Lifting the smokescreen

10 reasons for a smoke free Europe

By the Smoke Free Partnership

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Foreword

> *The lasting impact of this [smokefree] law in Ireland is that a child in Ireland today will never know what it is like to be in a smoke filled pub or restaurant.*
>
> Micheál Martin, T.D, Minister for Trade, Employment and Enterprise, Luxembourg, 2 June 2005

This report was commissioned in October 2004. At the time, Ireland had gone smoke free in March of that year, followed by Norway in June. On the other side of the world, New Zealand was due to follow suit in December 2004 and there were rumours from Italy and Malta that comprehensive smoke free legislation was being enacted and would come into force early in 2005. It seemed to the commissioning organisations[1] that times were changing. Smoke free workplaces were no longer confined to the more liberal US states. Could it be possible that comprehensive smoke free legislation could become a reality, not just in small European countries with a strong background in tobacco control, but across the European Union (EU) itself?

We decided to find out. The first task was to ascertain the size of the problem. Like the Health Ministers of Ireland, Norway, Italy and New Zealand, we knew that second-hand smoke exposure kills and causes harm in children and adults and had presented the evidence to this effect in the ASPECT (Analysis of the Science and Policy in Europe for the Control of Tobacco) report published at the same time as this report was conceived[2]. What we didn't know was the extent of the harm caused in the EU by such exposure. Chapter 1 of this report sets out the scale of the problem. The figures are shocking and, we believe, a very conservative estimate given the gaps in data referred to in the chapter.

The second task was to gather the economic evidence in support of smoke free legislation. The interests of health are frequently assessed against the vested economic interests of the tobacco industry and its allies and health doesn't always

[1] Cancer Research UK, European Cancer Leagues, European Heart Network, European Respiratory Society, Ligue nationale contre le Cancer

[2] Analysis of the Science and Policy in Europe for the Control of Tobacco (ASPECT) report. Tobacco or health in the European Union: past, present and future. Directorate General for Health and Consumer Protection, European Commission, Luxembourg, October 2004.

come first. But we believed, along with Philip Morris[3], that claims of economic catastrophe in the hospitality sector should smoke free bars and restaurants be introduced would not be borne out when the independent data on the economic effects of smoke free laws became available. As Chapters 2 and 3 show, our optimism was not unfounded. Smoke free laws help the economy as well as health.

Finally, we decided to look at public opinion on smoke free policies. To what extent did members of the public in various EU countries know that passive smoking was harmful and how supportive were they of legislation in this area? Again, the results have been surprisingly positive. The dangers of passive smoking are well known amongst the European public and the corresponding acceptance levels of comprehensive smoke free legislation in all workplaces are now running at over 65% in most countries where polling has been carried out over the last 3 years. In countries which have enacted and enforced legislation, support for the law is over 75%. These figures show that the public wants this legislation and that politicians should not be afraid to sponsor and vote for smoke free laws.

And indeed they are not, as the response to the Smoke free Europe Conference on 2 June 2005 revealed[4]. Held in Luxembourg under the auspices of the Luxembourg Presidency of the EU, and organised by the commissioning organisations of this report with sponsorship from GlaxoSmithKline and Pfizer, the conference brought together at European level for the first time health organisations, leading researchers and representatives of Europe's public and private sector employers, trades unions, occupational health inspectors, the European Commission and politicians to debate smoke free policy. In total, nine serving ministers of health and/or employment plus the ex-health minister of Italy spoke at the event. This unprecedented level of support from Europe's health ministers for smoke free policies confirmed that the tide has turned on smoke free workplace legislation. As Swedish Minister of Health, Morgan Johansson said at the Luxembourg conference:

[3] "…the economic arguments often used by the industry to scare off smoking ban activity were no longer working…These arguments simply had no credibility with the public, which isn't surprising when you consider that our dire predictions in the past rarely came true." Walls T. CAC presentation number 4, 8 July 1994. Bates Number 2041183751-90. www.legacy.library.ucsf.edu/tid/vnf77e00.

[4] Smoke free Europe 2005. Luxembourg, 2 June 2005. www.smokefreeeurope.com.

In five years time there will be a majority of EU countries with smokefree laws, and in another five years, it will be the exception to the rule not to be smokefree.

England has just voted overwhelmingly for comprehensive smoke free legislation. We hope that this report will assist European and other national politicians and policymakers in making that statement a reality.

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Lifting the smokescreen: 10 reasons for going smokefree

1. Second-hand smoke exposure kills and harms health.
2. Every worker has the right to be protected from exposure to tobacco smoke.
3. Scientific evidence shows that ventilation does not protect against exposure to tobacco smoke.
4. Smoke free laws do not result in negative economic effects.
5. Freedom of choice includes the responsibility not to harm others.
6. The public supports smoke free legislation.
7. The public complies with smoke free legislation.
8. It has been done elsewhere. It can be done everywhere.
9. It is a cost effective public health intervention.
10. Comprehensive smoke free policies work.

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Executive summary

Health effects (Chapter 1)

- Chapter 1 presents estimates, for all adults across the 25 countries of the European Union (EU) and, separately, for those who are non-smokers, of deaths from ischaemic heart disease, stroke, lung cancer and chronic non-neoplastic pulmonary disease that are attributable to passive smoking.

- With some exceptions, the magnitude of the reported risks associated with passive smoking has been small. However, because exposure of non-smokers continues to be ubiquitous in workplaces and enclosed public places in many countries, large numbers of people are exposed to this risk, and, in aggregate, the potential harm caused is considerable.

- While the risks from passive smoking for the four diseases of interest are now well-established in the scientific literature, data on active and especially on passive smoking within the EU are demonstrably incomplete. This has necessitated the making of a number of assumptions regarding the extent of exposure to passive smoking in both private and occupational settings. Wherever possible, conservative judgements have been adopted in order that the resulting numbers of attributable deaths are more likely to be under- than over-estimates.

- Passive smoking at work appeared to account for over 7,000 deaths across the EU in 2002, while passive smoking at home appeared to cause a further 72,000 deaths. Among employees of the hospitality industry, exposure to tobacco smoke at work accounts for one death every working day.

- Passive smoking at work appeared to account for over 2,800 deaths of non-smokers in the EU in 2002, while exposure at home appeared to cause a further 16,600 deaths of non-smokers. In the hospitality industry in the EU, passive smoking apparently kills one non-smoking employee every 3.5 working days.

- These results omit deaths in childhood caused by passive smoking, deaths in adults from other conditions known to be caused by active smoking, and the significant, serious morbidity, both acute and chronic, caused by passive smoking.

Economic effects (Chapters 2 and 3)

- Research evidence demonstrates that smoke free policies reduce tobacco consumption.

- By reducing the demand for tobacco, smoke free policies will reduce both private and social costs associated with smoking.

- The benefits of smoke free policies are particularly notable in the private sector of the economy. The savings come from several sources: reduced insurance costs; increased productivity among those who quit smoking and among workers no longer exposed to second-hand smoke; lower hiring costs due to a reduced need to replace labour lost due to tobacco-related morbidity and mortality; lower building maintenance costs, and savings due to reduced employers' liabilities for the impact of second-hand smoke exposure on workers, and for compounding effects of second-hand smoke on workers exposed to other toxins in the workplace.

- The long-term benefits of smoke free policies are reduced mortality and morbidity due to limiting exposure to second-hand smoke and due to the impact of these policies on smoking prevalence (both quitting and initiation). This will enhance countries' human capital, leading to further economic growth.

- Tobacco companies have claimed that a smoking ban in bars and restaurants would have a negative impact on business and lead to fewer sales and to less employment.

- Independent and reliable research on the financial impact of smoke-free policies in the hospitality industry provides evidence that counters the tobacco industry's economic claims.

- A review of almost 100 studies, produced before 31 August 2002, from Canada, UK, USA, Australia, New Zealand, South Africa, Spain and Hong Kong, failed to find a negative impact or a positive effect in studies based on objective and reliable measures, such as taxable sales receipts, data several years before and after the introduction of smoke-free policies, where controls for changes in economic conditions were employed, and where statistical tests were used to control for underlying trends and data fluctuations.

- More recent information on the effect of smoking bans in New York, British Colombia, Ireland, Norway or New Zealand showed no negative impact on business.

- In New York, for example, one year after the 2003 Smoke-Free Air Act banning smoking in all workplaces came into effect, business receipts for restaurants and bars have increased by 8.7%, employment has risen with 10,600 new jobs, virtually all establishments are complying with the law, and the number of new liquor licenses issued has increased, all signs that New York City bars and restaurants are prospering.

- Drinking habits are changing within Europe, as per capita alcohol consumption is decreasing and more people are drinking at home. Many factors may influence the sales of the hospitality industry. The volume of sales in bars in Ireland increased until 2001, but decreased by 2.8% in 2002, 4.2% in 2003 and 4.4% in 2004. Prior to the Irish law banning smoking in the workplace (including bars and restaurants) which came into force in 2004, drinking habits in Ireland had changed already. As in British Columbia, the decline in the volume of sales at drinking places in Ireland occurred prior to the enactment of the smoking ban.

Public awareness and attitudes (Chapter 4)

- As public awareness of the harmful effects of second-hand smoke grows, public support for measures to protect non-smokers from second-hand smoke also increases.

- International experience suggests that successful implementation of smoke free policies requires both a reasonable level of public awareness of the health risks of second-hand smoke, and a certain level of public support.

- Recent evaluations of smoke free policies in European countries, and data from population-based surveys, support these conclusions, and suggest that across the EU, public support for smoke free policies is rapidly increasing.

- The evidence suggests that provisions to protect non-smokers tend to lag behind public opinion. Indeed, in several European countries, the level of public support for smoke free workplaces and public places now equals or exceeds that which has proven sufficient for successful introduction of smoke free laws in other jurisdictions.

Ventilation (Chapter 5)

- Environmental tobacco smoke (ETS), derived primarily from sidestream cigarette smoke between puffs, is a major contributor to indoor air pollution wherever smoking occurs. In the frame of activities to evaluate human exposure to ETS in indoor environments, tests were undertaken to investigate the impact of various ventilation rates on the air concentration of ETS components at the Joint Research Centre's environmental chamber (INDOORTRON).

- Preliminary evidence indicates that changes in ventilation rates simulating conditions expected in many residential and commercial environments (0.3–4.5 air exchange rates (AER)) during smoking do not have a significant influence on the air concentration levels of ETS constituents, e.g. carbon monoxide (CO), oxides of nitrogen (NOx), aromatic compounds, nicotine.

- This suggests that efforts to reduce indoor air pollution through higher ventilation rates in buildings would not lead to a meaningful improvement of indoor air quality. Moreover, the results show that "wind tunnel"-like rates or other high rates of dilution ventilation would be required to achieve pollutant levels close to ambient air limit values.

Legislation and case studies (Chapter 6)

- No European country had banned smoking in bars and restaurants by January 2004. By March 2006 five countries (Ireland, Norway, Italy, Malta and Sweden) had introduced smoke free bars and restaurants, Scotland will do so in April 2006, and England should follow suit shortly.

- The examples of Norway and Ireland illustrate key factors for the successful implementation of smoke free legislation: 1) prior evidence-based research to inform public and policy makers of the adverse effects of second-hand smoke; 2) active involvement of key stakeholders, notably trade unions and health groups; 3) development of a clear consistent communication campaign to inform the public with an emphasis on the health rights of hospitality workers.

- The UK should serve as a warning to other countries considering voluntary restrictions: they simply don't work.

Chapter 1

An estimate of deaths attributable to passive smoking in Europe

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1.1. Introduction

Evidence that passive smoking can result in serious illness or even death among non-smokers first appeared in the English-language scientific journals in 1974[1,2] although the term "passive smoking" was originally coined in German. While the earliest reports in English referred to infants and young children living in homes where adults smoked, they were followed, in early 1981, by two studies implicating passive smoking as a cause of lung cancer in adult women who themselves did not smoke[3,4]. Four years later came the first indication that passive smoking also increased the risk of fatal ischaemic heart disease in non-smokers[5].

Since that time, there have been literally dozens of independent scientific investigations of the relationship between passive smoking and a variety of health problems. Even allowing for publication bias – the tendency for editors to reject manuscripts showing no association if they are submitted for consideration and even the failure of investigators to write up such studies – there is now a large body of evidence pointing to serious harm associated with passive smoking. This information is the more impressive for the variety of settings, populations and study designs it encompasses. It would be remarkable indeed if different teams of investigators had independently but systematically made the same scientific errors so as to indicate that passive smoking was a danger to the health of infants, children and adults when, in fact, no risk was present. Official independent enquiries in several countries[6,7,8,9] have reached the same conclusion – the risks to health and life from passive smoking are real, and they are widespread. The scientific evidence regarding these risks has been the wellspring of efforts to introduce and systematically extend smoke free policies.

With some exceptions, the magnitude of the reported risks associated with passive smoking has been small. However, because exposure of non-smokers con-

tinues to be ubiquitous in workplaces and enclosed public places in many countries, large numbers of people are exposed to this risk, and, in aggregate, the potential harm caused is considerable. This chapter presents an estimate of such harm as it relates to deaths in adults from ischaemic heart disease, stroke, lung cancer and chronic non-neoplastic pulmonary disease across the 25 countries of the European Union (EU). Estimates are provided both for all adults and, separately, for those who are non-smokers.

1.2. Methods

1.2.1. General approach

The calculations presented in this chapter are based on the formula for population attributable proportion, a well-established epidemiological method for estimating the proportion of events in a population that are related to a specific exposure of interest. This relationship is described mathematically as:

$$A = \frac{p.(RR-1).T}{1+p.(RR-1)}$$

Where:

A is the number of events attributable to the exposure,

p is the proportion of the population exposed (here, the prevalence of passive smoking),

RR is the relative risk associated with exposure (the number of times by which the frequency of the outcome is multiplied among those exposed to the factor compared with the frequency of the outcome among those not exposed), and

T is the total number of relevant events in the population.

The application of this formula depends fundamentally on the presence of a causal relationship between the exposure and outcome rather than on a relationship that represents a statistical association only. However, as indicated above, independent official reviews in several countries have concluded that passive smoking does cause serious and sometimes fatal disease[6,7,8,9]. Thus, the requirement for a causal relationship is met.

1.2.2. Scope of the calculations

The present calculations are limited to deaths, to deaths in adults, and specifically to deaths from ischaemic heart disease, stroke, lung cancer and chronic non-neoplastic pulmonary disease (table 1). These restrictions have been imposed for a combination of scientific and pragmatic reasons, but their effect is that the final figures for the harm attributable to passive smoking are inevitably conservative.

Table 1: Rubrics from the International Classification of Diseases used to extract numbers of deaths from the WHO-EURO database on mortality

Cause of death	ICD-10 rubrics
Ischaemic heart disease	I20 – I25
Stroke	I60 – I69
Lung cancer	C33, C34
Chronic non-neoplastic respiratory disease	J40 – J47

ICD-10: International Classification of Diseases (10th revision); WHO-EURO: World Health Organization European Office.

Evidence that passive smoking can result in lung cancer and fatal heart disease has been available for twenty years[3,4,5]. The body of information implicating passive smoking as a cause of stroke is more modest but it is sizeable. However, some strokes are secondary to heart attacks (myocardial infarction) because disruption of function of the heart can lead to development of clots in the heart chambers and these can break off and travel through the circulation to cause a stroke. Thus, if passive smoking is a cause of ischaemic heart disease, whose commonest major manifestation is acute myocardial infarction, it must also be a cause of stroke.

There are growing indications that passive smoking also causes chronic obstructive pulmonary disease (COPD)[10]. In the UK, the Royal College of Physicians has recently published estimates of deaths attributable to passive smoking that include a figure for deaths from COPD[11]. For the calculations in this chapter, however, the starting point has been a set of rubrics from the International Classification of Diseases that include asthma as well as COPD, and which are together denoted here as chronic non-neoplastic pulmonary disease (CNNPD). This will have resulted in an increased estimate of the impact of passive smok-

ing relative to the recent report from the UK but reflects the conflation within the World Health Organization European Office (WHO-EURO) database of deaths from COPD, deaths from asthma and deaths from other, less common, respiratory ailments. Since passive smoking is accepted as a cause of both asthma and attacks of asthma[7], this widening of the scope for calculation is defensible. In addition, the line between asthma, which has a major reversible element in the degree of obstruction of the airways, and COPD, which does not, becomes increasingly blurred in patients with asthma of long standing, and this almost certainly carries over into diagnostic imprecision in the ascription of cause of death in such individuals. In any case, the present calculations remain conservative in that they omit deaths ascribed to pneumonia, where passive smoking almost certainly plays a role in adults and is accepted as an important aetiology in infancy and early childhood[1,2].

1.2.3. Calculation of populations at risk

1.2.3.1. "Working age" and "elderly" populations

Data on the populations of the 25 countries in the EU were obtained from the WHO database (http://data.euro.who.int), selecting counts or estimates for year 2002. For most countries, this source provided a specific number for the proportion or population aged 65 years and over, and equivalent statistics for the population aged less than 15 years. As the aim of the study was to derive estimates of deaths in adults attributable to passive smoking at work and at home, the population of "working age" (20–64 years) was estimated as:

$$\text{Total population} - (\text{number } 65+) - (1.33 \cdot \text{number } 0–14),$$

on the grounds that mortality in the late teenage years is very small and fertility has been reasonably stable in Europe over the last two decades.

Because information on their age-structures was missing for the populations of Belgium, Denmark, France, Germany and Italy, the average proportions from the other EU15 nations for persons aged 65 and over and less than 15 years were applied in estimating the working age and elderly populations of those countries.

1.2.3.2. Employed population and hospitality industry workforce

The Eurostat database of the European Commission (http://epp.eurostat.cec.eu.int) gives country-specific estimates of the proportion of the population aged 15–64

years that is in paid work. Applying this figure to the corresponding total population aged 15–64 years yielded the absolute size of the employed workforce in each country. Separate estimates are also available for the proportion of the workforce in each country that is employed out-of-doors. This allows derivation of the estimated total workforce employed in indoor environments.

A further statistic in the Eurostat database gives the proportion of each national workforce that is employed in the hospitality industry, which permits estimation of the actual numbers of employees in this sector.

The proportions of indoor workers and hospitality workers for Norway and Iceland were estimated from the averages for the remaining three Nordic countries.

In the UK, 27.8% of the hospitality workforce is employed specifically in pubs, bars and nightclubs. This fraction has been applied across Europe.

It has been assumed that only one-fifth of employees spend their entire working lives in such occupations.

1.2.4. Calculation of age-specific deaths

The WHO database contains no information on deaths for Cyprus. For the other 24 countries, it provides separate cause-specific age-standardised mortality rates (ASMRs) for the population aged 25–64 years and those aged 65 years and over. For the population aged 25–64 years, the total numbers of deaths from one of the four conditions of interest in the present calculations was estimated as:

$$D(25–64) = (r_1.P_1).53/60$$

Where:

D(25–64) is the estimated number of deaths,

r_1 = cause-specific ASMR for the population aged 25–64 years in 2002 (or either adjacent year, depending on availability of data), and

P_1 = estimated population 20–64.

The correction factor in this calculation (*53/60*) reflects that the "European standard population" for age-groups 20–64 years includes 60,000 people, with 7,000 aged 20–24. The latter group is unlikely to have any relevant fatal events.

Deaths in the elderly population were estimated from the corresponding cause-specific ASMRs as:

$$D(65+) = (r_2.P_2)$$

Where:

D(65+) = deaths at ages 65 years and above,

r_2 = SDR 65+, and

P_2 = population aged 65 years and over.

1.2.5. Estimated prevalences of smoking among adults

With limited directly reported data, assumptions have had to be made regarding the overall prevalence of current smokers among adults, as shown in table 2.

Table 2: Assumptions regarding prevalence of smoking among adults

Reported % current smokers among adults	Figure adopted for:	Rationale
Italy = 26.6	Greece	Both are in southern Europe
Slovakia = 28	Slovenia	Near-neighbouring countries
Spain = 28.1	Portugal	Neighbouring country
United Kingdom = 26.8	Ireland	Neighbouring country, same language

1.2.6. Variation in smoking with age

The prevalence of smoking declines with age, through cessation and selective mortality.

As can be seen in table 2, the prevalence of current smokers (S) is usually summarised as a single proportion across the whole of the adult population, and expressed in per cent. However, it can be split into two components reflecting prevalences in the working age and elderly populations as follows:

$$S = [p_1.s_1.P + (100–p_1).s_2.P]/(P.100)$$

Where:

P is the total adult population (age 20+),

p_1 is the proportion of the population below age 65,

s_1 is the prevalence of smoking below age 65, and

s_2 is the prevalence above age 65.

This simplifies to:

$$S = [p_1.s_1. + (100–p_1).s_2]/100.$$

In both the UK and Australia $s_2/s_1 = 0.5$[12,13]. Thus re-arranging the formula gives:

$$s_1 = (S.100)/[p_1+((100–p_1).0.5)]$$

from which s_2 can be derived.

1.2.7. Allowance for non-random pairing and single person households

Smokers tend to live with smokers. In the UK, among adults under 65, the prevalence of smoking is 30% but the prevalence of domestic exposure of children is 42%[14,15].

The correction factors applied in the UK study[11] allowed for 13% of single-person households among adults aged less than 65 years and 37% of single-adult households among persons aged over 65.

Applying these correction factors give prevalences of passive exposure at home of:

$$s_1' = (42/30).0.87.\ S/[p_1+((100-p_1).0.5)] = 1.218.\ S/[p_1+((100-p_1).0.5)]$$

for adults of working age, and

$$s_2' = (42/30)\ .0.63\ .0.5\ .s_1 = 0.441.s_1.$$

for elderly adults.

1.2.8. Estimated deaths in the workforce

All employed persons are assumed to be aged 20–64. The percentage of this age-group represented by the estimated workforce has been applied to the estimated condition-specific number of deaths in this age-group.

1.2.9. Passive smoking at work

In 2002, no country in Europe enforced smoke-free policies in pubs, bars or nightclubs and all employees in these settings were likely to be passively exposed to tobacco smoke at work.

As of October 2005, the WHO database indicated that all but two of the countries in the EU have enacted at least partial restrictions on smoking in the workplace. This occurred in Norway in 2003 but the provisions came into force in Ireland, Italy, Latvia, Malta, the Netherlands and Slovakia only after 2003. The WHO also recorded Estonia, Finland, France, Greece, Hungary, Iceland, Lithuania, Poland, Portugal, Slovenia and Sweden as having "complete" smoke-free policies in force at workplaces. However, annotations on the database indicated that all of these laws allowed special areas for smoking, although such facilities are now exceedingly uncommon specifically in Finland. Since such areas for smoking are presumably indoors, and there appear to be no laws requiring them to have separate, externally ventilated air conditioning systems, it is likely that at least some tobacco smoke from these areas is recirculated throughout the relevant workplaces. In practice, this would mean that all employees would be passively exposed to tobacco smoke at work if any smoking occurred in the same building.

There were only five data points regarding the proportion of workforce employed where smoking was not restricted at all: Austria = 34% (1997), Denmark = 85%, Germany = 20%, Switzerland = 50% and UK = 8%, plus Ireland is now 0%. As the calculation is based on 2002, Ireland has been set to the UK level – 8% of employees passively exposed to tobacco smoke at work. The same figure has been adopted for countries listed in the WHO database as having "complete" smoke-free policies at work – Estonia, Finland, France, Greece, Hungary, Iceland, Lithuania, Poland, Portugal, Slovenia and Sweden – although, as noted earlier, it is probable that the remainder of the non-hospitality workforces in those countries do not enjoy complete protection from tobacco smoke at work.

Conservatively, the remainder of Western Europe, including Norway, has been set to the Austrian level – 34% of employees passively exposed to tobacco smoke at work – while the remainder of Eastern Europe has been set to the Danish level – 85% of employees passively exposed.

1.2.10. Risks attendant on passive smoking

The formula for population attributable proportion has been applied using the same estimates of relative risk for passive smokers as were employed in the recent report from the Royal College of Physicians in the UK[11]. These were median figures reported from reviews of the available literature and are summarised in table 3.

As noted above, it is assumed that all employees in the hospitality industry in all countries of the EU were passively exposed to tobacco smoke at work in 2002. The calculations employ an average risk for occupational exposure in the hotel/restaurant sector, but augmented risk for exposure in pubs/bars and nightclubs, based on work by Jarvis[16] on levels of cotinine excreted by non-smoking bar staff.

Table 3: Relative risks associated with passive smoking

Condition	Setting in which exposure occurs		
	Private home	Average workplace	Pub/bar/nightclub
Lung cancer	1.24	1.24	1.73
Ischaemic heart disease	1.3	1.2	1.61
Stroke	1.45	1.45	2.52
Chronic non-neoplastic pulmonary disease	1.25	1.25	1.76

1.2.11. Calculations for non-smokers only

A second analysis has been undertaken to estimate deaths attributable to passive smoking in non-smoking adults across the 25 countries of the EU, again with causes of death limited to ischaemic heart disease, stroke, lung cancer and chronic non-neoplastic pulmonary disease.

The sizes of the non-smoker populations have been defined by applying the relevant prevalence of current smokers to the appropriate population and subtracting the resulting number from the total. Non-smokers so defined will include both never-smokers and ex-smokers. Any excess risk related to their previous smoking borne by the latter has been ignored for three reasons. First, the WHO database does not include a separate figure for the proportion of ex-smokers. Second, the excess risk associated with previous smoking decreases with time, but there are few data available to define accurately the decay functions for the four diseases of interest, and most relate to cohorts established when non-filtered cigarettes accounted for a significant proportion of the tobacco market. Third, even if the decay functions were precisely known and current, applying them would require detailed information on when individuals had quit smoking, data that are also not readily available.

The calculations for non-smokers assume that the prevalence of active smoking is uniform within each of the working-age and older populations, regardless of employment status or specific occupation in the former.

For each cause of death and segment of the population, deaths attributable to current active smoking have been calculated by applying the formula for population attributable risk, the relevant figure for prevalence of active smoking, and the

corresponding estimate of the relative risk. The latter data were obtained from a systematic review published by English *et al.* in 1995[17]. That source provides cause- and age-specific pooled estimates of relative risks, as shown in table 4. The deaths from active smoking were then subtracted from the relevant total to derive the number of deaths to which passive smoking by non-smokers might contribute.

Table 4: Relative risks associated with active smoking

Condition	Age-group	
	<65 years	65 years and over
Lung cancer	12.2	12.2
Ischaemic heart disease	3.06	1.45
Stroke	3.12	1.30
Chronic non-neoplastic pulmonary disease	5.33	2.23

1.3. Results

Table 5 gives summary figures for deaths attributable to passive smoking in 2002 across the 25 countries of the expanded EU, while country-specific estimates are given in table 6.

Table 5: Estimated numbers of deaths attributable to passive smoking in the 25 countries of the EU in 2002

Condition	**Exposure at home**			**Exposure at work**		**Total** All home + All work-places
	Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	
Lung cancer	6498	4443	10941	2300	104	**13241**
Ischaemic heart disease	10025	19873	29898	2444	119	**32342**
Stroke	5973	20557	26530	2060	82	**28591**
Chronic non-neoplastic respiratory disease	1269	3531	4800	475	21	**5275**
Total*	**23765**	**48404**	**72170**	**7280**	**325**	**79449**

* May be affected by rounding in component estimates.

