

Smoke-free spaces:

Progress in reducing exposure to second-hand smoke in Northern Ireland incorporating the five year review of smoke-free legislation

Developed by the Institute of Public Health in Ireland (IPH) for the Department of Health, Social Services and Public Safety (DHSSPS)



Department of
**Health, Social Services
and Public Safety**

www.dhsspsni.gov.uk



Smoke-free spaces: Progress in reducing exposure to second-hand smoke in Northern Ireland incorporating the five year review of smoke-free legislation

May 2015

Prepared by:

Dr Joanna Purdy, Dr Helen McAvoy and Dr Elizabeth Mitchell (Institute of Public Health in Ireland).

To be cited as:

Purdy, J., McAvoy, H. and Mitchell, E. (2014) Smoke-free spaces: Progress in reducing exposure to second-hand smoke in Northern Ireland incorporating the five year review of smoke-free legislation. Dublin: Institute of Public Health in Ireland.

The Institute of Public Health in Ireland (IPH) has developed this report for the Department of Health, Social Services and Public Safety (DHSSPS).

DOI: 10.14655/20140009

Institute of Public Health in Ireland

5 th Floor	Forestview
Bishop's Square	Purdy's Lane
Redmond's Hill	Belfast
Dublin 2	BT8 7AR
Ireland	Northern Ireland

This report is available on the IPH website www.publichealth.ie and the DHSSPS website www.dhsspsni.gov.uk

This PDF will allow you to zoom in on the text to the size required. If you wish to request a copy of this report in larger text, please contact us.

Contents

Acknowledgements.....	1
Glossary of terms and abbreviations.....	2
List of figures	5
List of tables.....	7
Foreword.....	10
Executive summary.....	12
Chapter 1. Introduction.....	21
1.1 Policy context.....	21
1.2 Overview of evidence on the impact of second-hand smoke.....	23
1.3 Scope of the report	25
1.4 Key points	25
Chapter 2. Methods	27
2.1 Scoping of analyses	27
2.2 Data analysis.....	27
2.3 Key points	31
Chapter 3. Key trends in smoking prevalence and cessation among adults in Northern Ireland.....	32
3.1 Context	32
3.2 Smoking prevalence	33
3.3 Quitting	45
3.5 Key points	52
Chapter 4. Key trends in smoking by children in Northern Ireland	55
4.1 Context	55
4.2 Prevalence of smoking among children	55
4.3 Age of smoking initiation	57
4.4 Frequency of smoking by child smokers	59
4.5 Intensity of smoking among child smokers.....	59
4.6 Quitting among children & young people.....	61
4.7 Key points	61
Chapter 5. Second-hand smoke in the workplace and in other public places.....	63
5.1 Context	63
5.2 Compliance with smoke-free legislation in the workplace	63
5.3 Evidence of air quality pre- and post- legislation.....	65
5.4 Evidence of expansion of smoke-free places beyond the workplace legislation ..	66

5.5	Impact of smoke-free legislation on the hospitality sector	66
5.6	Key Points	66
Chapter 6.	Second-hand smoke in domestic settings – the home and car.....	68
6.1	Context	68
6.2	Second-hand smoke in Northern Ireland homes	68
6.3	Second-hand smoke in the car.....	74
6.3	Key points	78
Chapter 7.	Public perceptions relating to smoking and exposure to second-hand smoke in Northern Ireland	80
7.1	Context	80
7.2	Beliefs and attitudes to second-hand smoke exposure among adults.....	80
7.3	Beliefs and attitudes about smoking and exposing children to second-hand smoke	81
7.4	Key Points	83
Chapter 8.	Smoking-related illness and mortality.....	84
8.1	Context	84
8.2	Smoking-related hospital admissions – adults	84
8.3	Smoking-related deaths – adults.....	86
8.4	Estimates of morbidity and mortality associated with second-hand smoke exposure.....	91
8.5	Key points	91
Chapter 9.	Conclusions.....	93
Chapter 10.	Recommendations	96
	Policy	96
	Service design and delivery	97
	Services.....	97
	Public awareness	97
	Data and research.....	97
References	99

Acknowledgements

This report was developed by policy team staff in the Institute of Public Health in Ireland in partnership with staff of the Department of Health, Social Services and Public Safety.

The authors wish to acknowledge the considerable advisory support and guidance provided by Gerard Collins, Jenny McAlarney and Naresh Chada. The authors also wish to thank the staff of the Public Health Information Branch of DHSSPS and in particular Mervyn Wilson, Bill Stewart and Carey Bell for their courtesy and efficiency in the provision of data used in this report.

Thanks also to Leah Friend and Tara Burke in the Institute of Public Health in Ireland for their support in aspects of report editing and design.

Glossary of terms and abbreviations

ANETS	Adult Non-Smokers Exposure to Tobacco Smoke Study
Aortic aneurysm	A swelling (aneurysm) of the aorta – the main blood vessel that leads away from the heart, down through the abdomen to the rest of the body. The bulging occurs when the wall of the aorta weakens. Although what causes this weakness is unclear, smoking and high blood pressure are thought to increase the risk of aneurysm.
Cerebrovascular disease	A condition that develops as a result of problems with the blood vessels that supply the brain. Cerebrovascular disease is also a type of cardiovascular disease that affects the brain's blood vessels.
CHETS	Childhood Exposure to Tobacco Smoke Study
CHS	Continuous Household Survey (Northern Ireland)
Cochrane Systematic Review	Systematic reviews of research in healthcare and health policy published in the Cochrane Database of Systematic Reviews.
COPD	Chronic Obstructive Pulmonary Disease
DHSSPS	Department of Health, Social Services and Public Safety
Group 1 carcinogen	An agent that is considered by the International Agency for Research on Cancer to be directly involved in causing cancer in humans.
Health inequalities	Preventable and unjust differences in health status evident among certain population groups. Health inequalities often exist along a social gradient – the more favourable your social and economic circumstances, the more likely you are to enjoy good health.
Heavy smoking	Smoking twenty or more cigarettes a day
HSNI	Health Survey Northern Ireland

IPH	Institute of Public Health in Ireland
Ischaemic heart disease	The term that describes what happens when the heart's blood supply is blocked or interrupted by a build-up of fatty substances in the coronary arteries.
Low birthweight	Babies weighing less than 2.5kg at birth
Northern Ireland Multiple Deprivation Measure (MDM)	An official measure of spatial/area-based deprivation used in Northern Ireland. The measure is based on a weighted combination of seven deprivation domains including income, employment, health, education, proximity to services, living environment and crime.
NICE	National Institute for Health and Care Excellence
NISRA	Northern Ireland Statistics and Research Agency
NRT	Nicotine Replacement Therapy
Otitis media	Middle ear infection
Perinatal mortality	Stillbirths and deaths occurring in the first week of life
Protection of Children's Health (Tobacco Smoke in mechanically propelled vehicles) Bill 2014	Bill entitling an Act to amend the Public Health (Tobacco) Act 2002 in the Republic of Ireland in order to prohibit the smoking of tobacco products in vehicles where children are present and to provide for the investigation and prosecution of such offences by members of an Garda Síochána.
QOF	Quality and Outcomes Framework is an information system, linked to GP payment, that collects data at aggregate level for each general practice in Northern Ireland.
SCSNI	Statistics on Smoking Cessation Services in Northern Ireland
SEG	Socioeconomic group
SHS	Second-hand smoke is a mixture of exhaled mainstream smoke and side stream smoke released from a smouldering

cigarette or other smoking device (cigar, pipe, bidi, etc.) and diluted with ambient air.

Tobacco control

A field of public health science, policy and practice dedicated to reducing tobacco use and tobacco-related harm.

UK

United Kingdom

Wheeze

A continuous coarse sound produced by obstruction or narrowing of the respiratory airways due to asthma or other causes.

WHO

World Health Organization

YPBAS

Young Persons' Behaviour and Attitudes Survey Northern Ireland

List of figures

- Figure 1.1 Timeline of tobacco control legislation and adult smoking prevalence rates in Northern Ireland
- Figure 3.1 Smoking prevalence among adults (aged 16+) in Northern Ireland (1998/99 to 2012/13)
- Figure 3.2 Adult smoking prevalence by gender (aged 16+) (1998/99 to 2012/13)
- Figure 3.3 Smoking prevalence among adults (aged 16+) in Northern Ireland by age group in pre-ban, peri-ban and post-ban periods (1998/99 to 2012/13)
- Figure 3.4 Smoking prevalence among adults (aged 16+) by socioeconomic group (1998/99 to 2012/13)
- Figure 3.5 Smoking prevalence among adults (aged 16+) by multiple deprivation measure (2012/13)
- Figure 3.6 Smoking prevalence among adults (aged 16+) by whether or not they report a longstanding illness (2012/13)
- Figure 3.7 Cigarette consumption among adult smokers (aged 16+) in Northern Ireland by most and least deprived multiple deprivation measure quintiles (2012/13)
- Figure 3.8 Cigarette consumption among adult smokers (aged 16+) in Northern Ireland by socioeconomic group (2012/13)
- Figure 3.9 Number of quit dates set through specialist smoking cessation services in Northern Ireland (2006/07 to 2012/13)
- Figure 4.1 Smoking prevalence among young people in Northern Ireland aged 11-16 years (2000-2013)
- Figure 4.2 Age of smoking initiation among those Northern Ireland children/young people aged 11-16 who reported ever smoking (2013)
- Figure 4.3 Age at which children/young people aged 11-16 years smoked their first whole cigarette (2000-2013)

- Figure 4.4 Number of cigarettes smoked per week by 11-16 years old regular smokers (2000-2013)
- Figure 6.1 Proportion of Northern Ireland adults (aged 16+) reporting that smoking was not permitted in the home by whether or not children were resident (2007/08 and 2012/13)
- Figure 6.2 Proportion of Northern Ireland adults (aged 16+) reporting that smoking was not permitted in the home by multiple deprivation measure (2010/11 to 2012/13)

List of tables

Table 2.1	Overview of data sources used in the analyses
Table 3.1	Estimates of smoking prevalence across the UK by data source
Table 3.2	Median number of cigarettes smoked per day among Northern Ireland's adult smokers (aged 16+) (1998/99 to 2012/13)
Table 3.3	Median number of cigarettes smoked per day among Northern Ireland's adult smokers (aged 16+) by multiple deprivation measure quintiles (2012/13)
Table 3.4	Median number of cigarettes smoked per day among Northern Ireland's adult smokers (aged 16+) by socioeconomic group (2012/13)
Table 3.5	Estimated prevalence of smoking in pregnancy in Northern Ireland and in the UK (2005 and 2010)
Table 3.6	Reasons for wanting to quit among Northern Ireland adult smokers (2007/08 and 2011/12)
Table 3.7	Outcome at 4 weeks of those who have set a quit date (based on self-report) (2005/06 to 2012/13)
Table 3.8	Percentage of patients with Quality Outcomes Framework defined chronic conditions whose smoking status was recorded (2006/07 to 2012/13)
Table 3.9	Percentage of patients with Quality Outcomes Framework defined chronic conditions who received smoking cessation advice (2006/07 to 2012/13)
Table 4.1	Proportion of Northern Ireland boys and girls aged 11-16 who reported that they ever smoked (2000-2013)
Table 4.2	Smoking prevalence among young people in Northern Ireland aged 11-16 years (2000-2013)
Table 4.3	Frequency of smoking among 11-16 year olds who reported they had ever smoked (2000-2013)

Table 4.4	Number of cigarettes smoked per week by 11-16 year old regular smokers (2000-2013)
Table 4.5	Outcome at 4 weeks of young people aged 11-16 years who had set a quit date through specialist smoking cessation services (2005/06 to 2012/13)
Table 5.1	Compliance with smoke free legislation in Northern Ireland by type of premises (2007/08 and 2012/13)
Table 5.2	Smoke free legislation enforcement 1 April 2012 to 31 March 2013
Table 6.1	Rules about smoking in Northern Ireland homes (2007/08 to 2012/13)
Table 6.2	Rules about smoking in Northern Ireland homes by whether or not children are resident (2007/08 and 2012/13)
Table 6.3	Young people (aged 11-16 years) reporting adult smoking patterns in the home (2003-2013)
Table 6.4	Proportion of young people (aged 11-16 years) reporting that they are co-resident in a household with an adult smoker, by multiple deprivation measure (2010-2013)
Table 6.5	Proportion of young people (aged 11-16 years) co-resident in a household with an adult smoker, who report that an adult smokes inside the home, by multiple deprivation measure (2010-2013)
Table 6.6	Rules about smoking in the family car(s) (2007/8-2012/13)
Table 6.7	Rules about smoking in the family car(s) by whether or not there are children in the household (2012/13)
Table 6.8	Smoking not permitted in the family car(s) by smoking status and multiple deprivation measure (2012/13)
Table 7.1	Frequencies of adult responses: 'What illnesses do you believe are caused by inhaling other people's tobacco smoke?'
Table 7.2	Young people's attitudes and beliefs about smoking (2000-2013)
Table 8.1	Estimated number of hospital admissions attributable to smoking (2006/7 to 2012/13)

- Table 8.2 Estimated total number of deaths (all causes) attributed to smoking (2006-2012)
- Table 8.3 Estimated number of deaths attributable to smoking by cause of death (2006-2012)
- Table 8.4 Estimated number of deaths attributable to smoking among men by cause of death (2006-2012)
- Table 8.5 Estimated number of deaths attributable to smoking among women by cause of death (2006-2012)

Foreword

Smoking impacts on practically everyone in Northern Ireland. As well as killing around 2,300 people here each year, it is the primary cause of preventable ill health and a major contributor to health inequalities. In addition to the human cost of ill-health, the economic cost is also significant with the estimated annual hospital costs of treating smoking-related illness amounting to some £164m. This does not include primary care costs, impact on GP waiting times for appointments, and carer costs.

