

THE ECONOMIC IMPACT OF SMOKE-FREE LEGISLATION ON THE HOSPITALITY INDUSTRY

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INTRODUCTION

Over the past decade, many Canadian municipalities and some provinces have implemented smoke-free legislation to prohibit smoking in hospitality facilities to protect the public and workers from the harm caused by second-hand smoke. Yet, there is still concern in some quarters that smoke-free legislation could hurt the hospitality sector. Though numerous studies have been conducted to assess the economic impact of smoke-free legislation, the quality of these studies varies greatly, from anecdotal reports to complex statistical analysis, and it is difficult for policymakers to interpret findings and to reach evidence-based conclusions.

To fill this gap, this report provides an up-to-date summary of high quality studies of the economic impact of smoke-free legislation on the hospitality industry. It introduces criteria for assessing the quality of studies, provides an overview of studies available to date, and presents summaries of studies selected on the basis of methodological quality and peer review. Most of these studies were conducted in the United States and only a few in Canada and Australia; however, their scientific methods and results are widely applicable and could help guide tobacco control policy in Canada.

GUIDE TO ASSESSING STUDY QUALITY

Studies evaluating the economic impact of smoke-free legislation on the hospitality industry have typically adopted one of two approaches. The first approach is based on subjective data collected in surveys of owners or patrons of restaurants, bars and other hospitality facilities, either before or after the implementation of smoke-free legislation. The second approach is based

on objective data obtained from official or neutral agencies. Scientific evidence for the economic impact of smoke-free legislation based on these approaches varies considerably in quality.

Surveys of Owners and Managers

Owners and managers have been surveyed about their predictions or estimates of the impact of smoke-free legislation on their revenue, patronage, employee lay-offs, and costs associated with compliance. These data are based on subjective perceptions of the impact that are not verifiable, that may be biased by personal attitudes toward the legislation, and that do not account for the effect of confounding factors, such as trend, seasonal variation, the general economic conditions and other events that are unrelated to the legislation. Further, some of the samples surveyed are not representative of the jurisdictions under consideration. Because of these limitations, these surveys provide limited evidence on the economic impact of smoke-free legislation.

Surveys of Patrons and Consumers

Patrons and consumers have been surveyed about their anticipated or recent changes in patronage, spending or time spent dining in response to smoke-free legislation. While these data provide a better source to assess economic impact than surveys of owners, because any impact on business comes from changes in consumer behaviour, poorly designed consumer surveys are subject to limitations similar to those in owner surveys. On the other hand, properly designed patron and consumer surveys can reveal data at the micro level, for example behaviour changes of smokers and non-smokers, and could be useful in supplementing studies that use objective data, which are generally at an aggregate level [1].

Analysis of Objective Data

Objective data are those collected by official or neutral agencies for administrative purposes. These include retail sales tax data, employment statistics, and gaming revenues. These data are superior to the subjective perceptions of owners and consumers for measuring the impact of smoke-free legislation. They are verifiable, cover all establishments in jurisdictions under consideration, and are collected routinely over an extensive period using consistent methods.

It is crucial for researchers to analyze objective data using appropriate methods to provide reliable evidence on the impact of smoke-free legislation. It is important to differentiate the effect of confounding factors from that of smoke-free legislation through the use of proper measures and statistical analysis, and to include sufficient data points following the legislation to capture any long term effect. These requirements are summarized in four methodological criteria that were first proposed by Siegel [2] and subsequently used by Scollo et al. [3, 4] to judge study quality in their comprehensive review of studies evaluating the economic impact of smoke-free policies. The best quality studies are those that satisfy all of the four methodological criteria:

1. Use of objective data
2. Use of multiple observation points before and after the legislation was implemented
3. Use of statistical methods that control for time trends and random events, and
4. Use of statistical methods that control for economic trends

Besides methodological criteria, Scollo et al. considered publication in peer-reviewed journals as another indicator of high quality in terms of study design, reporting and evaluation. While the peer review process could help ensure the quality of studies, in practice, this process is not

perfect. Studies that were funded by the tobacco industry and did not use the best methods have been published in some academic journals.

In summary, the best quality studies are those that satisfy all four of Siegel's criteria. They give valid and evidence-based conclusions on the economic impact of smoke-free legislation.

Publication in a peer-reviewed journal is another indicator of high quality, though not a perfect marker.

OVERVIEW OF STUDIES OF THE ECONOMIC IMPACT OF SMOKE-FREE LEGISLATION

Updating the comprehensive review by Scollo et al. [3, 4] to the end of 2004 shows 115 studies that assess the economic impact of smoke-free legislation on the hospitality industry. These studies cover local jurisdictions in more than 35 states or provinces in eight countries, including Australia, the United States, Canada, the United Kingdom, New Zealand, South Africa, Spain, and China. Almost all of them examined the impact on the sales or employment of restaurants, some of them looked at bars and hotels, and a few focused on gaming revenues and tourism. We classified these studies by various quality indicators and by their conclusions regarding the impact of the smoke-free legislation on the hospitality industry (Table 1).

