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ORIGINAL ARTICLE

Effect of smoke-free legislation on Ticino gastronomy revenue

Peter J. Schulz · Uwe Hartung · Maddalena Fiordelli

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Abstract
Objective To provide evidence on the effects of smoke-free laws on gastronomy revenue in a European setting based on objective data. Damage to gastronomy revenue is a widely used argument against smoke-free legislation.
Method Gastronomy revenue in Ticino is compared with the rest of Switzerland before and after Ticino banned smoking from gastronomy in April 2007, being the first (and at the time of the study only) Swiss canton to do that. The study uses breakdowns by cantons of taxable revenue of gastronomy branches and retailers (for comparison) provided by the Swiss tax authorities for the years 2005–2008.
Results Revenues of restaurants and bars were not damaged by the Ticino smoke-free law. Decreases in Ticino happened before the smoke-free law came into effect. Evidence for night clubs is inconclusive.
Discussion The absence of detrimental effects on restaurant and bar revenue corroborates the gist of research on the subject from other countries. The argument that the decline of bar and restaurant sales prior to the implementation of the ban might have occurred in anticipation of the new regulation is not considered tenable.

Keywords Tobacco control · Smoking ban · Smoke-free legislation · Gastronomy revenue · Switzerland

P. J. Schulz · U. Hartung (✉) · M. Fiordelli
Institute of Communication and Health,
Università della Svizzera italiana, Via Giuseppe Buffi 13,
6904 Lugano, Switzerland
e-mail: uwe.hartung@usi.ch

Introduction

When smoke-free legislation was discussed and then implemented in the Swiss canton of Ticino, opposition came from several groups, among them some owners of gastronomy businesses, who feared declining revenue. The effects on the gastronomy business were also a major argument in newspaper coverage before a referendum was held on the bill (Schulz et al. 2012). The expectation of declining sales rests on the assumption that smokers among the clients will not come as often as they used to, or leave sooner and consume less, when they are no longer allowed to smoke. A further assumption is that this will not be balanced by non-smokers who might come more often and stay longer, cherishing the clean air in bars and restaurants where smoking is banned.

The gastronomy owners' fears raise the question of whether gastronomy sales were indeed harmed by the introduction of a smoking ban in Ticino in 2007. This article seeks to answer this question for the gastronomy sector as a whole, acknowledging that the effects might be different for individual businesses. The data come from the tax returns, aggregated and published by the Swiss tax authorities.

Smoke-free laws are enacted to protect employees' and customers' health, with ample evidence available now that such effects do occur (Goodman et al. 2009). In Switzerland, several cantonal smoke-free laws were enacted in recent years, as well as a relatively soft federal law (Bundesamt für Gesundheit 2012a, b). More cantons will set such laws into effect in the next few years. Ticino was the first (and for the period under study the only) canton to ban tobacco use from public places, offering only very few exceptions such as outdoor seating facilities. With 335,720 residents in 2009, Ticino covers approximately 4.3 % of the Swiss population (Bundesamt für Statistik 2009). It is virtually identical with the Italian-speaking part of Switzerland, and thus culturally and also geographically distanced from the rest of the country. The successful implementation of a smoke-free law in neighboring Italy in 2005 is widely believed to have boosted the efforts to pass similar legislation in Ticino.

Efforts to ban smoking in gastronomy businesses in Ticino began in earnest in May 2002 with a petition to the Grand Council, the canton's legislative body. Serious lawmaking began in October 2004 on committee level, and at this time, the newspapers in the canton began to intensify their coverage of the issue (Schulz et al. 2012). In September 2005, the committee published a majority and a minority report on the prospected bill (Boneschi et al. 2008). In October 2005, the Grand Council in full session passed the bill after deleting exemptions drafted by the committee majority. Within weeks, an initiative supported by two right-wing or conservative parties in the canton and some owners and representatives of gastronomy businesses collected enough signatures to effect a referendum to be held. The referendum took place on 12 March 2006. A surprisingly large share of four in five voters (79 %) supported the bill that had been passed by the Grand Council, and the smoking ban became effective a year later on 12 April 2007.