More than 1 in 5 adults in Northern Ireland smoke. It is, therefore, vital to reduce the number of smokers through providing support to quit and to prevent young people from starting to smoke in the first place. However, the need to protect others, particularly children, from the toxic chemicals produced by tobacco smoke is also a priority. This is reflected in my Department's tobacco control strategy which includes the key objective of protecting the population from harmful exposure to second-hand smoke.

The introduction of smoke-free legislation in April 2007 has contributed significantly towards the achievement of this objective. Preventing people from smoking in public places, particularly in bars and restaurants, was once unthinkable but has very quickly become the norm. Compliance, from individuals and businesses alike, has been reassuringly high from the start and shows no signs of easing off as the legislation has bedded in.

Prior to the introduction of the legislation, opponents claimed that it would lead to increased incidence of smoking in the home. Fortunately, as this report shows, the opposite has occurred. By introducing restrictions on smoking in public indoors places, we have given people cause to think about what is and isn't acceptable in terms of smoking behaviour.

Our job now is to build on this success and push the boundaries further. I believe that the conclusions and recommendations contained within this report provide an excellent starting point for future developments in reducing population exposure to second-hand tobacco smoke.

Finally, I would like to commend the Institute of Public Health in Ireland for undertaking such a comprehensive study of the impact of smoke-free legislation, which I have no doubt will help to inform future tobacco control policy in Northern Ireland.

A handwritten signature in black ink that reads "Simon Hamilton". The signature is written in a cursive, flowing style.

Simon Hamilton, MLA
Minister for Health, Social Services and Public Safety

Executive summary

Reducing exposure to second-hand smoke (SHS) is a core goal of tobacco control policies internationally and across the island of Ireland. The *Ten Year Tobacco Control Strategy for Northern Ireland* names 'reducing exposure to second-hand smoke' as one of three core strategic objectives. The strategy emphasises that while SHS is potentially harmful to everybody it is particularly harmful to children and to adults with pre-existing medical conditions. The expansion of smoke-free spaces is occurring, not just as a means to directly reduce exposure of children and adults to SHS and the resultant harms, but also to further denormalise tobacco use in a variety of social contexts.

Legislation restricting smoking in the workplace and indoor public places was introduced in Northern Ireland in 2007. *One Year* and *Three Year Reviews of Smoke-free Legislation* were published by the Department of Health, Social Services and Public Safety. This report provides an overview of progress in reducing SHS exposure in Northern Ireland that incorporates the five year review of smoke-free legislation, but also extends to a consideration of SHS exposure in non-work environments. The report occurs in the context of:

- New policy frameworks including *The Ten Year Tobacco Control Strategy for Northern Ireland* and *Making Life Better - A Whole System Strategic Framework for Public Health*.
- Significant expansion in smoke-free areas beyond the smoke-free legislation with Northern Ireland Executive support for further consideration of legislation to protect children from SHS exposure in the car
- Significant developments in the evidence relating to health outcomes associated with SHS and the effects of restrictions
- Increases in the use of e-cigarettes and indoor vaping.

Social, behavioural and physiological factors influence both exposure to SHS and sensitivity to its effects. This report considers aspects of inequalities in SHS exposure in particular according to social disadvantage and with a focus on vulnerable subgroups of the population.

Analyses were conducted on a number of nationally representative government surveys of adults, school-children and pregnant women. In addition, findings were drawn from administrative datasets relating to health service use, mortality and in terms of compliance with legislation. A broad range of indicators were used including those relating to smoking behaviours, quitting and attitudes/beliefs about smoking. Indicators included, but were not limited to, relevant indicators from the *One Year* and *Three Year Reviews of Smoke-free Legislation in Northern Ireland*. Analyses do not extend to in-depth multivariate assessments of potential cause and effect relationships between the smoke-free legislation and the indicators studied. However, observed patterns are discussed in the context of findings from systematic reviews and the international evidence.

Chapter 3 presents data on the source of SHS exposure – namely, Northern Ireland’s smokers. Smoking patterns in the adult population, including pregnant women, were analysed in pre- and post- ban periods. Data on quitting and the use of tobacco harm reduction methods such as e-cigarettes were also explored in the context of SHS exposure in Northern Ireland. The key findings were:

Adult smoking patterns

- The prevalence of smoking in the adult population (aged 16 and over) in Northern Ireland is 24% based upon the 2012/13 *Health Survey Northern Ireland*.
- Although a decline in smoking prevalence was observed at the time of the introduction of smoke-free legislation, this trend was not maintained over time. The absence of any lasting association between smoke-free legislation and adult smoking prevalence is in line with the findings of a Cochrane systematic review.
- Inequalities remain imprinted upon smoking prevalence in Northern Ireland. This has implications in terms of the risk of SHS exposure in these communities. Smoking prevalence in the most deprived areas of Northern Ireland was treble that of the least deprived areas¹.
- People who reported a long-term illness were over-represented among smokers in Northern Ireland. This suggests that those caring for and living with persons with long-term illness may be at higher risk of SHS exposure. However, the Quality and Outcomes Framework (QOF) data indicated a high compliance by GPs in terms of recording smoking status and provision of smoking cessation advice to patients with defined chronic conditions.
- Median weekday and weekend day self-reported consumption of cigarettes among Northern Ireland’s smokers declined in the post-ban period by around one third. Similar declines have been observed following the introduction of smoke-free legislation in other countries.
- Around one third of smokers living in the most deprived areas were heavy smokers which may have implications for the intensity and duration as well as the frequency of SHS exposure in disadvantaged households. Tackling inequalities in the prevalence of smoking will be critical to tackling inequalities in SHS exposure.
- Assuming that a significant proportion of indoor SHS exposure occurs in domestic environments, the data suggest that those children and adults living with adults in the 20 to 45 year old age bracket may be particularly vulnerable, as are those living

¹ Deprivation as measured by quintiles of the Northern Ireland Multiple Deprivation Measure.

in the most deprived areas.

Smoking in pregnancy

- The unborn foetus, new-born babies and infants are particularly vulnerable to harmful effects from SHS exposure. 15% of mothers in Northern Ireland reported that they smoked throughout their pregnancy. Pregnant women in the most deprived areas were three times more likely to smoke than those in the least deprived areas.
- In 2010, around one third of pregnant women in Northern Ireland lived in a household where at least one smoker was resident².

Quitting and use of nicotine replacements

- Over three-quarters of adult smokers expressed that they want to give up smoking and the majority have attempted to quit at some point.
- Concern for the effect of SHS on others was identified as a reason to quit by more than half of smokers. Smoking restrictions in public places, and to a lesser extent in the workplace, remained relevant as reasons to quit for between one fifth and one third of smokers, even three years after the introduction of legislation.
- There has been a significant increase in the number of smokers (including young people) successfully quitting³ over the period 2005/6 to 2012/13.
- Further data is needed in the Northern Ireland context to assess levels and patterns of use of e-cigarettes, not just in terms of smokers, but also in terms of the implications for reductions in the SHS exposure among the families, friends and co-workers of smokers.
- Current evidence suggests that the vapour released from e-cigarettes is considerably less toxic than SHS. However, the lack of regulation of the products means that it is difficult to make broad conclusions on the toxicological profile of e-cigarette vapour.

² Includes households where the pregnant woman themselves is the smoker.

³ At 4 weeks a successful quitter is defined as someone who had not smoked over the previous two week period (the first two weeks are ignored to allow for initial lapses).

- Vaping in public places may increase the overall exposure of children to smoking-type behaviours and this may be a concern in terms of its potential to erode progress in denormalising smoking type behaviours.

Chapter 4 presents data on children and smoking, updating and expanding upon findings presented in the *One Year* and *Three Year Reviews of Smoke-free Legislation in Northern Ireland*. The analyses explored the potential effect of smoke-free legislation on children's smoking patterns and the potential for children to act as sources of SHS to their family and peers. The *Ten Year Tobacco Control Strategy for Northern Ireland* emphasises the vulnerability of children to harms from both smoking and exposure to SHS. The key findings were:

- Between 2000 and 2013, the proportion of children aged 11 to 16 years who had ever smoked declined by almost two thirds from 37% to 13% in 2013. There have been convincing declines in youth smoking in both genders with the rate of decline among girls relatively greater than that of boys.
- The most common age for 11 to 16 year olds to try their first cigarette is between 12 and 14 years. There is a shift to the right, evident over time, with children trying their first cigarette later in childhood. The data did not allow for an assessment of later uptake among children and young adults aged 17 and over.
- Around 40% of children, who reported having smoked at least one whole cigarette, go on to become smokers, with around a third of those smoking every day or at least one a week. The ratio of 'ever smokers' to current⁴ and regular⁵ smokers has remained consistent over time.
- Among 11 to 16 year old smokers, the modal consumption was between 1 and 10 cigarettes a week with between one quarter and one third of child smokers in this category. There was a shift towards lower consumption over time with steepest declines in smokers of more than one packet of cigarettes a week. The proportion of child smokers who reported smoking >70 cigarettes a week (roughly equivalent to a 10 a day smoker) halved between 2003 and 2013 (15.1% of child smokers in 2003 and 7.1% of child smokers in 2013).
- The trend in many domains of child smoking including the number of children smoking, age of trying smoking and the amount smoked are positive.

⁴ Current smokers are defined as young people still smoking at the time of the survey.

⁵ Regular smokers are defined as young people who smoke every day or at least once a week.

- With relatively few child smokers and a pattern of low frequency and intensity smoking, it is unlikely that school children act as a significant source of SHS exposure to others.

Chapter 5 presents data relevant to the smoke-free workplace in Northern Ireland as well as early data on other smoke-free public places in Northern Ireland. The key findings were:

- Over 12,000 business premises in Northern Ireland were inspected for compliance with smoke-free legislation in the year 2012/2013. A high level of compliance was evident with overall levels of compliance increasing over time.
- There was evidence of very slight slippage over time in the display of correct signage in certain types of premises in the category of restaurants and cafés, licensed pubs/clubs, bookmakers, snooker halls, bingo halls and taxi depots.
- There were 811 written warnings and 586 fixed penalty notices issued in respect of smoking in a smoke-free commercial vehicle in the year 2012/2013. This was the most common category in terms of non-compliance with legislation.
- In keeping with the findings from other international studies, the introduction of smoke-free legislation was associated with a highly significant improvement in the air quality in pubs and bars in Northern Ireland.
- The economic impact of the smoking ban on the hospitality sector was examined in the *One Year and Three Year Reviews of Smoke-free Legislation in Northern Ireland*. There has been no conclusive evidence to suggest an association between smoke-free legislation and changes in sales or employment in the hospitality industry.
- In March 2014, the Western Health and Social Care Trust was the first trust in Northern Ireland to become 'smoke-free' by prohibiting smoking anywhere on the grounds or premises.
- There have been other ad hoc developments in smoke-free policies in outdoor public places such as rail and bus stations and schools but there is as yet no central register of activity.