Table 1. Studies classified by quality indicators and their conclusion regarding impact of smoke-free legislation on the hospitality industry: 1988 to 2004.

Type of Data ^a	Methodological Quality ^a	Peer Reviewed	Reported a Negative Impact		Total
			Yes	No	
Objective Data	Met all four of Siegel's criteria	Yes	0	15	30
		No	0	15	
	Met some of Siegel's criteria	Yes	0	2	21
		No	8	11	
Subjective Data	Patron/consumer surveys	Yes	0	5	30
		No	9	16	
	Owner/manager surveys	Yes	2	6	34
		No	19	7	
Total			38	77	115

^aStudies that used more than one method to collect and analyze data are classified according to the highest quality method used in that study.

High quality studies tend to report that smoke-free legislation has no negative impact on hospitality facilities. All 30 studies that met all four of Siegel's criteria, and 28 of 30 peer-reviewed studies reported no negative impact. The two peer reviewed owner surveys reporting a negative impact were conducted by two authors, one of whom was an employee of Philip Morris Management Corp. [5, 6].

None of the 38 studies reporting a negative impact satisfied all four of Siegel's criteria, and few were peer reviewed. Most used subjective data and most were funded by the tobacco industry or by organizations with links to the tobacco industry [3, 4].

In summary, high quality studies tend to conclude that smoke-free legislation does not adversely affect the hospitality industry. Those reporting a negative impact of the legislation do not meet the criteria for research quality.

SUMMARY OF STUDIES OF THE ECONOMIC IMPACT OF SMOKE-FREE LEGISLATION

The following sections present summaries of high quality studies, those that satisfy all four methodological criteria or have been peer-reviewed (Table 1). Because of limited space, only studies conducted since 1994 are presented.

Summaries for each of the 29 studies published from 1994 to 2004 that met all four of Siegel's methodological criteria are presented below. These are the best available studies that provide reliable evidence of the impact of smoke-free legislation on the hospitality industry. They used objective data, such as taxable sales, liquor purchases, employment statistics, gaming revenues, and tourism. They used multiple observations before and after the legislation to capture the long-term effect, They also utilized statistical techniques to control for time and seasonal variations, and controlled for underlying economic conditions by incorporating total retail sales, other economic indicators, or control groups in their analysis. Other confounding events, such as the

September 11 terrorist attack, were also accounted for through the design of outcome measures or analysis. These methodological details will not be reiterated in each of the summaries, but the type of control group used will be indicated where applicable.

All 29 studies concluded that smoke-free legislation does not have a negative impact on hospitality facilities. This conclusion subsumes some cases that need elaboration. One study found a transient negative impact on liquor purchases immediately following the legislation [7], but found no such impact over the long term. Some studies that examined a number of communities within a study found a significant negative impact for some communities and a positive impact for others when data were analyzed for each community separately [8, 9], with no consistent evidence pointing one way or another. When data for all communities were analyzed together, no significant negative impact was found. A few studies found that legislation might increase sales or business [10-11], but these results are not consistent enough to generalize this conclusion. All of these cases were classified as concluding no negative impact in this document.

For studies that do not satisfy all four of Siegel's criteria, we summarized those that had been peer reviewed and were published after 1993. These include two studies using objective data, five patron surveys and four owner surveys that reported no negative impact. We also included two owner surveys that found a negative impact (Table 1). As discussed below, the methods used in these two owner surveys have serious limitations [5, 6].

The 29 best quality studies (marked *) and the 13 studies that do not satisfy all four methodological criteria but have been peer reviewed will be presented by jurisdiction in the

following section. For the remaining 73 studies not summarized here, the reader should consult Scollo et al. for further information [3, 4].

STUDIES IN CANADA

British Columbia

- In January 2000, the Workers' Compensation Board (WCB) extended its smoke-free workplace regulation to hospitality facilities, including restaurants and bars. This new regulation was overturned in court in March 2000, pending further public consultation. Meanwhile, the WCB commissioned Pacific Analytics Inc. to assess the economic impact of this short-lived province-wide regulation with an econometric analysis of liquor purchases [7*]. They also examined the effect of a similar regional bylaw in the Capital Regional District that was implemented in January 1999 with no allowance for designated smoking rooms (this legislation remains in effect). Monthly data from October 1996 to August 2000 were obtained from the provincial Liquor Distribution Branch. The report concluded that while the smoke-free regulation likely had some transient negative impact on liquor purchases when adjustment took place within a short period following implementation, it did not have a negative impact over the long-term. Revised provincial regulation subsequently went into effect in May 2002.

Ontario

- The City of Ottawa implemented a 100% smoke-free workplace and public place bylaw on August 1, 2001 to prohibit smoking in restaurants and bars without exemption for designated smoking rooms. The Ontario Tobacco Research Unit examined its impact on the sales of licensed restaurants and bars, and unlicensed restaurants [12*]. Retail sales tax data for 41 months before and 11 months after the by-law were obtained from the Ontario Ministry of Finance, and were analyzed using a time series intervention method previously used by Wakefield et al. (see below). Three possible changes in sales that could result from the bylaw were analyzed—an abrupt permanent change, a gradual permanent change and an abrupt temporary change. Results demonstrated that none of these changes occurred, and the authors concluded that the Ottawa smoke-free bylaw had no negative impact on restaurant and bar sales.