Past research

The effects of smoke-free laws on gastronomy sales have been a concern in many countries and were widely studied. Recent reviews conclude that these businesses are not harmed by smoke-free policies (Eriksen and Chaloupka 2007; Lotrean 2008; Scollo et al. 2003; Scollo and Lal 2008). Moreover, there is a relationship between scholarly quality and results. Using criteria developed by Siegel (1992), Scollo and colleagues claim that the higher the quality the less likely does a study find negative economic consequences of smoke-free laws on gastronomy (Scollo et al. 2003; Scollo and Lal 2008). The quality criteria were the use of objective data, a longitudinal perspective covering before and after, applying appropriate statistical methods, and controlling for economic development. However, one of the recent reviews called upon further collecting evidence (Eriksen and Chaloupka 2007).

Relevant research has used both subjective and objective indicators of the economic development of the gastronomy sector (Eriksen and Chaloupka 2007). Among the subjective indicators are, for instance, management expectation of revenue development or self-reported client intentions with regard to frequency of going out. Objective indicators include number of businesses in the gastronomy sector, number of employees, and business value as expressed in sale prices for bars or restaurants. The objective indicator used most often is revenue as evidenced by official sales (or other) tax statistics, which is also the indicator we use.

Studies of gastronomy revenue development usually make use of a comparative element, such as a before/after design comparing different points in time (Huang et al. 1995; Howell 2005), or a design that compares communities with and without smoke-free laws (Alamar and Glantz 2007), or a design that compares restaurants and bars for a time when laws were in effect for the former but not the latter (such as in California between 1995 and 1998; Cowling and Bond 2005). Combinations of before/after design and comparison of communities with and without smoke-free laws are frequent (Glantz and Smith 1994, 1997; Glantz 2000; Bartosch and Pope 1999; Hyland et al. 1999). It is also the design we use.

The method of choice in data analysis is regression with revenue as dependent and presence or absence of smoke-free laws as independent variable, along with controls. Revenue or tax yield is often expressed as shares of gastronomy revenue among all retail sales, or of specific revenue such as from bars or restaurants among total gastronomy sales. The former method controls for regional differences in consumer climate or inflation. Other control variables include community dummies and local unemployment to allow for an effect of local economic conditions. Controls also often include trends and seasonal effects. The time series data are often available in monthly or quarterly steps.

Evidence on revenue development based on tax statistics comes mostly from the USA, including a wide variety of states and communities there, but also from Australia, Canada, Ireland, New Zealand, Norway, and South Africa. Evidence based on other objective indicators than revenue is available from Canada, New Zealand and (again by far the lion's share) the USA. Studies using subjective indicators come from the mentioned countries plus Hong Kong, Italy, Spain and the United Kingdom (Scollo and Lal 2008). Evidence from Switzerland has so far not been available to the international research community, and most evidence from European countries rests on subjective rather than objective data. We have therefore made an effort to look at objective development in a European setting.

Methods

We chose a study period that covered approximately similar periods before and after the implementation of the ban, and consequently looked at gastronomy revenue from 2005 to 2008, covering roughly 9 quarters before the enactment and 7 after.

The Swiss tax authorities (Eidgenössische Steuerverwaltung) annually publish detailed statistics on sales tax by business branches, documenting among many other variables taxable revenue (Eidgenössische Steuerverwaltung 2010). Even more detailed figures are documented online (Eidgenössische Steuerverwaltung 2001–2008). The business branches are documented and listed according to the "Nomenclature Générale des Activités économiques" (NOGA), a classifying system for business branches developed for official Swiss statistics, distinguishing almost 800 different branches. For gastronomy (NOGA Sector H) we selected three categories: NOGA code 553-restaurants, snack bars/cafés, tea rooms; 5540A-bars; and 5540B-discotheques, dancings, nightbars. When the computations were done, NOGA 553 was still differentiated into 5530A- restaurants, cafés, snack bars, tea rooms, and 5530B-restaurants with accommodation, which we added up. Restaurants cover eating and drinking places, while bars mostly refer to mere drinking places. The selection purposefully excludes all categories belonging to the accommodation business (NOGA 551 and 552) as well as canteens and caterers (555), because they are not likely to be affected by smoking bans. For comparison, we included retail sales (NOGA 52), one of three categories in Sector H: Trade. Retail sales include more or less everything people buy in stores or by mail order, from food, clothes, household appliances, furniture, to medication. It excludes cars and fuel, which are documented separately.