Table 6: Estimated annual deaths attributable to passive smoking by age, site of exposure and condition, member countries of the EU, 2002

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
AUSTRIA	Lung ca	99	37	135	64	3	200
	IHD	101	280	380	45	2	426
	Stroke	68	197	265	45	2	310
	Ch Resp	28	47	75	18	1	93
	Total*	**295**	**561**	**856**	**173**	**7**	**1029**
BELGIUM	Lung ca	157	184	342	106	2	448
	IHD	187	445	632	87	2	719
	Stroke	111	541	652	75	1	727
	Ch Resp	45	164	209	30	1	239
	Total*	**501**	**1335**	**1836**	**297**	**6**	**2133**
CYPRUS# # No estimate could be calculated as no data on mortality available.	Lung ca	-	-	-	-	-	-
	IHD	-	-	-	-	-	-
	Stroke	-	-	-	-	-	-
	Ch Resp	-	-	-	-	-	-
	Total*	**-**	**-**	**-**	**-**	**-**	**-**
CZECH	Lung ca	197	122	319	252	7	571
	IHD	392	712	1104	351	10	1455
	Stroke	214	876	1090	256	7	1346
	Ch Resp	35	49	83	44	1	128
	Total*	**838**	**1759**	**2597**	**904**	**25**	**3501**
DENMARK	Lung ca	94	117	211	128	1	339
	IHD	115	404	518	109	1	627
	Stroke	81	320	401	104	1	505
	Ch Resp	41	145	186	55	0	241
	Total*	**331**	**985**	**1316**	**397**	**3**	**1714**
ESTONIA	Lung ca	27	15	41	3	0	45
	IHD	107	101	208	9	1	217
	Stroke	68	148	216	9	1	225
	Ch Resp	5	7	12	1	0	12
	Total*	**207**	**270**	**477**	**22**	**2**	**499**

Table 6: Estimated annual deaths attributable to passive smoking by age, site of exposure and condition, member countries of the EU, 2002 (cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
FINLAND	Lung ca	33	39	71	6	0	77
	IHD	124	134	258	16	1	274
	Stroke	61	197	259	12	1	271
	Ch Resp	9	26	36	2	0	37
	Total*	**227**	**396**	**623**	**36**	**2**	**659**
FRANCE	Lung ca	1136	389	1525	134	12	1659
	IHD	799	1038	1837	65	6	1902
	Stroke	596	1325	1922	76	6	1997
	Ch Resp	117	174	291	14	1	304
	Total*	**2649**	**2925**	**5574**	**289**	**25**	**5863**
GERMANY	Lung ca	984	838	1822	386	15	2208
	IHD	1739	5329	7068	468	19	7536
	Stroke	772	3808	4580	312	10	4892
	Ch Resp	229	655	884	90	3	974
	Total*	**3724**	**10630**	**14354**	**1255**	**48**	**15609**
GREECE	Lung ca	143	133	276	19	4	295
	IHD	297	467	764	27	6	791
	Stroke	142	1120	1262	20	4	1282
	Ch Resp	8	39	47	1	0	48
	Total*	**590**	**1759**	**2349**	**67**	**15**	**2416**
HUNGARY	Lung ca	350	148	498	43	5	541
	IHD	621	1093	1714	52	6	1766
	Stroke	404	965	1369	52	5	1421
	Ch Resp	92	109	201	11	1	213
	Total*	**1468**	**2314**	**3782**	**158**	**16**	**3940**
ICELAND	Lung ca	3	3	5	1	0	6
	IHD	5	14	20	1	0	20
	Stroke	2	9	11	0	0	11
	Ch Resp	0	3	3	0	0	3
	Total*	**10**	**28**	**38**	**2**	**0**	**40**

Table 6: Estimated annual deaths attributable to passive smoking by age, site of exposure and condition, member countries of the EU, 2002 (cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All workplaces	Hospitality industry	All home + All workplaces
IRELAND	Lung ca	39	31	70	6	1	76
	IHD	107	176	282	12	2	294
	Stroke	33	106	139	6	1	145
	Ch Resp	11	37	49	2	0	51
	Total*	**189**	**350**	**539**	**26**	**5**	**566**
ITALY	Lung ca	628	491	1119	356	10	1475
	IHD	746	1476	2222	291	9	2513
	Stroke	500	2004	2504	284	7	2788
	Ch Resp	59	312	371	34	1	405
	Total*	**1932**	**4283**	**6216**	**965**	**28**	**7180**
LATVIA	Lung ca	39	24	63	43	0	106
	IHD	199	350	549	153	2	703
	Stroke	132	405	537	136	1	673
	Ch Resp	7	10	18	8	0	26
	Total*	**377**	**790**	**1167**	**340**	**3**	**1507**
LITHUANIA	Lung ca	54	31	85	6	0	91
	IHD	241	539	780	19	1	800
	Stroke	120	285	405	15	1	420
	Ch Resp	18	32	50	2	0	52
	Total*	**433**	**887**	**1320**	**42**	**3**	**1362**
LUXEMBOURG	Lung ca	7	6	13	4	0	16
	IHD	8	19	27	3	0	30
	Stroke	8	21	29	4	0	33
	Ch Resp	2	4	5	1	0	6
	Total*	**25**	**49**	**74**	**12**	**0**	**86**
MALTA	Lung ca	2	2	5	1	0	6
	IHD	8	19	27	4	0	31
	Stroke	3	14	17	2	0	19
	Ch Resp	0	3	3	0	0	3
	Total*	**14**	**38**	**52**	**7**	**0**	**59**

Table 6: Estimated annual deaths attributable to passive smoking by age, site of exposure and condition, member countries of the EU, 2002 (cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
NETHERLANDS	Lung ca	232	168	400	162	5	561
	IHD	272	404	676	131	4	806
	Stroke	156	463	619	110	3	729
	Ch Resp	47	156	203	33	1	236
	Total*	**707**	**1191**	**1898**	**435**	**12**	**2332**
NORWAY	Lung ca	41	37	78	31	1	110
	IHD	65	168	233	34	1	267
	Stroke	29	136	166	22	0	188
	Ch Resp	15	35	50	11	0	61
	Total*	**151**	**377**	**527**	**98**	**2**	**626**
POLAND	Lung ca	912	433	1346	86	5	1432
	IHD	1496	1798	3294	96	6	3390
	Stroke	1192	2203	3395	119	6	3514
	Ch Resp	130	242	372	12	1	384
	Total*	**3730**	**4677**	**8406**	**314**	**17**	**8720**
PORTUGAL	Lung ca	73	45	118	14	2	132
	IHD	131	220	351	17	3	368
	Stroke	171	733	904	34	5	939
	Ch Resp	21	56	76	4	1	80
	Total*	**396**	**1054**	**1450**	**69**	**10**	**1519**
SLOVAKIA	Lung ca	81	36	117	99	1	216
	IHD	259	515	774	221	3	995
	Stroke	108	238	346	123	1	469
	Ch Resp	15	20	35	18	0	53
	Total*	**463**	**809**	**1272**	**461**	**5**	**1733**
SLOVENIA	Lung ca	28	17	44	5	1	49
	IHD	37	66	103	4	1	108
	Stroke	31	88	119	6	1	124
	Ch Resp	3	18	21	1	0	21
	Total*	**100**	**188**	**287**	**15**	**2**	**303**

Table 6: Estimated annual deaths attributable to passive smoking by age, site of exposure and condition, member countries of the EU, 2002 (cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
SPAIN	Lung ca	576	381	957	320	15	1277
	IHD	630	1210	1840	242	11	2082
	Stroke	401	1701	2103	225	9	2328
	Ch Resp	97	467	564	54	2	618
	Total*	**1704**	**3759**	**5463**	**841**	**37**	**6305**
SWEDEN	Lung ca	22	26	48	6	0	54
	IHD	56	201	256	11	1	267
	Stroke	27	149	176	8	1	184
	Ch Resp	6	25	31	2	0	33
	Total*	**111**	**401**	**512**	**27**	**2**	**539**
UK	Lung ca	622	728	1351	117	14	1467
	IHD	1542	3210	4753	197	24	4950
	Stroke	650	2741	3391	128	12	3520
	Ch Resp	243	718	961	46	5	1007
	Total*	**3058**	**7398**	**10456**	**488**	**55**	**10944**
SWITZERLAND	Lung ca	82	66	148	45	1	193
	IHD	107	323	430	40	1	470
	Stroke	40	207	247	22	1	270
	Ch Resp	13	51	63	7	0	70
	Total*	**242**	**647**	**888**	**114**	**3**	**1003**
EU25	Lung ca	6498	4443	10941	2300	104	13241
	IHD	10025	19873	29898	2444	119	32342
	Stroke	5973	20557	26530	2060	82	28591
	Ch Resp	1269	3531	4800	475	21	5275
	Total*	**23765**	**48404**	**72170**	**7280**	**325**	**79449**
ALL	Lung ca	6580	4509	11089	2345	105	13434
	IHD	10132	20196	30328	2484	120	32812
	Stroke	6014	20764	26778	2083	82	28860
	Ch Resp	1281	3582	4864	482	21	5346
	Total*	**24007**	**49051**	**73058**	**7394**	**328**	**80452**

* May be affected by rounding in component estimates.

In summary, passive smoking at work appeared to account for over 7,000 deaths across the EU in 2002, or one death every 17 minutes during a working year of 50 weeks, of 40 hours each.

Passive smoking at home appears to cause 72,000 deaths, or one death every 7 minutes, around the clock, every day of the year.

And passive smoking among employees of the hospitality industry kills one such individual every working day.

Tables 7 and 8 provide information for non-smoking adults only. In summary, passive smoking at work appeared to account for over 2,800 deaths of non-smokers across the EU in 2002, or one death every 43 minutes during a working year of 50 weeks, of 40 hours each.

Table 7: Estimated numbers of deaths attributable to passive smoking among non-smokers in the 25 countries of the EU in 2002

Condition	Exposure at home			Exposure at work		Total
	Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
Lung cancer	403	629	1032	521	16	1553
Ischaemic heart disease	1781	6977	8758	1481	48	10239
Stroke	729	4954	5683	596	19	6279
Chronic non-neoplastic respiratory disease	155	815	970	201	6	1171
Total*	**3068**	**13375**	**16443**	**2799**	**89**	**19242**

* May be affected by rounding in component estimates.

Table 8: Estimated annual deaths attributable to passive smoking in non-smokers by age, site of exposure and condition, member countries of the EU, 2002

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
AUSTRIA	Lung ca	7	7	13	15	0	28
	IHD	18	100	118	28	1	146
	Stroke	9	48	56	13	0	69
	Ch Resp	3	13	16	8	0	24
	Total*	**37**	**168**	**204**	**64**	**2**	**268**
BELGIUM	Lung ca	11	23	34	26	0	60
	IHD	35	153	188	56	1	243
	Stroke	14	127	141	23	0	164
	Ch Resp	6	35	41	14	0	54
	Total*	**67**	**337**	**403**	**119**	**2**	**522**
CYPRUS# #No estimate could be calculated as no data on mortality available.	Lung ca	-	-	-	-	-	-
	IHD	-	-	-	-	-	-
	Stroke	-	-	-	-	-	-
	Ch Resp	-	-	-	-	-	-
	Total*	**-**	**-**	**-**	**-**	**-**	**-**
CZECH	Lung ca	12	17	29	54	1	83
	IHD	69	248	317	209	4	526
	Stroke	26	208	234	79	2	313
	Ch Resp	4	11	15	18	0	34
	Total*	**111**	**484**	**595**	**361**	**7**	**956**
DENMARK	Lung ca	5	13	18	24	0	43
	IHD	19	137	156	61	0	217
	Stroke	9	74	84	30	0	114
	Ch Resp	5	29	33	21	0	54
	Total*	**38**	**252**	**291**	**137**	**1**	**428**
ESTONIA	Lung ca	1	2	3	1	0	4
	IHD	17	35	52	5	0	57
	Stroke	8	35	42	2	0	45
	Ch Resp	1	1	2	0	0	2
	Total*	**26**	**73**	**100**	**9**	**1**	**108**

Table 8: Estimated annual deaths attributable to passive smoking in non-smokers by age, site of exposure and condition, member countries of the EU, 2002 (Cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
FINLAND	Lung ca	2	6	8	1	0	10
	IHD	25	47	72	10	0	82
	Stroke	8	47	55	3	0	59
	Ch Resp	1	6	8	1	0	8
	Total*	**37**	**106**	**143**	**16**	**1**	**159**
FRANCE	Lung ca	56	62	117	35	2	152
	IHD	101	366	467	43	3	510
	Stroke	53	317	370	22	1	392
	Ch Resp	11	43	53	7	0	60
	Total*	**220**	**787**	**1007**	**107**	**6**	**1114**
GERMANY	Lung ca	67	109	175	79	2	254
	IHD	340	1839	2179	272	8	2452
	Stroke	104	897	1001	84	2	1085
	Ch Resp	30	143	173	36	1	209
	Total*	**542**	**2988**	**3530**	**471**	**13**	**4000**
GREECE	Lung ca	10	17	28	4	0	32
	IHD	61	161	222	16	2	238
	Stroke	20	263	283	5	1	288
	Ch Resp	1	9	10	0	0	10
	Total*	**93**	**450**	**542**	**26**	**3**	**568**
HUNGARY	Lung ca	22	20	42	8	1	50
	IHD	114	412	526	29	2	555
	Stroke	51	248	300	13	1	313
	Ch Resp	11	25	37	4	0	41
	Total*	**198**	**706**	**904**	**55**	**4**	**959**
ICELAND	Lung ca	0	0	0	0	0	1
	IHD	1	4	5	1	0	6
	Stroke	0	2	2	0	0	2
	Ch Resp	0	1	1	0	0	1
	Total*	**1**	**7**	**8**	**1**	**0**	**9**

Table 8: Estimated annual deaths attributable to passive smoking in non-smokers by age, site of exposure and condition, member countries of the EU, 2002 (Cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
IRELAND	Lung ca	3	4	7	2	0	9
	IHD	19	62	81	8	1	89
	Stroke	4	25	30	2	0	31
	Ch Resp	1	9	10	1	0	11
	Total*	**28**	**100**	**128**	**11**	**2**	**140**
ITALY	Lung ca	40	80	119	96	2	216
	IHD	118	522	640	195	4	835
	Stroke	55	480	535	90	2	625
	Ch Resp	7	78	85	16	0	101
	Total*	**220**	**1160**	**1380**	**398**	**7**	**1778**
LATVIA	Lung ca	2	3	5	8	0	13
	IHD	37	120	157	86	0	243
	Stroke	17	95	112	39	0	151
	Ch Resp	1	2	3	3	0	6
	Total*	**58**	**220**	**278**	**136**	**1**	**414**
LITHUANIA	Lung ca	3	4	7	1	0	9
	IHD	43	186	229	11	0	240
	Stroke	15	67	82	4	0	86
	Ch Resp	2	7	9	1	0	10
	Total*	**64**	**264**	**328**	**17**	**1**	**345**
LUXEMBOURG	Lung ca	0	1	1	1	0	2
	IHD	1	7	8	2	0	10
	Stroke	1	5	6	1	0	7
	Ch Resp	0	1	1	0	0	1
	Total*	**3**	**13**	**16**	**4**	**0**	**20**
MALTA	Lung ca	0	0	1	0	0	1
	IHD	2	7	8	2	0	11
	Stroke	0	3	4	1	0	4
	Ch Resp	0	1	1	0	0	1
	Total*	**2**	**11**	**13**	**3**	**0**	**17**

Table 8: Estimated annual deaths attributable to passive smoking in non-smokers by age, site of exposure and condition, member countries of the EU, 2002 (Cont.)

Country	Condition	Exposure at home			Exposure at work		Total
		Adults <65 years	Adults 65+ years	All home	All work-places	Hospitality industry	All home + All work-places
NETHERLANDS	Lung ca	15	25	40	36	1	75
	IHD	48	142	190	79	2	269
	Stroke	19	110	129	32	1	161
	Ch Resp	6	37	43	14	0	57
	Total*	**88**	**314**	**402**	**160**	**4**	**562**
NORWAY	Lung ca	3	6	9	7	0	16
	IHD	11	65	77	21	0	98
	Stroke	4	36	39	7	0	46
	Ch Resp	2	9	11	5	0	16
	Total*	**20**	**116**	**136**	**40**	**1**	**176**
POLAND	Lung ca	54	56	110	17	0	128
	IHD	257	620	877	56	2	933
	Stroke	142	519	661	31	1	692
	Ch Resp	15	53	68	5	0	73
	Total*	**468**	**1248**	**1716**	**109**	**3**	**1826**
PORTUGAL	Lung ca	6	9	15	3	0	18
	IHD	31	104	135	10	1	145
	Stroke	28	234	262	9	1	271
	Ch Resp	3	17	21	2	0	22
	Total*	**68**	**364**	**432**	**24**	**3**	**457**
SLOVAKIA	Lung ca	5	5	10	22	0	33
	IHD	47	179	226	136	1	362
	Stroke	13	56	70	39	0	109
	Ch Resp	2	5	6	8	0	14
	Total*	**67**	**246**	**313**	**206**	**1**	**519**
SLOVENIA	Lung ca	2	3	5	1	0	6
	IHD	8	27	35	3	0	37
	Stroke	4	24	29	2	0	30
	Ch Resp	0	5	5	0	0	5
	Total*	**15**	**59**	**74**	**5**	**0**	**79**

Table 8: Estimated annual deaths attributable to passive smoking in non-smokers by age, site of exposure and condition, member countries of the EU, 2002 (Cont.)

Country	Condition	Exposure at home			Exposure at work		Total All home + All workplaces
		Adults <65 years	Adults 65+ years	All home	All workplaces	Hospitality industry	
SPAIN	Lung ca	37	53	90	71	2	160
	IHD	112	421	533	147	4	680
	Stroke	49	403	452	65	2	517
	Ch Resp	12	106	118	23	1	141
	Total*	**210**	**982**	**1193**	**306**	**9**	**1498**
SWEDEN	Lung ca	2	5	7	2	0	9
	IHD	12	72	83	8	1	91
	Stroke	4	36	40	3	0	43
	Ch Resp	1	7	8	1	0	9
	Total*	**18**	**120**	**138**	**14**	**1**	**151**
UK	Lung ca	42	106	148	27	2	175
	IHD	281	1122	1403	123	12	1526
	Stroke	82	651	733	36	3	769
	Ch Resp	31	168	199	20	2	219
	Total*	**436**	**2047**	**2483**	**207**	**19**	**2690**
SWITZERLAND	Lung ca	5	8	13	13	0	26
	IHD	18	111	130	33	0	163
	Stroke	5	49	53	9	0	62
	Ch Resp	1	11	12	4	0	16
	Total*	**29**	**179**	**209**	**59**	**1**	**267**
EU25	Lung ca	403	629	1032	521	16	1553
	IHD	1781	6977	8758	1481	48	10239
	Stroke	729	4954	5683	596	19	6279
	Ch Resp	155	815	970	201	6	1171
	Total*	**3068**	**13375**	**16443**	**2799**	**89**	**19242**
ALL	Lung ca	408	638	1045	534	16	1579
	IHD	1799	7088	8888	1514	49	10402
	Stroke	733	5003	5736	605	19	6341
	Ch Resp	157	826	982	204	6	1187
	Total*	**3097**	**13555**	**16652**	**2858**	**89**	**19510**

* May be affected by rounding in component estimates.

Passive smoking at home appears to cause 16,600 deaths of non-smokers per annum, or one death every 32 minutes, around the clock, every day of the year.

And passive smoking among employees of the hospitality industry kills one non-smoking employee every 3.5 working days.

1.4. Discussion

As will be evident from the preceding sections, the accompanying results depend on several assumptions. They are best regarded as estimates only. Because they omit relevant non-fatal morbidity as well as sometimes fatal acute respiratory conditions related to passive smoking and encompass adults only, the figures in Tables 5–8 are likely to be conservative. This is also true because, where data about specific countries were missing, the most conservative figure from the apparently most similar other country in the EU was applied. A more extensive discussion of the various assumptions inherent in calculating the likely impact on passive smoking can be found in the report from the Royal College of Physicians[11] and in the published estimate of deaths attributable to passive smoking in the UK[18].

1.5. Competing interests

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References

1 Harlap S, Davies AM. Infant admissions to hospital and maternal smoking. *Lancet* 1974; i: 529–532.

2 Colley JR, Holland WW, Corkhill RT. Influence of passive smoking and parental phlegm on pneumonia and bronchitis in early childhood. *Lancet* 1974; ii: 1031–1034.

3 Hirayama T. Nonsmoking wives of heavy smokers have a higher risk of lung cancer: a study from Japan. *Br Med J* 1981; 282: 183–185.

4 Trichopoulos D, Kalandidi A, Sparros L, MacMahon B. Lung cancer and passive smoking. *Intl J Cancer* 1981; 27: 1–4.

5 Garland C, Barrett-Connor E, Suarez I, Criqui MH, Wingard DL. Effects of passive smoking on ischemic heart disease mortality of nonsmokers. A prospective study. *Am J Epidemiol* 1985; 121: 645–650.

6 National Health and Medical Research Council. Effects of passive smoking on health. Canberra, NHMRC, 1987.

7 National Health and Medical Research Council (NHMRC) Working Party. The health effects of passive smoking: a scientific information paper. Canberra, NHMRC, 1997.

8 Scientific Committee on Tobacco and Health. Report of the Scientific Committee on Tobacco and Health. London, The Stationery Office, 1998.

9 Office of Environmental Health Hazard Assessment. Health effects of exposure to environmental tobacco smoke. Final report September 1997. Sacramento, California Environmental Protection Agency, 1997.

10 Law MR, Hackshaw AK. Environmental tobacco smoke. *Br Med Bull* 1996; 52: 22–34.

11 Royal College of Physicians. Going smoke-free: the medical case for clean air in the home, at work and in public places. London, Royal College of Physicians, 2005.

[12] White V, Hill D, Siahpush M, Bobevski I. How has the prevalence of cigarette smoking changed among Australian adults? Trends in smoking prevalence between 1980 and 2001. *Tob Control* 2003; 12: Suppl 2, ii67–74.

[13] Office of National Statistics. General Household Survey, Living in Britain, 2002. Table 8.5: Cigarette-smoking status by age and marital status. London, Office of National Statistics. www.statistics.gov.uk. Accessed: May 2004.

[14] Jarvis MJ, Goddard E, Higgins V, Feyerabend C, Bryant A, Cook DG. Children's exposure to passive smoking in England since the 1980s: cotinine evidence from population surveys. *BMJ* 2000; 321: 343–345.

[15] Kurukulaaratchy RJ, Matthews S, Arshad SH. Does environment mediate the earlier onset of the persistent childhood asthma phenotype? *Pediatrics* 2004; 113: 345–350.

[16] Jarvis M. Quantitative survey of exposure to other people's smoke in London bar staff. London, University College (Department of Epidemiology and Public Health), 2001.

[17] English DR, Holman CDJ, Milne E. *et al*. The quantification of drug caused morbidity and mortality in Australia, 1995 edition. Canberra, AGPS, 1995.

[18] Jamrozik, K. Estimate of deaths among smokers in the United Kingdom attributable to passive smoking, database analysis. *BMJ* 2005; 330:812 [Epub].

Chapter 2
Economics of smoke free policies

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2.1. Introduction

There are two economic rationales for smoke free policies: 1) to protect non-smokers from the dangers of second-hand tobacco smoke exposure; and 2) to discourage smoking, a behaviour that is a source of market inefficiency imposing economic costs on individuals and businesses. Numerous studies have concluded that comprehensive smoke free policies lead to significant reductions in smoking prevalence and average cigarette consumption among continuing smokers. These policies are cost-effective and the potential cost of their enforcement is often reduced by self-enforcement.

2.2. Economic rationale of smoke free interventions

Smoke free policies explicitly transfer "ambient air" property rights from smokers to non-smokers[1]. Smoke free policies can be used by governments to protect non-smokers from harm associated with second-hand smoke and to reduce tobacco consumption. They belong to the category of interventions effecting the demand for cigarettes by increasing the price of smoking. Policies related to cigarette taxes or information dissemination also belong to this intervention category. Smoking restrictions in public places may also send a subtle and consistent message to smokers that smoking is not socially acceptable.

2.3. Impact of smoke free policies on the demand for tobacco

There is plenty of research evidence on the effectiveness of smoke free policies: restrictions on smoking in public places and private or government

workplaces not only reduce exposure to second-hand smoke, they also reduce smoking prevalence (though cessation and lower initiation) and average daily cigarette consumption among smokers. In addition, these policies increase quit attempts and intensify quit intentions among current smokers, thus increasing the probability of future successful cessation. Apart from this direct impact of smoke free laws and restrictions, they also have an indirect effect: they convey the message to the public that smoking is a socially undesirable behaviour. This results in less peer pressure to smoke, which leads to further reduction in cigarette consumption by reducing the utility of smoking behaviour. The impact of smoke free policies is greater as they become more restrictive and comprehensive. However, the complex interaction of social forces and the impact of parallel regulatory policies (e.g. when smoke free policies are implemented at or around the time cigarette excise tax is increased) make it difficult to isolate the true impact of clean indoor air laws on smoking behaviour[2].

Population studies from the USA have found that per capita cigarette consumption was between 5 and 20 per cent lower in states with comprehensive clean air laws compared with states that did not enact these laws[3]. Another study[4] concluded that smoke free laws significantly reduced per capita cigarette consumption, with greater reductions resulting from more comprehensive restrictions. The study predicted that consumption decreased by 4.8 packs per person per year in states that had adopted clean indoor-air laws.

Studies focusing on smoking prevalence and smoking cessation in the USA[5,6] have concluded that states with extensive clean air laws had at least 10% lower prevalence rates. In addition, these states also had 12% higher rates of former to current smokers[5] and 38% higher 6-month cessation rates[7]. Smoke free policies also change smoking behaviour among youths and young adults. Research indicates that relatively strong smoking restrictions in public places reduce smoking prevalence among young people, decrease average cigarette consumption and increase the probability of smoking cessation among young smokers[8, 9, 10, 11].

Several studies have examined the differential impact of smoke free policies on specific socio-demographic groups. A USA study found more prominent effects of smoking bans on males and on those aged 25–44 years[6]. Another study concluded that smoking restriction in private worksites increased the probability of smoking cessation among employed young adult females[12]. Using results from a national survey in the USA Farrelly *et al.*[13] suggested that these restrictions have a smaller impact on smoking rates among low income populations and among those aged 18–24 years compared to those aged 40–65 years[13].

When evaluating the impact of smoke free policies, it is important to take into account the possible relationship between these policies and local anti-smoking sentiment and/or the local level of tobacco consumption. One study[14] found that the adoption of various smoke free policies was related to cigarette sales: localities with low levels of cigarette sales were more likely to adopt relatively comprehensive smoke free policies. This result is consistent with two other studies[15,16] which reported that regions where smoking is less prevalent are more likely to pass smoke free policies.

The impact of formal policies limiting or banning smoking in the workplace has also been the subject of many studies. Reports based on the experience of particular industries suggest that the quantity smoked by workers decreases in the range 5–25%, and that smoking prevalence falls between 0–20%[17]. Population studies have also found reductions in quantity smoked, but the impact on prevalence is less consistent. A study[18] evaluating the impact of workplace health-promotion programmes between 1968–1994 in the USA found that workplace smoking restrictions were successful in reducing both smoking in the workplace and exposure to second-hand smoke. However, the study did not find any impact of the restriction on smoking prevalence among workers. A study from Australia[19] concluded that a smoking ban across the entire Australian Civil Service reduced cigarette consumption among smokers by 5.2 cigarettes per day but did not significantly affect smoking prevalence. On the other hand, three studies[20,21,22] reported that quit rates were about 10–15% higher in firms with bans. Following the implementation of a national smoke free law in Finland, smoking prevalence and the number of cigarettes smoked per smoker declined by 16–17% in firms previously without bans[23].

There might be a difference between short- and long-term impacts of smoke free policies in the workplace. Studies measuring the long-term effect of smoke free policies found that quit rates increased over time. For example, the quit rates of workers were more than double in hospitals during the 6 years following a ban, compared to those in hospitals without bans[24]. Another study examining the effect of workplace smoking bans in the USA[25] employed more sophisticated methodology that allowed controlling for the possibility that workers can self-select themselves to their preferable smoke-regulated environment. This study found that workplace smoking bans reduced smoking prevalence by 4–6% and also reduced average daily cigarette consumption among smokers by 10%. Furthermore, the authors of the study found that workplace smoking bans had the largest impact on workers who worked longer hours, and the smallest impact on part-time workers. The study also examined the possibility that workplace smoking bans might impose economic costs on firms, if talented workers who smoke leave the company to work in places with

less strict smoking policies. It did not find any evidence that workers would self-select themselves according to their smoking status.

There is a larger impact from complete smoking bans compared to partial smoking restrictions. A study in the USA[26] found that smoking prevalence among indoor workers decreased by 2.2 percentage points and smoking intensity decreased by 1.6 cigarettes among those who still continued to smoke after the policies restricting smoking were introduced in the workplace. On the other hand, places banning smoking completely recorded 4.0 percentage points decline in smoking prevalence, almost double the impact on prevalence compared to partial restrictions, and a 1.9 cigarette decrease in smoking intensity among those who continued to smoke.

A 2002 review of 26 studies[27] concluded that complete smoking bans in workplaces reduce prevalence of smoking by 3.8% and smoking intensity by 3.1 cigarettes per day among continuing smokers. This represents about a 29% decline in the demand for cigarettes among workers exposed to these complete bans, saving 4,800 lives in the UK[28] and about 6,550 in the USA every year[a,29]. To achieve similar reductions by higher cigarette taxes, the smokers in these firms would have to be exposed to a 73% price increase assuming a price elasticity of cigarette demand of -0.4. For the USA, this would mean increasing its 2002 average cigarette tax from $0.76 to $3.05 per pack. The UK would have to increase its 2002 cigarette tax from £3.44 to £6.59 to achieve this reduction in cigarette demand. If all workplaces became smoke free, consumption per capita in the entire population would drop by 4.5% in the USA and 7.6% in the UK. The same effect could be achieved by a relatively smaller tax increase (from $0.76 to $1.11 in the USA and from £3.44 to £4.26 in the UK), because taxes also affect smokers who work at home, outdoors, or who are out of the labour force.