Quebec

- A survey in Quebec examined restaurateurs' expectations of costs and actual costs associated with smoke-free legislation. Cremieux and Ouellette interviewed 401 randomly selected restaurant owners in May 1997 [13], prior to the enactment of a smoke-free law. Those who had already gone smoke-free were asked about their costs; those who had not were asked about anticipated costs. Anticipated direct and indirect costs of the new law were far higher than actual costs incurred by those who were already smoke-free. Actual costs were minimal.

STUDIES IN THE UNITED STATES

Arizona

- In June 1993, Flagstaff became the first city in the state to prohibit smoking in restaurants. To investigate the economic impact, Sciacca and Ratliff compared taxable restaurant sales in Flagstaff to those in two similar cities, three counties and the entire state [14*]. Data from 1990 through 1994 were obtained from the state and local taxation authorities. The authors also analyzed the trend of motel and hotel sales in Flagstaff over the two years around the implementation. Prohibiting smoking did not affect restaurant sales or tourism. These results are consistent with the findings from a pre and post design survey of restaurateurs:

A random sample of 34 restaurant owners and managers were interviewed in the month prior to the implementation, and 15 months thereafter [15]. They were asked about their concerns regarding the impact on their business, employees, and on consumers' reaction in the initial interview, and were asked about their actual experience in the follow-up. According to the researcher, most fears were not realized when the ordinance went into effect.

- The impact of an ordinance to prohibit smoking in the city of Mesa, implemented in July 1996, was evaluated using sales tax data for restaurants from 1991 to 1997 [16*]. No significant negative impact associated with the ordinance was found.

California and Colorado

In California, statewide legislation to prohibit smoking in restaurants went into effect in January 1995, and was extended in January 1998 to include bars, lounges and nightclubs. Prior to this legislation, a number of municipalities had already implemented local smoke-free ordinances to prohibit smoking in restaurants and bars beginning in the late 1980s.

- Glantz examined the impact of statewide legislation on bar revenues in California [11*], using taxable sales data (1990 to 1998) from the State Board of Equalization (SBE). Using regression analysis, he found a small but significant increase in the proportion of retail sales from bar revenues after the legislation went into effect. These data do not support the claim that smoke free bar laws negatively impact bar business.

- In a landmark 1994 study [8*], Glantz and Smith compared taxable restaurant sales in 15 California and Colorado cities with 100% smoke-free ordinances to 15 matched control group cities that had not adopted such ordinances. Data (1986 through 1993) obtained from the SBE and Colorado State Department of Revenue were analyzed using regression methods. In a 1997 follow-up study [9*], three more years of data were added, and analysis was extended to include another five cities and two counties with smoke-free bar ordinances. The authors concluded that smoke-free ordinances did not adversely affect either restaurant or bar sales.

- In a 1994 report [17*], the Claremont Institute for Economic Policy Studies assessed the effect of non-smoking ordinances on restaurant revenues throughout California. Taxable sales of 19 cities with ordinances enacted before 1992 that required more than 50% of

restaurant seating to be non-smoking were compared to 87 bordering cities without such restrictions. Data (1986 to 1992) from the SBE were analyzed using an econometric model. The report concluded that ordinances had no systematic impact on restaurant revenues, regardless of the percentage of non-smoking seating required.

Delaware

- Delaware implemented statewide legislation in November 2002 to prohibit smoking in gaming facilities like racinos (racetracks with video lottery machines), with no provision for designated smoking rooms. A recent study examined the impact of this legislation on the state revenue from gaming [18*] using data (January 1996 to May 2004) obtained from the Delaware Lottery Office. Regression techniques were used to evaluate the effect on total revenues and on average revenues per gaming machine. No negative impact associated with the smoke-free legislation was found.

Florida

- Statewide legislation to prohibit smoking in restaurants and hotel common areas went into effect in Florida in July 2003, with exemption for stand-alone bars and designated guest rooms in hotels. Dai et al. applied regression analysis techniques to evaluate its impact using retail sales tax data (January 1990 to April 2004) and employment data (January 1993 to March 2004) from the State Department of Revenue and Agency for Workforce Innovation [19*]. Results indicated that the proportion of total retail sales from restaurants, and the proportion of total employment from the drinking and eating places increased after the legislation, but there was no significant change in the proportion of employment from the

accommodation industry. The authors concluded that there was no negative impact on the sales and employment of the leisure and hospitality industries associated with the legislation.

Indiana

- The City of Fort Wayne, Indiana implemented a smoke-free restaurant ordinance in January 1999. Styring investigated the impact using food and beverage tax data for Allen County (Fort Wayne accounted for 60% of the county population) [20*]. Analysis of data over the period 1987 to 2000 showed that the ordinance had no negative impact on restaurant sales.