The routine publications of these data document them for the country in total. Tax authorities provided us with the taxable revenue in a breakdown by canton, which we used to compute figures for Ticino and the remaining 25 other cantons. Analyses are conducted for 3 branches within the gastronomy sector and based on comparing indicators from 4 years × 2 areas (Ticino and rest of Switzerland), equaling 8 observations.

The study follows a difference-in-difference design, which examines the effect of a measure first by comparing the treatment group before and after and then by relating the change in the treatment group to the development in a control group which was not subject to the treatment. In our case, the treatment group is the canton of Ticino, and the control group is the rest of Switzerland. The analysis rests on the assumption that gastronomy sales in Ticino would have developed similarly to the rest of the country if a smoking ban had not been introduced in Ticino.

This is not necessarily so, as business climate or inflation might have affected Ticino and the rest of the country differently, the more so as Ticino is culturally and geographically rather distanced from the rest of Switzerland. Therefore, we not only look at sales in terms of money value, but also, as has been done in other similar studies (Lal and Siahpush 2009), at gastronomy sales as percentages of total taxable retail sales, although the former is no subcategory of the latter in the statistics we used. If Ticino had experienced a different consumer climate than the rest of the country, that should have affected gastronomy and the complete retail sales more or less similarly, and the share of gastronomy sales should have remained untouched.

Results

Restaurant sales in Switzerland without Ticino rose rather steadily between 2005 and 2008, creating an almost 11 % increase in these 4 years. Increase was highest in 2006, with a growth rate of 4.7 % in comparison to the year before. Ticino restaurants, however, saw a decrease of 1.7 % that very year, that is to say: the year before the Ticino smoking ban came into effect. The development over the complete 4 years is much less positive than for the rest of the country, with sales increasing by only 3 % in Ticino compared to almost 11 % for the rest of the country. The only year where development was better in Ticino than the rest of the country was 2007, the year the Ticino smoking ban came into effect (Table 1, upper panel).

Bar sales in Switzerland outside Ticino slightly dropped in 2006 and increased considerably in 2007 and then again in 2008. Ticino bars saw a much bigger drop in 2006, further decrease in 2007 (when the smoking ban became effective) and some recovery in 2008. Over the whole 4 years, the development was very positive in the rest of Switzerland with an overall increase of almost 15 %, while it was on balance negative in Ticino with a decline of 3.3 % from 2005 to 2008 (Table 1, middle panel).

Sales in night clubs in the rest of Switzerland by and large remained constant between 2005 and 2007 and then dropped in 2008. In contrast, the development was very dynamic in Ticino: very large increases in 2006 (before the smoking ban), equally large decreases the year after (when the smoke-free law became effective, and large increases in 2008. While it cannot be ruled out that the smoke-free law contributed to the decrease in 2007, the dynamic in the development clearly suggests other forces at work. The overall development is more positive in Ticino with a decline of 2.2 % from 2005 to 2008, compared to a decline of 4.4 % for the rest of the country.