Chapter 6 explores survey data relevant to SHS exposure in domestic environments including the family home and car. The analyses related to adults self-report on rules on smoking in the home and car as well as reports by school-children aged 11 to 16 years. The key findings were:

Smoking in the home – adult surveys

Around 78% of adults (aged 16 and older) reported that smoking was not allowed in the home.

- There was consistent evidence from several survey sources of a tightening of the rules on smoking in the home over time since the introduction of workplace legislation. One in five Northern Ireland smokers reported that the workplace smoke-free legislation made them stricter in terms of smoking rules in the home.
- A social gradient was evident in terms of rules on smoking in the home. 88% of adult respondents in the least deprived quintile reported that smoking was not allowed in the home, compared with 65% of adult respondents in the most deprived quintile. The gradient was evident in respect of both smoking and non-smoking respondents. Socioeconomic gradients in rules on smoking inside the home were less steep than those relating to smoking prevalence.
- Increases in the proportion of households where smoking is not allowed at all were evident across the socioeconomic spectrum comparing pre- and post- ban periods.
- There were significant differences in rules on smoking in the home according to whether children were resident in the home. Among households with one or more children, 85% of adult respondents did not allow smoking at all in the home. Among households with no children, 74% of adult respondents did not allow smoking at all in the home.
- In the period 2010/11 to 2012/13, the proportion of households with one or more children reporting that smoking was not allowed at all in the home increased from 81% to 85%. Among adult only households, an increase from 68% to 74% was observed.
- There are significant differences observed in estimates of whether smoking occurs inside the home between surveys of adult and child respondents.

Smoking in the home – children's surveys

- In 2013, 38.4% of 11 to 16 year olds reported that they lived with a smoker. 41.7% of those children reported that an adult smokes inside their home.
- There has been a significant stepwise decline in the proportion of 11 to 16 year olds living with a smoker and living in a house where smoking occurs in the house in the last decade. In 2003, over half of these children lived with a smoker

compared with 38.4% in 2013. In 2003, 78.6% of those children reported that someone smoked inside their home compared with 41.7% in 2013.

- Over half of children living in the most deprived area quintile live with an adult smoker. Children living in the most deprived area quintile were twice as likely to live with a smoker as those resident in the least deprived quintile.

Smoking in the car

- 84% of adults who reported there was a family car reported that smoking was not allowed in that family car in Northern Ireland. Between 2010/11 and 2012/13 there was a small increase (three percentage points) in the proportion of cars where smoking is never allowed but, unlike smoking in homes, no clear trend is evident.
- Rules on smoking in the car differed according to whether or not children were part of the household. Among respondents who formed part of adult only households, smoking was never allowed in 66% of cars compared with 77% of cars among respondents who were members of households with children.
- There was a consistent and steep gradient in terms of the rules on smoking in cars according to area-based deprivation. Among the most deprived quintile, smoking was never allowed in less than half of cars (48%) compared with 83% of cars in the least deprived quintile.
- Of Northern Ireland school-children aged 11 to 16 years, who lived with an adult smoker, 30.2% reported that smoking was permitted in the family car compared with 41.7% reported that smoking was permitted in the family home. There were no data suitable for providing estimates of exposure among younger children or infants.

Chapter 7 presents findings from analyses relevant to shifting behaviours and attitudes to smoking and SHS among adults in Northern Ireland. The key findings were:

- The vast majority of adults in Northern Ireland recognise that inhaling other people's tobacco smoke poses a high risk to health. Cancer and respiratory problems were among the most commonly identified illnesses associated with SHS exposure.
- There is evidence of an increasing sensitivity to the extent and range of harms associated with SHS over time, particularly in terms of the harms to respiratory

health and to children. The presence of children in a household is also related to the behaviour of smokers in terms of smoking inside the home or car.

- Over half of adults aged 16 and over in Northern Ireland indicated that they would challenge someone smoking in a non-smoking area. There was no change over time in the proportion of adults indicating their willingness to challenge.
- Public acceptance of smoke-free legislation in Northern Ireland is high.
- Children born around the time of the introduction of the legislation will be enjoying their eighth birthday in April 2015, having grown up in a Northern Ireland where smoking in indoor public places was neither legal nor socially acceptable.
- Significant declines in youth smoking indicators have been paralleled by a shift in attitudes and beliefs about smoking. There is an increasing recognition among young people that smoking does not increase confidence, contribute to a sense of calmness or improve your image – key attributes commonly promoted through tobacco advertising.

Chapter 8 presents findings on analyses of smoking-related mortality and health service use. Estimates of hospital admissions and deaths attributable to smoking in Northern Ireland are provided, updating estimates provided in the *One Year and Three Year Reviews of Smoke-free Legislation in Northern Ireland*. The key findings were:

- Around 2,200 deaths in Northern Ireland were attributable to smoking annually, representing 15% of all deaths.
- The overall burden of smoking attributable deaths was patterned by gender. In 2012, 19% of male deaths were attributable to smoking (n=1325 deaths) and 12% of female deaths were attributable to smoking (n=891 deaths).
- Of deaths attributable to smoking, 37% related to lung cancer, 27% related to chronic obstructive pulmonary disease (COPD) and 18% related to vascular diseases including ischaemic heart disease, cerebrovascular disease and aortic aneurysm. Other cancers and pneumonia were also significant in the profile of smoking-related deaths.
- In the seven year period 2006 to 2012, there were around 3,400 smoking-attributable deaths from lung cancer among men in Northern Ireland. There were 2,036 smoking attributable deaths from lung cancer among women in the same period.

- In 2012, there were 588 smoking-attributable deaths from COPD among men in Northern Ireland and 272 deaths such deaths among women.
- In 2012, there were 17,163 hospital admissions attributable to smoking in Northern Ireland and 62% of all smoking-attributable hospital admissions were male.
- In 2012, one third of smoking-attributable hospital admissions related to cancer, the majority of which related to lung cancer. COPD accounting for 27% of all smoking-attributable admissions and ischaemic heart disease accounted for 21% of all smoking-attributable admissions.
- Estimates of morbidity and mortality from SHS exposure are small in comparison to estimates for smoking. However, while the relative risks may be smaller, the health impact is significant as it relates to common diseases and it falls particularly heavily on children.
- Estimates of mortality and morbidity attributable to SHS for Northern Ireland have not been produced in this report and may be limited by small numbers for some outcomes. Meaningful assessment would require an all-island or UK-wide approach.

Chapter 9 presents the conclusions of this report, highlighting the success of workplace smoke-free legislation in Northern Ireland. A number of other 'wins' for tobacco control occurring in the context of pre- and post-ban periods were highlighted including clear shifts in the public acceptability of exposing others to SHS and progress on indicators relating to child smoking and smoking in pregnancy. However, significant challenges remain in terms of a high smoking prevalence, persistent inequalities and significant exposure in domestic environments in general and particular in the context of children.

Chapter 10 presents recommendations on policy, practice and research.

Chapter 1. Introduction

1.1 Policy context

Second-hand smoke is harmful to everyone and has been classified as a Group 1 carcinogen. Reducing the exposure of the population to SHS is a core element of the World Health Organization *Framework Convention on Tobacco Control* (WHO, 2003).

1.1.1 Tobacco control and public health policies

The *Ten Year Tobacco Control Strategy for Northern Ireland* published in 2012 brought a renewed emphasis to the issue of SHS by naming ‘reducing exposure to second-hand smoke’ as one of three core strategic objectives. The strategy emphasised that while SHS is potentially harmful to everybody, it is particularly harmful to children and to adults with pre-existing medical conditions (DHSSPS, 2012a). The strategy commits to further work to reduce SHS exposure in areas not covered in the *Smoking (NI) Order 2006* including homes, vehicles and entrances/exits of public buildings. In the Republic of Ireland, the *Tobacco-Free Ireland* policy (Department of Health, 2013) proposes to introduce legislation to prohibit smoking within the campuses of primary and secondary schools and childcare facilities as well as promote tobacco-free campuses for all third level institutions, healthcare, governmental and sporting facilities. In addition, the policy proposes to further promote tobacco-free environments in public playgrounds, parks and beaches.

In Northern Ireland both the *Service Framework for Respiratory Health and Wellbeing* (DHSSPS, 2009a) and the *Revised Service Framework for Cardiovascular Disease* (DHSSPS, 2014a) make specific reference to addressing SHS exposure in the context of both primary and secondary prevention. More broadly, the new public health framework for Northern Ireland – *Making Life Better – A Whole System Strategic Framework for Public Health 2013-2023* (DHSSPS, 2014b) commits to support the implementation of tobacco control policy and enhance the integration of prevention approaches within health service delivery while also supporting a range of policies for safe and healthy homes.

It is clear that for both jurisdictions policy reflects a renewed commitment to progress with expansions of smoke-free spaces on the island of Ireland. This approach is being pursued, not just as a means to directly reduce exposure of children and adults to SHS, but also to further denormalise tobacco use in a variety of social contexts. These developments occurred in the context of a range of other tobacco control measures introduced in Northern Ireland over the past few decades, as outlined in **Figure 1.1** below.

Figure 1.1 Timeline of tobacco control legislation and adult smoking prevalence rates in Northern Ireland

Year	Adult Smoking Prevalence (%)	Tobacco Control Legislation
98/99	29	
00/01	27	
02/03	26	<p>The Tobacco Advertising and Promotion Act 2002 (UK) – main provisions include ban on print media and billboard advertising (Feb 2003); ban on tobacco direct marketing (May 2003); ban on sponsorship within the UK (Jul 2003); and restrictions on tobacco advertising at point of sale (Dec 2004).</p> <p>The Tobacco Products (Manufacture, Presentation and Sale) (Safety) Regulations 2002 (UK) - increased the size and number of written warnings which were to appear on tobacco products.</p>
04/05	26	
06/07	25	The Smoking (Northern Ireland) Order 2006 – bans smoking in all enclosed or substantially enclosed public and workplaces in Northern Ireland.
07/08	23	The Tobacco Products (Manufacture, Presentation and Sale) (Safety) Regulations (Amendments) 2007 (UK) – introduces requirement for picture warnings to appear on tobacco products from October 2008.
08/09	24	The Children and Young Persons (Sale of Tobacco etc.) Regulations (Northern Ireland) 2008 – increases the minimum age of sale for tobacco products from 16 years to 18 years, to take effect from September 2008.
09/10	24	
10/11	24	
11/12	25	
12/13	24	<p>The Protection from Tobacco (Sales from Vending Machines) Regulations (Northern Ireland) 2012 – prohibits the sale of tobacco products from vending machines from March 2012</p> <p>The Tobacco Advertising and Promotion (Display) Regulations (Northern Ireland) 2012 – bans the display of tobacco products at point of sale in shops. Applies to large shops from October 2012 and to small shops from April 2015.</p>
13/14	22*	The Tobacco Retailers Act (Northern Ireland) 2014 – main provisions include requirement for all tobacco retailers to register; additional penalties for retailers who regularly sell tobacco to persons under the age of 18; and the introduction of fixed penalty notices for a number of tobacco-related offences.

* Smoking prevalence rates from Health Survey Northern Ireland 2013/14 were released prior to the publication of this report, but have not been included elsewhere in the analyses.

1.1.2 Smoke-free workplaces

Smoke-free legislation restricting smoking in the workplace and indoor public places was introduced in Northern Ireland in April 2007. The Department of Health, Social Services and Public Safety produced two reviews of the legislation – a *One Year Review* published in 2009 and a *Three Year Review* published in 2013 (DHSSPS, 2009b; DHSSPS, 2013).

In considering the development of a 5 year review, DHSSPS was aware that several contexts had changed since the introduction of the legislation in 2007. In particular, a new tobacco control strategy and public health framework had been developed (DHSSPS, 2012a; DHSSPS, 2014b) which proposed to build upon the success of existing measures in protecting people from SHS.

1.1.3 Smoke-free health service and care settings

In both jurisdictions there has also been an expansion of smoke-free regulation and policies in health service and care settings – an approach which is clearly recognised as evidence-based practice (National Institute for Health and Care Excellence (NICE), 2013). In the Republic of Ireland, the Health Service Executive committed to making all its workplaces and campuses smoke free by 2015, with 92% of acute hospitals already smoke-free. The Western Health and Social Care Trust was the first Trust in Northern Ireland to become completely smoke-free in March 2014. The Chief Medical Officer has called for all Health and Social Care Trusts to follow the example of the Western Trust and Health Service Executive by introducing smoke free policies on all Trust campuses.