Massachusetts

- In a recent study [21*], Glantz and Wilson-Loots assessed the impact of ordinances that prohibit smoking in bingo halls where bingo and charitable gaming are conducted, using data from the State Lottery Commission. Total state gaming profit showed a declining trend over the 17 years under study (1985 to 2001), but regression analysis indicated that this trend was not associated with the increasing percentage of state population covered by smoke-free ordinances over this period. In fact, this trend predated the enactment of local smoke-free ordinances. The authors concluded that smoke-free ordinances did not reduce gaming profits. An analysis with individual level data for 220 communities led to the same conclusion.
- In their 1999 study [22*], one of a series to investigate the impact of local smoke-free legislation throughout the state [23*, 24*], Bartosch and Pope compared taxable meal receipts of all restaurants and alcohol serving establishments in 32 communities that implemented smoke-free restaurant policies, to those in 203 communities without such legislation. Monthly data (1992 to 1995) were supplied by the State Department of Revenue.

Statistical analysis showed that smoke-free policies had no negative impact on restaurant business.

This study was updated in 2002 by adding three more years of data and covering a total of 239 communities [25*]. Analysis now controlled for the effect from bordering towns. Again it concluded that highly restrictive restaurant smoking policies did not have a significant effect on meal receipts. This evidence is consistent with findings from two random sample surveys described below.

- The Massachusetts Adult Tobacco Survey (MATS) in 1995 asked 2,356 respondents how they would change their use of restaurant and bars if smoking were prohibited in these establishments [26]. Some smokers reported that they would use bars and restaurants less often if such establishments were smoke free, and some non-smokers reported that they would use these establishments more often. Since smokers constituted less than one quarter of the population, the total number of adults predicting an increase in bar and restaurant patronage was much larger than those predicting a decrease in use. The data from 4,929 respondents in the MATS (1995-1996) also showed that a substantial proportion of non-smokers had avoided restaurants and bars in the past because of second-hand smoke [27]. These findings suggest that by adopting smoke-free policies, establishments would likely see an increase in business, particularly from health-conscious non-smokers.

New York

- Hyland et al. examined taxable sales and employment in restaurants and hotels in five counties that had implemented 100% smoke-free dining regulations since 1995 [28*, 29*].

These counties—New York City, Erie, Monroe, Suffolk, and Westchester—together represent 63% of the state's population. Data from 1990 through early 2000 were obtained from the State Departments of Taxation and Finance as well as Labor. Regression analysis showed that, compared to the rest of the state, per-capita sales for eating and drinking places and for hotels in the five counties increased after smoke-free regulations went into effect, but there were no significant changes in employment in restaurants and hotels associated with these regulations.

- New York City (NYC) implemented legislation in April 1995 to prohibit smoking in restaurants, with exemption for those with fewer than 35 seats and for bar areas. Hyland and his colleagues undertook a series of four studies with different research designs to investigate its impact. One regression analysis examined taxable sales of eating and drinking places [30*], and of hotels from 1990 through February 1997. No significant changes in sales were associated with the presence of the legislation when the sales data of the city was compared to that of 55 counties in the state without such legislation.

Another study used point-in-time comparison methods to examine the changes in official employment data between 1993 and 1997, two years before and after the implementation of legislation [31]. Between these two periods, NYC added 18% new restaurant jobs, while the rest of the state, without legislation, added 5%, and the change in the number of restaurants in NYC was comparable to that in three neighboring counties, and to the rest of the state. Data suggested that the legislation did not result in losses of restaurant jobs for the city.

Results of the preceding two studies were consistent with two random sample surveys conducted 18 months after implementation. One polled 434 owners and managers of NYC restaurants [32], including those under jurisdiction of the law (treatment group) and those not under jurisdiction of the law (control group). In response to the question asking how business had performed since the legislation took effect, the proportion of respondents who reported a decrease was similar in the two groups. These data did not suggest that the legislation had a detrimental effect on the city's restaurant business.

Another poll asked 887 adults who lived or worked in NYC how they had changed their dining out patterns since the law took effect [33]. A majority reported no change or dining out more frequently, and only a small percentage of consumers reported dining out less frequently. These results were consistent with a prior survey conducted by Corsun et al.

- In August 1995, about four months after implementation, Corsun et al. conducted a poll in which 389 patrons were personally interviewed at the sites of a random sample of Manhattan restaurants [34]. It was found that some smokers dined out less and ate faster after the legislation came into effect, whereas some non-smokers dined out more often. Since there were fewer smokers than non-smokers in the population, the increased revenue from the latter group offset the decrease, with no net effect on overall restaurant revenues.
- Hyland and his colleagues examined the impact of the smoke-free restaurant legislation implemented in January 1998 in Erie County [35*]. They concluded that the legislation had no adverse impact on restaurant employment.

North Carolina

- Goldstein and Sobel compared restaurant sales of five counties in North Carolina that had stringent ordinances to restrict smoking areas in restaurants with those of five matched cities without any restriction [36*]. Data (1990 to 1997) were obtained from the State Department of Revenue. The results showed that stringent smoking regulations had no adverse impact on restaurant sales in the five adopting counties.