Smoke free workplaces encourage workers to make quit attempts and strengthen the intention to quit smoking. Smokers who made a quit attempt and worked in a smoke free workplace were more likely to have achieved successful cessation that those who did not[21]. Total smoking bans are also associated with increased intentions to quit, both in the short term and long term[30]. Employer-provided smoking cessation programmes can assist in these efforts and further reduce the prevalence and intensity of smoking[26]. On average, 23.8% of employers in the USA provided smoking cessation programmes between 1992 and 1996. Workplaces that had a 100% smoke free workplace policy were 10.1 percentage points more likely to have smoking

[a] Based on extrapolation by the author using the original article, Fichtenberg and Glantz[27] and Warner[29].

cessation programmes to assist employees who want to quit smoking than those with less restrictive policies.

Even though there is some discussion regarding the substitution between smoked and oral tobacco and the smoke free policies, a study published in the USA found that laws restricting smoking in workplaces or other public places discourage both cigarette and snuff use, though the results were less consistent for snuff[31].

Complete smoking bans at work increase the probability of banning smoking in the home. For example, workers in firms with 100% smoke free policies were 7.7 percentage points more likely to restrict smoking in their homes[26]. In addition, employer-provided smoking cessation programmes are also associated with a 1.6 percentage point increase in the likelihood of having a home smoking restriction[26]. Smoking restrictions at home will reduce the exposure of children to second-hand smoke. In addition, adolescents living in smoke free households have a 26% lower risk of smoking initiation and a 1.8-times better quit rate compared to adolescents living in households without smoke policies[32].

A study examining smoking behaviour among students in Wales[33] found that both daily and weekly smoking prevalence were lower in schools where pupils' smoking restrictions were always enforced. These finding were confirmed by a USA study[34] which showed that school smoking bans could only slow down smoking uptake among high school students if these bans were strongly enforced. The findings of these studies suggest that the wider introduction of comprehensive school smoking policies in schools that are enforced may help reduce teenage smoking.

Smoke free policies, both in public places, private workplaces and at home reduce levels of second-hand smoke exposure[2,35]. Workplace smoking bans can be particularly effective in this respect since most exposure to second-hand smoke for non-smokers occurs in the workplace[36]. However, their effectiveness will depend on how easily they may be circumvented by the smoker[37]. Studies have found that companies or restaurants allowing smoking only in designated areas have substantially smaller effects on smoking behaviours than smoke free sites[13,22,38].

The impact of newly adopted smoke free laws will depend on the percentage of the population already covered by private restrictions[39]. However, smoking rates among this group may still be reduced if the new law is stricter and more comprehensive compared to the previous regulations and if the enforcement changes public norms and thereby increase compliance.

2.4. Economic benefits of smoke free policies

By reducing the demand for tobacco, smoke free policies will reduce both the private and social costs associated with smoking. The long-term impact of these policies will be a better economic performance of the whole economy.

The benefits of smoke free policies are particularly notable in the private sector of the economy. The savings come from several sources: reduced insurance costs (there is a higher insurance cost for smokers, including insurance for health, fire[b,40], accident and life insurance), increased productivity among those who quit smoking and among workers no longer exposed to second-hand smoke (time saved on smoking breaks and absenteeism), lower hiring costs due to a smaller need to replace labour lost due to tobacco-related morbidity and mortality, lower building maintenance costs, and savings due to reduced employers' liabilities for the effect of second-hand smoke exposure on workers and for compounding effects of second-hand smoke on workers exposed to other toxins in the workplace[41].

A study from Scotland[42] estimated that not having smokers in the workplace would save all Scottish employers between €437 million and €652 million (in 1997 figures) that they are currently losing due to productivity loss (the loss is between €380 million and €595 million), higher rates of absenteeism (the loss is about €52 million) and due to fire damage (about €5 million loss). This represents 0.51% to 0.77% of Scottish GDP[c] in 1997.

A study from Ireland[43] investigated the costs of smoking in the workplace. It looked specifically at: the excess absenteeism arising from smoking-related illness, loss of productivity among smokers, and costs associated with premature mortality and morbidity associated with smoking. The costs that could have been avoided in Ireland if no employees smoked amounted to €1,237–1,886 million, or 1.1–1.7% of Irish GDP in 2000. The study did not consider the costs of excess cleaning or higher insurance premiums. Therefore these potential savings represent a conservative estimate.

A study from Canada calculated some of the costs associated with employing a smoker as compared to an otherwise similar non-smoker, taking into account four cost factors: increased absenteeism, lost productivity, increased life insurance premiums and smoking area costs. The increased absenteeism due to

[b] The US Building Owners and Managers Association views smoking as the major cause of fires in office buildings[40].

[c] Author's calculation based on Scottish Economic Statistics 2002 at: http://www.scotland.gov.uk/stats/ses2002/ses2.pdf and the exchange rate from http://www.federalreserve.gov/releases/g5a/19980105/

smoking (about 2 days) results in a cost of about $230 per smoking employee every year[d]. The decreased productivity due to smoking in non-break periods cost an employer about $2,175 per smoking employee per year. The costs of higher life insurance premiums were about $75 per smoking employee annually (long-term disability, medical and dental health insurance premium not included). The cost of constructing and maintaining a separately ventilated smoking area is estimated to be $65 per smoking employee annually. With annual cleaning costs of about $20, the total cost for the smoking area is estimated to be $85 per smoking employee annually. Thus, the total saving for employing a non-smoker versus a smoker amounted to $2,565 per year (table 1).

Table 1: The annual cost of employing smokers (1995 $ per employee)

Cost factor	Cost
Increased absenteeism	$230
Decreased productivity	$2,175
Increased life insurance premiums	$75
Smoking area costs	$85
Total	**$2,565**

Source: Conference Board of Canada, 1997[44].

The US Congressional Office of Technology Assessment estimates that each of the ~15 million employed smokers in the USA cost their respective employers between $2,000 and $5,000 annually in higher healthcare and fire insurance premiums, higher absenteeism, lower productivity and property damage[29]. Applying an effectiveness of 3.8% reduction in smoking prevalence from a systematic literature review[27], the introduction of smoke free policies in all workplaces that currently don't have these policies could save the USA between $1,140 million and $2,850 million per year[e].

A recent analysis[45] investigated the health and economic effects of making all workplaces in the USA smoke free for 1 year. The researchers estimated that this measure would result in about 1.3 million smokers quitting their habit, decreasing cigarette consumption by more than 950 million cigarette packs in a year in the USA. The health benefits accounting only for cardiovascular

[d] In 1995 Canadian $.
[e] Calculation provided by the author.

diseases would result in about 1,500 fewer myocardial infarctions and 350 fewer strokes. The direct medical cost savings would be almost $49 million. If the smoke free policies continued even after their first year of introduction, the health benefits would amount to 6,250 fewer myocardial infarctions and 1,270 fewer strokes per year in the long run. The saved direct medical costs from these two cardiovascular diseases would be $224 million annually. Reductions in passive smoking would account for a majority of these savings, about 60% of the costs of myocardial infarctions.

Another study[46] estimated the health and economic impact of the proposed smoke free law in Florida that would ban smoking in all workplaces except for bars and private residences. At the time when the proposal was made (1999), Florida already had 68% of its indoor workers protected from passive smoking. The analysis concluded that in the first year after its implementation, Florida would have 1.5 million fewer people exposed to second-hand smoke and 103,000 fewer smokers. This would result in savings of $12 million in medical costs, consisting of $9 million in direct medical cost savings from prevention of cardiovascular diseases, $2 million in saving from prevention of low birth-weight infants, and $1 million saved from prevention of excess respiratory illnesses in children aged 0–5 years. Over time, this policy initiative would prevent 2,100 premature deaths and 700 low birth-weight infants. Therefore, the long-term impact would represent $200 million in healthcare savings, consisting of $185 million from ex-smokers and at least $15 million from reduced exposure to second-hand smoke. These estimates did not take into account any population growth, which would result in additional benefits from these policies.

Healthcare costs can also be reduced by limiting children's exposure to second-hand smoke. A World Health Organization report concluded that annual healthcare costs attributable to children's involuntary exposure to tobacco smoke in the USA are approximately US$ 1,000 million (in 1997 US$)[47].

The benefits of smoke free policies will be even more profound in the long term. Reduced mortality and morbidity due to limiting exposure to second-hand smoke and due to the impact of these policies on quitting will enhance countries' human capital, leading to further economic growth. Research shows that as adult male survival between the ages of 15–60 years rose from 70% to 80% in 52 countries between 1965 and 1990, income growth during the same period rose as well, by 0.23% per year[48]. Another study estimated that each additional year of life expectancy may increases GDP per capita by 4%[49].

2.5. Costs of smoke free policies

It is important to secure administrative capacity to introduce and enforce these policies. There are some costs associated with this, but voluntary compliance may reduce these costs if there is sufficient public support for the law[50]. Media publicity is one way to increase voluntary compliance[39]. Compliance with smoke free policies may be problematic in countries lacking public support for the law and in less developed economies[17].

Higher cigarette excise taxes and funding for state tobacco-control programmes are both positively and significantly associated with strong support for 100% smoke free bars, restaurants, and indoor work areas[30]. There may be a feedback mechanism between public support for smoking restrictions and the existence of these laws.

Another study[26] showed that the anti-tobacco attitude index among indoor workers increased by 3.7% as a response to workplaces adopting complete bans of smoking in workplaces, independent of the existence of employer-provided smoking cessation programmes. Smokers and non-smokers did not differ in their attitudes toward public smoking restrictions as a result of 100% smoke free workplace policies. However, the effect of workplace cessation programmes on workers' attitudes toward public smoking restrictions was larger among smokers than nonsmokers.

In addition, there are costs related to building smoking lounges (in the case of partial bans), but the benefits of workplace restrictions include fewer fires, reduced cleaning costs, and productivity improvements, through lower absenteeism and health-related costs[35]. A strong argument against separately ventilated smoking rooms is that they significantly increase lung cancer mortality risks among smokers[51]. However, there is limited research on the potential health effects of second-hand smoke on smokers and the actual level of exposure in smoking lounges. It is not clear, for example, whether the increased cancer risk is due to exposure to second-hand smoke in lounges or to a higher incidence of smoking. Repace *et al.*[52] illustrates that under all conditions of typical smoking and ventilation, the annual average level of the US National Ambient Air Quality Standard (NAAQS) for fine particles (PM2.5), which defines clean air, is violated. The NAAQS is designed to protect against air-pollution induced morbidity and mortality.

The tobacco industry often claims that smoke free policies have a negative impact on revenues in the entertainment industry[53]. A number of studies indicate that the economic impact is minimal to non-existent. An article by Glantz and Smith[54] compared sales tax data from 15 cities with smoke free restaurant ordinances and 15 similar non-smoke free control cities in California and Colorado and concluded that there was no statistically significant impact of local

non-smoking ordinances, either on restaurant sales as a percentage of total retail sales, or on restaurant sales in smoke free versus non-smoke free cities[54]. A further study from the USA compared taxable sales for eating and drinking places and hotels in New York City before and after the imposition of restrictions on smoking in 1995 and found that sales increased after the smoke free law was implemented, by 2.1% for eating and drinking places, and by 37% for hotels, compared with modest decreases in the rest of the State, which did not adopt such a law[55]. A Canadian report[56] demonstrates that the implementation of 100% smoke free by-law in Ontario on August 1, 2001 had no negative impact on sales in bar and restaurant sales.

A study of smoke free policy in cafes in an unregulated city in Europe[57] concluded that despite the current generation being raised in smoking friendly environments, customers look for smoke free opportunities, while paradoxically adhering to the tobacco industry paradigm of promoting "tolerance" rather than smoke free policies. Given the clear preference of a large number of customers, hospitality businesses could, however, greatly profit from offering smoke free environments, even in the absence of regulatory policies.

2.6. Cost-effectiveness of smoke free policies

Cost-benefit analyses of federal non-smoking legislation have been conducted in Canada and in the USA. The 1989 Canadian study[58] estimated that $32.2 million could be saved from reduced smoke and related property damage, depreciation, maintenance and cleaning costs and savings to the healthcare system through reduced ill-health effects of second-hand smoke exposure. Setting up separately ventilated smoking rooms was projected to cost $19.77 million during 1990, the first year of the Act.

The US Environmental Protection Agency (EPA) also conducted a cost-benefit analysis to evaluate the impact of the proposed Smoke Free Environment Act[59]. The bill asked for bans or restrictions on smoking in all non-residential indoor air spaces. The study concluded that the legislation would result in net benefits of between $39 and $72 billion. These benefits would be the result of increased organisational efficiency due to lower absenteeism, as smokers have about 50% more workdays lost compared with non-smokers, and former smokers reduce this disadvantage to about 30% more workdays lost compared with non-smokers. The efficiency of organisations will also improve due to reduced conflicts between smokers and non-smokers. The study further estimated the cost of building separate smoking lounges under the assumption that only 10–20% of buildings would construct them, due to cost and feasibility. These costs would be between $0.3 and $0.7 billion.

The WHO CHOICE[f] project provided estimates for cost effectiveness of 1-year clean indoor air law enforcement in various regions of the world in terms of the population-level health gains[60]. The results are summarised in table 2.

Table 2: Cost effectiveness of clean indoor air law enforcement

European Region		DALYs saved	Costs per DALY saved (in international $)
(EUR) - A	Andorra, Austria, Belgium, Croatia, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Luxembourg, Malta, Monaco, Netherlands, Norway, Portugal, San Marino, Slovenia, Spain, Sweden, Switzerland, United Kingdom	770,402	358
(EUR) - B	Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Bulgaria, Cyprus, Georgia, Kyrgyzstan, Poland, Romania, Slovakia, Tajikistan, The Former Yugoslav Republic of Macedonia, Turkey, Turkmenistan, Uzbekistan, Yugoslavia	242,990	283
(EUR) - C	Belarus, Estonia, Hungary, Kazakhstan, Latvia, Lithuania, Republic of Moldova, Russian Federation, Ukraine	249,322	201

Source: WHO-CHOICE, World Health Organization, 2002[60]. DALY: disability-adjusted years of life saved.

[f] CHOosing Interventions that are Cost Effective (CHOICE).

The regions are divided according to their stage of development, region A being most developed. The analysis shows that the interventions have a larger impact on population health in regions with a high prevalence of tobacco use, especially those in the second or third stage of the tobacco epidemic (regions B and C)[61]. The cost-effectiveness can also vary across regions due to the degree of anti-tobacco sentiment[62].

The cost effectiveness of the enforcement of clean indoor air laws is superior to a variety of public health interventions. The US guidelines for smoking cessation intervention consider an intervention costing $2,587 (1995 US$) or less per life-year gained as cost effective[63]. Individually based interventions usually have higher costs. Introducing driver-side air bags costs $30,000 per life-year gained[64]. Breast cancer screening through mammography has been found to cost ~$60,000 per life-year gained[65,66]. Screening of asymptomatic, average-risk women between 20–75 years, every 3 years, for cervical cancer costs $14,000 per life-year gained, and annual screening costs $40,000 per life-year gained compared to no screening[67].

Neither of these cost-benefit analyses assessed the enhanced quality of life accruing from reduced smoking or the reduced exposure of non-smokers to second-hand smoke, therefore these estimates can be considered conservative.

2.7. Conclusions

Research evidence demonstrates that smoke free policies, whether imposed by public laws or private firms, reduce tobacco consumption. Private workplaces' smoking restrictions and smoking bans reduce rates of consumption and smoking prevalence by 5–15% in populations. Younger and lower income socio-demographic groups may be less influenced by these policies, because they work more outside, at home, or don't work at all.

Non-price based tobacco-control measures such as smoke free policies and their enforcement are most effective as part of comprehensive tobacco-control programmes that include regular tobacco tax increases above the inflation level[68]. Importantly, restrictions in public smoking decrease the social acceptability of tobacco use which, in the medium and long term, leads to decreased prevalence and incidence of tobacco use and increased public support for tobacco control[69].

In the long term, smoke free policies reduce mortality and morbidity both by limiting exposure to second-hand smoke and by reducing smoking prevalence. Research demonstrates that 10 percentage point improvement in male survival rate can lead to 0.23% income growth per year. Thus, healthier citizens provide higher quality of human capital, which translates into the economic growth.

References:

1 National Cancer Institute (NCI). Health effects of exposure to environmental tobacco smoke. The Report of the California Environmental Protection Agency. Smoking and Tobacco Control Monograph No. 10. Bethesda, MD, US Department of Health and Human Services, National Institutes of Health, National Cancer Institute, 1999, NIH Pub. No. 99–4645.

2 U.S. Department of Health and Human Services (USDHHS). Reducing tobacco use: a report of the U.S. Surgeon General. Atlanta, GA, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2000.

3 Levy D, Friend K. Clean air laws: a framework for evaluating and improving clean air laws. *J Public Health Manag Pract 2001;* 7: 87–97.

4 Yurekli A, Zhang P. The impact of clean indoor-air laws and cigarette smuggling on demand for cigarettes: an empirical model. *Health Econ* 2000; 9; 159–170.

5 Emont SL, Choi WS, Novotny TE, Giovino GA. Clean indoor air legislation, taxation and smoking behavior in the United States: an ecological analysis. *Tob Control* 1992; 2: 13–17.

6 Ohsfeldt RL, Boyle RG, Capilouto EI. Tobacco taxes, smoking restrictions, and tobacco use. NBER Working Paper 6486, March 1998.

7 Moskowitz J, Lin Z, Hudes E. The impact of California's smoking ordinances on smoking cessation. *Am J Public Health* 2000; 90: 57–62.

8 Chaloupka FJ, Wechsler H. Price, tobacco control policies and smoking among young adults. *J Health Econ* 1997; 16: 359–373.

9 Chaloupka FJ, Grossman M. Price tobacco control policies and youth smoking. NBER Working Paper 5740, September 1996.

10 Tauras JA, Chaloupka FJ. Price, clean indoor air laws, and cigarette smoking: evidence from longitudinal data for young adults. NBER Working Paper 6937, February 1999.

[11] Tauras JA. The transition to smoking cessation: evidence from multiple failure duration analysis. NBER Working Paper 7412, November 1999.

[12] Tauras JA, Chaloupka FJ. Determinants of smoking cessation: an analysis of young adult men and women. *In*: Grossman M, Hsieh C.R, eds. The Economic Analysis of Substance Use and Abuse: The Experience of Developed Countries and Lessons for Developing Countries. Cheltenham, UK, Edward Elgar Publishing Limited, 2001, pp. 365–390.

[13] Farrelly MC, Evans WN, Sfekas A. The impact of workplace smoking bans: results from a national survey. *Tob Control* 1999; 8: 272–277.

[14] Chaloupka FJ, Saffer H. Clean indoor air laws and the demand for cigarettes. *Contemp Policy Issues* 1992; 10: 72–83.

[15] Warner KE. State legislation on smoking and health: a comparison of two policies. *Policy Sciences* 1981; 13, 139–152.

[16] Warner KE. Cigarette smoking in the 1970's: the impact of the anti-smoking campaign on consumption. *Science* 1981; 221: 729–731.

[17] Woolery T, Asma S, Sharp D. Clean indoor-air laws and youth access restrictions. Chapter 11. *In*: Jha P, Chaloupka F. Tobacco Control in Developing Countries. Oxford, Oxford University Press, 2000, pp. 273–286.

[18] Eriksen MP, Gottlieb NH. A review of the health impact of smoking control at the workplace. *Am J Health Promot* 1998; 13: 83–104.

[19] Borland R, Chapman S, Owen N, Hill D. Effects of workplace smoking bans on cigarette consumption. *Am J Public Health* 1990; 80: 178–180.

[20] Burns DM, Anderson C, Major J, Vaughn J, Shanks T. Cessation and cessation measures among adult daily smokers: national and state-specific data. *In*: Population Impact of Smoking Cessation: Proceedings of a Conference on What Works to Influence Cessation in the General Population. Smoking and Tobacco Control Monograph No. 12. Bethesda, MD, U.S. Department of Health and Human Services, National Institutes of Health. National Cancer Institute. NIH Publication Number 00-4892, November 2000; 25–98.

[21] Farkas A, Gilpin E, Distefan J, Pierce JP. The effects of household and workplace smoking restrictions on quitting behaviors. *Tob Control* 1999; 8: 261–265.

22 Glasgow RE, Cummings KM, Hyland A. Relationship of worksite policies to changes in employee tobacco use: Findings from COMMIT. *Tob Control* 1997; S2: 44–48.

23 Heloma A, Jaakkola MS, Kahkonen E, Reijula K. The short-term impact of national smoke free workplace legislation on passive smoking and tobacco use. *Am J Public Health* 2001; 91: 1416–1418.

24 Longo DR, Johnson JC, Kruse RL, Brownson RC, Hewett JE. A prospective investigation of the impact of smoking bans on tobacco cessation and relapse. *Tob Control* 2001; 10: 267–272.

25 Evans WN, Farrelly MC, Montgomery E. Do workplace smoking bans reduce smoking? *Am Econ Rev* 1999; 89: 728–747.

26 Farrelly MC, Thomas KY. Smoking behavior in the workplace: exploring the current population surveys. RTI International. Research Triangle Park, North Carolina, Report prepared for CDC, November 2001.

27 Fichtenberg CM, Glantz SA. Effect of smoke_free workplaces on smoking behaviour: systematic review. *BMJ* 2002; 325: 188–191.

28 Workplace ban "is best way to stop smoking" *The Independent* 26 July 2002. http://news.independent.co.uk/uk/health/story.jsp?story=318446

29 Warner D. 'We do not hire smokers': may employers discriminate against smokers? *Employee Responsibilities Rights Journal* 1994; 7: 129–140.

30 Loomis B, Farrelly M, Ellison R. The effect of local 100% smoke free ordinances on smoking behaviors among adults. RTI International, October 2004.

31 Ohsfeldt RL, Boyle RG, Capilouto EI. Tobacco Taxes, Smoking Restrictions, and Tobacco Use. The Economic Analysis of Substance Use and Abuse: An Integration of Econometric and Behavioral Economic Research. The University of Chicago Press, September 1999.

32 Farkas AJ, Gilpin EA, White MM, Pierce JP. Association between household and workplace smoking restrictions and adolescent smoking. *JAMA* 2000; Vol 284: 717–722.

[33] Moore L, Roberts C, Tudor-Smith C. School smoking policies and smoking prevalence among adolescents: multilevel analysis of cross-sectional data from Wales. *Tob Control* 2001; 10: 117–123.

[34] Wakefield MA, Chaloupka FJ, Kaufman NJ, Orleans CT, Barker DC, Ruel EE. Effect of restrictions on smoking at home, at school, and in public places on teenage smoking: cross sectional study. *BMJ* 2000; 321: 333–337.

[35] Hopkins DP, Briss PA, Ricard CJ, *et al.* Reviews of evidence regarding interventions to reduce tobacco use and exposure to environmental tobacco smoke. *Am J Prev Med* 2001; 20: Suppl 2, 16–66.

[36] Gottlieb NH, Eriksen MP, Lovato CY, Weinstein RP, Green LW. Impact of a restrictive worksite smoking policy on smoking behavior, attitudes, and norms. *J Occup Med* 1990; 32: 16–23.

[37] Repace JL. Risk management of passive smoking at work and at home. *St. Louis University Public Law Review* 1994; 13: 763–785.

[38] Brauer M, Mannetje A. Restaurant smoking restrictions and environmental tobacco smoke exposure. *Am J Public Health* 1998; 88: 1834–1836.

[39] Levy D, Friend K. The effectiveness of policies directed at youth access to cigarettes: results of the SimSmoke Simulation Model. *Tob Control* 2001; 10: 108–116.

[40] Garland WS. BOMA supports smoking bans in buildings. http://no-smoke.org/htmlpage.php?id=10. Accessed: May 2005.

[41] Max W. The financial impact of smoking on health-related costs: a review of the literature. *Am J Heath Promot* 2001; 15: 321–331.

[42] Parrott S, Godfrey C, Raw M. Costs of employee smoking in the workplace in Scotland. *Tob Control* 2000; 9: 187–192.

[43] Madden D. Setting the appropriate tax on cigarettes in Ireland. Working paper series, Wp02/05, Centre for Economic Research, October, 2002.

[44] Lok P. Smoking and the bottom line. The costs of smoking in the workplace. Ottowa, The Conference Board of Canada, 1997.

[45] Ong MK, Stanton A, Glantz SA. Cardiovascular Health and Economic Effects of Smoke Free Workplaces. *Am J Med* 2004; 117: 32–38.

[46] Ong M, Lightwood JM, Glantz SA. Health and economic impacts of the proposed Florida Smoke free for Health Initiative (November 1, 2003). Center for Tobacco Control Research and Education. Tobacco Control Policy Making: United States. Paper FL2002. http://repositories.cdlib.org/ctcre/tcpmus/FL2002. Accessed: May 2005

[47] Consultation Report. International Consultation on Environmental Tobacco Smoke (ETS) and Child Health, 11-14 January 1999. Geneva, World Health Organization, 1999.

[48] Jamison DT, Sandbu M, Wang J. Cross-country variation in mortality decline, 1962-87: The role of country-specific technical progress, CMH Working Paper Series Paper No. WG1: 4 April 2001. http://www.cmhealth.org/docs/wg1_paper4.pdf. Accessed: May 2005.

[49] Bloom DE, Canning D, Sevilla J. The effect of health on economic growth: theory and evidence. NBER Working Paper 8587, November 2001.

[50] Jacobson PD, Wasserman J. Tobacco control laws: implementation and enforcement. Santa Monica, CA RAND Corporation, 1997.

[51] Siegel M, Husten C, Merritt RK, Giovino GA, Eriksen MP. Effects of separately ventilated smoking lounges on the health of smokers: is this an appropriate public health policy? *Tob Control* 1995; 4: 22–29.

[52] Repace J, Kawachi I, Glantz S. Fact sheet on secondhand smoke. Geneva, UICC, 1999. http://repace.com/SHSFactsheet.pdf. Accessed: May 2005.

[53] Maroney N, Sherwood D, Stubblebine W. The impact of tobacco control ordinances on restaurant revenues in California. Claremont, California, The Claremont Institute for Economic Policy Studies, 1994.

[54] Glantz SA, Smith LRA. The effect of ordinances requiring smoke free restaurants on restaurant sales. *Am J Public Health* 1994; 84: 1081–1085.

[55] Hyland A, Cummings KM, Nauenberg E. Analysis of taxable sales receipts: was New York City's smoke free air act bad for restaurant business? *J Pub Health Mgmt Prac* 1999; 5: 14–21.

[56] Ontario Tobacco Research Unit. The Tobacco Control Environment: Ontario and Beyond. Special Reports: Monitoring and Evaluation Series, 2003-2004. Toronto, ON, Ontario Tobacco Research Unit, November 2004;Vol. 10, No. 1.

[57] Künzli N, Mazzoletti P, Adam M, *et al.* Smoke free cafe in an unregulated European city: highly welcomed and economically successful. *Tob Control* 2003; 12: 282–288.

[58] Labour Canada's Regulatory Impact Analysis Statement. Prepared for the federal Non-smokers' Health Act. Ottawa, Minister of Supply and Services, Canada Gazette, 1989: 4540.

[59] Environmental Protection Agency (EPA). The costs and benefits of smoking restrictions: an assessment of the Smoke Free Environment Act of 1993 (H.R. 3434). Washington, Indoor Air Division, Office of Radiation and Indoor Air, 1994.

[60] WHO-CHOICE. CHOosing Interventions that are Cost Effective. Geneva, World Health Organization. http://www3.who.int/whosis/menu.cfm?path=evidence,cea&language=english. Accessed: May 2005.

[61] Torgerson DJ, Raftery J. Economic notes. *BMJ* 1999; 319: 914–915.

[62] The world health report 2002 - Reducing Risks, Promoting Healthy Life. Geneva, World Health Organization, 2002. http://www.who.int/whr/2002/en/

[63] Cromwell J, Bartosch WJ, Fiore MC, Hasselblad V, Baker T. Cost-effectiveness of the clinical practice recommendations in the AHCPR guideline for smoking cessation. *JAMA* 1997; 278: 1759–1766.

[64] Harvard Centre for Risk Analysis. Comprehensive table of cost-utility ratios 1976-2001. Cost-utility analyses published from 1976 to 2001, with ratios converted to 2002 US dollars, Harvard Center for Risk Analysis, Boston.

[65] Elixhauser A. Costs of breast cancer and the cost-effectiveness of cancer screening. *Int J Technol Assess Health Care* 1991; 7: 604–615.