The years under study were years of growth for Swiss retailers outside Ticino. Retail sales increased by approximately 5 % annually, while in Ticino they rose by almost 10 % in 2006 and only by 1.6 % in 2007. Between 2008 and 2005, retails sales increased by 15.4 % in Switzerland outside Ticino and by 14.4 % in Ticino. The increase was steady in the rest of country, while in Ticino most of it occurred in 2006. Gastronomy sales as percent or permille

Table 1 Overview of taxable gastronomy and retail sales, Switzerland 2005–2008

	2005	2006	2007	2008
Restaurants Ticino (Mio. CHF)	597.1	587.2	608.7	614.9
Index 2005 = 100	100.0	98.3	101.9	103.0
Annual change (%)		−1.7	+3.7	+1.0
In relation to retail sales (%)	25.0	22.5	22.9	22.5
Restaurants Switzerland without Ticino (1000 Mio. CHF)	11.2	11.7	12.0	12.4
Index 2005 = 100	100.0	104.7	107.5	110.9
Annual change (%)		+4.7	+2.7	+3.2
In relation to retail sales (%)	12.0	11.9	11.7	11.5
Bars Ticino (Mio. CHF)	76.3	72.0	70.4	73.8
Index 2005 = 100	100.0	94.4	92.3	96.7
Annual change (%)		−5.5	−2.3	+4.8
In relation to retail sales (‰)	32.0	27.6	26.5	27.0
Bars Switzerland without Ticino (Mio. CHF)	488.6	482.7	523.0	560.0
Index 2005 = 100	100.0	98.8	107.0	114.6
Annual change (%)		–1.2	+8.3	+7.1
In relation to retail sales (‰)	5.3	4.9	5.1	5.2
Night Clubs Ticino (Mio. CHF)	17.9	21.1	16.6	17.5
Index 2005 = 100	100.0	118.1	92.7	97.8
Annual change (%)		+18.1	−21. 6	+5.6
In relation to retail sales (‰)	7.5	8.1	6.2	6.4
Night Clubs Switzerland without Ticino (Mio. CHF)	339.9	341.3	339.5	324.9
Index 2005 = 100	100.0	100.4	99.9	95.6
Annual change (%)		+0.4	−0.5	−4.3
In relation to retail sales (‰)	3.7	3.5	3.3	3.0
Retail sales (1000 Mio. CHF)				
Ticino	2.4	2.6	2.7	2.7
Switzerland without Ticino	93.0	98.3	102.4	107.3

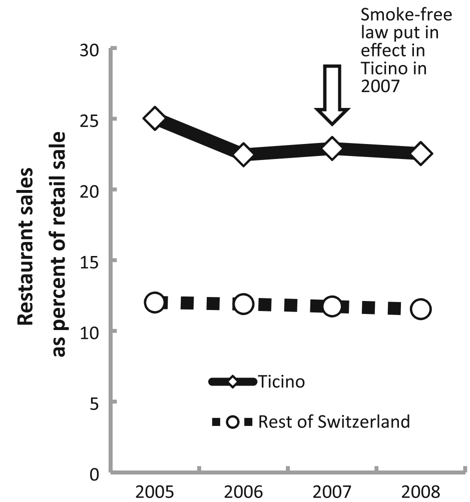

Fig. 1 Restaurant sales as percent of retail sales, Switzerland, 2005–2008

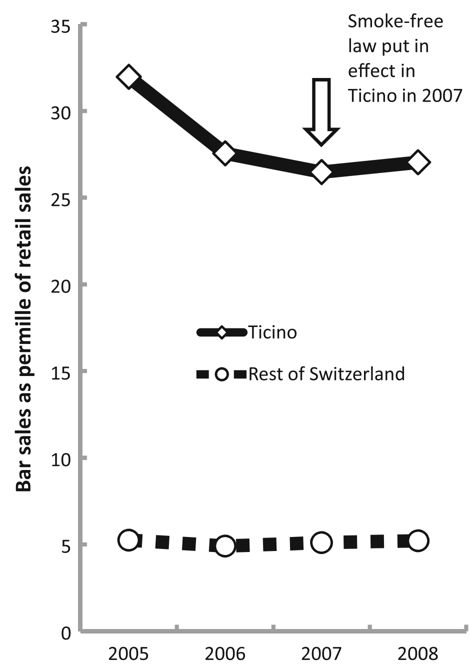

Fig. 2 Bar sales as permille of retail sales, Switzerland, 2005–2008

of retail sales are clearly higher in Ticino than in the rest of the country (Table 1; Figs. 1, 2, 3), which can be considered an expression of different life styles, different structures of the hospitality branch and a different significance of tourism. It is not the level of the shares that is of interest here, but their development.