North Dakota

- In January 2002, Minot became the first city in North Dakota to prohibit smoking in restaurants. Researchers at Minot State University analyzed the impact using taxable sales data (1997 to 2002) from the State Tax Commissioner [37*]. There were no changes in restaurant sales associated with the smoke-free ordinance.

Texas

- In January 2002, El Paso implemented a smoke-free ordinance, the strongest in the state, to prohibit smoking in restaurants and bars with no provision for designated smoking rooms. The State Department of Health evaluated its impact using sales tax data from 1990 through 2002 obtained from the State Comptroller of Public Accounts [38*]. Regression analysis was performed on restaurants sales (SIC 5812, 5816, and 5817) and on bars sales (SIC 5813 and 5814) to allow for the detection of differential impact across establishments. Results indicated there was no significant change in the sales of restaurants, and bars that was associated with the ordinance.

- The State Department of Health had previously examined the impact of smoke-free ordinances on taxable restaurant sales for each of the four cities—Arlington, Austin, Plano and Wichita Falls—that had implemented such legislation over the period 1994 to 1996 [39*]. Using retail sales data covering the period 1987 to 1999, the authors found no evidence of a decrease in restaurant revenue after implementation in each of these four cities.

- In another earlier study, the State Department of Health investigated the impact of smoke-free restaurant ordinances implemented in the city of West Lake Hills in June 1993 [40*]. Taxable restaurant sales (1992 to 1994) aggregated from eight restaurants that were in operation in the city since 1992 were analyzed. The authors found that restaurant sales did not decrease as a result of the ordinance.

Tourism in Three States and Six Cities

- Glantz and Charlesworth investigated the impact of smoke-free restaurant ordinances on tourism [10*]. Specifically, they compared hotel room revenues in three states (CA, UT, VT) and six cities (Boulder, CO; Flagstaff and Mesa, AZ; San Francisco and Los Angeles, CA, and New York City, NY) to that for the entire United States, and analyzed the numbers of international tourists who visited CA, UT and New York City. Government departments or agencies supplied data covering multiple periods before and after the ordinances were implemented. The study found that, taken together, smoke-free ordinances did not appear to adversely affect, and might increase, tourist business.

Nationwide Studies

- A recent study by Alamar and Glantz investigated the impact on restaurant profitability, which reflected the net changes in revenue and costs associated with smoke-free ordinances [41]. Profitability was measured by the value of a restaurant when the owner sold his business in the market. Data for 608 restaurants that were put on sale in the United States between 1991 and 2002 were retrieved from the database of Bizcomps, a business information provider, and were analyzed by taking into account economic disparities and type of restaurant. It was found that restaurants in smoke-free jurisdictions were sold at higher market values, hence were more profitable, than comparable restaurants in jurisdictions without smoke-free ordinances. A similar analysis of 73 stand-alone bars led to the same conclusion. However, the bar results should only be considered preliminary because of the small data set.

- Dunham and Marlow examined the differential impact of smoke-free legislation on restaurants and bars in two studies. In one study, they used logistic regression to analyze data from a telephone survey conducted in September 1996 in which 1,300 owners and managers of restaurants, bars and taverns across the United States were asked how revenues would change following laws requiring that all firms become virtually nonsmoking [5]. The authors found that owners of bars and taverns were more than twice as likely as owners of restaurants to predict revenue decreases after legislation. Recently, they examined data from a survey of 978 owners of restaurants and taverns and bars in Wisconsin in early 2001 [6], and came to the same conclusion. However, their conclusion was not based on actual measures of revenues, but relied solely on self-reported predictions of bar and tavern owners on what

would happen if the government imposed a ban [42, 43]. Their conclusion was not supported by studies using taxable sales data that did not find a disproportionate impact on bar sales [11*, 38*].

STUDIES IN AUSTRALIA

South Australia

- Legislation to prohibit smoking in restaurants in South Australia (SA) was implemented in January 1999. Wakefield et al. assessed its impact using time series intervention methods in which restaurant sales in SA were compared to those for the rest of Australia where no such legislation was in place [44*]. Three potential changes in sales associated with the legislation –an abrupt permanent change, a gradual permanent change or an abrupt temporary change– were analyzed. Sales data for restaurants (1991 to 2000) were from the Retail Trade Survey administered by the Australian Bureau of Statistics. The authors concluded that the introduction of smoke-free legislation did not adversely affect restaurant business in SA. This evidence is consistent with the findings from the following two random sample surveys.
- A sample of 3,019 South Australians age 15+ were polled in November 1996 for their opinion about the likely effect of the upcoming smoke-free restaurant legislation on their dining-out frequency [45]. Although smokers were more likely than non-smokers to predict dining out less often, since smokers comprised only about a quarter of the population, the proportion of respondents who anticipated an increase in patronage outweighed those who

predicted a decrease by a factor of 3. This evidence suggested there would be a net increase in restaurant patronage following the legislation.