[66] White E, Urban N, Taylor V. Mammography utilization, public health impact, and cost-effectiveness in the United States. *Annu Rev Public Health* 1993; 14: 605–633.

[67] Eddy DM. Screening for cervical cancer. *Ann Intern Med* 1990; 113: 214–226.

[68] U.S. Centers for Disease Control and Prevention (CDC). Best Practices for Comprehensive Tobacco Control Programs, August 1999. http://www.cdc.gov/tobacco/bestprac.htm. Accessed: May 2005.

[69] Tobacco Free Initiative (TFI) World Health Organization. http://www.who.int/tobacco/research/economics/restrictions/en/. Accessed: May 2005.

Chapter 3

Economic impact of a smoking ban in bars and restaurants

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3.1. Introduction

Tobacco companies have always claimed that a smoking ban in bars and restaurants would have a negative impact on business and lead to less sales and less employment. By using this argument, they have been successful in delaying or annulling smoking bans in bars and restaurants in some countries or regions. What is the review of the literature on the impact of smoking bans? What are the main changes within the sector of bars and restaurants in Europe?

In this paper we will discuss the research on the economic impact of a ban of smoking in bars and restaurants on the hospitality industry.

3.2. The literature on the economic impact of a smoking ban in bars and restaurants

3.2.1. An article reviewing the literature

M. Scollo and colleagues did a review of studies on the economic effects of the smoke free policies on the hospitality industry (for studies published before 31 August 2002). A total of 97 studies were located[1].

The authors of the review used the Siegel's criteria[2] to judge study quality:

- use of objective data (for example, tax receipts or employment statistics);
- inclusion of all data points after the law was implemented and several years before;

- use of regression or other statistical methods that control for secular trends and random fluctuation in the data;
- appropriate control for overall economic trend.

An outcome measure was deemed "objective" if it was based on data collected routinely by an independent agency covering the periods both before and after the smoke free policy was in force. Objective measures included: sales figures provided for the purposes of taxation assessment; employment figures provided to government agencies generally for insurance purposes; and numbers of new or existing establishments based on business permit applications or registrations to the government agency that issues such permits, and bankruptcy data.

Unverifiable predictions of future changes or estimates of recent changes in patronage or spending were deemed "subjective". Subjective measures included anecdotal reports and self-report data collected in polls of, or interviews with, patrons or owners of restaurants, bars or similar businesses, conducted either before or after the policy was put in place.

Another indicator of the quality of a study is whether it has been subject to peer review. A study was deemed to have been peer reviewed if it was an article published in an academic journal.

Funding sources for each paper were noted after completion of all the other classification tasks.

3.2.1.1. Results of the review

Less than a quarter (21) of the 97 studies met all four of Siegel's quality criteria. None of these 21 studies reported a negative impact. In fact, four of the studies report a positive impact on taxable sales receipts of restaurants, bars, hotels, or tourism.

Only a handful of studies, based on objective data only, conclude a negative impact. None of these meets more than one of Siegel's other three criteria for methodological quality. Only one peer-reviewed study concluded a negative impact. This study relied on subjective data and was funded by a tobacco company.

Scollo and colleagues[1] concluded in the following way:

> *Siegel's criteria are a valuable tool for assessing the quality of studies on the economic impact of smoke free policies in the hospitality*

industry. Our findings suggest that policymakers can make a quick preliminary assessment of study quality by asking three questions:

- *Was the study funded by a source clearly independent of the tobacco industry?*
- *Did the study objectively measure what actually happened, or was it based on subjective predictions or assessments?*
- *Was it published in a peer reviewed journal?*

Of the 35 studies on this topic published that concluded a negative impact, none have been funded by a source clearly independent of the tobacco industry, and none have both used an objective measure and been peer reviewed. In fact, 80% of these studies passed none of these basic tests of quality. With all 21 of the well designed studies finding that smoke free restaurant and bar laws had no negative impact on revenue or jobs, policymakers can act to protect workers and patrons from the toxins in second-hand smoke confident in rejecting predictions that there will an adverse economic impact.

3.2.2. The effect of the smoking ban in British Columbia

A 2004 report of the Ministry of Management services in British Columbia looked at the declining revenues at drinking places[3]. According to the report, British Columbia's food and beverage service industry has been enjoying strong growth in revenues in recent years. However, one sector of the industry, drinking places, has been sharply battered over the last half decade.

Revenues at drinking places in British Columbia have plummeted 29% in the period 1998–2003. This is in striking contrast with establishments that primarily serve food. At full service restaurants, revenues have expanded 23%. At limited service "fast food" restaurants, revenues are up 19%. Even food service contractors and caterers have seen revenue growth (+9%). Thus, drinking places are the one weak spot in the food and beverage service industry.

According to the report, there are several possible factors in the decline of drinking places in British Columbia, including general trends in prices and consumption of alcohol, the ban on smoking in bars, and growing competition from licensed restaurants.

Overall spending on alcoholic beverages has shown relatively slow growth in recent years. In addition, the price of served liquor (+9.7%) has been rising much faster than the price of store-bought liquor (+1.3%) over the past 5 years. However, neither of these facts provides an adequate account of why drinking places have seen such a steep decline in revenues.

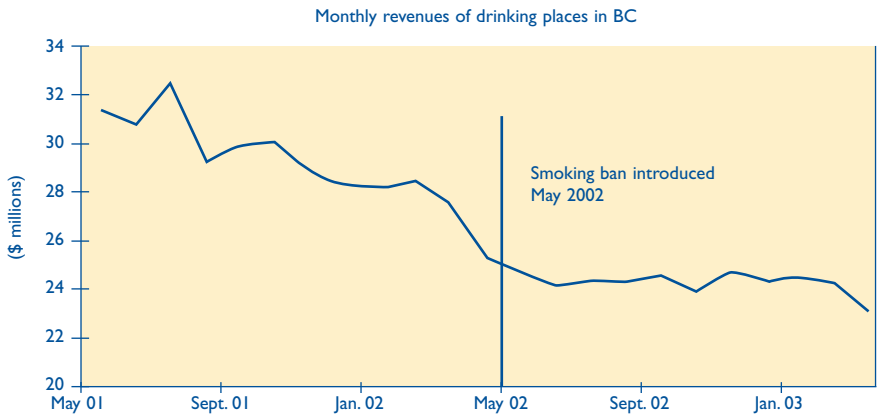
The introduction of the smoking ban, which might be expected to be a particular burden on drinking places, was a possible factor. However, the report concluded that "the downturn in revenues largely occurred before the smoking ban was enacted."

Competition from licensed restaurants has probably been the main factor in the declining revenues and market share of drinking places.

The impact of the smoking ban is explained in the report[3] and figure 1 in the following way:

> *The smoking ban on the food and beverage service industry is another possible factor in the decline of drinking places. Drinking and smoking are often done together, which could make a smoking ban in bars and nightclubs particularly burdensome.*
>
> *When the Workers Compensation Board (which acts on behalf of the Ministry of Labour) first imposed the ban in January 2000, it provoked a sharp reaction from industry. Two and a half months later, the BC Supreme Court ruled that the WCB had failed to adequately consult with stakeholders, and overturned the ban. A study commissioned by the Workers Compensation Board (which was based on provincial liquor sales, rather than establishment revenues) concluded that the two and a half month ban did produce a short-term decline in the liquor service industry.*
>
> *The smoking ban was re-introduced in May 2002. However, this date does not correspond to a drop in the revenues of drinking places.*
>
> *The decline in revenues at drinking places occurred prior to the enactment of the smoking ban, and revenues have been relatively stable since then. It seems that the smoking ban did not have a negative impact on the revenues of BC drinking places.*

Figure 1: The smoking ban did not spark a decline in revenues



Source: Ministry of Management Services[3].

3.2.3. The effect of the smoking ban in New York

The Smoke-Free Air Act banned smoking in all workplaces in the city of New York, including the hospitality industry. When the Smoke-Free Air Act went into effect on March 30, 2003, questions were raised about how the law would affect the City's restaurants and bars. Would the law hurt business? Would some establishments have to lay off workers or close?

According to report published by the city of New York, the data are clear one year later. Since the law went into effect, business receipts for restaurants and bars have increased, employment has risen, virtually all establishments are complying with the law, and the number of new liquor licenses issued has increased, all signs that New York City bars and restaurants are prospering[4]:

- business tax receipts in restaurants and bars are up 8.7%;
- employment in restaurants and bars has increased by 10,600 jobs (about 2,800 seasonally adjusted jobs) since the law's enactment;
- 97% of restaurants and bars are smoke free;
- New Yorkers overwhelmingly support the law.

3.2.3.1. Bar and restaurant tax receipts in New York

Data from the New York City Department of Finance show that the amount of money spent in New York City's bars and restaurants has increased over the past year. From April 1, 2003, through January 31, 2004, the most recent data available, bar and restaurant business tax receipts were up 8.7% from the same period in 2002–2003. From April 2003 through January 2004, the City collected $17,375,688 in tax receipts from bars and restaurants; in the same period one year previously, the City collected $15,984,811.

3.2.3.2. Bar and restaurant employment in New York

New York City's improved financial climate has translated into employment gains for the bar and restaurant industry. Now, as a result of the Smoke-Free Air Act, these workers can also enjoy a safer, smoke-free workplace.

Employment data from the New York State Department of Labor, and seasonally adjusted by the New York City Economic Development Corporation, show that the City's restaurant and bar industry is expanding once again after a downturn at the end of 2001 and throughout 2002 (prior to the implementation of the Smoke-Free Air Act). More people are employed in the City's bars and restaurants with an average number of workers employed in the industry during 2003 of 164,000, the highest number recorded in at least a decade.

In the months following the law's enactment from March 2003 to December 2003, employment in New York City's restaurants and bars increased by about 2,800 seasonally adjusted jobs, amounting to an absolute gain of about 10,600 jobs.

3.2.3.3. Bar and restaurant openings and closings in New York

According to the New York State Department of Labor, the number of New York City bars and restaurants remained essentially unchanged between the third quarter of 2002 and the third quarter of 2003. This is an improvement compared with the same period in 2002, during which 280 more bars and restaurants closed than opened.

Furthermore, the New York State Liquor Authority issued 1,416 new liquor licenses to New York City bars and restaurants in 2003, compared with 1,361 issued in 2002, prior to the passage of the Smoke-Free Air Act. At the end of

2003, citywide, there were 9,747 active liquor licenses, a net gain of 234 from 2002. Bar and restaurant owners as well as investors remain confident in the strength of the industry and of their ability to flourish in this vibrant and varied sector of the City's economy.

3.2.4. The effect of the smoking ban in Ireland

The Irish law which bans smoking at the workplace (including bars and restaurants) came into force on 29 March 2004. The Licensed Vintners Association (LVA) which represents 95% of Dublin publicans commissioned research to evaluate the economic impact of the ban. In a press release of 9 July 2004 the association says: "Research carried out by marketing Research Company, Behaviour and Attitudes, confirms the negative economic impact of the Smoking Ban on the Dublin licensed trade, with turnover down by as much as 16%, and overall employment levels cut by up to 14% since the introduction of the Smoking Ban"[5]. These figures have been quoted and misquoted by tobacco companies and hospitality industry in other countries. The British tobacco industry would refer to the Vinters Association in its September 2004 briefing and say "the Dublin (pub) trade has been down between 15% and 25% since the ban was enforced"[6]. The French hospitality industry would quote a figure of 20% loss[7] and the Flemish hospitality industry quoted a loss of 25%[8].

While it is too soon to evaluate the total economic impact of the ban, figures released by the Central Statistics Office of Ireland would deny the claims made by the Licensed Vintners Association. Data on the revenues of bars in Ireland are available at monthly basis. The Retail Sales Index (RSI) is the official short-term indicator of changes in the level of consumer spending on retail goods and is published every month by the Central Statistics Office (CSO). The official figures show that the average value of bar sales in Ireland were at 106.6 in the period after the ban (from April 2004 to March 2005) compared to 110.2 in the equivalent period a year earlier (from April 2003 to March 2004)[9]. A decrease of revenues of 3.3% and not 15%, 20% or 25%. The decrease in the value of the sales of 3.3% is in line with the decrease of the volume of sales in the bars in Ireland which had already started in 2002. Retail sales volume indices exclude the effects of retail price changes. They are calculated by deflating the trading-day adjusted value indices using specially constructed retail price indices derived from the Consumer Price Index (CPI). The volume of sales in bars in Ireland increased until 2001, but decreased by 2.8% in 2002, 4.2% in 2003 and 4.4% in 2004[10].

As in British Columbia, the decline in volume at drinking places in Ireland occurred prior to the enactment of the smoking ban. One important factor which may explain the decline is the high price of beer in Ireland:

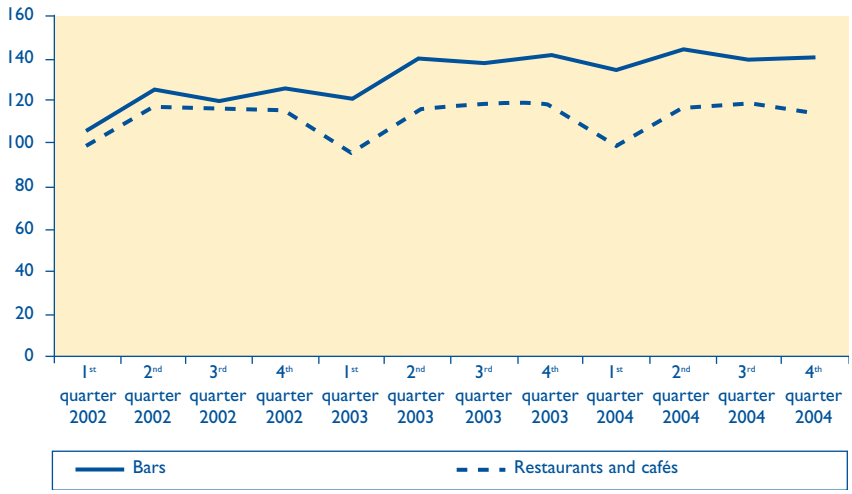
- The price of drinks increased in June 2004 after the introduction of smoking ban.[11]
- The beer price in Ireland was the fourth highest in European region in 2002.[12]
- The price of a pint of beer has grown more rapidly in Ireland in the period 2000–2003 than the general price index[13].
- The price of beer was particularly high in Dublin. According to a survey of the Central Statistics Office in 2004 the prices for alcohol consumed in licensed premises were consistently higher in Dublin. The greatest difference was for a pint of lager where average prices in Dublin were 13.2% higher than elsewhere in Ireland[14].

The CSO also publishes statistics on employment in the hospitality sector in its Quarterly National Household Survey. Employment rates in this sector are traditionally susceptible to fluctuations. The data shows a decline of 2.4% between the end of 2003 and 2004. However, the numbers employed in the sector at the end of 2004 exceeded those employed in 2002 by 0.6%. The most recent CSO data on tourism and travel (published February 2005) shows that there was a 3.2% increase in visitors to Ireland in 2004 when compared to 2003[15].

3.2.5. The effect of the smoking ban in Norway

Legislation on smoke free bars and restaurants came into force on 1 June 2004 in Norway. An evaluation report of the law was published in June 2005 by SIRUS, the National Institute for Alcohol and Drug Research in Oslo. SIRUS analysed data provided by Statistics Norway which publishes a quarterly turnover index on transport and tourism. This index includes hotel and restaurant business turnover figures. The base year for the turnover index is 2000. From 2001 to 2004 there was a slight increase for restaurants and cafés (104.2–112.2). For bars, the index increased from 105 (2001) to 140 (2004). The quarterly turnover index for restaurants and cafés decreased with 3.5 index points from the last quarters of 2003 (before the ban) to the last quarter in 2004 (after the ban). There was no change in index point for bars in this period. Figure 2 shows the quarterly turnover index for bars and restaurants. Since 2002, especially bars have enjoyed rising figures. Restaurants and cafés seem to be more susceptible to seasonal variations than bars[16].

Figure 2: Turnover index for bars and restaurants. Value index. 2000=100.



Source: SIRUS (National Institute for Alcohol and Drug Research, Norway)[16].

3.2.6. The effect of the smoking ban in New Zealand

Legislation on smoke free bars, restaurants, clubs and casinos came into force on 10 December 2004 in New Zealand. As usual, there were concerns that the profits of these venues would fall, which would result in loss of jobs and business closures. There was also concern that fewer tourists would visit New Zealand if venues were smoke free.

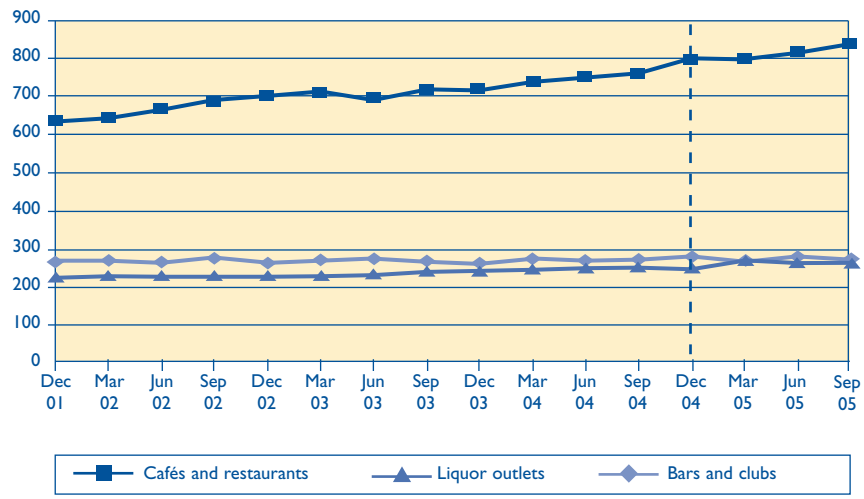
A report published in December 2005 by the Asthma and Respiratory Foundation of New Zealand, examined various indicators before and after the implementation of the legislation in December 2004 and suggested that these fears were unfounded[17] (figure 3). Retail sales, employment figures and overseas visitor numbers have remained steady.

> *The retail trade figures for bars, clubs, cafés and restaurants for the March, June and September quarters of 2005 show that sales remain strong. This period included the British and Irish Lions rugby tour of New Zealand.*

Seasonally adjusted sales for cafés and restaurants continued their upward trend, with an increase of over eight percent in the March and June quarters and ten percent in the September quarter compared to the same periods last year.

There was an initial downturn in bar and club sales in March 2005 and corresponding increase in sales from liquor outlets – suggesting that people may have been buying liquor to drink at home, rather than going to a bar. However, bar and club sales quickly rebounded, with sales up three percent in the June quarter and almost one percent in the September quarter over the same period last year.

Figure 3: Retail trade figures in selected industries ($ million)



Source: Asthma and Respiratory Foundation of New Zealand[17].

3.2.7. Drinking trends in Europe

There are differences between Member States in relation to the prevalent drinking cultures. In fact, at least three groups of Member States can be identified: the wine drinking south, the beer drinking of the centre and the spirit drinking of the North[18]. While this is a characterisation of the regions, regions have changed over the last 30 years such as Northern Europe now drinking more beer than spirits[19]. Trends in alcohol consumption vary around Europe: per capita alcohol consumption decreased since the 1980s in the period 1980–2000 in the wine drinking countries such as France (-35%), Italy (-34%) and Spain (-37%), but remained high in countries such as Luxembourg, Ireland, Denmark, Czech Republic and Hungary. Per capita consumption rose in Ireland by 48% in the period 1980–2002.

Per capita alcohol sales figures do not discriminate between men, women, age and factors such tourism, cross border sales, import/export and non-commercial production, and therefore should be interpreted with caution[19].

Table 1 is from the Organisation for Economic Cooperation and Development (OECD) Health Data 2004[20]. Luxembourg gets the number 1 rank for alcohol consumption from the OECD, followed by Ireland, Hungary, Czech Republic and Spain. As explained above, the first place for Luxembourg may be explained by factors such as cross-border sales due to the low taxes on alcohol in Luxembourg.

In addition to the decrease of alcohol consumption, a second factor may influence the sales of alcohol in the hospitality sector: the trend to drink more at home (table 2).

In most European countries there is a trend to consume more alcohol at home. Only Ireland had very low levels of beer consumption at home: the estimated share of total beer consumed in private homes is 12% in Ireland in 2000, but the share increased over recent years to 23% in 2003. Ireland is also the country of the highest market share for draught beer in relation to total beer sales: 78%. In other words, when they drink beer, they do it mostly in the hospitality industry, such as pubs. But again, Ireland is changing, but only recently. According to the statistics of The Brewers of Europe, per capita beer consumption in Ireland remained at a high level of 125 litres in the period 2000–2002, but decreased to 118 litres in 2003[21].

Table 1: Alcohol consumption - Litres per capita (pop. aged 15+)

	1960	1980	1990	1995	2000	2002	Change % in the period 1980–2000
Austria	9.4	13.8	12.6	11.9	11.3		-18%
Belgium	8.9	14	12.1	11.1	10.2		-27%
Czech Republic		11.8	11.3	11.6	11.8	11.9	-
Denmark	5.5	11.7	11.7	12.1	11.5	11.2	-2%
Finland	2.7	7.9	9.5	8.3	8.6	9.2	+9%
France		16.1	12.7	11.5	10.5		-35%
Germany	7.5		13.8	11.1	10.5	10.4	-24%
Greece		13.2	10.7	10.6	9.4		-29%
Hungary	8.2	14.9	13.9	12.2	12.3		-17%
Ireland	4.9	9.6	11.2	11.5	14.2	14.3	+48%
Italy	16.6	13.2	10.9	10.4	8.7		-34%
Luxembourg	13.1		14.7	14.8	14.9		-
Netherlands	3.7	11.3	9.9	9.8	10		-12%
Poland			8.3	8.2	8.5		+2%
Portugal		14.9	16.1	14.6	13		-13%
Slovak Republic	6.9	14.5	13.4	14.6	13		-10%
Spain		18.5	13.5	11.4	11.7		-37%
Sweden	4.8	6.7	6.4	6.2	6.2		-7%
UK		9.4	9.8	9.4	10.4	11.1	+11%

Source: Organisation for Economic Cooperation and Development (OECD)[20].

Table 2: The trend to drink more at home. Estimated share of total beer sales consumed in private homes

	1980	1995	2000	2001	2002	2003
Austria	45	63	66	65	65	65
Belgium	-	36	41	42	43	44
Denmark	77	75	75	75	75	-
Finland	65	69	72	73	73	75
France	-	-	-	-	70	72
Germany	60	65	65	65	68	70
Greece	-	35	35	35	35	35
Ireland	6	11	12	12	20	23
Italy	49	58	59	58	59	59
Luxembourg	-	-	63	63	-	-
Netherlands	60	63	63	63	-	-
Portugal	24	35	37	31	33	34
Spain	20	32	32	32	32	-
Sweden	85	79	79	79	79	79
UK	12	27	33	35	37	39

Source: Brewers of Europe[21].

3.3. Restaurants, bars and catering in Europe

Economic activities in the European community are classified according to the classification system NACE. The activities of the sales of meals and beverages for consumers are classified under NACE groups 55.3 (restaurants), 55.4 (bars) and 55.5 (canteens and catering).

In 2001 there were 1.2 million restaurants, bars and catering enterprises which generated a total value added of €92.4 billion, representing 3.8% of the non-financial services total. Ireland and Spain reported a relatively high specialisation in restaurants, bars and catering, evidenced by a noticeably higher contribution

of this sector to the non-financial services added, respectively 6.1% and 5.7%. Among the new Member States, in contrast, only Slovenia reported that this sector had a higher share of non-financial services than the European Union (EU) average, while all other central and European countries were at the bottom of the ranking. More than two thirds of the EU value added in this sector originated from just four countries: UK, Germany, Italy and Spain[22].

The restaurants, bars and catering sector is a labour intensive sector and employs 5.6 million persons in 2001 in the EU-25 countries. The UK alone accounted for more than one quarter, with 1.4 million persons employed. Ireland, Portugal and Spain reported a high concentration of employment in this sector, mirroring their specialisation in terms of value added[22]. In relation to the total number of persons employed in each country the employment in restaurants and bars is the highest in Cyprus (5.5%), Luxembourg (5.4%), UK (5.2%), Spain (5.1%), Ireland (4.8%), France (4.8%) and Portugal (3.9%) (table 3). The number of people employed is generally speaking much higher in restaurants than in bars. In 2000 there were 54,002 people in Belgium employed in restaurants compared to 16,183 people in bars[23]. In the same year there were 392,489 people in France employed in restaurants compared to 99,797 people in bars[24].

The statistical office of the EU (Eurostat) has no data for restaurants and bars separately in all EU countries, although they exist in some countries. The number of drinking places in countries is decreasing in the Netherlands, Belgium and France, while the number of restaurants is increasing. The decrease of bars has been linked to the changing drinking habits (less alcohol intake and more drinking at home), the price of the drinks, the closure of bars and cafés in the small villages and the shift from drinking places to places that also serve food. In Belgium the number of drinking places decreased from 26,457 in 1995 to 18,922 in 2003 (-28.5%), while the number of restaurants increased during the same period from 22.802 to 24.922 (+11.1%)[23]. In France the number of drinking places decreased from 77,544 in 1985 to 50,700 in 2000 (-34.6%), while the number of restaurants increased during the same period from 66,289 to 88,870 (+34.1%)[24]. In the Netherlands the number of drinking places has decreased slightly from 11,412 in 1994 to 10,848 in 2004 (-4.9%), but the expectation is that the number will decrease further to 10,400 in 2010[25].

The decreasing trend in the number of drinking places has not been observed in all Member Countries. The number of bars increased slightly in the UK from 46,395 in 1995 to 47,537 in 2003 (+2.5%)[26]. In Italy the number of bars increased from 95,434 in 1995 to 117,882 in 2002 (+23.5%) and the number of people employed increased during the same period from 199,341 to 279,086 (+40%)[27].

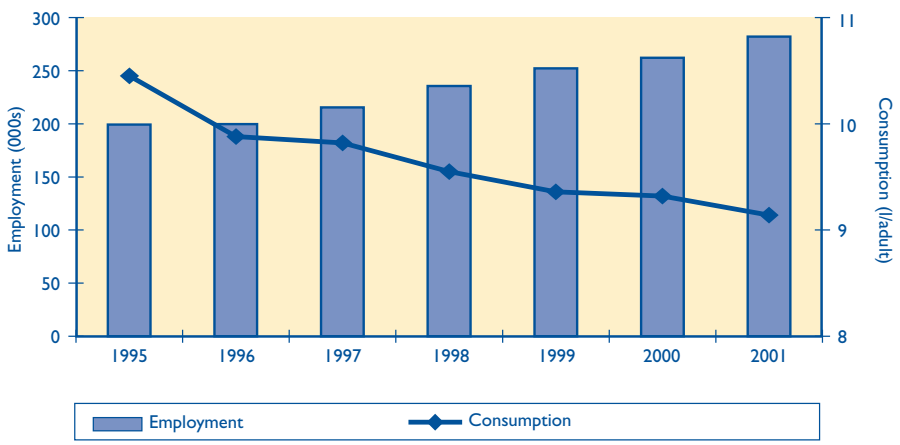
Table 3: Employment in restaurants, bars, canteens and catering (NACE groups 55.3, 55.4 and 55.5) in 2001

Country	Employment in restaurants and bars (thousands)	Total employment (thousands)	Employment in restaurants and bars in relation to total employment
BE	135	4039	3.3%
CZ	131	4701 (2003)	2.8%
DK	72	2717	2.6%
DE	744	36528	2.0%
EE	9	594 (2003)	1.5%
EL	-	3918	-
ES	809	15877	5.1%
FR	575	23678	4.8%
IE	83	1718	4.8%
IT	665	21373	3.1%
CY	18	327 (2003)	5.5%
LV	14	1007 (2003)	1.4%
LT	20	1433 (2003)	1.4%
LU	10	185	5.4%
HU	39	3922 (2003)	1%
MT	5	148 (2003)	3.4%
NL	266	8065	3.3%
AT	103	3997	2.6%
PL	-	13617 (2003)	-
PT	193	4984	3.9%
SI	-	897 (2003)	-
SK	12	2162 (2003)	0.6%
FI	40	2403	1.7%
SE	79	4125	1.9%
UK	1442	27990	5.2%

Source: European Commission[22], last column: own calculations.

The increase of the number of bars and the related employment in Italy is remarkable as alcohol per capita consumption has steadily decreased in Italy during the last two decades (figure 4). A possible explanation for the situation in Italy might be the classification of bars and restaurants: for Italians a bar does not automatically refer to a place where one can have an alcoholic drink. It also refer to places where you can go for coffees and brioche for breakfast or quick lunches which serve coffee, panini, toast etc. It is unknown to us whether "breakfast bars" were classified as bars or restaurants.