1.1.4 Smoking in cars when children are present

The issue of legislation relating to smoking in cars while children are present has also been highlighted in recent years. In February 2014, England and Wales were granted regulation-making powers under Section 95 of the *Children and Families Act 2014* to make private vehicle carrying children smoke-free. Under the proposed regulations, existing smoke-free legislation as set out in the *Health Act 2006* will be extended, so that it would be an offence to smoke in a private vehicle with someone under age 18 present and fail to prevent smoking in a private vehicle with someone under age 18 present. This legislation does not extend to Northern Ireland. Meanwhile, in the Republic of Ireland, *The Protection of Children's Health (tobacco smoke in mechanically propelled vehicles) Bill* prohibiting smoking in cars with children is in the final stages of the legislative process and is expected to be enacted in 2015.

1.2 Overview of evidence on the impact of second-hand smoke

There is now a growing body of evidence relating to the role of SHS and the effects of restrictions on exposure to SHS. Such evidence is needed to define policy priorities and evaluate the effectiveness of smoke-free policies and legislation in the future. This section provides a brief overview of the evidence relating to the health impacts of SHS and

includes an overview of key findings in relation to the introduction of smoke-free legislation in the workplace.

The considerable mortality and morbidity attributable to exposure of adults to SHS relates principally to cardiovascular and respiratory diseases including lung cancer. World Health Organization guidelines on assessing the burden of disease associated with SHS exposure at national and local levels were published in 2010 and summarized the evidence on the exposure-risk relationships between SHS and various health outcomes based on recent reviews and meta-analyses. For adults, the strongest evidence related to lung cancer, ischaemic heart disease and the onset of asthma. There was also suggestive evidence for severity of asthma, chronic obstructive pulmonary disease (COPD), breast cancer and stroke. Numerous studies have concluded that exposure to SHS is harmful to those who have never smoked, but there are considerable methodological challenges and therefore uncertainty regarding the effects of SHS on ex-smokers and current smokers (Öberg, 2010).

The impact of SHS on children has received particular attention for many reasons. At a physiological level, the developing respiratory tract can be more sensitive to environmental pollutants and children's higher respiratory rate means they can inhale more air per body volume than adults resulting in a higher exposure (Öberg, 2010). The issue of childhood exposure has distinct sociological and indeed ethical dimensions in terms of the child's autonomy to avoid exposure and the concentration of exposure within the context of the family home. Estimates of the burden of childhood disease attributable to SHS exposure have also been produced. These estimates find that around 11% of lower respiratory infection and 8% of wheezing in children aged under 3 years as well as 10% of asthma in children aged 5 and over was attributable to SHS exposure. In addition, 7% of middle ear disease was considered attributable to SHS exposure (Royal College of Physicians, 2010). The spectrum of childhood disease attributable to SHS suggests that exposure may pose a threat not just to children's health but also in terms of their participation in school and daily life and their wider aspects of child development.

Early evaluations of the impact of smoke-free legislation clearly showed the success of the measure in terms of reducing the exposure and harms for workers. More recently studies are increasingly highlighting the potential returns to child health from smoke-free legislation including in terms of pregnancy and neonatal outcomes (pre-term birth, small for gestational age) and childhood asthma outcomes (Kabir et al, 2009a; MacKay et al, 2010).

The World Health Organization stresses that behavioural and physiological factors influence both exposure to SHS and sensitivity to its effects (Öberg, 2010). It recommended therefore that specific attention be given to understanding of both exposures and effects among:

- neonates and babies in utero
- young infants and children
- children with pre-existing respiratory illness
- older people
- adults with chronic cardiac and respiratory conditions including COPD.

1.3 Scope of the report

Aim

To report on progress in reducing exposure to SHS with a view to informing future policy and practice for Northern Ireland.

Objectives

- To report upon trends in SHS exposure among adults and children, including vulnerable groups
- To present an overview of key developments in policy and practice in Northern Ireland relating to reducing SHS exposure
- To report in particular on the 5 year outcomes from the smoke-free legislation in Northern Ireland based on indicators used in the *One Year* and *Three Year Reviews* and additional indicators where appropriate
- To propose actions for further policy to reduce SHS exposure both within and beyond the context of current legislation.

1.4 Key points

- Reducing exposure to SHS is a core goal of tobacco control policies internationally and across the island of Ireland. The *Ten Year Tobacco Control Strategy for Northern Ireland* names 'reducing exposure to second-hand smoke' as one of three core strategic objectives. The strategy emphasises that while SHS is potentially harmful to everybody it is particularly harmful to children and to adults with pre-existing medical conditions.
- Legislation restricting smoking in the workplace and indoor public places was introduced in Northern Ireland in 2007 – a *One Year* and *Three Year Review of Smoke-Free Legislation* have been published by the Department of Health, Social Services and Public Safety.
- There is commitment to progress the expansion of smoke-free spaces on the island of Ireland. This is reflected in the growth of smoke-free public places, healthcare settings and in the commitment by Northern Ireland government to take into consideration UK legislation on smoking in cars with children. The expansion of

smoke-free spaces is being pursued not just as a means to directly reduce exposure of children and adults to SHS and the resultant harms, but also to further denormalise tobacco use in a variety of social contexts.

- There is a growing body of evidence relating to the role of SHS and the effects of restrictions on exposure to SHS. This evidence can be used to refine policy priorities and evaluate the effectiveness of smoke-free policies and legislation in the future.

- This report provides an overview of progress in reducing second-hand smoke exposure in Northern Ireland that incorporates the Five Year Review of Smoke-free Legislation. This progress report occurs in the context of:
 - New policy frameworks including *The Ten Year Tobacco Control Strategy for Northern Ireland* and *Making Life Better - A Whole System Strategic Framework for Public Health*.
 - Significant developments in smoke-free areas beyond the smoke-free legislation
 - Significant developments in the evidence relating to health outcomes associated with SHS and the effects of restrictions
 - Increases in the use of e-cigarettes and the challenge of indoor vaping.

- Social, behavioural and physiological factors influence both exposure to SHS and sensitivity to its effects. This report considers aspects of inequalities in SHS exposure in particular according to social disadvantage and with a focus on vulnerable subgroups of the population.

Chapter 2. Methods

2.1 Scoping of analyses

In late 2013, DHSSPS approached IPH to support the development of a 5 year review of smoke-free legislation in Northern Ireland. IPH developed a scoping paper on the development of the review taking into account a range of issues including the new policy contexts, new research evidence and departmental priorities relating to SHS. A *Briefing Paper to inform the development of a 5 year review of smoke-free legislation in Northern Ireland* developed by IPH in January 2014:

- Captured learning from comparing the *One Year* and *Three Year Reviews of Smoke-Free Legislation in Northern Ireland* and from similar government reviews conducted in other countries
- Informed the selection of appropriate indicators in this report and suggested potential new indicators where evidence was supportive
- Highlighted new topics and directions in the development and monitoring of smoke-free legislation into the future.

2.2 Data analysis

A data request was developed by the project team. The data request was based upon:

- Data outputs provided in the *One Year* and *Three Year Reviews*
- A rapid review of literature relating to the evidence on outcomes from SHS exposure and reviews of the impact of smoke-free legislation
- An appraisal of the available data through assessment of survey questionnaires.

Data analysis and outputs were provided by the DHSSPS Public Health Information branch.

This report presents data on patterns in key smoking behaviours and SHS exposure. In keeping with the *One Year* and *Three Year Reviews*, these analyses do not extend to in-depth multivariate assessments of potential cause and effect relationships between the smoke-free legislation intervention and the outcomes studied. However, the observed patterns are discussed in the context of evidence from systematic reviews and international studies.

The report contains all relevant indicators included in the *One Year* and *Three Year Reviews* as well as some new indicators. The format of the report therefore differs slightly to the previous Reviews. An overview of the data sources used this report is included in **Table 2.1**.

Table 2.1 Overview of data sources used in the analyses

Survey	Years	Main variables assessed	Population group	For further information
Health Survey Northern Ireland (HSNI)	2010/11 2011/12 2012/13	<ul style="list-style-type: none"> • Smoking prevalence • Tobacco consumption (weekdays and weekends days) • Smoking in the family home and car • Awareness of health risks • Reasons for quitting smoking • Source of help or advice about quitting smoking • Use of nicotine replacement therapies 	Adults aged 16 and over (data weighted by age and gender).	www.csu.nisra.gov.uk/
Continuous Household Survey (CHS)	1998/99 2000/01 2002/03 2004/05 2006/07 2007/08 2008/09 2009/10	<ul style="list-style-type: none"> • Smoking prevalence • Smoking in the family home and car • Awareness of health risks • Reasons for quitting smoking • Source of help or advice about quitting smoking • Use of nicotine replacement therapies 	Adults aged 16 and over (data unweighted).	www.csu.nisra.gov.uk/

Adult Non-smokers Exposure to Tobacco Smoke Survey (ANETS)	2007 & 2008	<ul style="list-style-type: none"> Smoking in the family home 	Non-smoking adults aged 18 and over who live with at least one regular smoker.	http://www.spacetobreathe.org.uk/
Young Persons' Behaviour and Attitudes Survey (YPBAS)	2000 2003 2007 2010 2013	<ul style="list-style-type: none"> Smoking prevalence (ever having smoked) Age of starting smoking Frequency of smoking Tobacco consumption Attitudes and beliefs about smoking Smoking in the family home and car 	Young people aged 11-16 years.	www.csu.nisra.gov.uk
Infant Feeding Survey (IFS)	2005 & 2010	<ul style="list-style-type: none"> Smoking prevalence (before and during pregnancy) Women who lived with smoking adult Quitting behaviour (before, during and following pregnancy) 	Pregnant women giving birth August & September 2005; August & October 2010.	www.csu.nisra.gov.uk
Integrated Household Survey (IHS)	2013	<ul style="list-style-type: none"> Weekly household expenditure on alcohol and tobacco 	Adults aged 16 and over.	www.csu.nisra.gov.uk
Smoking Cessation	2005/06 to 2012/13	<ul style="list-style-type: none"> Quit attempts in the context of specialised smoking cessation 	Children and young people aged 11-17	www.dhsspsni.gov.uk

Services in Northern Ireland (SCSNI)		services among policy-defined population subgroups (number of quit attempts; success of quit attempts at 4 weeks; timing of quit attempts)	Adults aged 18 and over.	
Group Environmental Health Committees	2007/08 & 2012/13 01 April 2012 to 31 March 2013	<ul style="list-style-type: none"> • Compliance with smoke-free legislation – number of premises inspected, signage and smoking behaviours • Smoke-free legislation enforcement – written warnings, fixed penalty notices and cases referred for prosecution 		
Quality and Outcomes Framework (QOF)		<ul style="list-style-type: none"> • Smoking indicator 1 – recording of smoking status on the patient record • Smoking indicator 2 – whether patient received smoking cessation advice 		www.dhsspsni.gov.uk
Hospital Inpatient System	2008/09 to 2012/13	<ul style="list-style-type: none"> • Total and smoking attributable hospital admissions by gender 		www.dhsspsni.gov.uk
Vital statistics/ demography	2006 to 2012	<ul style="list-style-type: none"> • Total and smoking deaths by gender 		www.nisra.gov.uk

2.3 Key points

- The development of this report was informed by a briefing paper which captured learning from the *One Year* and *Three Year Reviews of Smoke-Free Legislation* in Northern Ireland and international research which informed the selection of a revised set of indicators.
- Analyses were conducted on a number of nationally representative government surveys of adults, school-children and pregnant women. In addition, findings were drawn from administrative datasets relating to health service use, mortality and in terms of compliance with legislation.
- A broad range of indicators were used including those relating to smoking behaviours, quitting and attitudes/beliefs about smoking.
- Analyses do not extend to in-depth multivariate assessments of potential cause and effect relationships between the smoke-free legislation and other smoke-free measures. However, observed patterns are discussed in the context of findings from systematic reviews and the international evidence.
- The report concludes by proposing actions for further policy to reduce SHS exposure in Northern Ireland.

Chapter 3. Key trends in smoking prevalence and cessation among adults in Northern Ireland

3.1 Context

Reducing SHS exposure at population level requires a range of actions. Reducing the number of smokers is one component of a strategic approach, as is modifying the behaviour of smokers through information campaigns and meaningful regulation and legislation. This chapter begins by presenting data on the source of SHS in the environment – namely, Northern Ireland’s smokers.