- South Australia has developed a voluntary code of practice on restricting smoking in restaurants since 1991. A survey of 276 owners and managers in Adelaide (the capital city) in 1996 found that [46], among those who had voluntarily prohibited smoking, 78% reported that the introduction of such a policy had had no effect or had led to a gain in business. Among those who had not adopted any smoke-free policy, almost half (47%) believed that a loss of business would result if such a policy were implemented. This mismatch between the actual and expected effects of smoke-free policies demonstrated that restaurateurs' fears of business losses were not warranted.

Tasmania

- Legislation came into force in September 2001 to mandate smoke-free workplaces and public places, with exemptions for bar and gaming areas where meals were not served. Time series intervention methods used in the South Australia study (see above) were adopted to investigate the impact of this legislation [47*]. Data from January 1990 through September 2002 were obtained from the Australian Bureau of Statistics. Researchers compared restaurant and cafe sales in Tasmania to those in Queensland and the Northern Territory, where no legislation was in place, and compared pub and licensed club sales in Tasmania to those in Australia. Results indicated that the smoke-free law had no impact on the sales of restaurants and cafes, or of pubs and licensed clubs in Tasmania.

Victoria

- Victoria introduced its legislation to prohibit smoking in restaurants and cafes in July 2001. One study examined its impact by comparing restaurant and cafe sales in Victoria (1990 to September 2002) to those in Queensland and the Northern Territory where no legislation was in place [48*]. Methods and data sources were the same as in the study for South Australia discussed above. Researchers found that the smoke-free policy had no negative impact on restaurant and cafe sales in Victoria.

CONCLUSION

Evidence from the best quality studies consistently demonstrates that smoke-free legislation does not have a negative impact on the sales, revenues, profits and employment of restaurants, bars, hotels, and gaming facilities over the long term. Peer-reviewed patron and consumer surveys repeatedly show that while smokers dine out less because of the legislation, non-smokers dine out more, with no net impact on restaurant business. Peer reviewed owner and manager surveys show that anticipated losses or costs are overstated in comparison to what actually occurs. The evidence presented here indicates that smoke-free legislation does not adversely affect the hospitality industry.

WEB LINKS

Readers will find useful information about the economic impact of smoke-free legislation on the hospitality industry at the following websites:

The Ontario Campaign for Action on Tobacco (OCAT) provides summaries of studies that do not fall into our selection criterion, nevertheless may be useful to readers.

<http://www.ocat.org/economics/index.html>

Readers can download copies of some of the studies discussed here from the website maintained by Professor Stanton A. Glantz at the University of California, San Francisco

http://www.tobaccoscam.ucsf.edu/resource/resource_eco.cfm

For more information on studies in US, Canada and around the globe, visit The Americans for Nonsmokers' Rights website:

<http://www.no-smoke.org/getthefacts.php?dp=d19>

REFERENCES

1. Colman, R. (2002) *THE ECONOMIC IMPACT OF SMOKE-FREE PLACES: AN ASSESSMENT FOR NEW BRUNSWICK*. Glen Haven, NS: GPIAtlantic.
2. Siegel, M. (1992) Economic impact of 100% smoke-free restaurant ordinances. In: *SMOKING AND RESTAURANTS: A GUIDE FOR POLICY MAKERS*. Berkeley, CA: UC Berkeley/UCSF Preventative Medicine Residency Program; American Heart Association, California Affiliate; Alameda County Health Care Services Agency, Tobacco Control Program.
3. Scollo, M., Lal, A., Hyland, A. & Glantz, S. (2003) Review of the quality of studies on the economic effects of smoke-free policies on the hospitality industry. *Tobacco Control*, **12**, 13-20. <http://www.vctc.org.au/publ/papers/papers.html> (Accessed March 1, 2005).
4. Scollo, M. & Lal, A. (2004) *SUMMARY OF STUDIES ASSESSING THE ECONOMIC IMPACT OF SMOKE-FREE POLICIES IN THE HOSPITALITY INDUSTRY - INCLUDES STUDIES PRODUCED TO FEBRUARY 2004*. Melbourne: VicHealth Centre for Tobacco Control. <http://www.vctc.org.au/tc-res/Hospitalitysummary.pdf> (Accessed March 1, 2005).
5. Dunham, J. & Marlow, M. L. (2000) Smoking laws and their differential effects on restaurants, bars and taverns. *Contemporary Economic Policy*, **18** (July), 326-33.
6. Dunham, J. & Marlow, M. L. (2003) The economic incidence of smoking laws. *Applied Economics*, **35**, 1935-42.
- 7*. Pacific Analytics Inc. (2001) *THE ECONOMIC IMPACTS OF THE PROPOSED AMENDMENT TO THE ETS REGULATION*. British Columbia: The Workers Compensation Board of British Columbia, Canada. <http://www.worksafebc.com/news/campaigns/ets/assets/pdf/economicimpact.pdf> (Accessed March 1, 2005).
- 8*. Glantz, S. A. & Smith, L. R. (1994) The effect of ordinances requiring smoke-free restaurants on restaurant sales. *American Journal of Public Health*, **84**, 1081-5.
- 9*. Glantz, S. A. & Smith, L. R. (1997) The effect of ordinances requiring smoke-free restaurants and bars on revenues: A follow-up. *American Journal of Public Health*, **87**, 1687-93.
- 10*. Glantz, S. A. & Charlesworth, A. (1999) Tourism and hotel revenues before and after passage of smoke-free restaurant ordinances. *The Journal of the American Medical Association*, **281**, 1911-18.
- 11*. Glantz, S. A. (2000) Effect of smokefree bar law on bar revenues in California. *Tobacco Control (Letters)*, **9**, 111-12.
- 12*. Luk, R. Ferrence, R. & Gmel, G. (2003) *THE ECONOMIC IMPACT OF A SMOKE-FREE BYLAW ON RESTAURANT AND BAR SALES IN OTTAWA, CANADA*. Toronto, ON: Ontario Tobacco Research Unit. http://www.otru.org/pdf/updates/update_june2003.pdf (Accessed March 1, 2005).