Restaurant sales expressed as share of retail sales hardly changed in Switzerland outside Ticino, with a small but steady decline. In Ticino, there was a clear decline in 2006, the year before the smoke-free law was implemented, and not much change after that (Fig. 1). This confirms the findings with regard to money values. Compared to the rest of the country and relative to retail sales, Ticino restaurants lost revenue, but the loss occurred before the smoke-free law was put in effect.

Bar sales in Ticino developed similarly. There was a sharp decline compared with the rest of country, and relative to retail sales, in 2006, and not much change thereafter. The further small decrease in 2007 can hardly be considered indicative of an effect of the smoke-free law implemented then (Fig. 2).

For night clubs, the evidence is different, but similar to the analysis on money values. How much of the decrease in 2007 is a return to a usual level, and how much the ban might have contributed to it, cannot be decided with the data at hand. The similarity of the net development from 2005 to 2008 speaks against an effect of the ban: By 2008 Swiss night clubs had lost 17.0 % of their revenue (relative to retail sales), while the Ticino night clubs had lost 14.5 % (Fig. 3).

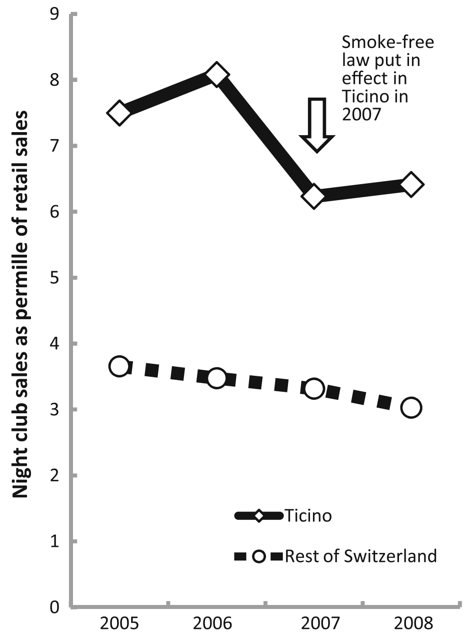

Fig. 3 Night club sales as permille of retail sales, Switzerland, 2005–2008

Discussion

The data presented here suggest the smoke-free law in Ticino, implemented in April 2007, did not harm restaurant and bar sales. Overall, Ticino restaurant and bar sales developed less positively than in the rest of Switzerland in the period from 2005 to 2008, but the negative development clearly began well before the smoke-free law in Ticino came into effect, while immediately after the introduction of this law, sales did not change much. Another interpretation is that 2005 was an exceedingly positive year for Ticino gastronomy, while 2006 and 2007 saw a return to normalcy. This interpretation also would not leave much room for a ban-induced decline of business. The evidence with regard to night clubs is inconclusive, largely because the erratic development is difficult to interpret. By and large, the results on bars and restaurants confirm research on the effects of smoke-free legislation conducted in other countries. Some studies seem to suggest revenue might even increase after the implementation of smoke-free laws (Eriksen and Chaloupka 2007), especially in restaurants. Nothing in our data suggests this happened in Ticino.

The discussion of the smoking ban happened at a time when the Ticinese and their tourist guests freely spent money (soaring retail sales in 2006), but at the same time stayed away from restaurants and bars or spent less there, though night clubs still drew a lot of money. As restaurant and bar owners worried about what the smoking ban would do to their businesses, they experienced a considerable decline in revenue unlikely to be related to the ban. We cannot discuss the reasons for this decline, but its existence suggests that local worries about declining hospitality revenues are misdirected when they focus on smoke-free laws.