Figure 4: Bar employment and alcohol consumption (litres per capita) in Italy



Source: P. Anderson *et al.*, Institute of Alcohol Studies, UK[28].

3.4. Conclusions

Tobacco companies have always claimed that a smoking ban in bars and restaurants would have a negative impact on business and lead to less sales and to less employment. They often use anecdotal facts or speculative projections. The UK Tobacco Manufacturers Association's September 2004 briefing on the smoking bans in Ireland and New York for instance uses this technique by quoting declarations on dramatic losses on pub revenues in Ireland which can hardly be verified and suggestive "evidence" on the situation in New York such as "The ban on smoking in New York has been in place for over a year. A significant amount of evidence has suggested that the ban has negatively affected bars, clubs and taverns across New York State. Many press accounts have

described a dramatic drop in customers for bars throughout the state, as well as a steep decline in bar revenue and significant job losses"[6].

M. Scollo and colleagues[1] did a review of the studies on the economic effects of the smoke free policies on the hospitality industry which were published before 31 August 2002. A total of 97 studies were located. The authors concluded "Of the 35 studies on this topic published that concluded a negative impact, none have been funded by a source clearly independent of the tobacco industry, and none have both used an objective measure and been peer reviewed. In fact, 80% of these studies passed none of these basic tests of quality. With all 21 of the well designed studies finding that smoke-free restaurant and bar laws had no negative impact on revenue or jobs, policymakers can act to protect workers and patrons from the toxins in second-hand smoke confident in rejecting predictions that there will an adverse economic impact"[1].

The Smoke-Free Air Act banned smoking in all workplaces in the city of New York, including the hospitality industry. According to a report published by the city of New York, the data are clear one year later. Since the law went into effect, business receipts for restaurants and bars have increased by 8.7%, employment has risen with 10,600 new jobs, virtually all establishments are complying with the law, and the number of new liquor licenses issued has increased, all signs that New York City bars and restaurants are prospering.

The "Drinking and smoking just go together" argument has been used by the tobacco industry to campaign against smoking bans in California[29]. This argument also implies a possible negative impact on business: smokers will avoid smoke free bars, which will hurt revenues. Certainly in a country with high alcohol consumption, the economic consequences of a smoking ban would be considerable. Ireland, for instance, had one of the highest alcohol consumption per capita consumption in the world in 2002. Ireland is also the country of the highest market share for draught beer in relation to total beer sales: 78%. In other words, when the Irish drink beer, they do it mostly in the hospitality industry, such as pubs. The Irish law which bans smoking at the workplace (including bars and restaurants) came into force on 29 March 2004. While it is too soon to evaluate the total economic impact of the ban, figures released by the Central Statistics Office would deny the claims made by the hospitality industry, which estimated the losses in the pub trade between 15% and 25% since the ban was enforced. The official figures show that the value of bar sales in Ireland were at 106.6 in the period after the ban (from April 2004 to March 2005) compared to 110.2 in the equivalent period a year earlier (from April 2003 to March 2004). The decrease of the value of the sales of 3.3% is in line with the decrease of the volume of sales in the bars in Ireland which had already started in 2002. The vol-

ume of sales in bars in Ireland increased until 2001, but decreased by 2.8% in 2002, 4.2% in 2003 and 4.4% in 2004. Prior to the ban, drinking habits in Ireland had already changed. As in British Columbia, the decline in volume at drinking places in Ireland occurred prior to the enactment of the smoking ban.

Drinking habits are changing within Europe, as per capita alcohol consumption is decreasing and more persons are drinking at home. Many factors may influence the sales in the hospitality industry. The number of drinking places in countries is for instance decreasing in several European countries. The decrease of bars has been linked to the changing drinking habits (less alcohol intake and more drinking at home), the price of the drinks, the closure of bars and cafés in the small villages and the shift from drinking places to places which also serve food.

Studies which measure the economic impact of a smoking ban on the hospitality industry should meet minimum standard such as the Siegel's criteria[2] to judge study quality:

1. Use of objective data (for example, tax receipts or employment statistics).

2. Inclusion of all data points after the law was implemented and several years before.

3. Use of regression or other statistical methods that control for secular trends and random fluctuation in the data.

4. Appropriate control for overall economic trend.

References

1 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.

2 Siegel M. Economic impact of 100% smoke-free restaurant ordinances. *In*: Smoking and restaurants: a guide for policy makers. Berkeley, UC Berkeley/UCSF Preventative Medicine Residency Program; American Heart Association, California Affiliate; Alameda County Health Care Services Agency, Tobacco Control Program; 1992; 26–30.

3 Ministry of Management Services, Tourism Sector Monitor, July 2004, BC Stats, August 4 2004, issue: 04-07. http://www.bcstats.gov.bc.ca/pubs/tour/tsm0407.pdf.

4 New York City. The State of Smoke-Free New York City. A One-Year review. NY, March 2004.

5 Licensed Vintners Association. Independent research shows impact of smoking ban among Dublin Publicans. Press Release 9 July 2004. http://www.lva.ie/easyedit/files/09July04.doc. Accessed: February 2005.

6 Tobacco Manufacturers Association, Briefing, September 2004, Focus point. www.the-tma.org.uk. Accessed: January 2005.

7 Soumois F. Chasser la cigarette des restos? [Drive the cigarette out the restaurants?] *Le Soir*, 22 septembre 2004.

8 De Smedt E. Knack pro & contra, Moet roken verboden worden in de horeca? [Pro and contra, should smoking be banned in the Horeca (hotels, restaurants and bars)?] knack, 29 september 2004; CM Le cas irlandais, La Libre Belgique, 26 janvier 2005.

9 Central Statistics of Ireland: Retail sales index (Monthly) RSCM0130 Bars Value. Base 2000=100. www.eirestat.cso.ie/diska/RSCM0130.html. Accessed: May 2005.

10 Office of Tobacco Control. Smoke free workplaces in Ireland. A one-year review. Co. Kildare, March 2005.

[11] MAGAZINE. Drinks Industry Ireland. July/August 2004. Volume 4 Issue 9, page 7.

[12] World Health Organization. Global status report: alcohol policy. Geneva, 2004. www.who.int/substance_abuse/publications/alcohol/en/. Accessed: February 2005.

[13] Irish Brewers Association. Brewing Industry - Fast Facts. Dublin, 2004. www.finfacts.com/biz10/Irishdrinkfacts2004.pdf. Accessed: January 2005.

[14] Central Statistics Office. Consumer Prices: Average Price Analysis - Dublin and Outside Dublin, Dublin, November 2004. www.cso.ie. Accessed: February 2005.

[15] Central Statistics Office, Travel and Tourism available at: www.cso.ie/releasespublications/pr_tourism.htm.

[16] Lund M. Smoke-free bars and restaurants in Norway. SIRUS, National Institute for Alcohol and Drug Research, Oslo, Norway, June 2005. www.sirus.no/cwobjekter/SmokefreebarsandrestaurantsinNorway.pdf. Accessed: January 2006.

[17] Asthma and Respiratory Foundation of New Zealand. Aotearoa New Zealand Smokefree Workplaces: A 12-month report. Wellington, Asthma and Respiratory Foundation of New Zealand, December 2005. www.asthmanz.co.nz/files/PDF-files/Aotearoa_NZ_Smokefree_Workplaces_12_month_report.pdf. Accessed: January 2006.

[18] European Commission. The Health status of the European Union. Narrowing the health gap. Health and consumer protection. Luxembourg, 2003.

[19] Personal communication, B. Baumberg, Policy and Research Officer, Institute of alcohol studies, London, UK, 24 February 2005.

[20] OECD Health Data 2004, 3rd edition. http://www.oecd.org/dataoecd/13/29/31963581.xls. Accessed: May 2005.

[21] The Brewers of Europe, Beer facts 2003. www.brewersofeurope.org/uk/publications_doc/beerfacts2003.pdf. Accessed: February 2005.

[22] European Commission. European business. 2004 Edition. Facts and figures. Data 1998-2002, Eurostat, Brussels, 2004.

[23] Horeca Vlaanderen, Statistieken [Horeca Flanders, statistics]. www.fedhorecavlaanderen.be. Accessed: January 2005.

[24] Union des métiers et des industries de l'hôtellerie, Chiffres Clé [Union of the professions and industries in the hospitality sector, key statistics]. www.umih.fr/chiffres/cafebar.php. Accessed: December 2004.

[25] Bedrijfschap horeca en catering, drinken in de Nederlandse Horeca 2004 [Society Horeca and catering, drinking in the Dutch Horeca 2004]. www.bhenc.nl. Accessed: January 2005.

[26] National Statistics Online – home of official UK statistics. www.statistics.gov.uk/. Accessed: January 2005.

[27] European Commission. Eurostat. www.europa.eu.int/eurostat. Accessed: January 2005.

[28] Anderson P, Baumberg B. Alcohol in Europe. London, Institute of Alcohol Studies, 2006.

[29] Magzamen S, Charlesworth A, Glantz S. Print media coverage of California's smoke free bar law. *Tob Control* 1992; 10; 154–160.

Chapter 4

Public attitudes to smoke free policies in Europe

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4.1. Introduction

This article summarises the current status of knowledge and attitudes to smoking in public places in selected European countries, and trends in public attitudes to smoking in enclosed public places. It summarises international experiences of smoke free laws, and outlines recent studies of attitudes to smoke free policies introduced in Europe.

Information on public attitudes to smoking in the EU comes from a variety of sources, including annual surveys by government-funded entities, opinion polls by government bodies and health interest organisations, and polls commissioned by media organisations. In addition, evaluations of smoke free laws introduced in certain EU countries have included information on public opinion before and after the law was introduced.

Polls often record the level of support for smoking restrictions or for 100% smoke free laws in various settings, including public buildings, offices, restaurants, bars/cafés, and workplaces.

When comparing polls, it is evident that the manner in which questions are framed and worded can lead to variability in results. For example, terms such as "smoke free" convey a clear message and a positive image, while "smoking restrictions" may cover a wide range of provision, from a single non-smoking table to completely separate smoking rooms. Terms such as "bans" on smoking in public or "banning smoking" may be misunderstood as meaning that smoking itself may be made illegal, or that smoking may not be permitted anywhere except in the home.

Carefully worded survey questions avoid these sources of confusion, and therefore give a clearer picture of the true level and strength of public support for evidence-based measures to protect against the harmful effects of second-hand smoke.

New evidence of the nature and scale of the health effects of passive smoking has emerged over the past few years. Moreover, the successful introduction in several cities, states and countries of laws making all enclosed workplaces smoke free has focused attention on implementing effective policies that are proven to protect health. The main rationale for these policies is to protect workers – including workers in the hospitality trade, who are often at particular risk of high-level exposure to second-hand smoke over many years.

Despite the variation in the methodology and questions used in polls across Europe, certain general conclusions emerge. Support for laws to restrict smoking in public places, and for smoke free policies, is growing across Europe. Support is higher among those who are aware of the health risks of passive smoking. It is higher among non-smokers than among smokers, with ex-smokers intermediate between the two groups. Supporters of smoking restrictions are more likely to be women; to be in professional or managerial occupations; and to be aged 35 and over. Smokers are more likely to favour smoking restrictions over completely smoke free places.

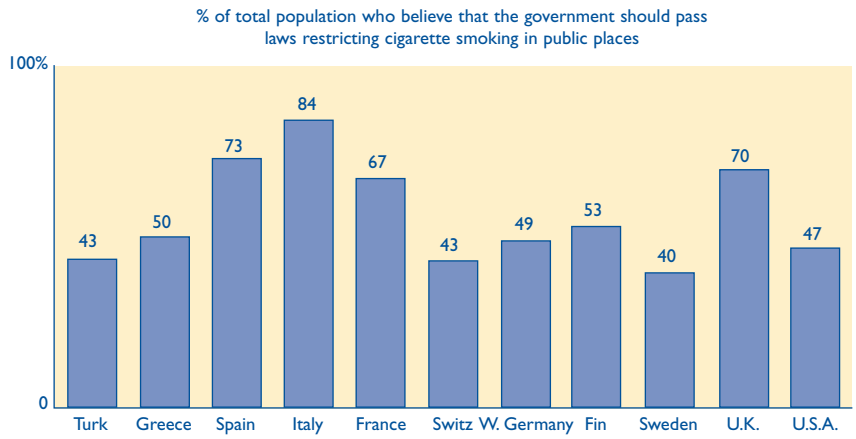
Support for smoke free public places is stronger when the questions used highlight health protection as the rationale. But even where support for smoke free workplaces – including smoke free restaurants – is strong, the evidence suggests that many do not always fully recognise bars, pubs and clubs as workplaces. For example, in a UK poll[1], just under half (49%) of respondents supported a law to make pubs and bars smoke-free. However, in the same survey, when reminded that most enclosed public places are also workplaces, almost three-quarters (73%) of respondents said they would support a law making **all** public places and workplaces smoke-free; just 15% of those questioned would oppose such a law.

4.2. Public support for smoke free places in Europe

Internal documents made public as a result of legal action against the tobacco industry in the USA show that as early as the 1980s, attitudes to smoking in public places in Europe were being monitored by the tobacco companies.

In a 1989 document[2] comparing public attitudes to a range of tobacco control measures in 10 European countries and the USA, Philip Morris found that a substantial proportion of adults believed that the government should pass laws to restrict smoking in public places. (figure 1). In all but three countries (Turkey, Sweden and Switzerland) support for smoking restrictions exceeded that in the USA. Support was highest in Italy (84%), Spain (73%), UK (70%) and France (67%).

Figure 1: Philip Morris survey of public attitudes to laws restricting smoking, 1989



Source: Philip Morris, 1989[2].

4.2.1. Public support for smoking restrictions in selected European countries

Recent representative surveys on public support for smoke free laws are not available for all European countries. However, the data that are available show a considerable level of support for smoking restrictions – and indeed smoke free policies – in several countries.

4.2.1.1. UK

There is broad acceptance among the UK public that passive smoking harms health[3]: for example, more than eight out of ten (85%) people agree that breathing someone else's smoke increases the risk of lung cancer. A 2004 survey[4] found that 70% of respondents were personally worried about the health risks of breathing other peoples' smoke.

Initiated in 1996, annual UK government surveys[5] have showed a consistently high level of public support for smoking restrictions in the workplace (88% in 2003), as well as in most public facilities, including restaurants (91%). Support for restrictions in bars has grown over the years, reaching 65% in 2004.

Recent surveys have gauged the level of public support for smoke free policies. Almost one in three people (64%) support a law to make public places smoke free[6], while 67% agree that the government should ban smoking in enclosed public spaces and workplaces, including pubs, bars and restaurants[7]. Another poll[8] found that 79% of those questioned would support a law to make restaurants completely smoke free, while 49% were in favour of smoke free bars.

When asked whether they agree that all employees should have a right to work in a smoke free environment, almost nine out of ten (89%) respondents strongly agreed, or tended to agree. Only one in twenty (5%) expressed disagreement.

Employers favour smoke free workplaces: the overwhelming majority (93%) would encourage a law banning smoking in the workplace[9].

4.2.1.2. France

In France, awareness of second-hand smoke as an occupational health hazard is high: 93% of respondents to a July 2005 survey[10] agreed that working in a smoky environment posed a real health risk. Moreover, 70% of restaurant workers, and 67% of café/bar workers perceive exposure to tobacco smoke at work as a risk to their health[11].

There is substantial support for smoke free workplaces: three out of four French people (75%) agree that employers must guarantee their employees a smoke free workplace, including restaurants, hotels, bars, cafés and discotheques. A law to make restaurants smoke free would be supported by the majority of workers (61%) and proprietors (51%).

4.2.1.3. Germany

In Germany, recent representative surveys show a considerable level of support for smoke free dining. A 2005 media poll[12] put support for smoke free restaurants at 59% nationally, with 67% of residents of the former East Germany in favour.

Support for smoke free policies in other settings is also strong. A study published in December 2005 by the German Cancer Research Centre[13] reported that almost seven out of ten (69%) Germans support smoke free workplaces (85% of non-smokers, 44% of smokers), while three out of four (75%) favour making all public buildings smoke free.

4.2.1.4. Belgium

A September 2004 survey commissioned by the Belgian Foundation Against Cancer[14] found a substantial level of support for 100% smoke free restaurants and cafés. The majority (58%) supported a complete ban on smoking in restaurants, while almost half (49%) were in favour of cafés being made smoke free by law.

Opinion varied markedly between different regions: support for smoke free was highest in Brussels, where 82% wanted smoke free restaurants, but stood at 47% in Flanders.

4.2.1.5. Latvia

Data from the 2004 annual health monitoring survey[15] show a considerable level of support among Latvians for controls on smoking in restaurants, cafés and bars. The overwhelming majority (87.5%) of respondents agreed that it was necessary to restrict smoking in these venues, with 37.5% thinking that smoking should be completely forbidden in these places.

4.2.1.6. Finland

In Finland, smoking is not permitted in the majority of workplaces, but is allowed in restaurants and bars. Recently, a Ministry of Health and Social Welfare working group recommended that restaurants and bars be made 100% smoke free. A July 2005 newspaper poll[16] put public support for this proposal at 47%, with 49% of respondents opposed.

4.2.1.7. Cyprus

A recent survey[17] showed that the vast majority of Cypriots support smoke free policies. Asked whether the would agree with smoking being forbidden in public places, 86% of respondents were in favour, while 78% felt that smoking should not be permitted in the workplace.

Although approval for smoke free places was higher among non-smokers, a majority of both smokers and non-smokers were in support: 91% of non-smokers wanted smoke free public places, compared with 69% of smokers, while 85% of non-smokers and 52% of smokers supported smoke free workplaces.

4.2.1.8. Sweden

Data from surveys prior to the introduction of smoke free bar legislation in Sweden in June 2005 show more than eight out of ten (85%) of Swedes support the introduction of the law[18]. Among smokers, 63% were in support, with the overwhelming majority (90%) saying they would respect the law when it came into force.

4.2.1.9. Switzerland

Data on support for smoke free policies in Switzerland comes from an October 2005 survey commissioned by the Swiss League Against Cancer[19]. It shows that more than three out of four (76.8%) Swiss adults – including a majority (62%) of smokers – are in favour of smoking being forbidden in all enclosed public places. Almost two out of three (64%) would support a law to make bars, cafés and restaurants smoke free.

4.2.1.10. Lithuania

In Lithuania, a survey gauging public support for smoke free bars, restaurants and other enclosed public places was commissioned by the Ministry of Health and carried out by an independent agency during summer 2005.

Three out of four respondents (75%) to the survey supported the idea of a law forbidding smoking in bars, restaurants and other enclosed public places. Support reached 86% among non-smokers, while around one in two (51%) of smokers were also in favour.

4.2.1.11. Romania

In Romania, there is a high level of awareness of the health risks of passive smoking among non-smokers and smokers. A 2004 survey[20] found that more than nine out of ten (91.9%) smokers believed that the smoke from their cigarettes is dangerous to others, while (95.3%) of non-smokers believed that the smoke from others' cigarettes is dangerous for their health.

Over one-half (56.4%) of non-smokers agreed that smoking should not be permitted in the workplace in the presence of non-smokers; just over one-third of smokers (34.7%) agreed.

4.2.1.12. Iceland

A recent population-based survey[21] conducted on behalf of the Icelandic Public Health Institute examined public attitudes towards passive smoking and smoke free policies.

More than nine out of ten (93.8%) participants believed that working in an environment where smoking is allowed is bad for one's health. More than six out of ten (61.3%) supported a law to make all restaurants, pubs and bars smoke free.

4.2.1.13. Spain

In Spain, a survey[22] carried out in advance of the 1 January 2006 introduction of a new law restricting smoking in non-hospitality workplaces found general support for the measure.

The survey found that three out of four respondents (77%) supported the law, with only 15% of those questioned expressing opposition. Seven out of ten people (70.5%) asked felt that the law would contribute to improving public health.

4.3. Public support for existing smoke free laws

Where smoke free laws have been introduced, they enjoy widespread public support. Moreover, public support for smoke free laws typically grows during the build-up to their introduction, and increases still further after implementation. Evidence from comparative studies between countries suggest that the announcement, preparation and enactment of smoke free legislation can act as a catalyst for changing public attitudes, leading to more rapid gains in support for smoke free policies.

4.3.1. Smoke free laws outside Europe

Experience of smoke free laws outside Europe comes from cities, states and countries. This section presents evidence on public support for existing smoke free policies in selected non-European countries.

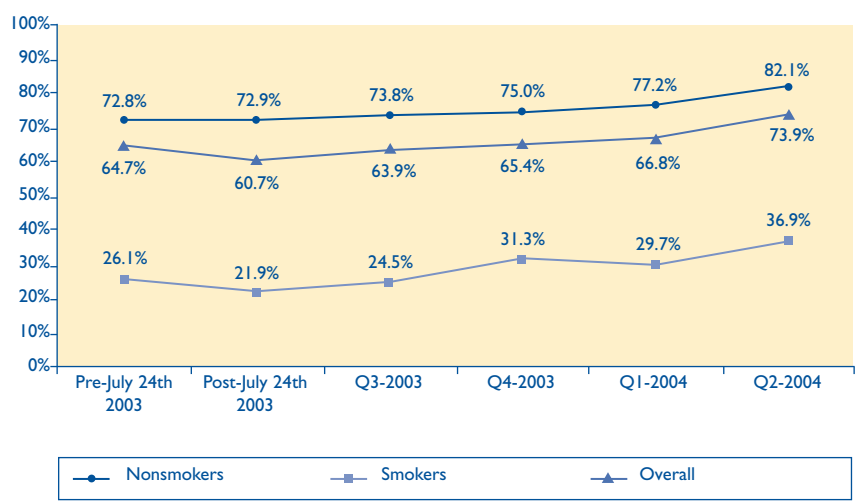
4.2.1.1. USA – state-wide laws

State-wide smoke free laws in the USA are popular. In California, support for a law to make bars smoke free jumped from 68% before its introduction in 2000, to 75% afterwards. In Connecticut, a survey of public attitudes to a law making all workplaces – including bars and restaurants – smoke free found that 85% of those surveyed supported the law. Support for the Maine smoke free act grew from 77% when it was introduced in December 2003, to 88% one year later. Support among smokers rose from 40% to 54% over that period.

The experience in New York echoes that seen elsewhere in the USA, with a steady increase in support for the Clean Indoor Air Act (CIAA) under which indoor workplaces – including bars, pubs and clubs – are completely smoke free. Figure 2 shows the levels of support for the Act among smokers and non-smokers before and after it came into force on 24 July 2003.

While support for the Act dipped slightly immediately after its introduction, it climbed steadily thereafter: one year later, it was some 10 percentage points higher among both smokers and non-smokers, at around 74%. Compliance with the Act is high, with some 94% of premises being smoke free[23].

Figure 2: Percentage of adults (non-smokers and smokers) who support the New York Clean Indoor Air Act (CIAA) before and after its implementation in July 2003



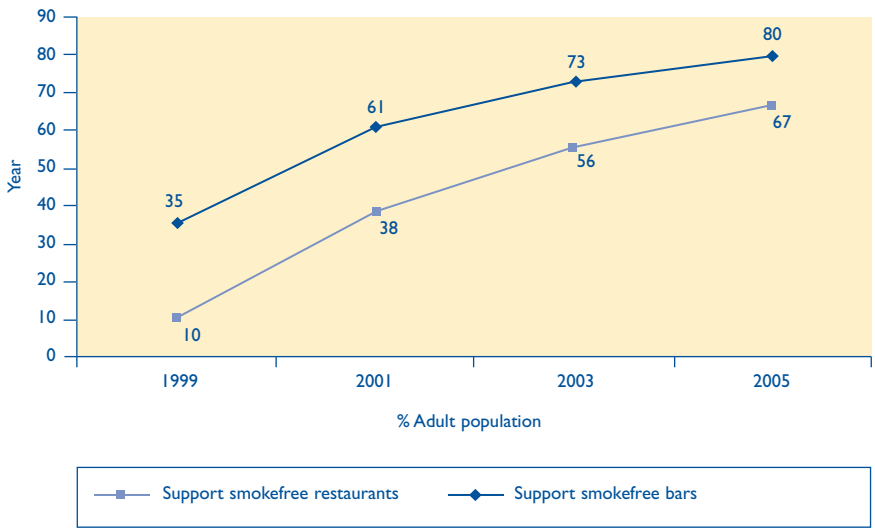
Source: New York State Department of Health[23]

4.3.1.2. New Zealand

In December 2004, all workplaces in New Zealand – including restaurants, bars and casinos – became smoke free. An evaluation of the law published on the one-year anniversary of its introduction[24] found an increase in support for the law. Support for smoke free restaurants grew from 73% before the law came into force, to 80% nine months after; support for smoke free restaurants grew from 48% to 67%. Compliance with the law is high, with 97% of bars and taverns being smoke free. Introduction of the law was followed by a rapid decline in socially-cued smoking in nightclubs, bars, casinos and cafés.

The New Zealand experience clearly demonstrates how public attitudes to smoking in public places and workplaces can change rapidly over a short period. Figure 3 shows public support for smoke free bars and restaurants in New Zealand over recent years. Since 1999, support for smoke free restaurants has grown from 35%, and support for smoke free bars from just 10%[24].

Figure 3: Public support for smoke free policies in New Zealand, 1999–2005



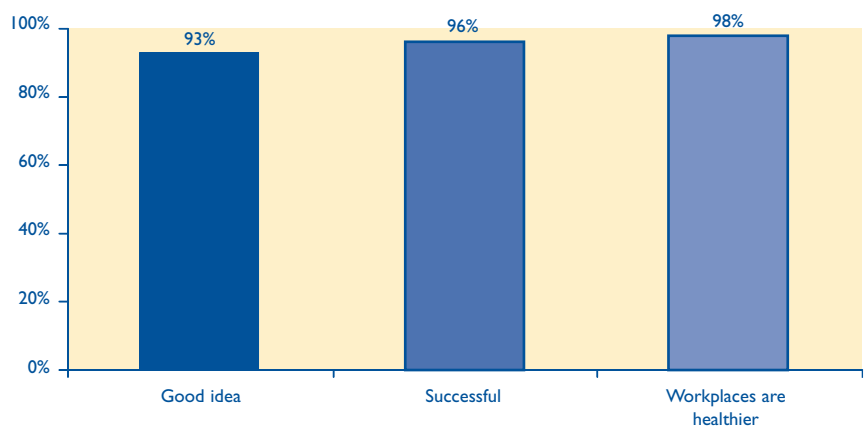
4.3.2. Smoke free laws in Europe

Evaluation of the 100% smoke free workplaces law introduced in Ireland in March 2004, and of the smoke free bars and restaurant law introduced in Norway later that year, clearly demonstrates that smoke free laws can be successful and popular in Europe. In addition, preliminary studies of new legislation in Malta, Sweden and Italy, and of laws yet to come into effect in Scotland and Northern Ireland, suggest that these initiatives enjoy widespread public support.

4.3.2.1. Ireland

The smoke free workplace law introduced in Ireland in March 2004 has been well received. In a survey of public attitudes[25] carried out one year later among a representative sample of adults, there was almost universal agreement (98%) that workplaces are healthier since the introduction of the law. The vast majority (96%) believe that the law is successful, including almost nine out of ten (89%) of smokers. Likewise, the large majority (93%) think the introduction of the law was a good idea – including 80% of smokers (figure 4).

Figure 4: Public attitudes to the Irish smoke free at work law



Source: Office of Tobacco Control, Ireland[25]

The law is well respected – another indicator of public support. Nine months after its introduction, compiled inspection data showed overall compliance at 94%, with 99% compliance in restaurants, 93% in hotels and 90% in licensed premises. The average compliance rate over the same period for premises such as offices and factories monitored by the Health and Safety Authority[26] was 92%.

Public support for the Irish law has increased steadily, from 67% before its implementation to 82% five months after its implementation, to 93% after one year.

4.3.2.2. Norway

An evaluation of the first year of the smoke free bars and restaurants law in Norway[27] found an increase in support for the law. Six months before its introduction, 47% of the population was in favour; six months after its introduction, in December 2004, support had climbed eleven percentage points to 58%, with 73% of non-smokers in favour.

Compliance with the law is high: 94% of respondents reported that they were seldom or never exposed to tobacco smoke in bars and restaurants, a significant improvement on the situation (56%) the year previously.

4.3.2.3. Malta

Public approval for recent legislation on smoking in public places in Malta is high: almost nine out of ten (89%) of respondents agreed that the law regulating smoking was necessary, with 96% of non-smokers and 72% of smokers in support of the law[28]. Women smokers viewed the law slightly more favourably than men (75% women in support, versus 70% men).

4.3.2.4. Italy

On 10 January 2005, Italy introduced legislation making all workplaces, including bars and restaurants, smoke free. This measure enjoys a high level of public support.