The *Ten Year Tobacco Control Strategy for Northern Ireland* aims to reduce the proportion of adults who smoke to 15% and reduce the proportion of smokers in manual groups to 20% by 2020. This section of the report presents key trends in smoking prevalence in Northern Ireland updating information provided in the *One Year* and *Three Year Reviews of Smoke-Free Legislation in Northern Ireland* (DHSSPS, 2009b; DHSSPS, 2013). The analyses relate to the targets proposed in the Strategy with a focus on manual groups and other dimensions of inequalities as well as some preliminary analyses on smoking among those with existing long-term illness.

Measures to address SHS exposure have the potential to influence the behaviours of smokers in terms of when and where they smoke and their beliefs in respect of the harmfulness and social acceptability of exposing others to their SHS. Measures that aim to reduce SHS exposure also have potential to influence the decision making of some smokers in respect of quit attempts. This chapter presents data on trends in the number of cigarettes smoked and quit attempts. Data on changes in the beliefs and attitudes of smokers are presented in Chapter 7.

The analyses reflect dimensions of change examined in a recent Cochrane review of the evidence on the relationship between the introduction of smoke-free legislation and a set of defined smoking outcomes. This concluded that while smoke-free legislation had been highly effective in its core goal of reducing SHS exposure in the workplace, there was inconsistent evidence of an association with a sustained decrease in smoking prevalence among adults. However the review found suggestive evidence of an association between smoke-free legislation and declines in the number of cigarettes smoked by adults in a number of countries (Callinan et al, 2010).

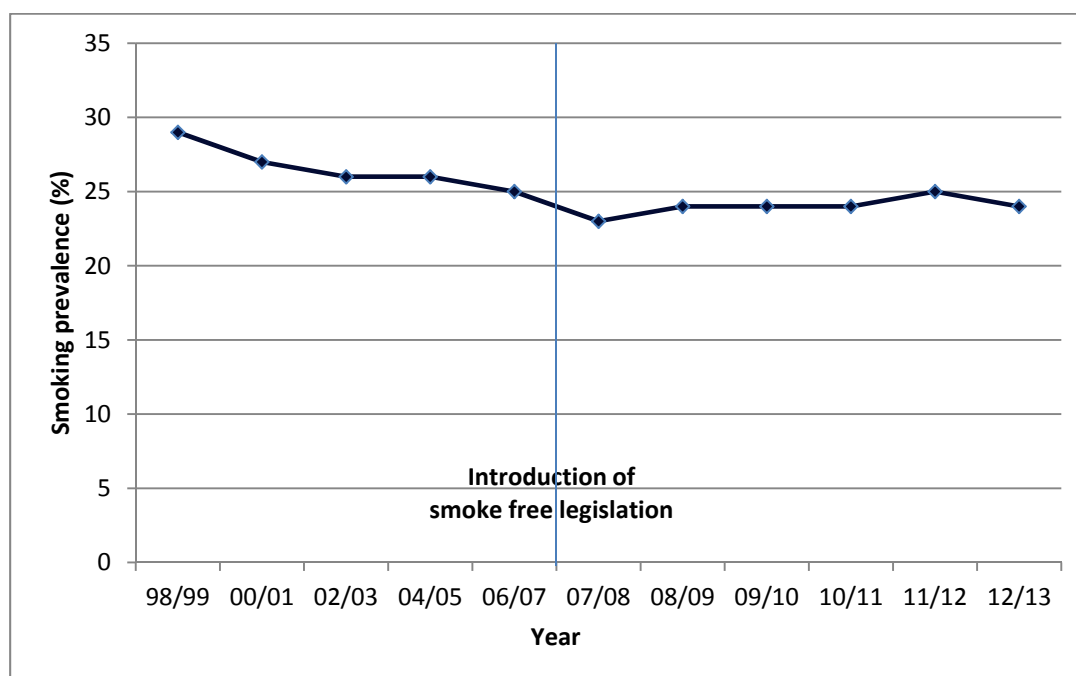
3.2 Smoking prevalence

3.2.1 Prevalence of smoking by age and gender

Smoking activity amongst the adult population (aged 16 and over) in Northern Ireland was assessed using data from the *Continuous Household Survey (CHS)* (1998/99 to 2009/10) and data from *Health Survey Northern Ireland (HSNI)* (2010/11 to 2012/13). **Figure 3.1** outlines smoking prevalence among adults in the period 1998/99 to 2012/13.

The most recent figures (2012/13) indicate that just under a quarter of adults (24%) in Northern Ireland were smokers. This is equivalent to around 343,570 smokers aged 16 and over (NISRA, 2014).

Figure 3.1 Smoking prevalence among adults (aged 16+) in Northern Ireland (1998/99 to 2012/13)



Source: CHS (1998/99 to 2009/10); HSNI (2011/12 to 2012/13)

When compared with the rest of the UK, Northern Ireland still has one of the highest smoking prevalence rates in the UK (**Table 3.1**). However, estimates may not be strictly comparable due to differences in survey methodology between UK jurisdictions.

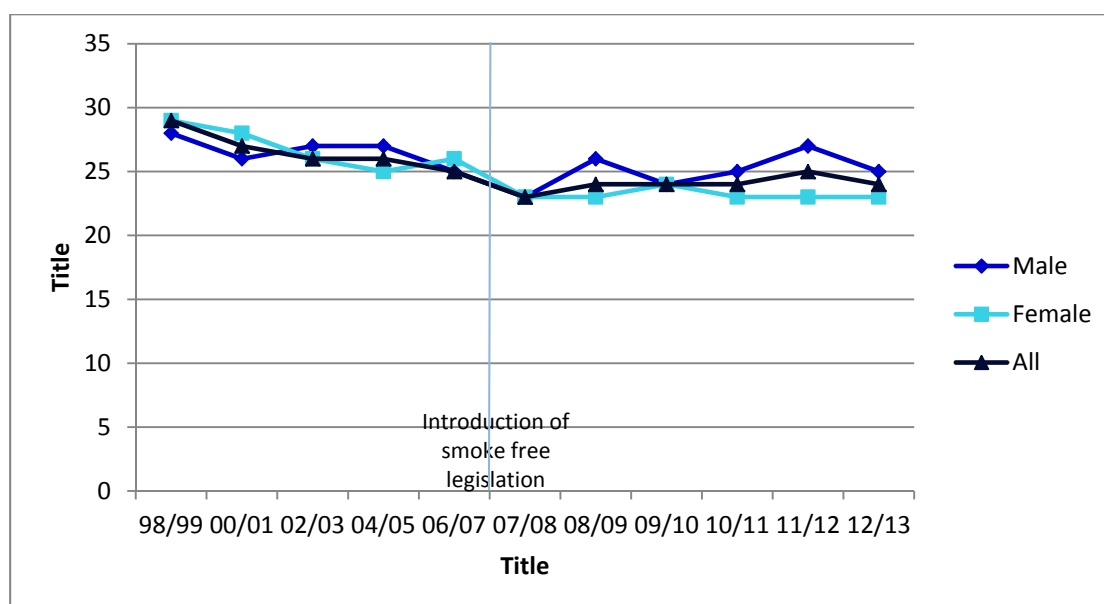
Table 3.1 Estimates of smoking prevalence across the UK by data source

Year	Country	Smoking Prevalence (% adult smokers aged 16+)*	Data Source
2012	England	20	General Lifestyle Survey
2012	Scotland	25	Scottish Health Survey
2010	Wales	23	Welsh Health Survey
2012/13	Northern Ireland	24	Health Survey Northern Ireland

*Estimates may not be strictly comparable due to differences in survey methodology between UK jurisdictions.

In 2012/13 in Northern Ireland, smoking prevalence estimated in *Health Survey Northern Ireland* in men and women was 25% and 23% respectively (**Figure 3.2**). In keeping with findings from other countries, there was a notable reduction in smoking prevalence observed in the year following the ban but this was not associated with a sustained drop in smoking prevalence over time (Callinan et al, 2010).

Figure 3.2 Adult smoking prevalence by gender (aged 16+) (1998/99 to 2012/13)

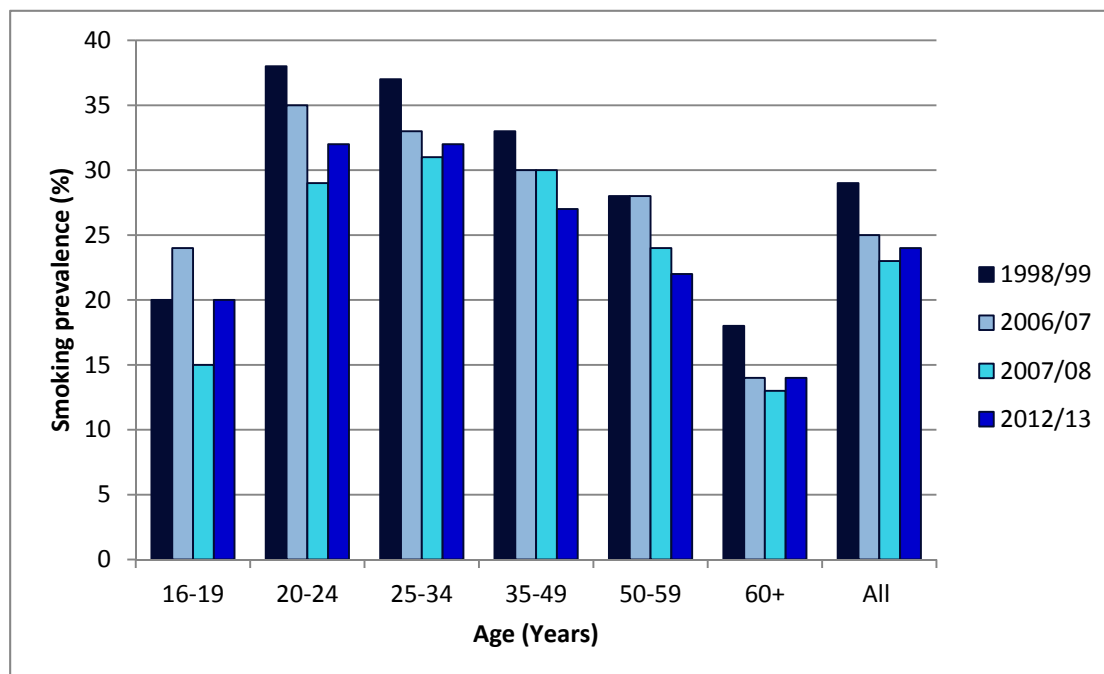


Source: CHS (1998/99 to 2009/10); HSNi (2011/12 to 2012/13)

Smoking prevalence is generally highest among younger age groups (20-34 years) (**Figure 3.3**), but decline is evident over the past 15 years. Smoking patterns among young adults (aged 16-19) exhibit fluctuation, compared with all other age groups – however this could

be attributed to small numbers of smokers in the age grouping and other methodological issues with the group and should be interpreted with caution.

Figure 3.3 Smoking prevalence among adults (aged 16+) in Northern Ireland by age group in pre-ban, peri-ban and post-ban periods (1998/99 to 2012/13)



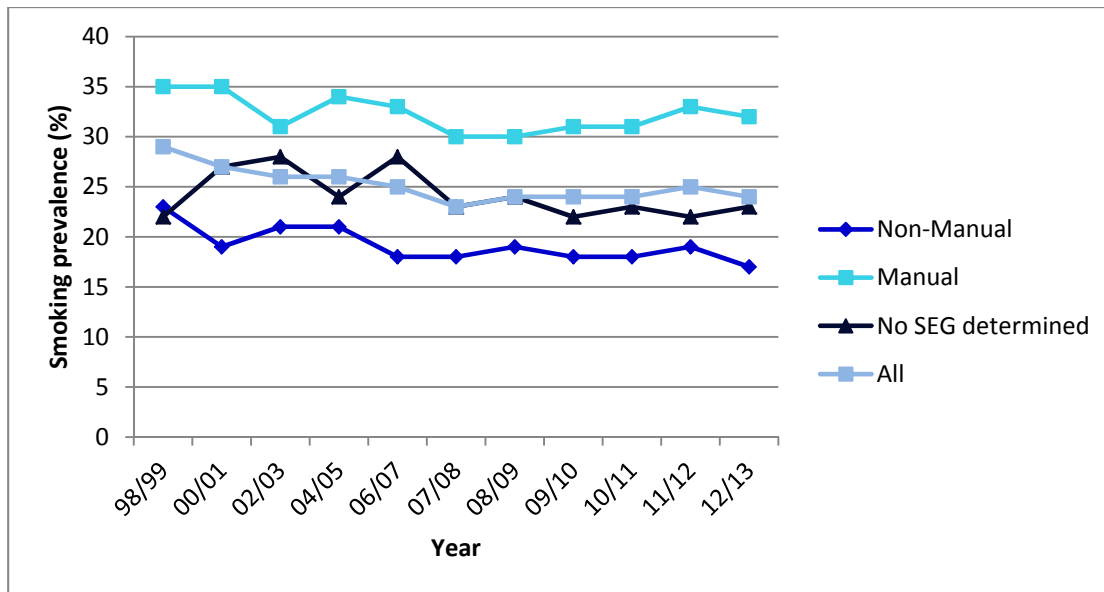
Source: CHS (1998/99, 2006/07 and 2007/08); HSNI (2012/13)

3.2.2 Inequalities in smoking prevalence

Inequalities in smoking prevalence in Northern Ireland are well recognised and a key concern in tobacco control and public health policy. Smoking prevalence is consistently higher among lower socioeconomic groups as demonstrated both by analysis according to socioeconomic groupings based on individual occupational status and according to area-based multiple deprivation measures. The legacy of this pattern is also evident in respect of the excess risk of lung cancer, premature mortality and smoking-related morbidity in disadvantaged areas of Northern Ireland (DHSSPS, 2012b).