The pre-ban decline in 2006, however, can be used as an argument against our conclusion if one were to hold that it occurred in anticipation of the ban. At least four behaviors could explain this: Customers could have stayed away from bars and restaurants in anger, from frustration or simply to get used to new habits. Second, owners could have ordered smoking bans on their premises prior to the date the law became effective, which kept their customers away. Third, some owners might have closed down their businesses for good in anticipation of losses, and fourth some places might have closed temporarily for redecorating or rebuilding, to create rooms where smokers could indulge in the habit.

The first, second and third behavior all mean that people voluntarily do things they dislike earlier than they are forced to. Why should a dedicated smoker stay home rather than go to a bar and smoke when tobacco use is still allowed? Why should an owner who fears losses from the ban impose his own private ban months before the government demands it? Why should he close down before it is necessary? None of these behaviors are reasonable, though a final word cannot be spoken as we have no data to know whether the behaviors occurred, and how common they were. Evidence on closing down for good is potentially available because the tax statistics document the number of sales tax payers by branch. However, we have no access to these data, which were not included in this study.

The second, third and fourth behaviors point at a limitation of this study: branch revenue data are insensitive to shifts between businesses caused by a smoking ban. If one business wins what another loses, branch revenue remains unaffected. Such shifts, which might be of enormous bearing to some owners, cannot be detected by our method. In as much as closing down temporarily or for good and an owner-ordered ban before the law became effective lead to shifts between businesses, branch tax yield is left untouched, which means these behaviors are not a good explanation of the pre-ban decline.

As to rebuilding, a representative survey among 143 gastronomy business owners conducted in April and May 2008 shows that 5 % said they had done some rebuilding to allow smoking in separated rooms. Supposed this required closing down for a month (=8 % of a year), the total loss in branch business days per annum can be approximated at $0.05 \times 0.08 = 0.004$ or 0.4 %, which can also be used as an estimation of revenue loss for the branch. However this value is overestimated as it does not account for revenue going to other businesses and for the likelihood that rebuilding will be done in the winter months when business is slow in Ticino gastronomy. Moreover, only a part of the rebuilding can have happened in 2006. This means: the likely loss to the branch in 2006 caused by rebuilding is just by far too small to explain the loss we documented.

A final limitation should be noted: the small data base, which precludes the use of statistical analysis. The basis could be broadened by looking at semi-annual or quarterly data, but such data are available only in uncontrolled and unconsolidated form. The semi-annual and quarterly data are much less reliable than the annual ones, and they sometimes show somewhat different developments. Analysis of these data, however, confirms the conclusion that nothing much speaks for business damages in restaurants or bars after the Ticino ban became effective. It will be years before Swiss data are available that can employ statistical methods. With one canton after the other introducing bans, conducting such a study will be a promising endeavor.

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References

Alamar B, Glantz SA (2007) Effect of smoke-free laws on bar values and profits. Am J Public Health 97:1400–1402

Bartosch WJ, Pope GC (1999) The economic effect of smoke-free restaurant policies on restaurant business in Massachusetts. J Public Health Manag Pract 5(1):53–62

Bartosch WJ, Pope GC (2002) Economic effect of restaurant smoking restrictions on restaurant business in Massachusetts 1992 to 1998. Tob Control 11:ii38–ii42

Boneschi M, Antonietti A, Tomada A, Schulz PJ, Ehmig S (2008) Rapporto: ICH—progetto ESAGONO. Research report. Lugano: Università della Svizzera italiana, Institute of Communication and Health, Center for Applied Research in Communication and Health, ARCHE

Bundesamt für Gesundheit (2012a) Schutz vor Passivrauchen in den Kantonen (Gastronomie). Stand 1.7.2012. Schweizerische Eidgenossenschaft, Departement des Inneren: http://www.bag.admin.ch/themen/drogen/00041/03814/03815/index.html?lang=de. Accessed 6 Aug 2012