Even before its introduction, survey data[29] demonstrates support for the law was high: in 2004 polls showed support reaching 85.8%, with 47.5% of respondents expressing strong support for the measure. A year later, overall support remained solid, at 86.8%, and the proportion in strong support of the law had increased to 55.5%. Opposition to the law decreased slightly, from 11.1% to 10.6%.

4.3.2.5. Scotland and Northern Ireland

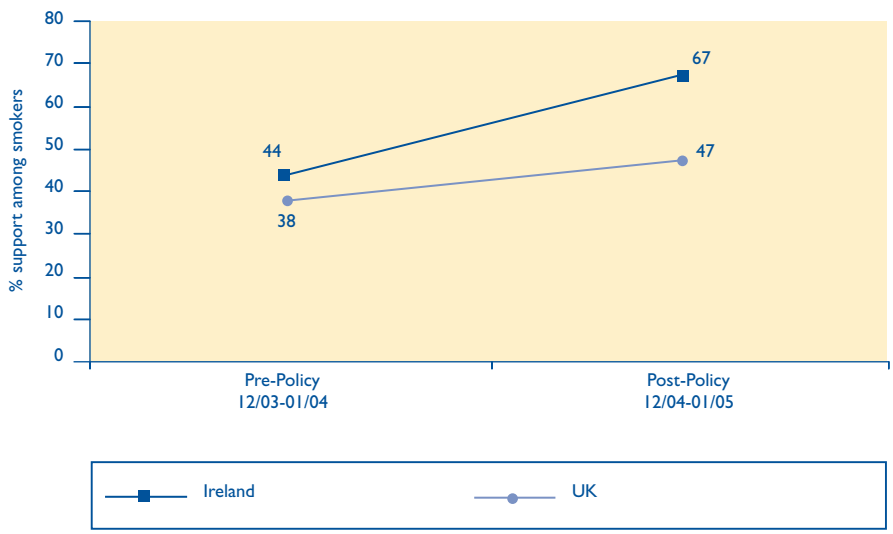
In Scotland, a new law to make all public places smoke free comes into effect on 26 March 2006. A survey carried out in August 2005 showed that 56% of Scots support the new law, with support among smokers having increased from 19% to 33% in the three months from May-August[30]. In Northern Ireland, plans have been announced to make all workplaces smoke free from April 2007, a move supported by 69% of the public[31].

4.3.3. Comparative studies of smoke free laws

Further evidence that after smoke free policies are implemented, support for them increases among smokers comes from a comparative study tracking the impact of various tobacco control policies on smokers in different countries (figure 5)[32].

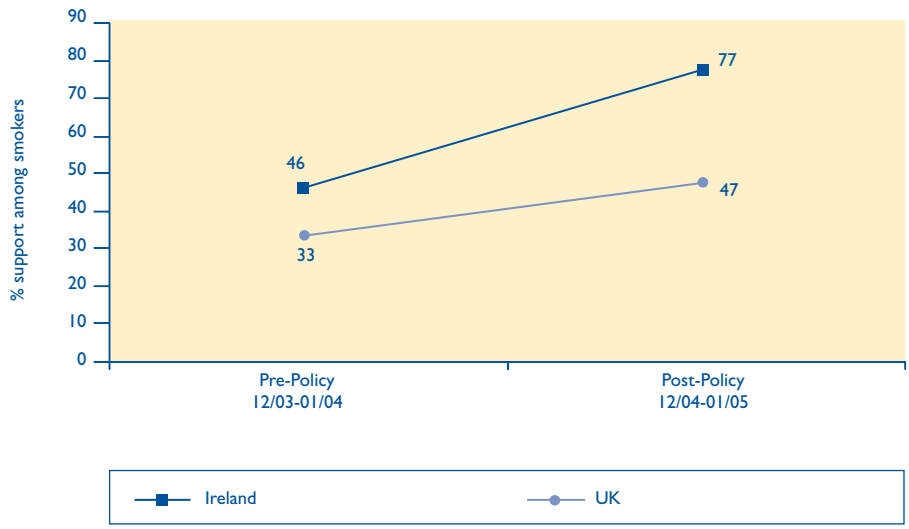
Before the smoke free workplace law was introduced in Ireland, 44% of smokers were in favour. Nine months afterwards, this had climbed to 67%: an increase of 23 percentage points. During the same period in the UK, support for smoke free workplaces also grew; but not as rapidly, increasing by nine percentage points.

Figure 5: Support for the smoke free workplace law in Ireland increased among smokers after its implementation



A similar pattern is seen for support for smoke free restaurants and bars (figure 6). Over the 12 months to December 2004/January 2005, support for smoke free restaurants increased 31 percentage points among Irish smokers, but 14 percentage points among UK smokers.

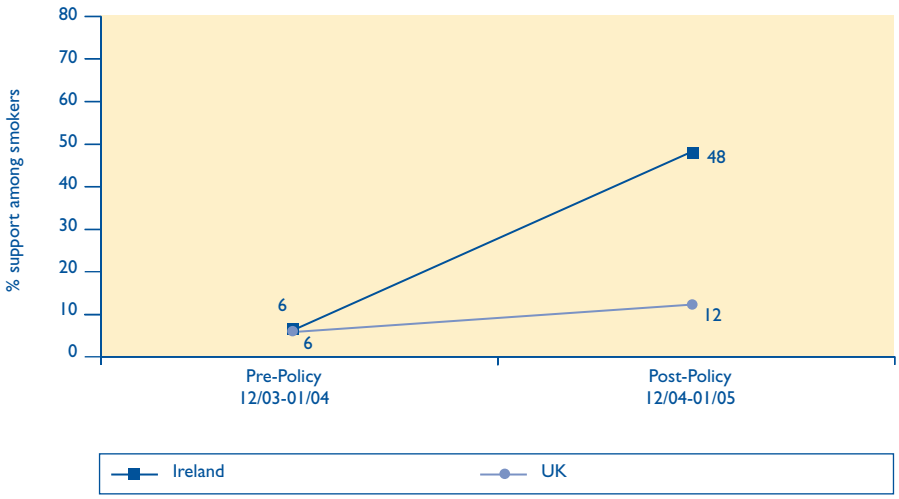
Figure 6: Support for smoke free restaurants in Ireland increased among smokers after implementation of the smoke free workplace law



The most dramatic increase of all is seen among approval for smoke free bars among Irish smokers. At the beginning of 2004, around one in twenty smokers (6%) in Ireland and the UK supported smoke free bars. Over the next year, approval among Irish smokers soared to almost one in two (48%), an increase of 42 percentage points. In the UK, over the same period, approval increased just 6 percentage points, to 12% (figure 7).

The impact of political leadership in leading and building public support for smoke free laws is again seen in recent experiences within the UK. One poll[33] in Spring 2004 showed that support for completely smoke free pubs and bars stood at 39% in Scotland, and 51% in England. By December 2005, support for smoke free had risen throughout the UK[34]. But while in England support for smoke free bars had increased 11% percentage points, in Scotland, where the First Minister Jack McConnell had announced in November 2004 his intention to make all public places smoke free by law, it had soared to overtake that in England, increasing 31 percentage points to 70%.

Figure 7: Dramatic increase in support for smoke free bars in Ireland among smokers after implementation of the smoke free workplace law

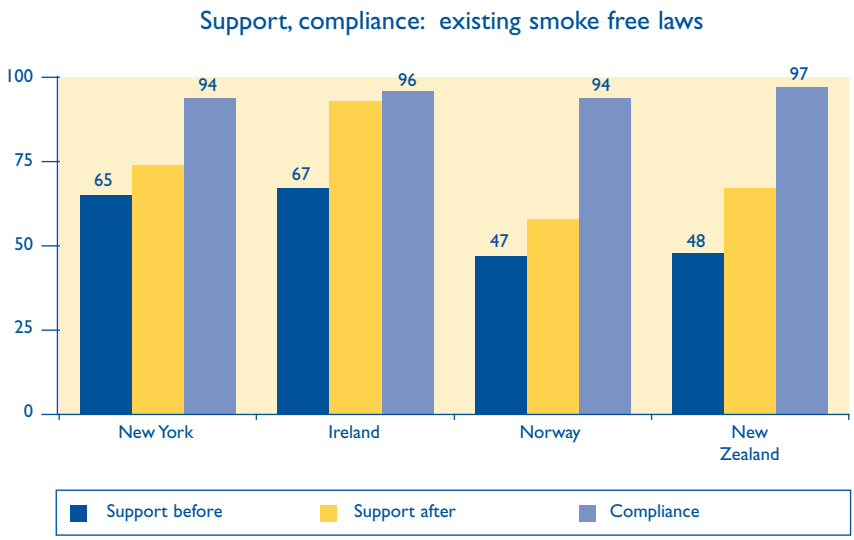


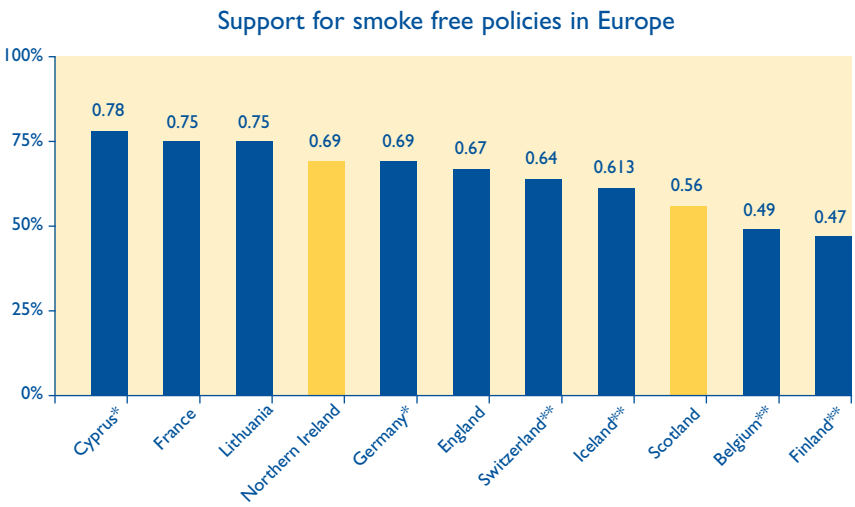
4.4. Smoke free in Europe: ready or not?

Among the factors key to the success of smoke free polices are a high level of public awareness of the health risks of passive smoking and a certain level of public support for smoke free laws. Some have argued that public support for smoke free policies in most European countries falls far short of the critical level that would allow for their successful introduction, and ensure popular support and respect.

Although population-based data are not yet available for many EU member states, the data that are available suggest otherwise. Indeed, awareness of the health risks of passive smoking and support for smoke free places in certain EU countries now equals or exceeds that which has proven sufficient for successful introduction of smoke free laws in other jurisdictions (figure 8). Moreover, the latest evidence shows that 100% smoke free workplace laws can be successfully enacted even where one-in-three adults smokes. There seems little rational basis for expecting that should a smoke free law be introduced in an EU country where the same conditions are met, support and compliance would not reach the same high levels seen elsewhere.

Figure 8: Support for 100% smoke free laws in many European countries already exceeds that seen in countries where such laws have been successfully introduced, with a high level of compliance





Countries that have announced 100% smoke free laws are shown in yellow.
All percentages show population-based support for a law to make all workplaces smoke-free, except * support for smokefree workplaces ** support for smoke free bars, cafés, restaurants.

The evidence shows that support for laws to make all workplaces smoke free increases after their introduction (figure 8). Indeed, as the evidence from California, Connecticut, Maine, New York, New Zealand and Ireland shows, action by policy-makers can lead public support, including among smokers.

Politicians can be slow to appreciate the popularity of smoke free laws. Yet in a years'-end poll run by the Irish public television service RTE, the smoke free law was voted the most popular event of 2004. It is difficult to imagine any other law that could command these levels of public support and approval. Fears of adverse press coverage may also be misplaced: a survey of press coverage of the Clean Indoor Air Act in New York found that overall, the editorial tone of news articles became more favourable to smoke free policies as time went on.

References

1 MORI. Overwhelming support for workplace smoking ban. 16 June 2004. www.mori.com/polls/2004/ash.shtml

2 Philip Morris International. How today's smokers and non-smokers in Europe feel about smoking issues. October 1989. Philip Morris (Bates no. 2500147468). www.pmdocs.com. Accessed: December 2005.

3 Lader D, Goddard L. Smoking-related behaviour and attitudes, 2003. London, Office for National Statistics, 2004.

4 ICM Research. BBC Smoking Poll, July 2004. www.icmresearch.co.uk/reviews/2004/BBC-Breakfast News-Smoking July04/BBC Breakfast Smoking July04.asp. Accessed: December 2005.

5 Lader D, Goddard L. Smoking-related behaviour and attitudes, 2004. London, Office for National Statistics, 2004. www.statistics.gov.uk/statbase/Product.asp?vlnk=1638. Accessed: December 2005.

6 Public Attitudes to Smoke-free Policy. *In*: Going Smoke-free: The Medical Case for Clean Air in the Home, at Work and in Public Places. London, Royal College of Physicians, 2005. p. 106.

7 ICM Research BBC Healthy Britain Poll. Sept 2004. news.bbc.co.uk/1/hi/health/3633018.stm

8 MORI Overwhelming support for workplace smoking ban. 16 June 2004. http://www.mori.com/polls/2004/ash.shtml

9 Peninsula. Majority of employers support workplace smoking ban. Personnel Today 14 July 2004. http://www.personneltoday.com/pt_news/news_daily_det.asp?feed=rss&liArticleID=24628

10 Ipsos. Survey for Pfizer. French employees and application of the anti-tobacco law: perceptions and expectations. 23, 24 July 2005.

11 IFOP survey for *Le Journal du Dimanche*. The French and smokefree public places. 6, 7 October 2005.

[12] Auftrag der Deutschen Presseagentur, 2005 [On behalf of the German Press Agency]. www.nid.de/NRI/58/info052.html#Gäste%20und%20Personal

[13] Schaller K, Poetschke-Langer M, Schultze A, Ehrmann K. Massnahmen zum Nichtraucherschutz in Deutschland [Measures of nonsmokers' protection in Germany]. Heidelberg, DKFZ, 2005.

[14] Belgians back restaurant smoking ban. 22 September 2004. www.expatica.com/source/site_article.asp?channel_id=3&story_id+12107

[15] Health Behaviour Survey among Latvian Adult Population, 2004. (The FINBALT Health Monitoring Survey).

[16] Aamulehti/Taloustutkimus. July 2005. http://www.yle.fi/news/left/id14474.html. Accessed: December 2005.

[17] Cymar Market Research Ltd. May 2005.

[18] Swedish National Institute of Public Health, May 2005. www.tobaksfakta.org/Default.asp?bhcd=32&bhsh=768&bhsw=1024

[19] Enquete sur la fumée de tabac en Suisse [Survey about smoking tobacco in Switzerland]. Institut universitaire de médicine sociale et préventive, Lausanne et DOXA, October 2005. www.swisscancer.ch/

[20] Centre for Health Politics and Services/EU, Lithuania. Knowledge, attitudes and practices about smoking. 2004.

[21] Public Health Institute/IMG Gallup Iceland. March 2005. www.lydheilsustod.is

[22] Centro de Investigaciones Sociologicas. Tabaquismo y nueva normative anti tobacco [Tobacco and the new law antitobacco]. November 11, 2005.

[23] First Annual Independent Evaluation of New York's Tobacco Control Program, Final report, New York State, Department of Health, Nov 2004.

[24] Asthma and Respiratory Foundation of New Zealand. Aotearoa New Zealand Smokefree Workplaces: A 12-month report. Wellington, New Zealand. December 2005. www.asthmanz.co.nz/files/PDFfiles/Aotearoa_NZ_smokefree_workplaces_12_months_report.pdf. Accessed: January 2006.

[25] Office Tobacco Control. 28 March 2005. Press release: Poll shows 98% of us believe Irish workplaces are healthier as a result of the smokefree law. www.otc.ie

[26] Office of Tobacco Control. Smoke free at work: a one year review. Ireland, 29th March 2005.

[27] Lund M. Smoke-free bars and restaurants in Norway. SIRUS, National Institute for Alcohol and Drug Research, Oslo, Norway, June 2005 www.sirius.no/cwobjekter/ smokefreebarsandrestaurantsinNorway.pdf. Accessed: January 2006

[28] Times of Malta, 2005. www.mam.org.mt/newsdetail.asp?i=391&c=1.

[29] DOXA. Il fumo in Italia. Sintesi dei Risultati [Smoking in Italy]. [Summary of results]. www.doxa.it/italiano/nuoveindagini/fumo2005.pdf

[30] MRUK –home Scottish survey. 2005. www.clearingtheairscotland.com/research/opinion-survey.html

[31] MORI. Ireland. November 2004. www.mori.ie/latest/smoking.shtml

[32] Fong GT, Hyland A, Borland R, *et al*. Reductions in tobacco smoke pollution and increases in support for smoke-free public places following the implementation of comprehensive smoke-free workplace legislation in the Republic of Ireland: findings from the ITC Ireland/UK survey. *Tob Control* 2005; Epub ahead of print (doi:10.1136/tc.2005013649).

[33] ASH. Major New Poll Shows Public Support Across UK for Comprehensive Smokefree Law. Press Release 30th December 2005. http://www.ash.org.uk/

[34] YouGov, ASH, Cancer Research UK, 2005. www.ash.org.uk/html/press/051230.html.

Chapter 5

Why ventilation is not a viable alternative to a complete smoking ban

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5.1. Introduction

Environmental tobacco smoke (ETS), derived primarily from sidestream cigarette smoke between puffs, is a major contributor to indoor air pollution wherever smoking occurs. Ventilation has been suggested as an alternative to a complete smoking ban in response to this, however the following chapter will show why ventilation is not a viable alternative.

ETS is a complex mixture of thousands (~4,000) of compounds in particulate and vapour phases. Nicotine and respirable suspended particulates (RSPs) are used to quantify exposure as ETS cannot be measured directly as a whole. The contribution of various environments to personal exposure to tobacco smoke varies with the time-activity pattern of the exposed individuals, e.g. exposure of infants residing in the home of a smoker would be greater for those who do not attend day-care. For adults residing with non-smokers, the workplace may be the principal location where exposure takes place. In the USA, nicotine concentrations in homes where smoking occurs typically range from less than 1 $\mu g/m^3$ to over 10 $\mu g/m^3$. Concentrations in offices where people smoke typically range from near zero to over 30 $\mu g/m^3$. Levels in restaurants, and especially bars, tend to be even higher, and concentrations in confined spaces such as cars can be higher still. Measurements of ETS-associated RSPs in homes where people smoke range from a few $\mu g/m^3$ to over 500 $\mu g/m^3$, while levels in offices are generally less than 100 $\mu g/m^3$ and levels in restaurants can exceed 1000 $\mu g/m^3$. In Western societies, with adult smoking prevalence of 30–50%, it is estimated that over 50% of homes are occupied by at least one smoker, resulting in a high prevalence of ETS exposure in children and other non-smokers. Application of high ventilation rates in indoor spaces and/or separation of smokers from non-smokers in public areas

have often been suggested to reduce human exposure to ETS. However, experts in building ventilation have stated that dilution ventilation, used in all mechanically ventilated buildings, will not control ETS in restaurants, bars etc. They have also noted the lack of recognised standards for acceptable ETS exposure as well as the lack of information on typical exposure levels[1,2].

In order to evaluate the impact of various air exchange rates (AER) on the levels of ETS-derived air contaminants, a series of experiments have been carried out using the INDOORTRON facility, a 30 m^3 walk-in type environmental chamber. The study is part of our investigations on tobacco smoke constituents, including research on tobacco additives[3], human exposure studies to mainstream and sidestream tobacco smoke and the impact of ETS on indoor air quality. Emphasis is given to the identification and quantification of the main ETS volatile components (many of them known to cause serious health effects) at different ventilation rates, rather than to examine available control technologies for ETS. A particular feature of our study was the monitoring of the various ETS components close (1.5 m) to the emission source (cigarette burning) during the smoking period, to evaluate human exposure in the direct proximity of the source.

5.2. Experiments to test the impact of ventilation rates on ETS components

Two series of experiments were carried out.

5.2.1. First series of experiments

Five cigarettes were smoked consecutively with a commercial smoking machine following the ISO smoking regime in the INDOORTRON facility. For these experiments the chamber was operated at stagnant air conditions and at three different ventilation rates i.e. 0.2, 0.5 and 1 exchanges/hour while maintaining the relative humidity at 50% and the temperature at 23°C.

5.2.2. Second series of experiments

Four cigarettes were smoked simultaneously five times, making a total of twenty cigarettes smoked during each experiment. The chamber was operated at five different ventilation rates i.e. 0.5, 1, 2, 3.5 and 5 exchange rates/hour while main-

taining the relative humidity at 50% and the temperature at 23°C (at 5 AER relative humidity dropped down to 23%).

During the experiments air samples were taken at distinct time intervals in order to follow changes in concentration of some of the characteristic compounds that are formed during the burning of tobacco.

The following substances were sampled and analysed:

- Volatile organic compounds (VOCs): benzene, toluene, pyridine, m+p-xylene, limonene and nicotine (first and second series of experiments at stagnant air conditions, 0.5, 1 and 2 AER).
- Carbonyl compounds: formaldehyde and acetaldehyde (second series of experiments at 0.5, 1 and 2 AER).
- Inorganic gases: oxides of nitrogen (NOx ($NO+NO_2$)) and carbon monoxide (CO) (all experiments).

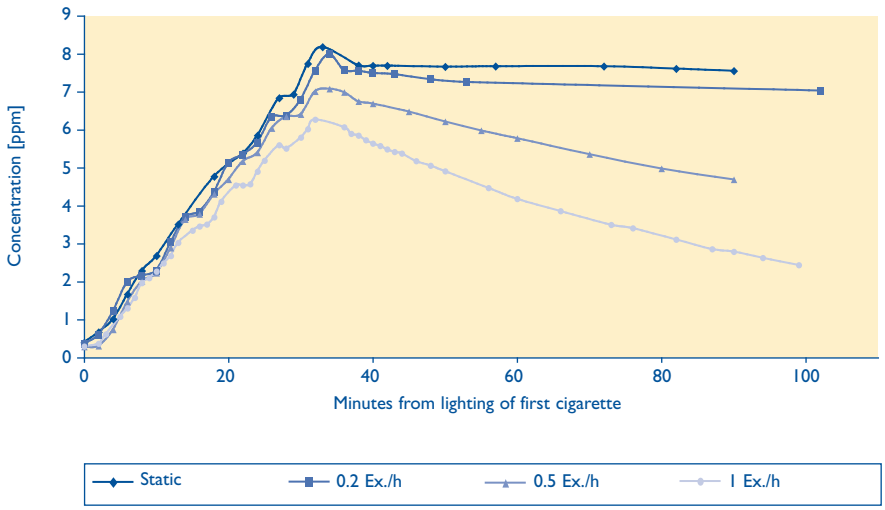
5.3. Results and discussion

5.3.1. Monitoring of carbon monoxide (CO) and oxides of nitrogen (NOx)

Figures 1 and 2 show the variation of the CO and NOx concentrations during consecutive smoking of five cigarettes at stagnant air conditions and by applying different air exchange rates within a period of ~100 min (duration of the experiments). Within the burning period (~37 min after lighting) CO and NOx concentrations steadily increase to reach the maximum by the end of the burning period. The measurements clearly indicate that during this time (burning period) changes in the ventilation rate do not have any significant influence on the concentration of the pollutants. Changing the ventilation rate from static conditions to up to one exchange per hour (i.e. 30 m^3), results in changes to the CO concentrations of up to 25% only, compared to the values obtained at stagnant air conditions. Similar results were found for NOx too.

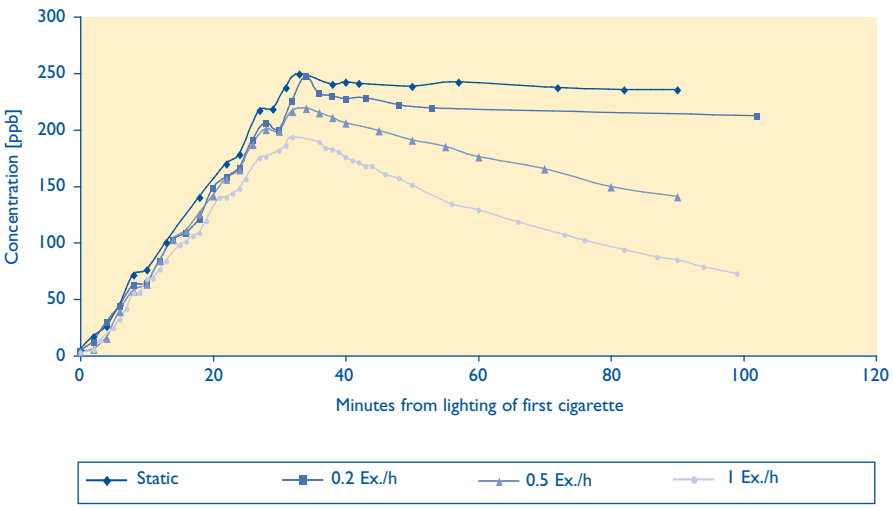
After the smoking period (lasting ~37 min), an overall reduction of the air concentrations of the pollutants was observed. This can be attributed to air exchange rate variations and the absence of the strong emission source (cigarette burning). At the end of the experiments (after ~100 min), a change of the ventilation rate of up to one exchange per hour, results in ~67% and 70% reduction of the CO and NOx concentrations, respectively (compared to stagnant air conditions).

Figure 1: Concentration of carbon monoxide (CO) at different air exchange rates (first series of experiments)



Ex./h: exchange rate per hour; ppm: parts per million.

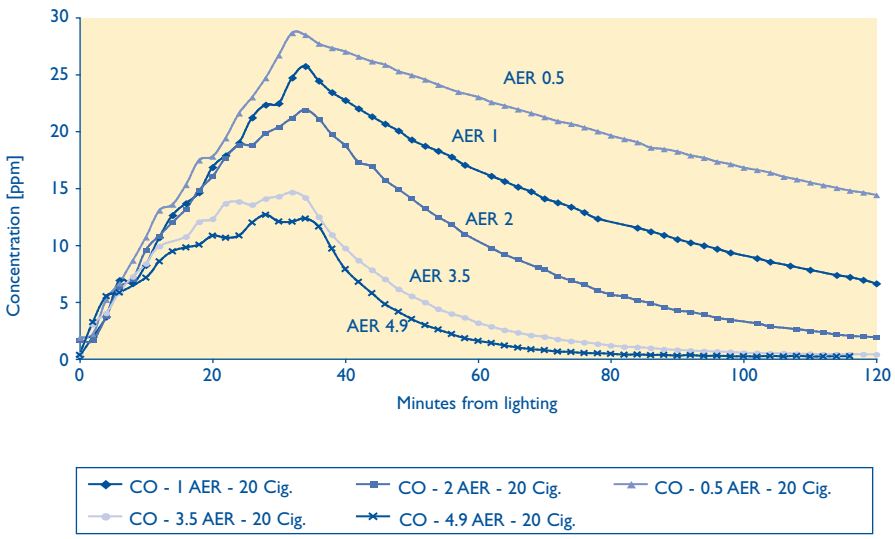
Figure 2: Concentration of oxides of nitrogen (NOx) at different air exchange rates (first series of experiments)



Ex./h: exchange rate per hour; ppb: parts per billion.

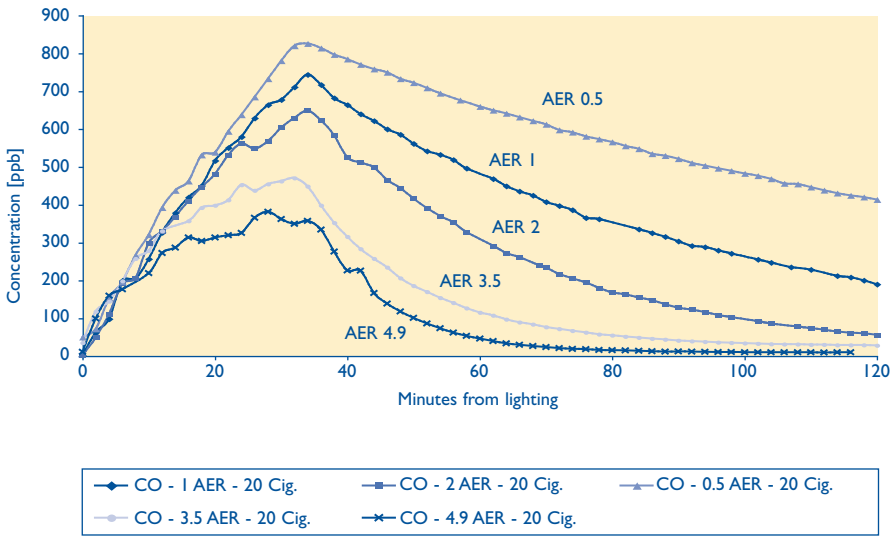
The formation of CO and of NOx (figures 3 and 4) during the second series of experiments with 20 smoked cigarettes (and with clearly higher smoke volume produced) follows the same trend, already observed during the first series of experiments with five cigarettes smoked. During the smoking period (~37 min), peak concentrations up to 30 parts per million (ppm) CO and 800 ppb NOx were measured (at 0.5 AER). This corresponds, as expected, to concentrations up to four times higher compared to the concentrations measured during the first series of experiments. Variations of peak concentrations of CO and NOx during the initial phase of the experiment (smoking period) and at different ventilation rates (0.5, 1, 2 and 3.5 AER), do not exceed 47% despite the large change in AER. Twenty minutes after the end of the smoking period CO and NOx concentrations dropped down up to 80% at ventilation rates of up to 3.5 exchanges per hour. An increase of the ventilation rate up to 5 exchanges per hour leads to a further reduction (up to 25%) of CO and NOx concentrations compared to those at 3.5 AER.