In 2012/13, just under one third (32%) of manual workers were smokers, compared with less than a fifth (17%) of non-manual workers (**Figure 3.4**). Smoking prevalence has declined since 1998/99 for all socioeconomic groups, but a greater relative reduction in smoking prevalence was observed among non-manual workers (23% to 17%) compared with manual workers (35% to 32%).

Figure 3.4 Smoking prevalence among adults (aged 16+) by socioeconomic group (1998/99 to 2012/13)

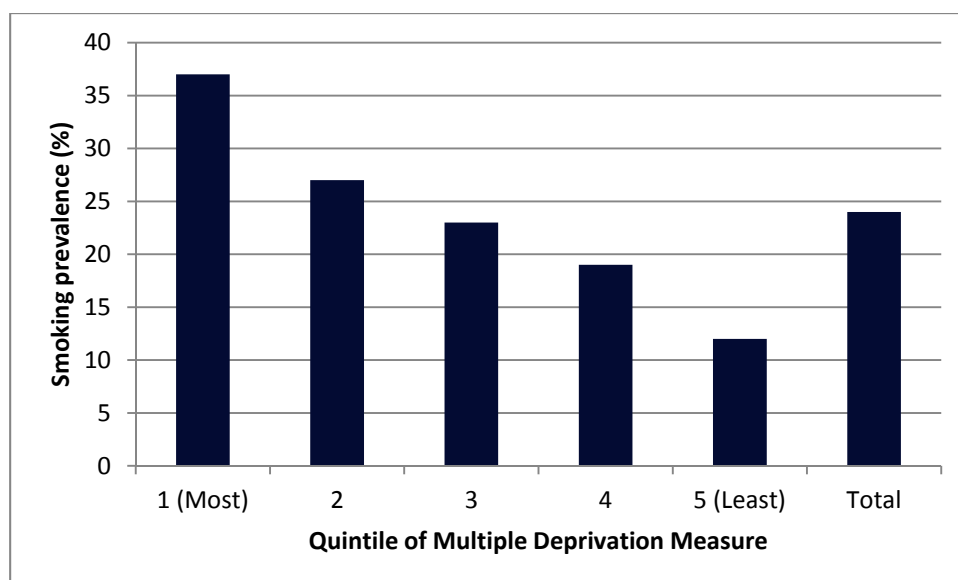


Source: CHS (1998/99 to 2009/10); HSNi (2010/11 to 2012/13)

Figure 3.5 demonstrates a social gradient in smoking prevalence according to multiple deprivation measure (MDM)⁶ for the period 2010/11 to 2012/13. This may reflect the capacity of the deprivation quintiles to represent socioeconomic disadvantage differently including the situation of the unemployed and women who may be underrepresented in an analysis focussing on manual versus non-manual workers. In 2012/13 smoking prevalence in the most deprived quintile was more than three times that of the least deprived quintile. The gap between the most and least deprived has widened slightly over the last three years (2010/11 to 2012/13). Smoking prevalence has remained fairly constant among the most deprived quintile (between 37% and 39%) whilst there has been a notable decrease in smoking rates among the least deprived quintile (18% to 12%).

⁶ Northern Ireland Multiple Deprivation Measure comprises seven domains of deprivation, each developed to measure a distinct form or type of deprivation; income (25%), employment (25%), health and disability (15%), education, skills and training (15%), proximity to services (10%), living environment (5%) and crime and disorder (5%) (NISRA, 2010).

Figure 3.5 Smoking prevalence among adults (aged 16+) by multiple deprivation measure (2012/13)



Source: HSNi 2012/13

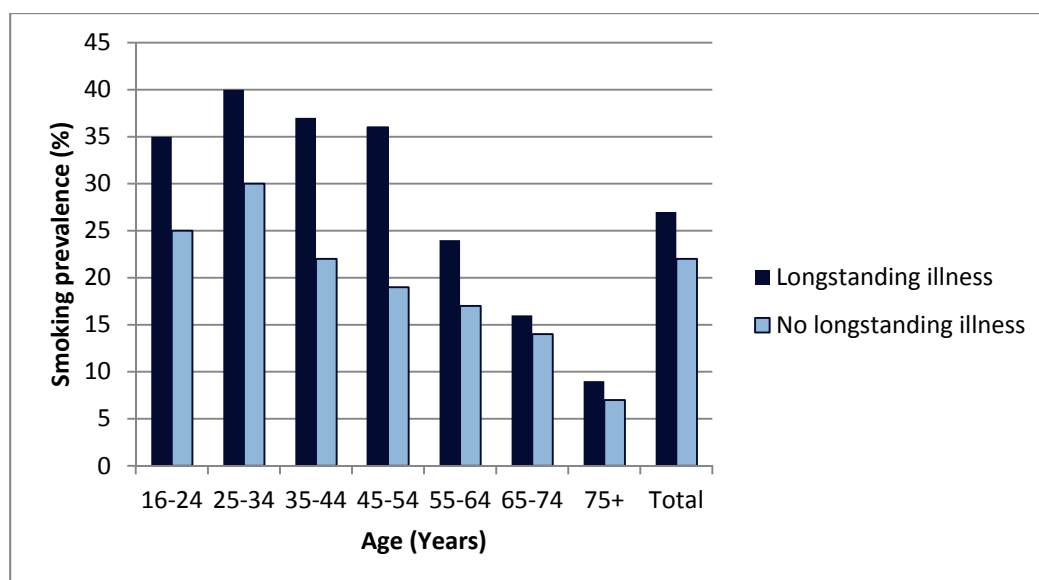
3.2.3 Smoking and long-term illness

The prevalence of longstanding or chronic conditions is increasing and represents a significant challenge for patients, carers and the entire health and social care system. It has been estimated that between 2007 and 2020, the number of adults in Northern Ireland living with chronic conditions will increase by around 30% (Balanda et al, 2010).

In 2012/13, 32.7% of the adult population aged 16 and over reported that they had a long-term illness. Respondents to *Health Survey Northern Ireland* were considered to have a long-term illness if they responding positively to the question 'Do you have any physical or mental conditions or illnesses lasting or expected to last 12 months or more?'

Figure 3.6 presents data on the prevalence of smoking among adults according to whether they reported having a longstanding illness.

Figure 3.6 Smoking prevalence among adults (aged 16+) in Northern Ireland by whether or not they report a longstanding illness (2012/13)



Source: HSNi 2012/13

This analysis shows that the prevalence of smoking is consistently higher among those with long-standing illness in the population both in general and within all the age groups studied. The prevalence of smoking among those with long-standing illness is almost double that of those without long-standing illness in the 45 to 54 year old age group.

These analyses suggest that persons with long-term illness are over-represented among smokers in Northern Ireland with clear policy implications. Targeted action may be required in terms of addressing the prevalence of smoking among those with existing self-identified long-term illness. Such action would be important in terms of protecting those with existing long-term illness from further disease and disability as a result of smoking. The data also suggest that those caring for and living with persons with long-term illness may be at higher risk of exposure to SHS.

3.2.4 Smoking patterns across the week and cigarette consumption

Between 1998/99 and 2008/09 data on daily cigarette consumption was obtained through the *Continuous Household Survey*.⁷ Since 2010/11 this information has been collected in the *Health Survey Northern Ireland*.⁸ This analysis looked at cigarette consumption to explore aspects of the intensity of potential exposure for those in proximity to smokers and to explore whether the introduction of smoke-free legislation was associated with declines in cigarette consumption among smokers, as observed in some other countries (Callinan et al, 2010).

⁷ Continuous Household Survey data unweighted.

⁸ Northern Ireland Health Survey data weighted by age and gender.

Table 3.2 presents data on smokers in Northern Ireland in terms of the median number of cigarettes smoked on weekdays and on weekend days based upon an analysis of these two data sources for the period 1998/99 to 2012/13.

Table 3.2 Median number of cigarettes smoked per day among Northern Ireland’s adult smokers (aged 16+) (1998/99 to 2012/13)

Average (median) number of cigarettes smoked per day									
Year	98/99	00/01	02/03	04/05	06/07	08/09	10/11	11/12	12/13
Weekdays	15	15	15	15	15	15	10	10	12
Weekend days	20	20	20	16	20	15	15	15	15

Source: CHS (1998/99 to 2008/09); HSNi (2010/11 to 2012/13)

Over the last 15 years, daily cigarette consumption has been consistently higher on weekend days compared with weekdays. Median weekday cigarette consumption declined in post-ban years by around one third, falling to 10 cigarettes a day in 2010/11. However a slight increase in daily cigarette consumption was observed in 2012/13.

Median weekend day consumption also fell in post-ban periods with a notable decline in 2008/09. Such reductions in cigarette consumption may be related in part to smoke-free legislation which affected the ease of smoking during the working week as well as in bars and restaurants when socialising at weekends.

Lower socioeconomic status is known to be associated with a higher prevalence of smoking as well as heavier smoking. **Table 3.3** presents an analysis of median weekday and weekend day cigarette consumption by MDM quintiles. This shows that smokers in the most deprived areas of Northern Ireland consistently report higher tobacco consumption across the week. This analysis suggests that the median consumption of cigarettes among smokers in the most deprived areas is 50% higher than that in the least deprived areas (105 compared with 70 cigarettes per full week).

Table 3.3 Median number of cigarettes smoked per day among Northern Ireland’s adult smokers (aged 16+) by multiple deprivation measure quintiles (2012/13)

Deprivation Quintile	Average (median) number of cigarettes smoked per day	
	Weekdays	Weekend days
1 (Most)	15	15
2	13	15
3	10	15
4	10	15
5 (Least)	10	10

Source: HSNi (2012/13)

Analysis by socioeconomic group (SEG) demonstrates a similar pattern in tobacco consumption, with manual workers exhibiting a slightly higher level of consumption on weekdays (**Table 3.4**).