Bundesamt für Gesundheit (2012b) Stand der Tabakprävention in den Kantonen, Stand 05.07.2012. Schweizerische Eidgenossenschaft, Departement des Inneren: http://www.bag.admin.ch/themen/drogen/00041/03814/index.html?lang=de%20%3Chttp://www.bag.admin.ch/themen/drogen/00041/03814/index.html?lang=de. Accessed 6 Aug 2012

Bundesamt für Statistik (2009) Ständige Wohnbevölkerung nach Staatsangehörigkeit, Geschlecht und Kantonen, 2009. Tabelle su-d-1.2.1.1.11. http://www.bfs.admin.ch/bfs/portal/de/index/themen/01/02/blank/data/01.html. Accessed 1 Dec 2011

Cowling D, Bond P (2005) Smoke-free laws and bar revenues in California: the last call. Health Econ 14:1273–1281

Eidgenössische Steuerverwaltung (2001). Detaillierte Branchentabellen 2001–2008 gemäss NOGA 2002. http://www.estv.admin.ch/dokumentation/00075/00076/00714/01125/index.html?lang=de. Accessed 1 Dec 2011

Eidgenössische Steuerverwaltung (2010). Die Mehrwertsteuer in der Schweiz 2006-2007: Resultate und Kommentare. Neuchâtel: Office fédérale de la statistique, 2010. http://www.estv.admin.ch/dokumentation/00075/00076/00714/01076/index.html?lang=de Accessed 1 Dec 2011

Eriksen M, Chaloupka F (2007) The economic impact of clean indoor air laws. CA Cancer J Clin 57:367–378

Glantz SA (2000) Effect of smokefree bar law on bar revenues in California. Tob Control 9:111–112

Glantz SA, Smith LR (1994) The effect of ordinances requiring smoke-free restaurants on restaurant sales. Am J Public Health 84:1081–1085

Glantz SA, Smith LR (1997) The effect of ordinances requiring smoke-free restaurants and bars on revenues: a follow-up. Am J Public Health 87:1687–1693

Goodman PG, Haw S, Kabir Z, Clancy L (2009) Are there health benefits associated with comprehensive smoke-free laws. Int J Public Health 54:367–378. doi:10.1007/s00038-009-0089-8

Howell F (2005) Smoke-free bars in Ireland: a runaway success. Tob Control 14:73–74

Huang P, Tobias S, Kohout S et al (1995) Assessment of the impact of a 100 percent smoke-free ordinance on restaurant sales West Lake Hills Texas 1992–1994. MMWR Morb Mortal Wkl Rep 44:370–372

Hyland AK, Cummings M, Nauenberg E (1999) Analysis of taxable sales receipts: was New York City's smoke-free air act bad for business. J Public Health Manag Pract 5(1):14–21

Lal A, Siahpush M (2009) The effect of smoke-free policies on revenue in bars in Tasmania Australia. Tob Control 18:405–408. doi:10.1136/tc.2008.028589

Lotrean LM (2008) Effects of comprehensive smoke-free legislation in Europe. Salud Publica Mex 50(suppl 3):S292–S298

Schulz P, Hartung U, Fiordelli M (2012) Assessing the rationality of argumentation in media discourse and public opinion: an exploratory study of the conflict over a smoke-free law in Ticino. Empedocles: European Journal for the Philosophy of Communication 3(1):83–110

Scollo M, Lal A (2008) Summary of studies assessing the economic impact of smoke-free policies in the hospitality industry includes studies produced to 31 January 2008. http://www.vctc.org.au/tc-res/Hospitalitysummary.pdf. Accessed 6 April 2011

Scollo M, Lal A, Hyland A, Glantz S (2003) Review of the quality of studies on the economic effects of smokefree policies on the hospitality industry. Tob Control 12:13–20

Siegel M. (1992). Economic impact of 100 % smoke-free restaurant ordinances. In: Smoking and restaurants: a guide for policy makers. UC Berkeley/UCSF Preventative Medicine Residency Program; American Heart Association, California Affiliate; Alameda County Health Care Services Agency, Tobacco Control Program, Berkeley