Figure 3: Concentration of carbon monoxide (CO) at different air exchange rates (second series of experiments)



AER: air exchange rate; ppm: parts per million.

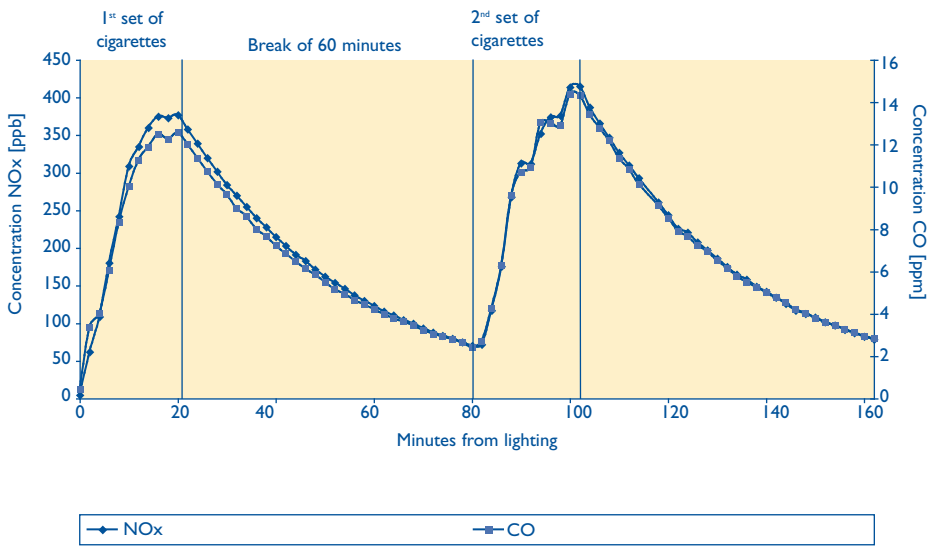
Figure 4: Concentration of oxides of nitrogen (NOx) at different air exchange rates (second series of experiments)



AER: air exchange rate; ppb: parts per billion.

One experiment was carried out (at 2 AER) where 10 cigarettes were smoked during a period of ~20 min, followed by a non-smoking period of 60 min and subsequent smoking of another set of ten cigarettes. Production and elimination of CO and NOx is shown in figure 5. Maximum concentrations of ~370 ppb for NOx and of ~12 parts per million (ppm) for CO were measured. During the non-smoking period of 1 hour the concentrations for both NOx and CO dropped down to 70 ppb and 3 ppm, respectively. When smoking began again, NOx and CO levels reached values slightly higher than those measured during the first smoking period.

Figure 5: Concentration of oxides of nitrogen (NOx) and carbon monoxide (CO) smoking ten cigarettes, stopping for 1 hour and smoking again 10 cigarettes at an air exchange rate of 2 (60 m³/h)



ppb: parts per billion.

5.3.2. Monitoring of volatile organic compounds

Apart from CO and NOx some organic compounds produced during cigarette burning were regularly monitored, in particular, during the initial phase of the experiments (smoking period). The results show that peak concentrations of benzene, toluene, m+p-xylene, limonene and pyridine do not change significantly when studied at different ventilation rates. For nicotine, the measured concentration at one AER amounts to ~85% of the concentration measured at stagnant air conditions.

In a second series of the experiments the formation of benzene, BTEX (sum of aromatics), pyridine, limonene and nicotine was monitored during the entire duration of the experiment and at different ventilation rates i.e. including measurements beyond (~80 min) the initial smoking period (~37 min). Peak concentrations up to 210 and 1640 mg/m³ for benzene and nicotine respectively were measured (at 0.5 AER). Even at elevated air exchange rates (2 AER) the concentrations of 160 mg/m³ for benzene and 1200 mg/m³ for nicotine are (at the end of the smoking period) still high. For both compounds, at the end of the

experiment (after ~120 min) air concentration dropped down to 14 mg/m^3 and 115 mg/m^3 for benzene and nicotine, respectively. A similar behaviour was observed for the other volatile organic compounds monitored.

5.3.3 Monitoring of carbonyl compounds

It is well known that high amounts of carbonyl compounds, e.g. formaldehyde and acetaldehyde, are produced during smoking[4,5]. During the first series of experiments several measurements were made to quantify formaldehyde and acetaldehyde produced during cigarette burning under the conditions of our studies. On the basis of these preliminary results, we decided (during the second series of experiments) to monitor the formaldehyde and acetaldehyde production during the entire time of the experiment and at different ventilation rates i.e. to include measurements beyond (~60 min) the initial smoking period (~37 min). Peak concentrations up to 1400 and 500 µg/m^3 were measured for acetaldehyde and formaldehyde, respectively. Even at elevated air exchange rates (2 AER) the concentrations of 900 µg/m^3 for acetaldehyde and of ~400 µg/m^3 for formaldehyde are (at the end of the smoking period) still high. For both compounds, at the end of the experiment (after ~100 min), air concentrations dropped down to 180 µg/m^3 and 90 µg/m^3 for acetaldehyde and formaldehyde, respectively.

5.3.4. Modelling

In addition to the experimental activity, modelling work was carried out with the aim to simulate CO and NOx buildup and decay during the entire period of the experiments (up to 120 min) at different air exchange rates. Moreover, an attempt was made to calculate at which air exchange rates CO and NOx concentrations reach levels comparable to those in ambient air (NO_2: 200 µg/m^3 (1 hour), CO: 10 mg/m^3 (8-hours aver)).

As spatial homogeneity was guaranteed in most of the experiments, a first order, linear ODE (ordinary differential equation) was used to simulate mathematically the experimental setup. The concentration change of NOx or CO was attributed to:

- emissions from the smoking device;
- removal due to air exchange;
- and introduction of outdoor polluted air into the chamber (for the experiments in "rinsing mode").

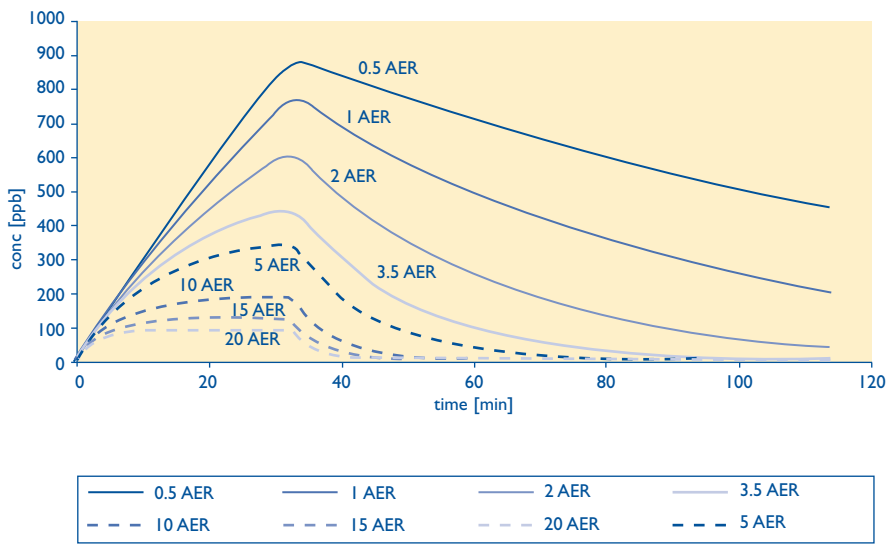
Besides assuming a well-mixed chamber, we considered no other source or sink terms for the two pollutants under consideration as little deposition on the steel walls of the chamber or chemical activity for the specific gases is expected to occur in such a short time (~2 hours).

The static experiment data were used to estimate the emission rate of both NOx and CO applying a linear regression analysis as emission rate was expected to be constant during the burning of a cigarette. The same emission rate was used to simulate both the first and second series of experiments, multiplied by four in the latter case.

Model and experimental data agree fairly well confirming all the assumptions made in the model and also verifying the quality of the experimental procedure. The correlation coefficient between measured and calculated time series stays above 99% in all cases while the normalised bias is kept below 5% in all but one dataset. Consequently, the model successfully reproduces the experimental results and thus can be readily and securely applied to give answers for hypothetical cases.

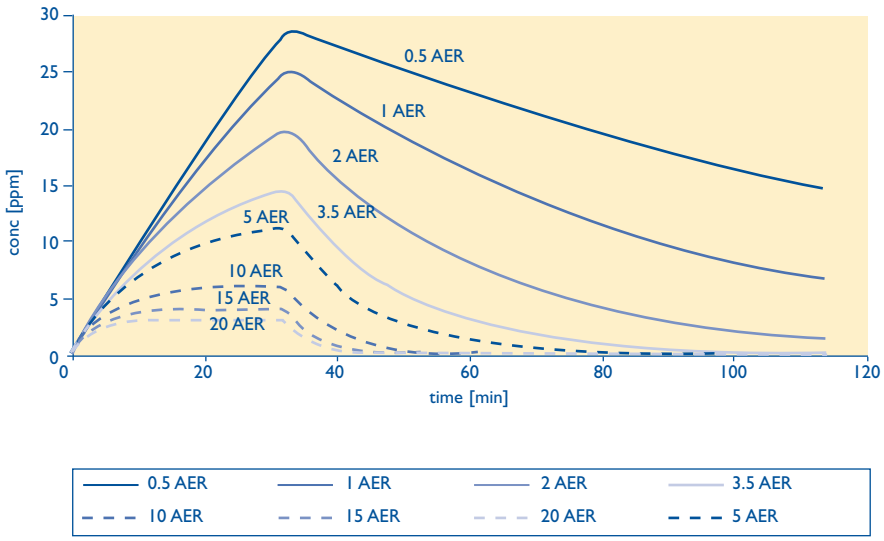
The results of the simulations, similar to the second series experiments but with higher air exchange rates, are presented in figures 6 and 7.

Figure 6: Simulation of oxides of nitrogen (NOx) concentrations for different air exchange rates (model parameters according to second series of experiments)



AER: air exchange rate; ppb: parts per billion.

Figure 7: Simulation of carbon monoxide (CO) concentrations for different air exchange rates (model parameters according to second series of experiments)



AER: air exchange rate; ppm: parts per million.

5.4. Concluding remarks

ETS is a significant risk factor for lung cancer in non-smokers, and it has been classified as a respiratory carcinogen by International Agency for Research on Cancer (IARC). The increased individual risk can be 30–50% depending on the extent of the overall exposure.

Results obtained from our studies clearly indicate that cigarette smoking represents a considerable source of a large number of chemicals such as: volatile hydrocarbons, carbonyls, polycyclic aromatic hydrocarbons, inorganic gases and particles etc. They are produced at high concentrations during the burning process and cannot be rapidly and substantially eliminated from the indoor air atmosphere, even when high air exchange rates are applied. Diffusion of the emitted compounds (sidestream compounds and burning products) is relatively slow, so dilution via mixing with new incoming fresh air is not very effective as a control measure.

These results show that "wind tunnel"-like rates or other high rates of dilution ventilation would be required to achieve pollutant levels close to ambient air limit values, findings which are comparable with the results obtained in USA studies carried out at different hospitality venues (restaurants, bars).

References

1 Repace J. Can ventilation control secondhand smoke in the hospitality industry? OSHA Ventilation Workshop Analysis (James Repace Associates Inc.), June 2000.

2 Repace J. An air quality survey of respirable particles and particulate carcinogens in Delaware hospitality venues before and after a smoking ban (James Repace Associates Inc.), February 7, 2003 (www.tobaccoscam.ucsf.edu/pdf/Repace Delaware.pdf). Accessed: January 2006.

3 Geiss O, Kotzias D. Determination of ammonium, urea and pesticide residues in cigarette tobacco. *Fresenius Environ Bull* 2003; 12: 1562–1565.

4 Schlitt H. A new automatic analyser for aldehydes and ketones using the DNPH-method and its application to air monitoring in the smoking and non-smoking sections of a restaurant. INDOOR AIR Conference 1996, Nagoya, Japan.

5 Seeman JI, Dixon M, Haussmann HJ. Acetaldehyde in mainstream tobacco smoke: formation and occurrence in smoke and bioavailability in the smoker. *Chem Res Toxicol* 2002; 15: 1331–1350.

Chapter 6

Smoke free success in Europe: mistakes made, lessons learned

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6.1. Smoke free legislation

No European country had banned smoking in bars and restaurants by January 2004. By March 2006 five countries (Ireland, Norway, Italy, Malta and Sweden) had introduced smoke free bars and restaurants, Scotland will do so in April 2006, and England should follow suit shortly. The most comprehensive European smoke free legislation (a complete ban at the workplace – including bars and restaurants without designated smoking rooms) has been introduced in Ireland (March 2004) and Scotland (March 2006). The act does not apply to hotel rooms, prisons and psychiatric hospitals. Norwegian smoke free legislation provides the same protection in bars and restaurants as in Ireland but is less strict in other workplaces, where designated smoking rooms are allowed. Italian, Maltese and Swedish legislation provides for smoke free workplaces, including bars and restaurants, but permits the possibility of designated, closed, ventilated smoking rooms. A smoking ban in restaurants with designated, closed, ventilated smoking rooms will come into force in 2007 in Belgium.

In January 2006 Spain introduced a complete ban at the workplace – excluding bars and restaurants without designated smoking rooms. A complete ban at the workplace excluding bars and restaurants and with the possibility of designated

and ventilated smoking rooms has been implemented in Finland, Iceland, the Netherlands and Belgium. In addition, many countries in Europe have legislation which provides smoking zones and areas, either at the workplace or in bars and restaurants. Smoking zones provide no health protection as the smoke in the smoking and non-smoking area will mix. Legislative texts based on smoking zones should be replaced by genuinely comprehensive smoke free legislation, which includes a total ban in all workplaces (including bars and restaurants), public places (including health and educational facilities) and public transport.

The following section presents case studies from Ireland, Norway and the UK.

6.2. Smoke free workplaces in Ireland

6.2.1. Introduction

On 29th March 2004 Ireland became the first country in Europe to implement a comprehensive ban on smoking in enclosed workplaces. The smoke free workplace law builds on earlier controls on the smoking of tobacco products in public places. The law applies to all enclosed workplaces including hospitality venues such as pubs and restaurants, with very limited exemptions. The principal aim of the law is to protect third parties, particularly workers, from the harmful effects of exposure to second-hand tobacco smoke. A major public debate surrounded the law's introduction with the main focus on the hospitality sector. The majority of the public supported the introduction of the law. Compliance was high from the outset and remains so, while support from smokers and non-smokers has continued to increase since the law was implemented.

6.2.2. Background

Since the late seventies the scope of tobacco control legislation in Ireland has grown to encompass prohibitions and restrictions on advertising and sponsorship; restrictions on the sale and marketing of tobacco products; smoking prohibitions and restrictions; labelling and health warning provisions; and product specification and testing.

Legislation published in 1988 included provisions to prohibit and restrict smoking in a variety of public places and designated facilities. These provisions came into force in 1990 and 1995. Smoking was banned in schools, public offices,

cinemas, theatres, buses, taxis, hairdressers, etc. Restrictions applied in trains, ferries and in restaurants where half the seating had to be no smoking. A voluntary code on smoking in the workplace was published in 1994 to encourage a consensual approach to smoking control policies.

In the late 1990s the need for comprehensive integrated tobacco control measures to counter the damaging effects of tobacco was recognised. A parliamentary enquiry and report led to a new national tobacco control policy entitled "Towards a Tobacco Free Society, Ireland – a Smoke Free Zone"[1], which was published in 2000. The need for greater protection for non-smokers from exposure to second-hand smoke and protection in enclosed workplaces was seen as a priority issue. Existing legislation prohibiting or restricting smoking in most public places served to protect a significant number of employees from passive smoking in the workplace. However, those working in places not covered by the law, such as bars or those in premises where restricted smoking was allowed, were not protected. In addition to the parliamentary committee's recommendation prohibiting workplace smoking (including pubs) the policy set out that protection from second-hand smoke should be included in statutory workplace health and safety plans.

Parliament passed a comprehensive tobacco control act "The Public Health (Tobacco) Act" in 2002. This Act provided the Minister with the power to make regulations banning or restricting smoking in specified places including licensed premises, registered clubs and workplaces (the Act also established the Office of Tobacco Control as an independent statutory body). The tobacco industry challenged a number of provisions in the Act and the Minister undertook to bring a new Act through parliament. The Public Health (Tobacco) (Amendment) Act, 2004 was passed in March 2004. The tobacco industry is again challenging the Act, however the smoke free workplace provisions were not challenged and have become law.

Given the increasing concerns about the health effects of second-hand smoke, the Office of Tobacco Control and the Health and Safety Authority had, in 2002, commissioned an independent scientific working group to investigate the health risks posed by second-hand smoke in the workplace. Their "Report on the Health Effects of Environmental Tobacco Smoke in the Workplace"[2] drew attention to the unequivocal conclusion of the world scientific community that environmental tobacco smoke (ETS or second-hand smoke) causes fatal diseases, and that current ventilation systems or voluntary codes are not effective in dealing with the adverse health effects caused by exposure to ETS. They noted that certain categories of workers were at greater risk (pregnant workers, bar staff,

waiters, etc.) and required special consideration. They highlighted that legislative measures are the most appropriate means of addressing this Category A carcinogen. At the launch of this report in January 2003, the Minister announced the introduction of a comprehensive ban in all enclosed workplaces.

6.2.3. *National debate*

The introduction of the smoke free law was one of the most intensely debated issues in the country. In the 15 months between the Minister's announcement and the measure becoming law it was a constant feature in national and local media. The main focus of attention centred on bars and publicans' organisations voicing their opposition and concerns. However, the measure had majority public support – 59% in the month following the announcement. It also had the active support of a wide range of organisations including the trade unions (particularly the bar workers' union MANDATE), NGOs (Action on Smoking and Health (ASH) Ireland, Irish Cancer Society, Irish Heart Foundation, and the Environmental Health Officers' Association) and the health and medical community.

Opponents of the law questioned the health evidence and proclaimed that the law was unnecessary, unworkable, and unenforceable; it would cause vast job losses and ruin business in bars. The Office of Tobacco Control (OTC) and those actively supporting the law focused on strengthening awareness of the adverse health effects, building confidence in the enforceability of the legislation and countered misleading claims relating to economics, ventilation, separate areas, civil liberties, etc.

6.2.4. *Preparing to go smoke free and building compliance*

The OTC produced guidance for employers and managers to assist them in complying with their legal obligations and to support the smooth implementation of the law. Consultations on the guidance involved representatives of the hospitality industry, trades union and enforcement agencies and other parties. No smoking signs and "smoke free bars" posters were also produced. The guidance and materials were distributed to all licensed premises and available on the web. Public information materials were produced and disseminated to all workplaces by the Department of Health. A special website provided further information. The OTC ran a television and radio advertising campaign highlighting the health effects of second-hand smoke with the date that the law was being introduced.

A lo-call smoke free compliance line was set up to build compliance with the law. If a member of the public has voiced their concerns to the person in charge of a premises and does not get a satisfactory response they can ring the compliance line and their complaint will be passed on to the relevant enforcement agency for investigation.

The OTC is responsible for the national implementation of the smoke free law while it is enforced locally by Environmental Health Officers (EHOs) of the Health Service Executive. EHOs have traditionally been responsible for tobacco control; they also carry out food safety and other environmental health duties. Inspectors from the Health and Safety Authority also monitor compliance with the law as part of their general health and safety duties. EHOs throughout the country proactively visited premises and worked in partnership with owners and managers before and after the introduction of the law.

6.2.5. The Smoke Free Workplace Law

Since 29 March 2004 enclosed workplaces are smoke free by law. This includes licensed premises, restaurants, public transport and registered clubs. The key aim of the "Smoke Free Workplace Law" is to protect third parties, particularly workers, from the harmful effects of exposure to second-hand smoke. There are certain exemptions to the public health law but even in these workplaces employers are obliged to provide a safe and healthy working environment. Exempted premises include private dwellings, prisons, hotel bedrooms, nursing homes, and psychiatric hospitals.

A person who contravenes the law may be fined up to €3,000. This applies both to the smoker and the owner or person in charge. "No smoking signs" must be displayed at all times in premises. The name of the person in charge of the premises and name of the person to whom a complaint may be made must be on the sign.

6.3. Smoke free is working

Compliance with the smoke free workplace law has been consistently high at over 90%. Public support grew in the lead up to the introduction of the law and has continued to grow since it was introduced, so that it now enjoys almost universal support: 93% of people think the law was a good idea, including 80% of smokers; 96% of people believe the law is successful, including 89% of smokers; 98% of people feel that workplaces are healthier, including 94% of smokers.

Air quality in pubs has improved dramatically since the smoke free law and the levels of carbon monoxide have decreased by 45% in non-smoking bar workers. 96% of all indoor workers report working in smoke free environments.

6.3.1. Factors contributing to success

- A clear consistent communications campaign to ensure that the public know the serious and harmful effects of second-hand smoke and the rationale for the law. Maintaining the focus on health with an active coalition of "pro-health" partners.

- Highlighting that hospitality venues are places where people work, that they may be more vulnerable and that their health is as important as any other workers'.

- The active involvement of key stakeholders, particularly the trade unions who actively supported the law to ensure that their members' health would be protected.

- Publication of evidence-based research to inform of the health effects and counter misleading arguments.

- A long lead-in time (15 months) prior to the introduction of the legislation meant that there was a wide ranging and high profile debate in the media and the public was well informed about the measure.

- The law applies equally to all enclosed workplaces and is therefore clear and well understood by all parties. This facilitates compliance with the law, makes enforcement easier and does not impose the expense required to create smoking areas in premises. Mandatory signs in all premises highlight the law and carry the name of the person to whom a complaint can be made.

- Good enforcement mechanisms comprising of a national statutory enforcement agency with an experienced and skilled inspection force at local level. Using a partnership approach to building compliance.

6.3.2. Conclusion

The overwhelming majority of enclosed workplaces in Ireland are now smoke free due to consistently high levels of compliance with the smoke free workplace legislation. Doubts were expressed at the outset that Irish people would not comply with the law, but the widespread support of employers, managers, proprietors, employees and the public – smokers and non-smokers alike – has meant that the law is now part of normal work and social life. The smoke free workplace law has been successfully introduced and the very high level of public support and compliance will ensure lasting benefits on the health of all Irish citizens. Smoke free laws protect public health and can also be popular.

6.4. Smoke free bars and restaurants: the Norwegian experience

6.4.1. Introduction

On 1 June 2004 Norway became the second European country to ban smoking in bars and restaurants. Similar legislation had already taken effect in Ireland on 29 March 2004. The Norwegian ban was a result of a sound knowledge base, extensive legal preparation, collective and intense lobbying efforts by NGOs, and political will to legislate for public health benefits. At the time of writing, the ban has not been in place long enough for definitive evaluation results to be presented, but the first impressions are promising. Compliance is high, public opinion in favour of the ban is increasing, and the economic consequences for the bar and restaurant industry do not seem to be significant. This overview intends to present a brief summary of the process leading up to the ban, and preliminary experiences after the law came into effect.

6.4.2. Towards smoke free bars and restaurants: a short history

6.4.2.1. Legal aspects

Norway was one of the first countries to enact comprehensive legislation on smoking in public places. This happened in 1988 as a reaction to increased awareness of the adverse health effects of second-hand smoke. The provisions were far reaching and applied to all "enclosed spaces", such as indoor rooms in houses, buildings, halls, tents, and cabins. The Act did not regulate outdoor smoking, but

rather "enclosed places of public access" and "conference rooms, work premises, and institutions where two or more people were gathered." Thus, the provision did not regulate smoking in private homes either.

Restaurants and bars were however exempted. Here regulations stipulated that smoking was allowed in 33% of the premises from 1993 and 50% of the premises from 1998.

A study was commissioned in 1999 to monitor compliance with the regulations. The main findings showed that enforcement was not satisfactory. In at least 30% of Norwegian communities, there was no supervision at all. In the remaining communities supervision was random and often superficial. There were big differences between various types of establishments. Restaurants followed the rules more strictly than bars and clubs where the regulations were often violated.

Approximately 50% of the inspectors reported that it was impossible to follow the regulations in practice. Few of them were satisfied with the current regulations, and a majority wanted stricter restrictions.

In August 2001, the Norwegian Ministry of Health and Social Affairs sent out a consultation paper on amendments to the Norwegian Tobacco Act to allow for the integration into national legislation of the European Union (EU) Tobacco Directive regulating issues such as the labelling and content of tobacco products. In this consultation paper, the Ministry also drafted four alternative proposals to amend the current regulations on smoking in restaurants and bars. The alternatives were:

- A continuation of the current Restaurant Regulation with minor changes.
- Physically separated smoking areas in all enclosed public places serving food and drink.
- Exemptions from the smoking ban for establishments able to document fulfilment of certain requirements with regard to ventilation, division into separate zones, etc.
- A total smoking ban in all enclosed public places serving food and drink.

The proposals were sent on two separate consultations, and both of them resulted in a majority supporting the ban. The Norwegian Hospitality Association

(RBL) suggested introducing differentiated regulations for restaurants and other public places serving food or drinks, proposing a total ban in restaurants while allowing smoking in other establishments, on the condition that their facilities and ventilation systems had been approved by the authorities.

However, RBL subsequently changed its position and presented a new proposal, namely to keep the current Restaurant Regulation. To ensure compliance with regulations, RBL suggested that restaurants and bars where smoking was allowed would have to be pre-approved by the authorities. Approval would not be granted if the ventilation system was unsatisfactory. Moreover, RBL stated that the organisation saw no practical solutions to differentiate between places serving food and other establishments. They meant it would be virtually impossible to establish clear criteria distinguishing the various categories of establishments. A major concern to RBL was the industry's ability to meet the needs of all their guests, smokers as well as non-smokers, and the organisation felt that it would be difficult to gain acceptance for a smoking ban among guests, owners, and the general public. RBL was highly sceptical of the kind of restaurant environment that would develop if "self-serve" smoking rooms were introduced.

The Labour Unions supported the ban. The Hotel and Restaurant Workers' Union (HRAF) stated in its response that a total ban was the only acceptable proposal, given current knowledge on passive smoking and a safe working environment. They maintained that it was not possible to accept various risk levels for second-hand smoke, and that only a ban on smoking in workplaces was a viable option. Moreover, this alternative would eliminate the issue of investments into ventilation systems, which might skew competition. It would also simplify control routines, and fewer opportunities for confrontations would arise between employees and guests.

Central NGOs like the Norwegian Medical Association, and Cancer Society also supported the ban. Support was also gained in the public health community, as well as several communities and municipalities.

The bill was passed in April 2003, to be effective from 1 June 2004.

6.4.2.2. Background for the bill: main argument

The main focus for the proposal was the health of employees in the hospitality industry. These employees did not have the same environmental protection as other employee groups in Norway.

Scientific base

Prior to the consultation process, Norwegian experts were commissioned by the Ministry of Health and Social Welfare to write a report on the scientific literature regarding second-hand smoke and health effects. Their findings were in line with various international research studies, that second-hand smoke causes cancer, heart disease, as well as increased risk of respiratory disease and low birth weight in infants. The main part of this report was included in the consultation document that was sent out by the Ministry.

6.4.2.3. Background for the bill: other decisive factors

Labour Union support

The former Minister of Health and Social Affairs, Dagfinn Høybråten, stated that the stance taken by the trade unions played a decisive role for the government.

The Norwegian Confederation of Trade Unions (LO) supported the ban from the start, as well as the trade union for employees in the hotel and restaurant business (HRAF, see above).