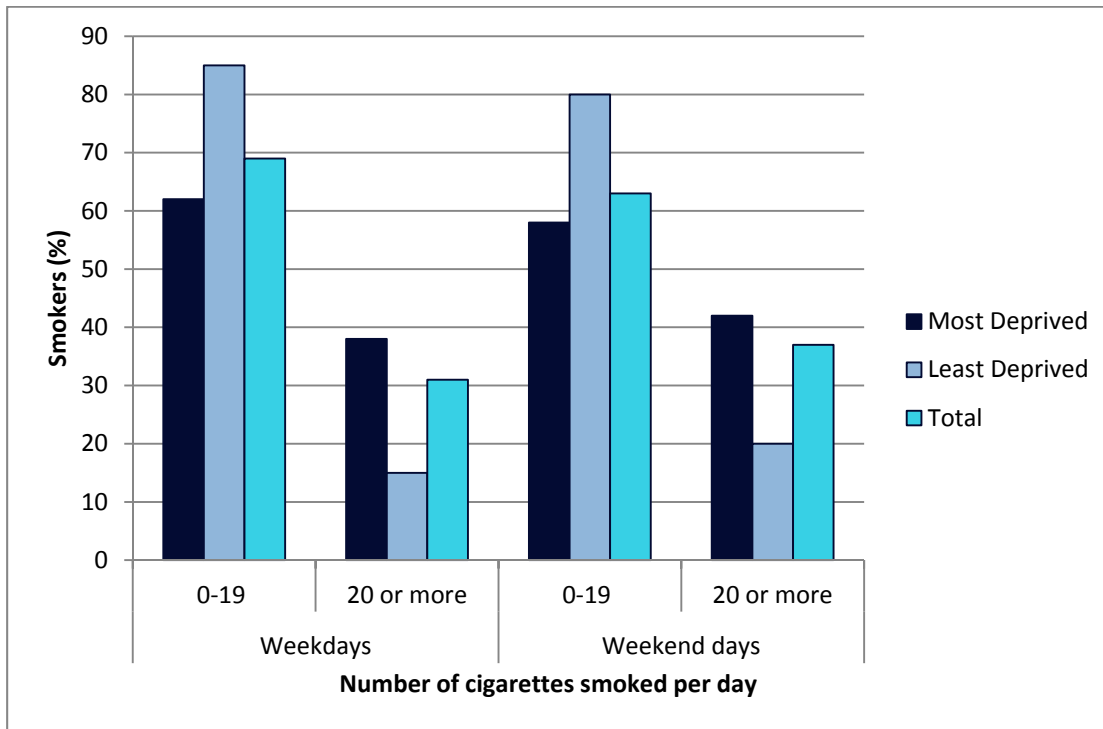
Table 3.4 Median number of cigarettes smoked per day among Northern Ireland’s adult smokers (aged 16+) by socioeconomic group (2012/13)

Socioeconomic group	Average (median) number of cigarettes smoked	
	Weekdays	Weekend days
Manual	15	15
Non-manual	10	12
Unknown	15	15

Source: HSNi (2012/13)

Data were analysed to assess patterns of heavy smoking (20 or more cigarettes per day) by SEG and MDM. In 2012/13, on weekdays 38% of smokers in the most deprived quintile were heavy smokers compared with 15% in the least deprived quintile (**Figure 3.7**). Heavy smoking across all quintiles is higher on weekend days. Smokers in the most deprived quintiles were more likely to report heavy smoking on both weekdays as well as weekend days.

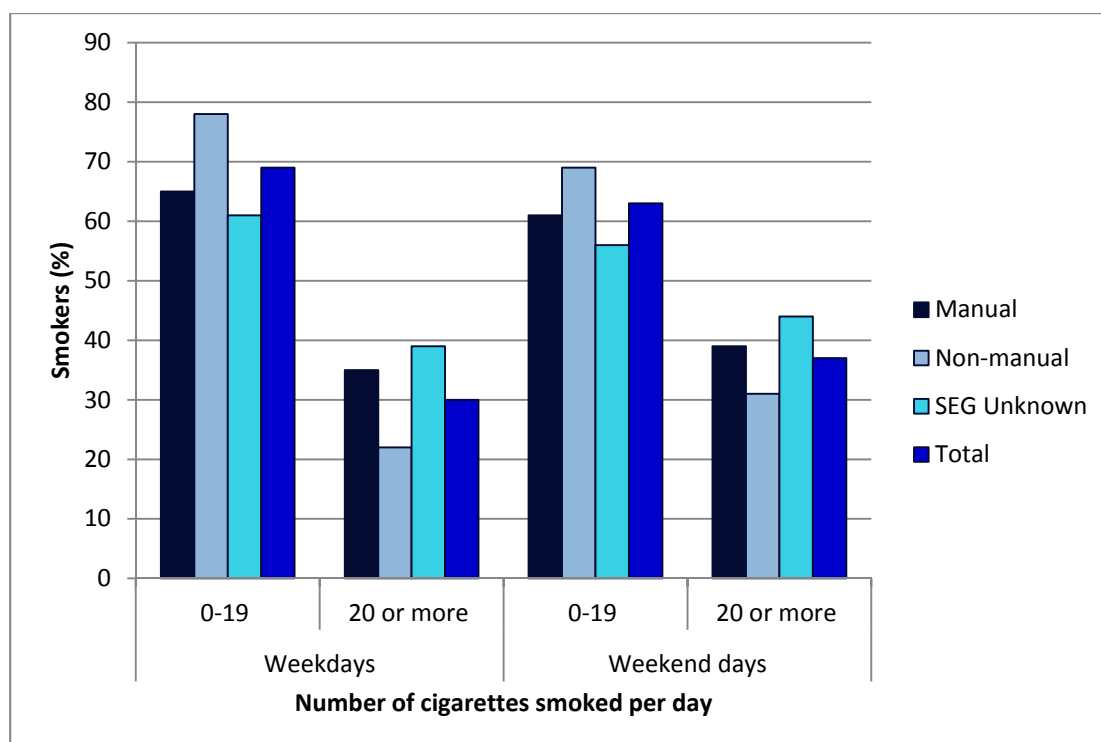
Figure 3.7 Cigarette consumption among adult smokers (aged 16+) in Northern Ireland by most and least deprived multiple deprivation measure quintiles (2012/13)



Source: HSNi (2012/13)

Manual worker smokers were more likely to be heavy smokers compared with non-manual worker smokers (**Figure 3.8**). In 2012/13 there was a small increase in the proportion of manual workers and those for whom SEG was not specified smoking 20 or more cigarettes per weekday.

Figure 3.8 Cigarette consumption among adult smokers (aged 16+) in Northern Ireland by socioeconomic group (2012/13)



Source: HSNi (2012/13)

3.2.5 Smoking in Pregnancy

The *Ten Year Tobacco Control Strategy for Northern Ireland* proposes specific targets for a reduction in smoking prevalence among pregnant women. These aim to reduce the proportion of pregnant women who smoke to 9% (DHSSPS, 2012a).

Smoking in pregnancy has direct effects on the health and development of the foetus and the associations with miscarriage, perinatal mortality and congenital malformation are well known (Schneider and Schütz, 2008; Royal College of Physicians UK, 2010). In the context of this report, understanding patterns of smoking in pregnancy is particularly pertinent to the direction of policy in reducing SHS exposure. The unborn foetus (via the mother inhaling SHS) as well as new-born babies and infants are particularly vulnerable to harmful effects from exposure to SHS. The primary source of exposure for the majority of young children is, and has always been, their parents smoking.

A recent meta-analysis of SHS and adverse foetal outcomes in non-smoking pregnant women estimated that pregnant women who are exposed to SHS are 23% more likely to experience stillbirth and 13% more likely to give birth to a child with a congenital malformation than non-smoking women who are not exposed to any SHS (Leonardi-Bee et al, 2011).

Smoke-free legislation has been an important development in protecting pregnant workers from exposure to SHS in the workplace, particularly among those women working in the hospitality sector.

In Northern Ireland, there are a number of information sources which provide estimates of the prevalence of smoking among pregnant women - the *Infant Feeding Survey* which is conducted every 5 years in all UK jurisdictions and annual data available through the *Northern Ireland Child Health System* which records data on all children and pregnant women registered with a General Practitioner.

There is no data source available to provide estimates of SHS exposure among pregnant women as it is not routinely recorded on antenatal records or within routine surveys of pregnant women in the UK. This analysis presents a proxy measure– the proportion of pregnant women living in households where at least one adult is identified a smoker. This could reasonably be interpreted as the number of pregnant women at risk of SHS exposure in the home but fails to provide a reasonable estimate of actual exposure. Assessment of patterns of SHS exposure among pregnant women, as for other adults, is complicated by significant levels of active smoking in the population group.

15% of mothers in Northern Ireland reported that they smoked throughout their pregnancy in 2010 (**Table 3.5**). The proportion of mothers reporting that they smoked throughout pregnancy fell by just over a third between 2000 and 2010. Pregnant women in the most deprived areas were three times more likely to smoke in pregnancy than those in the least deprived (DHSSPS, 2012b).

28% of Northern Ireland mothers reported that they had ever smoked. 13% of these mothers reported quitting just prior to pregnancy or in the antenatal period and the remaining 15% smoked throughout pregnancy. Of those mothers who continued to smoke in pregnancy 80% reported that they had cut down.

Reductions are observed in the proportion of women who reported smoking before or during pregnancy as well as reductions in those who reported smoking throughout pregnancy. There was a stepwise improvement in the proportion of pregnant women in Northern Ireland who reported that they had quit before or during pregnancy over time. However the proportion of women reporting that they had successfully quit smoking before or during pregnancy was lower in Northern Ireland than in other UK jurisdictions.

Table 3.5 Estimated prevalence of smoking in pregnancy in Northern Ireland and in the UK (2005 and 2010)

Smoking during pregnancy	Northern Ireland		UK	
	2005	2010	2005	2010
% who smoked before or during pregnancy	32	28	33	26
% who smoked throughout pregnancy	18	15	17	12
% who gave up before or during pregnancy	43	47	48	54

Source: IFS (2005 and 2010)

In 2010, around one third (33%) of pregnant women in Northern Ireland lived in a household where at least one smoker was resident⁹ compared with 37% in 2005. This estimate includes households where the pregnant woman themselves is the smoker

⁹ Includes households where the pregnant woman themselves is the smoker.

3.3 Quitting

3.3.1 Context

Analysis of quitting behaviours is another important facet of understanding smoking behaviours as well as smokers' beliefs and concerns regarding exposing others to SHS. Protecting others from exposure to the harmful effects of tobacco smoke and becoming a positive role model to children can be a key motivating factor in quit attempts, particularly among parents. In addition, wider tobacco control measures and media campaigns contribute to a denormalisation of smoking and a societal unacceptance for exposure to SHS which may act in itself as a prompt to quitting.

In recent years, tobacco harm reduction approaches have expanded in line with efforts to quit. These include the short and long-term use of nicotine replacement treatments and non-medicinal nicotine delivery systems. In particular there has been a significant growth in the use of electronic cigarettes which has had an impact of visibility of smoking-type behaviours in areas covered by the current smoke-free legislation.

This section presents analyses on quitting data from *Health Survey Northern Ireland* and the *Statistics on Smoking Cessation Services in Northern Ireland (SCSNI)* which monitors outcomes from specialist smoking cessation services in Northern Ireland. SCSNI data is produced by DHSSPS from a web based recording system with data being provided by community clinics, pharmacies and hospitals.

3.3.2 Reasons for quitting

Health Survey Northern Ireland 2011/12 indicates that over three-quarters of smokers would like to give up smoking. **Table 3.6** shows the proportions of respondents that agreed with a set of statements which would lead them to consider quitting

Table 3.6 Reasons for wanting to quit among all Northern Ireland adult smokers (aged 16+) (2007/08 and 2011/12)

Statement	% giving reason 2007/08	% giving reason 2011/12
Concern for your personal health	74	77
The price of cigarettes	70	68
Setting an example for children	64	67
Concern for the effect of your cigarette smoke on non-smokers	55	55
Advice from doctor, dentist or other health professional to quit	49	46
Free or lower-cost stop-smoking medication	42	36*
That society disapproves of smoking	36	32
Smoking restrictions in public places like restaurants or bars	41	31*
Warning labels on cigarette packets	25	26
Smoking restrictions at work	24	18*

Source: CHS (2007/08); HSNi (2011/12)

