as opposed to the date of implementation, because any prospective buyer would have known that the law was to come into effect. This information would have been factored into the sales price agreed to by the buyer and seller of the bar. We defined a dummy variable to indicate the presence of a smoke-free bar law (1 = a smoke-free law had been enacted before the transaction date; 0 = otherwise).

To control for the economic differences across time and geographic region, we obtained the per capita gross state products and annual percentage gross state product growth for all states for all years in which transactions occurred from the Bureau of Economic Analysis and unemployment rates by state and by year from the Bureau of Labor Statistics.<sup>6</sup> Gross state product is reported in real terms with a base year of 2005 according to the standard inflators of the Bureau of Economic Analysis. All variables reported in dollars were adjusted to real terms according to the standard inflators of the Bureau of Economic Analysis and a base year of 2005.<sup>7</sup> To further control for any secular trend, we used a year variable, with 1992 counted as year 0.

### Econometric Model

The ratio of the transaction price to gross revenue is a standard valuation measure to compare transactions. Dividing the price of the bar by its annual total gross sales allowed

for a standardization across bars of various sizes. This is a particularly good measure of comparative value in service industries that are not capital intensive.<sup>8</sup> The price-to-sales ratio was regressed on the smoke-free dummy variable, the ratio of the seller's discretionary cash flow to sales, which represents the profit margin of the business; per capita gross state product in dollars; gross state product percentage growth rate; statewide unemployment percentage; and time.

White's test<sup>9</sup> on the residuals from ordinary least squares regression indicated the presence of heteroscedasticity. To correct for this problem, a weighted least squares regression was used with seller's discretionary cash flow as the weight. This procedure assumes that the variance in the error terms is inversely proportional to the seller's discretionary cash flow; thus, the larger (higher seller's discretionary cash flow) bars were weighted more heavily. White's test on the weighted residuals did not reject homoscedasticity, and the weighted least squares regression results were reported.

## RESULTS

The parameter estimate for the smoke-free variable did not even approach statistical significance ( $P = .723$ ; Table 2), indicating that the presence of a smoke-free law had no detectable effect on the sale price of a bar.

Of the control variables, the ratio of the seller's discretionary cash flow to sales, gross state product, gross state product growth rate, unemployment, and time were significant. The positive and significant coefficient for gross state product growth was not surprising, because high growth rates indicate that businesses are growing and thus are more profitable. The negative coefficient for the gross

**TABLE 2—Determinates of the Price-to-Sales Ratio of Bars (Ordinary Least Squares): United States, 1993–2005**

	Parameter Estimate ( $\pm$ SE)	P
Smoke-free bar	0.034 ( $\pm$ 0.096)	.723
Constant	0.491 ( $\pm$ 0.144)	<.001
Seller's discretionary cash flow/sales	0.753 ( $\pm$ 0.110)	<.001
Per capita gross state product, \$	-0.008 ( $\pm$ 0.004)	.031
Gross state product growth rate, %/year	3.284 ( $\pm$ 1.073)	.003
Unemployment, %	-1.249 ( $\pm$ 1.665)	.454
Time	-0.014 ( $\pm$ 0.005)	.016
Weighted $R^2$	0.723	

state product suggests that as the gross state product rises, bar values decline, perhaps because areas of higher wealth may have more business competing against each other, which reduces profitability. The negative coefficient for time suggests that real bar values have been decreasing over time, which indicates that the market has become more competitive over time. The coefficient for per capita unemployment was not significant.

We further tested how robust the model was by adding a quadratic time factor. The quadratic time coefficient was not significant, and its inclusion had no effect on the smoke-free coefficient.

## DISCUSSION

Although several studies have reported no effect or a positive effect of smoke-free bar laws on aggregate bar revenues as reflected in tax receipts,<sup>3</sup> this study was the first to examine the effect of smoke-free laws on the value of individual bars. Because the value of a bar is directly related to the profitability of the bar, this study also examined the profitability of individual bars. We can have a high level of certainty regarding the negative conclusion in this brief because the available data have 80% power to detect a 12% change in the price-to-sales ratio, assuming the other control variables were orthogonal to the policy variable and with a significance level of .05, which is

well below the 30% decline in business that the tobacco industry has often claimed.<sup>10,11</sup> (The power of this study to detect a 30% change in the price-to-sales ratio was 99.94%.)

The tobacco industry has argued that bar owners would be financially burdened by smoke-free policies.<sup>1</sup> Despite this rhetoric, the results from this study that the price-to-sales ratio was not affected, combined with the previous results on bar revenues,<sup>3,12,13</sup> indicate that bar owners' worries that smoke-free laws will reduce the value of their bars are unfounded. ■

### About the Authors

The authors are with the Center for Tobacco Control Research and Education, Department of Medicine (Cardiology), University of California, San Francisco.

Requests for reprints should be sent to Stanton A. Glantz, PhD, 530 Parnassus St, Suite 366, University of California, San Francisco, CA 94143-1390 (e-mail: glantz@medicine.ucsf.edu).

This brief was accepted July 10, 2006.

### Contributors

Both authors originated the study and wrote and revised the article. B. Alamar collected the data and ran the statistical analysis.

### Acknowledgments

This research was funded by the National Cancer Institute (grant CA-61021).

The funding agency had no involvement in the conduct of the research or the preparation and revision of the article.

### Human Participant Protection

No protocol approval was needed for this study, because no human participants were involved.

### References

- Ritch WA, Begay ME. Strange bedfellows: the history of collaboration between the Massachusetts Restaurant Association and the tobacco industry. *Am J Public Health*. 2001;91:598–603.
- Dearlove JV, Bialous SA, Glantz SA. Tobacco industry manipulation of the hospitality industry to maintain smoking in public places. *Tob Control*. 2002;11:94–104.
- Scollo M, Lal A, Hyland A, Glantz S. Review of the quality of studies on the economic effects of smoke-free policies on the hospitality industry. *Tob Control*. 2003;12:13–20.
- Alamar B, Glantz S. Smokefree ordinances increase restaurant profit and value. *Contemp Econ Policy*. 2004;22(5):520–525.
- Sanders J. BizComps business sale statistics; May 2006. Available at: <http://www.bvmarketdata.com>. Accessed May 15, 2006.
- Bureau of Economic Analysis. Regional economic accounts: state and local area personal income. Available at: <http://www.bea.gov/regional/index.htm>. Accessed May 16, 2006.
- Bureau of Labor Statistics. Local area unemployment statistics: January 2006. Available at: <http://www.bls.gov/data/home.htm>. Accessed May 16, 2006.
- Pratt S, Schweihers R. *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*. 4th ed. New York, NY: McGraw-Hill; 2000.
- White H. A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity. *Econometrica*. 1980;48:817–838.
- Traynor MP, Begay ME, Glantz SA. The new tobacco industry strategy to prevent local tobacco control. *JAMA*. 1993;270:479–486.
- Samuels B, Glantz SA. The politics of local tobacco control. *JAMA*. 1991;266:2110–2117.
- Health Scotland. International review of the health and economic impact of the regulation of smoking in public places. 2005. Available at: <http://www.healthscotland.com/documents/447.aspx>. Accessed May 2, 2007.
- Tang H, Cowling DW, Lloyd JC, et al. Changes of attitudes and patronage behaviors in response to a smoke-free bar law. *Am J Public Health*. 2003;93:611–617.