A case at the Norwegian Supreme Court

Another factor made it even easier to focus on the employees. A case concerning a 41-year-old woman with lung cancer was tried in the Norwegian Supreme Court in October 2000. The woman got lung cancer after having worked for 20 years in a heavily smoke-polluted discotheque. A smoker herself, she sued her employer's insurance company for compensation. Two medical experts appointed by the court, evaluated to what extent the second-hand smoke in the discotheque and her active smoking contributed to the development of her lung cancer. They concluded that the contribution of second-hand smoke constituted a minimum of 40%, whereas, her own active smoking constituted a maximum of 60%. The court could not regard the second-hand smoke as insignificant. A causal connection between the hazardous effects of the work environment and her illness was thereby established and she was granted full compensation.

Public support

Polls have shown that a majority supports the ban. Several different opinion polls have shown that between 50–60% of the population tend to be positive towards

smoke free bars and restaurants. Another 10–20% say they are neutral, while 25–30% say they are negative. Women seem to be more positive than men, and obviously non-smokers appreciate the change more than smokers do. These polls have been conducted ever since the ban was initially proposed in 2001, and the results show that support has increased. In 2001 only about 30% of the population supported the ban.

6.4.2.4. Counter arguments and media debate prior to 1 June 2004

The debate throughout 2003 was to some extent a debate about the credibility of the research on second-hand smoke and the authorities that passed the law. The Directorate for Health and Social Affairs arranged a conference in April 2004 on different aspects of second-hand smoke. At this conference international experts were invited to speak, and they all concurred with the Norwegian conclusions on second-hand smoke and health consequences.

Many who in principle acknowledged second-hand smoke as detrimental to the health of restaurant employees, claimed that the problem could be solved by less drastic measures such as improved ventilation or enclosed smoking areas.

Another argument that was raised was the right of an individual to smoke and that the government does not have the right to legislate on such matters of individual freedom.

Thus the debate indicated three main challenges:

1. The public did not accept the risk associated with second-hand smoke.

2. The hospitality industry believed the ban would have a negative impact on their economy.

3. The public did not accept the workers rights issue as the main reason for the law, but rather a measure from the authorities to reduce smoking prevalence.

In addition a large number of potential challenges were identified, including poor enforcement, bewilderment on a variety of issues in the hospitality industry, violent customers and social isolation for people who might loose their most important social arena.

6.4.2.5. Implementation strategy

At the Directorate for Health and Social Affairs the implementation strategy was prepared to meet the aforementioned challenges. The campaign was divided into separate phases. Through a strong integration between advertising and PR the ambition was to increase understanding and acceptance for the law. A total of 10 mill NOK (~€1.2 million) was granted for communication purposes.

Research and experience from New York, Ireland and elsewhere showed that these main challenges were misconceptions rather than legitimate concerns. Thus in phase one the primary message was "The risk associated with second-hand smoke is real", in phase two "Research suggests an increase rather than a decrease in earnings", and in phase three "The main purpose of the law is to protect workers from second-hand smoke".

It was therefore decided that PR measures – with high credibility – were appropriate for challenge no 1. The main purpose of the aforementioned conference was to meet this challenge. Prior to the conference an opinion poll was conducted that showed favourable attitudes and expectations towards the ban. In connection with the conference the Directorate for Health and Social Affairs were able to set up interviews with authoritative spokespersons on the issues of ventilation, risk, dose-response models and economic impact of smoke free workplaces.

In response to challenge no. 2, two additional opinion polls were carried out to discover how people were expected to behave after June 1. The results, coupled with various positive reports from New York and elsewhere, indicated that the law wouldn't necessarily be bad for business.

To meet challenge no. 3 a variety of advertisements for a broad and intensive mass media campaign were developed. Through a series of advertisements an effort was made to create sympathy for the employees in the hospitality industry. In a soft tone of voice with appealing images and music, bars and restaurants were presented as places for enjoyment and fun, where people worked hard to make their customers feel good. This emphasised that bar and restaurant owners deserved the same occupational protection that workers in other industries had benefited from since 1988. Advertisements were produced for radio, TV, cinema and print media. Innovative advertisements for the Internet were also developed. The campaign was initiated 1 week before the ban was effective and ran for a total of 3 weeks.

To inform the hospitality industry, information packages were produced and mailed directly to all bars and restaurants. These packages included background information for the ban as well as no-smoking signs and postcards.

In addition to these measures a strong alliance was maintained with various NGOs. The Norwegian Association for Asthma and Allergies proved to be an important ally. Young people who had previously been prohibited from going out, told their stories in the national media. The Norwegian Heart and Lung Association produced their own campaign and the Norwegian Medical Association showed continuing support in all phases of the process.

6.4.3. Evaluation

In the months leading up to the commencement the public attitude towards the ban became increasingly positive. This was reflected in the media coverage of the issue. The positive trend continued in the first months into the ban. Several opinion polls showed increased public support for tobacco control policies in general, with the highest support measured in October 2005, when 76% of the population said they were positive towards the ban. The Norwegian Directorate for Health and Social Affairs commissioned an evaluation of the law. The commission was assigned jointly to the Norwegian Institute for Drug and Alcohol Research (SIRUS, Oslo) and the Research Centre for Health Promotion (HEMIL). An evaluation report was published in June 2005, one year after the law was implemented[3]. The report's findings on the economic impact in the hospitality industry are summarised in Chapter 3 of this report. For the public attitude to the ban, preliminary results show a general willingness to comply with the ban and public support is increasing. In addition, health problems have dropped significantly among employees after the bans implementation. Smoking prevalence is stable but the total sales of tobacco have dropped.

The National Institute of Occupational Health conducted a study on health effects among employees a few months after the ban. This study indicates a significant improvement of indoor air quality, a significant reduction in cotinine levels in the urine of employees, and improved lung function.

6.4.4. Looking forward

Focusing on the workers right aspect of the ban was probably the single most important reason for success. Labour Union support was also a crucial aspect to getting the bill passed. Other decisive factors were the collective efforts by an organised NGO lobby.

The impression is that the ban is successful, and experiences seem to be in line with the Irish. This shows that seemingly controversial tobacco control policies are now feasible. The politicians in Europe should now start showing the political will to act for public health issues.

6.5. Towards a smoke free UK: pitfalls of the voluntary approach

6.5.1. Overview

Until very recently, the UK was the black sheep of Europe as far as restricting smoking in public places and workplaces was concerned. Despite a growing trend towards smoke free provision in places such as offices, shops, cinemas and public transport, some 2 million people in England and Wales are currently still exposed to tobacco smoke in their place of work. But thanks to a concerted campaign by health groups, trade unions and sections of the hospitality trade, politicians have finally been persuaded of the need for legislation to ensure people can work and socialise without having their health compromised by environmental tobacco smoke.

Table 1: Results of a You Gov survey of 3,600 respondents across the UK conducted in December 2005. People were asked whether they would support a proposal to make ALL workplaces, including all pubs and all restaurants smoke free.

	England %	Scotland %	Wales %	N Ireland %	UK %
Would support such a proposal	71	71	70	78	71
Would not support such a proposal	24	25	27	18	24
Don't know	5	4	4	4	5

Source: A survey commissioned by Action on Smoking and Health and Cancer Research UK.

The groundswell of public support for smoke free workplaces has also been driven by the popular and successful implementation of the smoking ban in Ireland (table 1). Scotland became the first country within the UK to pass legislation to require all workplaces to be smoke free. Although it was inevitable that England, Wales and Northern Ireland would eventually follow suit, the Labour Government had initially proposed exemptions for private members' clubs and pubs that did not sell food.

Now that a legally-enforced ban on tobacco smoke pollution in virtually all indoor workplaces is set to become a reality, it is easy to forget how long and tortuous the process of getting this far has been. The rationale for the laissez-faire approach that has predominated until now reflects past political and social attitudes that are beginning to change in response to the overwhelming evidence of the harmful effects of second-hand smoke. The delay in legislation to date is also probably due in part to covert lobbying by the tobacco industry, particularly its attempts to forge relationships with the hospitality trade to oppose smoke free regulation. Despite the lack of legislation, there has been a gradual shift towards smoke free provision in the majority of workplaces and many public places in the UK. The notable laggard has been the hospitality trade and the blame for this lies squarely with the industry-backed "Public Places Charter" with its emphasis on ventilation as a "solution" to the smoking problem.

6.5.2. Brief history of the trend towards smoke free provision

Although UK government support for the legal protection of citizens from second-hand smoke is recent, there have many attempts by individual politicians to introduce Private Members' bills to ban smoking in public places and workplaces. These include a bill tabled by a current Minister who pledged her support for smoke free provision back in 1994. However, as is the case with the majority of private bills that do not have government support, the attempt to outlaw smoking in public places was lost in the early stages of the parliamentary procedure.

Despite the absence of legislation requiring businesses or publicly accessible places to have no-smoking areas, a gradual shift towards smoke free provision began to occur from the early 1970s onwards, in response to public pressure. Some of the earliest policy changes included an increase in non-smoking provision on public transport. In London, for example, smoking was banned on single-decker buses in 1971, while the proportion of smoke free carriages on underground trains increased from 50% to 75%. However, it took another 16 years for smoking to be banned completely and it might have taken even longer had it not been for a fire which claimed 31 lives. Other early measures included the banning of smoking in some cinemas (1971) and the emergence of some hotels and guesthouses providing smoke free accommodation (early 1980s).

Table 2: Establishments with effective# smoking policies for the general public, 1995

Establishment type	Establishments with effective smoking policies %
Shops	63
Health	71
Education	77
Restaurants and cafes	36
Pubs	14
Other	53

Effective is defined as having a smoking policy which bans or restricts smoking in areas used by the public. The policy must be enforced. Where there are smoking and non-smoking areas within the same room, there should be an adequate method of ventilation.

Source: National Opinion Poll Social and Political for the Department of the Environment[4].

Table 3: Restrictions on smoking where respondent currently works: 1996–2003. Sample base: those currently working

	Level of restriction %					
	1996	1997	1999	2000	2001	2003
No smoking at all	40	42	48	44	47	50
Designated areas only	42	41	37	40	38	38
No restrictions at all	13	13	11	11	9	8
Don't work with others	5	4	4	5	6	4

Source: Office for National Statistics[5].

Table 4: Respondents agreeing that smoking should be restricted in certain places, 1996–2003. Sample base: all respondents

	Smoking should be restricted %						
	1996	1997	1999	2000	2001	2002	2003
… at work	81	84	85	86	86	86	86
… in restaurants	85	85	88	88	87	88	87
…in pubs	48	51	54	53	50	54	56
…in other public places	82	85	87	86	85	87	90

Source: Office for National Statistics[5].

Tables 2–4 show the change in the level of smoking restrictions over time in the UK between 1995 and 2003, and the publics' changing attitude to smoking restrictions over this time period.

Throughout the 1980s and 1990s the trend towards smoke free provision in public places continued as businesses responded to consumer demand. In 1988, the Government's advisory body, the Independent Scientific Committee on Smoking and Health, published a report which concluded that there was a small but significant increase in risk of lung cancer from passive smoking and that the public should be alerted to the risks arising from breathing in other people's tobacco smoke[6].

Four years later, the Government issued a code of practice for the managers and owners of places visited by the public. The guidance clearly stated that non-smoking should be the norm in public places and also noted that "ventilation alone does not adequately protect against the effects of environmental tobacco smoke". The Government set a target of 80% of places visited by the public to be covered by "effective" smoking policies by the end of 1994. This was generally interpreted as requiring provision of some smoke free areas. But again, the emphasis was on encouragement and persuasion. There was not even a threat of legislation or sanctions if managers failed to comply. An assessment of how far the targets had been met was conducted in 1995. Whilst some categories such as shops and entertainment venues had shown signs of improvement, not one category reached the 80% target. Only education (77%) and health (71%) came close. The NOP report noted: "This result is surprising as about four fifths of deciders and implementers agreed with the health advice that inhaling other

people's cigarette smoke can harm the health of non-smokers." The level of agreement ranged between 74% and 91%.

By the late 1990s, many public places such as shopping centres, cinemas, public transport and leisure facilities were either partially or totally smoke free. However, this piecemeal approach has left many vulnerable groups unprotected from tobacco smoke and serves to show why the voluntary approach is an unsatisfactory public health measure. Among those worst affected by the voluntary smoking restrictions are employees in the leisure and catering industry. The current lack of health protection stems from the inadequate policy response of the Labour government elected in 1997 which opted for a continuation of the voluntary approach to smoke free provision.

6.5.3. The Public Places Charter: a voluntary approach

Following the Labour Party's election in 1997 after 18 years' of Conservative rule, the new Government pledged to introduce a range of tobacco control measures such as a ban on tobacco advertising and specialist services for people wanting to stop smoking. These measures were spelled out in the first ever White Paper (policy document) on tobacco[7]. Whilst most measures were greeted with enthusiasm by the health community, the one area of weakness was the failure of the government to commit to legislation to prohibit smoking in workplaces and public places. The format proposed was a continuation of the market-led voluntary approach, designed to encourage greater smoke free provision but with no sanctions for companies that failed to comply with the very weak targets set by Government.

The "Smoking kills" White Paper noted that "provision [of no-smoking areas] is improving, but there is a long way to go". However, the document also stated that:

> *We do not think a universal ban on smoking in all public places is justified while we can make fast and substantial progress in partnership with industry. [para. 7.4, p66][7]*

The White Paper established a hierarchy of measures, specifying that a totally smoke free environment was the ideal, having separate smoking and no-smoking rooms was the next best option, while the third option would be separate smoking/no-smoking areas. These proposals were later to form the basis of what became known as the Public Places Charter (PPC).

The Public Places Charter was officially launched in September 1999. It was made up of the principal hospitality trade groups such as The Restaurant Association, the British Beer and Pub Association and British Hospitality Association. The Association of Licensed Multiple Retailers (ALMR) took on the role of coordinating the campaign. However, funding was provided by AIR – an acronym for "Atmosphere Improves Results" – with its emphasis on ventilation as a "solution" to the smoking problem. AIR in turn received funding from the Tobacco Manufacturers' Association although the TMA did not seek to make this widely known, preferring instead to remain behind the scenes. The ties between the tobacco industry and the hospitality trade have been documented elsewhere[8], with Philip Morris's "Courtesy of Choice" being amongst the most well-known. This placed the emphasis on "accommodation", that is, the perceived desirability of meeting the needs of both smokers and non-smokers by providing separate areas wherever possible.

Aside from the obvious weakness of the voluntary approach, the PPC included a default option of allowing pubs and restaurants to do nothing, other than to put up a sign declaring that smoking was permitted! The three policy options were: "No Smoking in public areas", "Smoking allowed in designated areas", and "Smoking allowed throughout". In addition, premises with mechanical ventilation such as air conditioning could put up signs showing that such equipment was installed, the inference being that this would help solve the smoking problem.

The promoters of the Public Places Charter persuaded the Government to accept feeble targets by which to measure the success of the policy. These were as follows:

- 50% of all pubs and restaurants should have a formal smoking policy and carry an external sign.

- 35% of these policies should restrict smoking to designated and enforced areas and/or have ventilation that met the agreed standard.

6.5.4. Evaluation of the Public Places Charter

In November 2001, the Charter Group published an interim progress report. The results were not impressive. Only 27% of pubs and bars were Charter compliant with the majority of those (62%) opting for the "Smoking allowed throughout" policy. Just 9% of pubs surveyed had separate smoking and non-smoking

areas and none had banned smoking completely. The report predicted that by 2003 a third of pubs would have separate smoking/no-smoking areas. On this basis, it argued that the Charter was on track to meet its targets. However, the PPC ultimately failed to even meet these lowly targets.

The Charter Group submitted its final report to the Department of Health in May 2003, without making it publicly available. The reason for its reticence? The fact that signatories to the Charter had failed to achieve even the lowly target of having a formal smoking policy and appropriate signage – just 43% of pubs were compliant, 7% short of the 50% target. The achievements on providing separate smoking areas were similarly unremarkable with 56% of Charter compliant premises still allowing smoking throughout and only a handful providing totally a smoke free environment.

The results were validated by an independent, Government-commissioned survey. Shortly after publication, the Department of Health issued the following statement:

> *More must be done and rapidly. The Government will be considering the issue of environmental tobacco smoke in light of these findings and other recent developments (including the Framework Convention on Tobacco Control).*

6.5.5. Recognition of the need for legislation

Despite the call for "more to be done, and rapidly" the Government could offer no alternative proposals and remained silent on the matter. By contrast the hospitality trade continued to argue that voluntary measures to limit smoking were adequate and drew up plans to encourage pubs and restaurants to offer more smoke free provision.

The hospitality trade knew that if it did not respond quickly the Government's threat of legislation could be invoked. By mid 2003, the devolved parliaments of Wales, Scotland and Northern Ireland as well as some English regional governments were beginning to formulate plans for totally smoke free workplaces. Of these, only the Scottish Executive had the powers to enact such a law: the others would require enabling legislation to be passed by the UK national government.

By early 2004 signs of a split in the hospitality trade over the smoking issue were beginning to appear. The pub chain JD Wetherspoon – the first to have designated non-smoking areas in all outlets – broke ranks by declaring that a total smoking ban was preferable to the piecemeal approach being proposed by the pub trade. Although at the time, Wetherspoon's founder and chief executive Tim

Martin said that to initiate a ban without the backing of law would be "commercial suicide" several months later he nevertheless announced that Wetherspoons would make 60 of its pubs totally smoke free by May 2005 and the rest of the chain would follow suit one year later. Meanwhile, in a bid to fend off possible legislation, a coalition of five major pub groups announced a plan to make 80% of the trading area of their premises smoke free by December 2009.

The smoke free issue continued to attract media attention with the implementation of the ban on smoking in all workplaces, including pubs and restaurants, in Ireland in March 2004. As our closest neighbours, all eyes were on the Irish to see how they would respond to the new law. Not surprisingly, the licensed trade on both sides of the Irish sea predicted dire consequences: job losses, pub closures, and even more importantly for some, an end to the famous Irish craic – the genial atmosphere supposedly generated by music, Guinness and cigarette smoke. The fact that the Irish smoking ban turned out to be popular and did not lead to the end of the pub trade fuelled further divisions on the subject within the British hospitality trade.

Prompted by a broad alliance of health groups, the momentum for totally smoke free legislation continued throughout 2004 and remained a hot issue in the media. Meanwhile the UK Government held a series of consultations in preparation for a new White Paper on public health. The question of how best to tackle smoking in public places was high on the agenda and pressure on the Government to follow the Irish model was intense. However, last minute political wrangling led to a watered-down proposal: smoking would be prohibited from most indoor work environments including restaurants but pubs that did not serve food and private clubs would be exempt. This botched policy left health campaigners and hospitality groups united in agreeing that this was an unworkable, unnecessarily bureaucratic approach. The Government, meanwhile clung to the policy until an irreconcilable split in the Cabinet forced the Prime Minister to allow Labour MPs a free vote on the matter. Free from the requirement to follow Party lines, politicians delivered a resounding vote in favour of comprehensive smoke free legislation.

6.5.6. Conclusions

Despite strong public support for smoke free provision in public places and workplaces, the legacy of the voluntary approach left the UK lagging behind many European countries, although it is now pushing ahead with comprehensive smoke free legislation. The lessons to be learned are clear. Firstly, relying on market forces simply leads to at best a snail's pace rate of change or at worst, total inertia. Secondly, there is clear evidence that the tobacco industry has played a

significant part in promoting voluntary restrictions to fend off legislation. A third lesson is that applying a policy such as the Public Places Charter to such a disparate range of businesses is unworkable. The hospitality trade is diverse and responses to voluntary codes of practice will always be variable according to the priority given to particular policies. Not surprisingly, pubs and bars were less inclined to adopt smoking restrictions than restaurants and hotels, making a uniform code of practice virtually impossible to achieve. The UK example should serve as a warning to other countries considering voluntary restrictions: they simply don't work. Controlling tobacco smoke is far too important to be left to market forces. In the interests of public health, smoking in public places and workplaces must be banned by law.

References

1 Towards a Tobacco Free Society, Ireland – a Smoke Free Zone. The report of the Tobacco Free Policy Review Group, Dublin, Stationery Office, 2000.

2 Report on the health effects of environmental tobacco smoke (ETS) in the workplace. Office of Tobacco Control, Health and Safety Authority. December 2002.

3 Lund M. Smoke-free bars and restaurants in Norway. SIRUS, National Institute for Alcohol and Drug Research, Oslo, Norway, June 2005. www.sirus.no/cwobjekter/SmokefreebarsandrestaurantsinNorway.pdf. Accessed: February 2006.

4 Report by National Opinion Poll (NOP) Social and Political for the Department of the Environment. Smoking in public places. 2nd survey data. Her Majesty's Stationery Office, 1996.

5 Smoking-related behaviour and attitudes, 2003. London, Office for National Statistics, 2004.

6 Independent Scientific Committee on Smoking and Health: fourth report. London, HMSO, 1988.

7 Smoking kills. A White Paper on Tobacco. London, Department of Health, 1998

8 See for example: The tobacco industry, ETS and the hospitality trade. London, Action on Smoking and Health, 2003. http://www.ash.org.uk/html/workplace/html/hospitality_ets.html

Chapter 7

Conclusions and recommendations

1. Passive smoking currently kills 79,000 European Union (EU) citizens a year. 72,000 of these deaths are due to second-hand smoke (SHS) exposure at home and 7,000 are due to SHS exposure at work.

2. Exposure to tobacco smoke at work in the hospitality industry accounts for one death every working day in the EU.

3. All workers have the right to be protected from tobacco smoke and their employers are legally obliged to take measures to prevent all workplace SHS exposure.

4. The only effective way to provide this protection is to enact comprehensive workplace smoking legislation.

5. Ventilation does not protect workers from second-hand smoke exposure.

6. Voluntary agreements do not protect workers from tobacco smoke exposure.

7. Smoke free workplace laws lead to increased quit attempts.

8. Research evidence shows that smoke free policies also reduce tobacco consumption.

9. The benefits of smoke free policies are particularly notable in the private sector of the economy.

10. The long-term benefits of smoke free policies will enhance countries' human capital, leading to further economic growth in line with the Lisbon objectives.

11. Tobacco companies have claimed that smoke free workplace legislation in bars and restaurants would have a negative impact on business. Independent and reliable research provides clear evidence that this claim is false. Almost 100 studies, produced before 31 August 2002, from around the world failed to find a negative impact in studies based on objective and reliable measures.

12. More recent information on the effect of smoking bans in New York, British Colombia, Ireland, Norway or New Zealand showed no negative impact on business.

13. Support for smoke free policies amongst the public in Europe is strong. A majority of people now support comprehensive smoke free laws in all workplaces, including bars and restaurants.

14. Support for smoke free laws rises after their introduction – amongst smokers as well as non-smokers.

15. The public and workers comply with smoke free legislation.

16. All EU Member States should enact comprehensive smoke free legislation to make all workplaces and enclosed public spaces smoke free at the earliest possible opportunity.

17. When doing so, the Limassol recommendations below, should be taken into account.

7.1. The Limassol recommendations to obtain comprehensive smoke free legislation

The Limassol recommendations were drawn up at a strategy meeting of EU tobacco control organisations in Limassol, Cyprus in April 2005. When drafting them, the participants took into account recent developments in countries such as Ireland, Norway, Italy, Scotland and France, as well as other jurisdictions around the world. The lesson learned from this exercise is that every country is different and every country will make its own way towards effective smoke free legislation. Some countries, such as Italy, had high levels of political support to enact such laws; others, such as the UK, were able to do so without this support but needed a strong and coordinated coalition in support of smoke free laws to fill the void left by politicians. However, key elements for success can be identified and are presented below.

The strategy meeting and Limassol recommendations were the result of a collaboration between the following organisations: Association of European Cancer Leagues, European Heart Network, European Respiratory Society, European Network for Smoking Prevention, Cancer Research UK and Ligue Nationale Contre le Cancer.

Introduction

These are key recommendations which are mainly based on research findings and the experience of successful countries like Ireland, Norway and Italy. These recommendations should be relevant to most circumstances. However, going smoke free is affected by local political, social and economic circumstances, which might need an adaptation at the local or national level.

1. The main scientific argument is the proven danger of passive smoking.

Smoke free legislation is health and safety legislation. The scientific evidence establishes that tobacco smoke causes disease, disability, and death to those exposed - both smokers and non smokers. The World Health Organisation "International Agency for Research on Cancer" identifies passive smoking as a cause of lung cancer, and classifies second-hand smoke as a human carcinogen. Article 8 of the WHO Framework Convention on Tobacco Control (FCTC), which was adopted unanimously by 192 countries in May 2003, recognises that scientific evidence has unequivocally established that exposure to tobacco smoke causes death, disease and disability. The guiding principle is the right of every one to work in a healthy work environment. Support of the public health community is vital and the backing of the workers unions in the hospitality industry can also be crucial. An awareness campaign on the danger of passive smoking is recommended. Ventilation can not be considered as an option to resolve the health problems caused by second hand smoke.

2. The most convincing argument in the political debate is the overwhelming success of the implementation of comprehensive smoke free legislation in Ireland, Norway and Italy.

In all three countries support for the law has increased after its introduction. Research in Ireland has indicated that 93% of people think the introduction of the law was a good idea, including 80% of smokers and 98% of people feel that workplaces are healthier since the introduction of the law including 94% of smokers. A smoke free environment is a joy for ever.

3. Opt for clear legislation.

Unclear legislation will not be respected. Clear legislation means a legal text without ambiguity, a clear date of enforcement, clear visible signs, clear fines and clear responsibility, for enforcement. An awareness campaign on the provisions of the law is crucial: it is a relatively cheap way of reducing the costs of enforcement, as the legislation will rely to great extent on self policing to be enforced effectively.

4. A total ban without exemptions is the best option.

There is evidence that a total ban is easier to enforce than smoking restrictions. Restriction means that smoking is allowed in some areas and banned in other areas. This leads to confusion and disputes between smokers and nonsmokers. Compliance with the legislation in Ireland and Norway improved when a total ban was introduced in 2004.

5. Comprehensive smoke free legislation is the objective.

Comprehensive smoke free legislation includes a total ban of smoking at the work place, bars and restaurants, public places (including health and educational facilities) and public transport. A society will not become smoke free overnight. Smoke free legislation at the work place is the most important provision. It is easiest to introduce smoke free legislation for short distance public transport such as buses and subways. Smoke free legislation in bars is the toughest to obtain. If there is not enough support for comprehensive smoke free legislation at once, a step by step approach can be considered.

6. Avoid legislation with smoking areas or zones.

A smoking area is an unclear concept which is difficult to enforce. In addition it provides no health protection as the smoke in the smoking and non smoking area will mix. A total ban is the best option. If a total ban is not feasible, an alternative for smoking areas is a closed smoking room. Characteristics of the closed

smoking room should be defined in such a way that the choice for this option is rather exceptional. At a minimum, where smoking is allowed in separately smoking rooms, it is important that these rooms should be limited in space, totally separated from non smoking rooms, have walls from floor to ceiling and ventilated under strict conditions directly to the outside. Additionally, workers and members of the public should not be required to enter these rooms to do their job or to pass through them. Legislation in Italy, Malta and Sweden is mainly based on these principles.

7. Avoid the introduction of legislation which is likely not to be enforced.

Compliance with smoke free legislation has to start the first day it enters into force. If the legislation is not been enforced during the first week, it is likely that non compliance problems will remain. It is easier to maintain high compliance when the law has been respected from the start.

8. Provide an effective enforcement system.

Enforcement depends on several factors such as information on the date of enforcement (is the population aware that the law enters into force), the visibility of the non smoking signs, the clarity of the law (is the law easy to understand and easy to enforce), the level of fines, information on the level of the fines, information on the complaint mechanisms (such as a phone number), the number of controls and the probability to be caught.

9. A total ban in the work place, including bars and restaurants is only possible after a proper preparation and consultation process.

A key factor for successful legislation is the attitude of the population towards smoke free legislation. The implementation of such a law requires the endorsement of the population. Opinion polls on smoke free policies are recommended. A proper preparation and consultation process is needed which can take the form of a public and parliamentary debate.

10. A pro-active and reactive media strategy

In order to have the population on side, a permanent media strategy has to be developed, which includes continuously providing new research and information in relation to smoke free legislation and a media response team capable of reacting rapidly.

11. Be prepared for strong opposition when introducing a comprehensive smoke free law.

The hospitality and tobacco industry has claimed smoking ban laws in restaurants and bars have a negative impact on business and lead to less sales and to less employment. There is no evidence for these claims, but it may have an impact on public opinion. Research in Norway has indicated that more people believed that the law creates more problems before the introduction than the law actually did after the enforcement.

12. The introduction of a smoke free legislation requires an united public health community.

The public health community has to form a broad coalition of organizations in support of smoke free legislation. This coalition must develop a strategic plan with a clear message and speak with one voice.

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