13. Cremieux, P. Y. & Ouellette, P. (2001) Actual and perceived impacts of tobacco regulation on restaurants and firms. *Tobacco Control*, **10**, 33-7.
- 14*. Sciacca, J. P. & Ratliff, M. I. (1998) Prohibiting smoking in restaurants: Effects on restaurant sales. *American Journal of Health Promotion*, **12**, 176-84.
15. Sciacca, J. P. (1996) A mandatory smoking ban in restaurants: Concerns versus experiences. *Journal of Community Health*, **21**, 133-50.
- 16*. Bialous, S. A. & Glantz, S. A. (1997) *TOBACCO CONTROL IN ARIZONA, 1973-1997*. San Francisco, CA: Center for Tobacco Control Research and Education, University of California at San Francisco. <http://repositories.cdlib.org/ctcre/tcpmus/AZ1997> (Accessed March 1, 2005).
- 17*. Maroney, N., Sherwood, D. & Stubblebine, W. C. (1994) *THE IMPACT OF TOBACCO CONTROL ORDINANCES ON RESTAURANT REVENUES IN CALIFORNIA*. Claremont, CA: The Claremont Institute for Economic Policy Studies, The Claremont Graduate School.
- 18*. Mandel, L.L., Alamar, B. C. & Glantz, S. A. (2005) Smoke-free law did not affect revenue from gaming in Delaware. *Tobacco Control*, **14**, 10-2. <http://www.tobaccoscsm.ucsf.edu/pdf/delawareGaming1.pdf> (Accessed March 7, 2005).
- 19*. Dai, C., Denslow, D., Hyland, A. & Lotfinia, B. (2004) *THE ECONOMIC IMPACT OF FLORIDA'S SMOKE-FREE WORKPLACE LAW*. Gainesville, FL: Bureau of Economic and Business Research, University of Florida. <http://www.tobaccoscsm.ucsf.edu/pdf/109-Florida+Economic+Impact+Final+Report.pdf> (Accessed March 1, 2005).
- 20*. Styring, W. (2001) *A STUDY OF THE FORT WAYNE (IN) RESTAURANT SMOKING BAN: HAS IT IMPACTED THE RESTAURANT BUSINESS?* Indianapolis, IN: Hudson Institute.
- 21*. Glantz, S. A. & Wilson-Loots, R. (2003) No association of smoke-free ordinances with profits from bingo and charitable games in Massachusetts. *Tobacco Control*, **12**, 411-3.
- 22*. Bartosch, W. J. & Pope, G. C. (1999) The economic effect of smoke-free restaurant policies on restaurant business in Massachusetts. *Journal of Public Health Management and Practice*, **5**, 53-62.
- 23*. Pope, G. C. & Bartosch, W. J. (1995) *PRELIMINARY ANALYSIS OF THE ECONOMIC IMPACT OF BROOKLINE'S SMOKING BAN*. Waltham, MA: Health Economics Research Inc.
- 24*. Pope, G. C. & Bartosch, W. J. (1997) *EFFECT OF LOCAL SMOKE-FREE RESTAURANT POLICIES ON RESTAURANT REVENUE IN MASSACHUSETTS*. Waltham, MA: Center for Health Economics Research.
- 25*. Bartosch, W. J. & Pope, G. C. (2002) Economic effect of restaurant smoking restrictions on restaurant business in Massachusetts, 1992 to 1998. *Tobacco Control*, **11**, ii38-ii42.
26. Biener, L. & Siegel, M. (1997) Behavior intentions of the public after bans on smoking in restaurants and bars. *American Journal of Public Health*, **87**, 2042-4.

27. Biener, L. & Fitzgerald, G. (1999) Smoky bars and restaurants: Who avoids them and why? *Journal of Public Health Management and Practice*, **5**, 74-8.
- 28*. Hyland, A. (2002) *TAXABLE SALES FROM EATING AND DRINKING PLACES BEFORE AND AFTER SMOKE-FREE REGULATIONS IN NEW YORK STATE*. Buffalo, NY: Roswell Park Cancer Institute.
<http://www.tobaccoscsm.ucsf.edu/pdf/091-HylandNYS.pdf> (Accessed March 1, 2005).
- 29*. Hyland, A., Puli, V., Cummings, M. & Sciandra, R. (2003) New York's smoke-free regulations: Effects on employment and sales in the hospitality industry. *Cornell Hotel and Restaurant Administration Quarterly*, **44**, 9-16.
- 30*. Hyland, A., Cummings, K. M. & Nauenberg, E. (1999) Analysis of taxable sales receipts: Was New York City's Smoke-Free Air Act bad for restaurant business? *Journal of Public Health Management and Practice*, **5**, 14-21.
31. Hyland, A. & Cummings, K. M. (1999) Restaurant employment before and after the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice*, **5**, 22-7.
32. Hyland, A. & Cummings, K. M. (1999) Restaurateur reports of the economic impact of the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice*, **5**, 37-42.
33. Hyland, A. & Cummings, K. M. (1999) Consumer response to the New York City Smoke-Free Air Act. *Journal of Public Health Management and Practice*, **5**, 28-36.
34. Corsun, D. L., Young, C. A. & Enz, C. A. (1996) Should NYC's restaurateurs lighten up? Effects of the city's Smoke-free Air Act. *Cornell Hotel and Restaurant Administration Quarterly*, **37**, 25-33.
- 35*. Hyland, A., Vena, C., Cummings, K. M. & Lubin, A. (2000) The effect of the Clean Air Act of Erie County, New York on restaurant employment. *Journal of Public Health Management and Practice*, **6**, 76-85.
- 36*. Goldstein, A. O. & Sobel, R. A. (1998) Environmental tobacco smoke regulations have not hurt restaurant sales in North Carolina. *North Carolina Medical Journal*, **59**, 284-87.
- 37*. Moseley, F. & Schmidt, K. (2003) *THE ECONOMIC IMPACT OF MINOT'S SMOKE-FREE RESTAURANT ORDINANCE*. Minot, ND: Minot State University.
http://www.tobaccoscsm.ucsf.edu/pdf/101_MinotStudy.pdf (Accessed March 1, 2005).
- 38*. Huang, P., De, A. K. & McCusker, M. E. (2004) Impact of a smoking ban on restaurant and bar revenues - El Paso, Texas, 2002. *Morbidity and Mortality Weekly Report*, **53**, 150-52.
- 39*. Hayslett, J. A. & Huang, P. P. (2000) *IMPACT OF CLEAN INDOOR AIR ORDINANCES ON RESTAURANT REVENUES IN FOUR TEXAS CITIES: ARLINGTON, AUSTIN, PLANO AND WICHITA FALLS, 1987-1999*. Austin, TX: Bureau of Disease, Injury and Tobacco Prevention, Texas Department of Health.
<http://www.tobaccoscsm.ucsf.edu/pdf/088-HayslettTexas.pdf> (Accessed March 1, 2005).
- 40*. Huang, P., Tobias, S., Kohout, S., Harris, M., Satterwhite, D., Simpson, D. M., Winn, L., Foehner, J. & Pedro, L. (1995) Assessment of the impact of a 100% smoke-free ordinance

- on restaurant sales? West Lake Hills, Texas, 1992-1994. *Morbidity and Mortality Weekly Report*, **44**, 370-2.
41. Alamar, B. C. & Glantz, S. A. (2004) Smoke-free ordinances increase restaurant profit and value. *Contemporary Economic Policy*, **22**, 520-25.
42. Glantz, S. A. (2000) *THE DUNHAM AND MARLOW "STUDIES" ON SMOKEFREE RESTAURANT LAWS: MORE TOBACCO INDUSTRY HOT AIR ON SMOKEFREE RESTAURANTS*. San Francisco, CA: Institute for Health Policy Studies, University of California San Francisco.
43. Fox, M. H. (2004) *THE ECONOMIC IMPACT OF INDOOR SMOKING BANS*. Lawrence, KS: University of Kansas Medical Center.
http://www.no-smoke.org/doc/EconImpact_MikeFox1004.doc (Accessed March 1, 2005).
- 44*. Wakefield, M., Siahpush, M., Scollo, M., Lal, A., Hyland, A., McCaul, K. & Miller, C. (2002) The effect of a smoke-free law on restaurant business in South Australia. *Australian and New Zealand Journal of Public Health*, **26**, 375-82.
45. Wakefield, M., Roberts, L. & Miller, C. (1999) Perceptions of the effect of an impending restaurant smoking ban on dining-out experience. *Preventive Medicine*, **29**, 53-6.
46. Jones, K., Wakefield, M. & Turnbull, D. A. (1999) Attitudes and experiences of restaurateurs regarding smoking bans in Adelaide, South Australia. *Tobacco Control*, **8**, 62-6.
- 47*. Lal, A., Siahpush, M. & Scollo, M. (2004) The economic impact of smoke-free legislation on sales turnover in restaurants and pubs in Tasmania. *Tobacco Control (Letters)*, **13**, 454-5.
- 48*. Lal, A., Siahpush, M. & Scollo, M. (2003) The economic impact of smoke-free policies on sales in restaurants and cafes in Victoria. *Australian and New Zealand Journal of Public Health (Letters)*, **27**, 557-8.