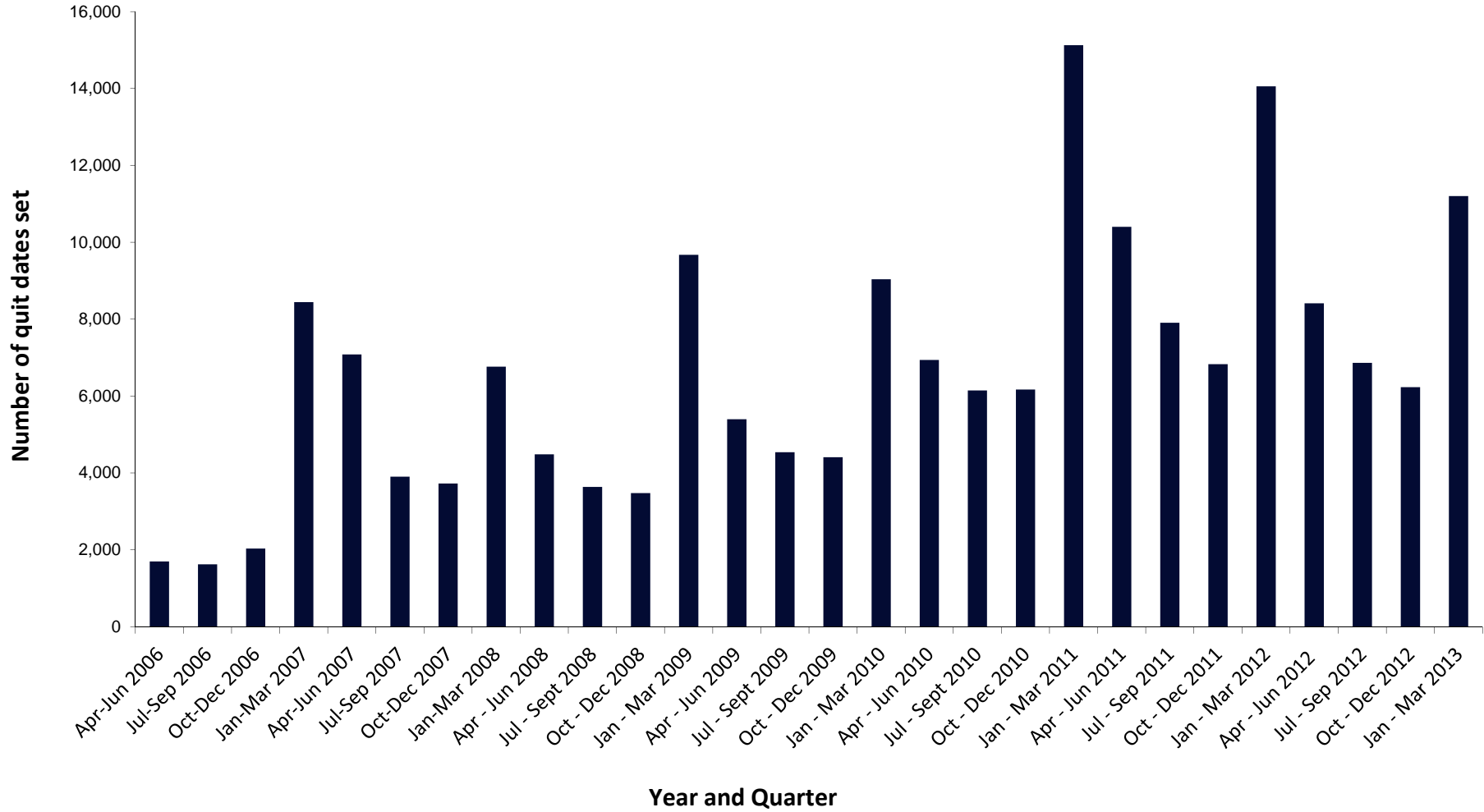
Note: Where an * is used in the table above this denotes cases where there is a significant difference (i.e. increase or decrease) between 2007/08 and 2011/12.

Personal health concerns, price and setting an example for children were most commonly identified as reasons to quit. However, concern for the harmful effects of SHS exposure on others and societal disapproval were also pertinent reasons for a significant proportion of smokers. Smoking restrictions in public places and work were identified as reasons to quit by around 31% of smokers, even several years after smoke-free legislation was introduced. There appears to be some dilution of this effect over time.

3.3.3 Quit attempts

In *Health Survey Northern Ireland 2012/13*, 81% of adult smokers reported that they had tried to quit smoking at some time. The *One Year and Three Year Reviews of Smoke-Free Legislation* provided detailed information on the activity of specialist smoking cessation services around the period of the introduction of the ban. The introduction of smoke-free legislation was associated with a small peak in quit attempts but the pattern was not maintained over time. 186,230 quit dates were set through the specialist smoking cessation services in the period 2006/07 to 2012/13 ranging from 13,795 in 2006/07 to 39,204 in 2011/12. The most recent figure (2012/13) saw 32,714 individuals set a quit date. A quarterly breakdown is illustrated in **Figure 3.9**.

Figure 3.9 Number of quit dates set through specialist smoking cessation services in Northern Ireland (2006/07 to 2012/13)



Source: SCSNI 2006/07 to 2012/13

People who set a quit date were followed up after 4 weeks to ascertain whether they were still not smoking and were considered as having successfully quit at this stage. There was a significant increase between the years 2005/06 (47%) and 2012/13 (57%) in the overall quit rate (**Table 3.7**). The 2012/13 quit rates were also significantly higher than in 2011/12 (52%).

Table 3.7 Outcome at 4 weeks of those who have set a quit date (based on self-report) (2005/06 to 2012/13)

Smoking cessation outcomes	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
Number setting a quit date	8,702	13,795	21,476	21,272	23,383	34,386	39,204	32,714
Number quit at 4 week follow-up	4,119	7,150	10,971	10,787	12,042	17,951	20,299	18,516
% quit at 4 week follow-up	47	52	51	51	51	52	52	57

Source: SCSNI 2005/006 to 2012/13

3.3.4 General Practice smoking cessation advice

The Quality and Outcomes Framework (QOF) (part of the General Medical Services contract introduced on 1 April 2004) is the annual reward and incentive programme detailing General Practice achievement results. Data are collected at an aggregate level for each general practice, allowing analysis of the overall prevalence of certain conditions (but not by age or gender). On 1 April 2006, two smoking-related clinical indicators were introduced and GPs record the smoking status among those patients with QOF defined chronic conditions¹⁰.

In 2012/13, of the 1,909, 338 registered patients, around 20% were recorded as having one of the QOF defined chronic conditions. **Table 3.8** presents data on the number of patients with any combination of the QOF defined chronic conditions and the proportion of those patients whose smoking status was recorded. Since 2006/07 around 96% of patients with the defined conditions have had their smoking status recorded in each of the last 7 years.

¹⁰ In 2006/07, these included coronary heart disease, stroke or transient ischaemic attack, hypertension, diabetes, chronic obstructive lung disease or asthma. In 2008/09 chronic kidney disease, schizophrenia, bipolar affective disorder and other psychoses were added to the list. In 2012/13 peripheral arterial disease was also included.

Table 3.8 Proportion of patients with Quality Outcomes Framework defined chronic conditions whose smoking status was recorded (2006/07 to 2012/13)

Smoking Indicator 1 ¹¹	No. of patients with any or any combination of the defined conditions	No. of patients whose smoking status was recorded	%
2006/07	335,784	323,330	96.3
2007/08	343,434	331,360	96.5
2008/09	366,553	352,664	96.2
2009/10	377,429	362,604	96.1
2010/11	387,380	372,595	96.2
2011/12	395,687	380,746	96.2
2012/13	405,427	391,319	96.5

Source: QOF Payment Calculation and Analysis System (2006/7 to 2012/13)

Patients with any or any combination of the defined conditions, who smoke, are offered smoking cessation advice from their GP. **Table 3.9** below indicates that around 94-95% of patients with the defined conditions and who smoke have been offered smoking cessation advice in each of the years listed since 2006/07.

Table 3.9 Proportion of patients with Quality Outcomes Framework defined chronic conditions who received smoking cessation advice (2006/07 to 2012/13)

Smoking Indicator 2 ¹²	No. of patients with any or any combination of the defined conditions, who smoke	No. of patients who received smoking cessation advice	%
2006/07	64,768	61,148	94.4
2007/08	65,609	61,785	94.2
2008/09	72,658	68,343	94.1
2009/10	75,200	70,643	93.9
2010/11	76,455	71,526	93.6
2011/12	76,897	71,994	93.6
2012/13	78,352	74,153	94.6

Source: QOF Payment Calculation and Analysis System (2006/7 to 2012/13)

¹¹ Smoking Indicator 1 reports whether smoking status has been recorded on the patient record.

¹² Smoking Indicator 2 reports whether smoking cessation advice has been offered.

3.3.5 Nicotine replacement therapies and the use of non-medicinal nicotine delivery systems (e-cigarettes) in public places

The 2011/12 *Health Survey Northern Ireland* found that 94% of respondents who are current smokers or ex-smokers who quit in the past 6 months had heard about medications to help people stop smoking such as Nicotine Replacement Therapies (NRT), and of these, 55% had used some form of NRT. 62% of those who had tried NRT had used nicotine patches.

Electronic or e-cigarettes are battery operated devices that do not contain tobacco but operate by heating nicotine and other chemicals to produce a vapour which is then inhaled (Britton and Bogdanovica, 2014). Recent years have seen a rapid increase in the use of electronic cigarettes in the UK and Ireland. Across the UK, e-cigarettes are available as a consumer product. The e-cigarette market in the UK is estimated to be worth £91.3 million a year with the market expanded rapidly year on year. The number of e-cigarette users in the UK has been estimated at 1.3 million (Bauld et al, 2014).

The potential of e-cigarettes as a means to support quitting remains unclear with divergent results from various studies and a lack of data to make firm conclusions on long-term efficacy of their use in supporting quitting. However, there is considerable evidence to support their role in terms of tobacco-harm reduction for those that successfully transition fully away from smoking tobacco and do not revert to tobacco or adopt a dual use pattern (NICE, 2013).

Nationally representative data on the use of e-cigarettes by people in Northern Ireland were not available at the time of going to press with this report. Data on the prevalence of vaping in places covered under current smoke-free legislation or by voluntary smoke-free policies are also unavailable. Several UK jurisdictions are currently working towards regulation of the sale or marketing of such devices. In Northern Ireland a consultation is being held on legislation to prohibit the sale of nicotine-containing products to under-eighteens (DHSSPS, 2014c). There is no national legislation relevant to restricting their use in indoor spaces. The use of these devices is not covered under the current smoke-free legislation which specifically relates to tobacco smoke. Public attitudes on the acceptability of vaping in indoor spaces have also not yet been assessed. However, there has been an emergence of restrictions in certain areas such as public transport bye-laws, within private businesses such as cafés and restaurants. In addition, the Health Service Executive has moved to restrict the use of e-cigarettes within the context of the smoke-free health service provisions in the Republic of Ireland. Similar measures have been introduced across Health and Social Care Trust campuses in Northern Ireland.

There are many unresolved debates with regard to the overall contribution of e-cigarettes to the achievement of tobacco control goals. Such debates are beyond the scope of this

report which specifically relates to progress on smoke-free spaces in Northern Ireland. However, the current points are noted within the context of this report:

- Toxicological studies indicate that the vapour released from an e-cigarette is considerably less harmful and toxic than second-hand tobacco smoke. However, there is limited regulation on the content of e-cigarette capsules and in this context the potential health consequences of inhalation of e-cigarette vapour remain unclear (Orr, 2014). SHS is made up of products of combustion as well as exhaled sidestream smoke which adds to its potential toxicity compared with e-cigarette vapour.
- The increased use of e-cigarettes could contribute to reducing SHS exposure for adults and children in the domestic setting and may be particularly important in terms of smoking in smaller enclosed spaces such as cars or small housing units. It is not known whether adults modify their use of cigarettes/e-cigarettes according to the context of exposing others to SHS.
- The social acceptability of using e-cigarettes in indoor spaces has not been measured but it would appear that the smoke-free legislation may be creating a halo effect on their use in certain indoor environments.
- Vaping in public places may increase the overall exposure of children to smoking-type behaviours and erode the denormalisation of smoking type behaviours achieved through various tobacco control measures in recent years (Faculty of Public Health, 2014).
- The largely unregulated and aggressive marketing of e-cigarettes to children may influence their attitudes and behaviours in terms of trying smoking or trying e-cigarette type products. Current evidence suggests that two-thirds of children in Great Britain had heard of e-cigarettes, although usage among children is low. Whilst use of e-cigarettes is concentrated among children who were already cigarette users, the low level of usage among non-smoking children is on the increase (Bauld et al, 2014).
- Further data is needed in the Northern Ireland context to assess levels and patterns of use not just in terms of smokers but also in terms of the implications for reductions in the SHS exposure among the families, friends and co-workers of smokers.

3.5 Key points

- Reducing the number of smokers as well as modifying the attitudes and behaviours of smokers represents two central components of a strategic approach to reducing SHS exposure.
- Measures to address SHS exposure have potential to influence the behaviour of smokers in terms of (i) when and where they smoke (ii) beliefs about the harmfulness and social acceptability of exposing others to SHS and (iii) quit attempts and the success of those attempts.
- This chapter presents data on smoking patterns in key subgroups of the adult population in Northern Ireland (including pregnant women). Data on quitting and the use of tobacco harm reduction methods such as e-cigarettes are also featured.
- The prevalence of smoking in the adult population (age 16 and over) in Northern Ireland is 24% based upon the 2012/13 data.
- Although a decline in smoking prevalence was observed at the time of the introduction of smoke-free legislation, this trend was not maintained over time. The absence of any lasting association between smoke-free legislation and adult smoking prevalence is in line with the findings of a Cochrane systematic review.
- Inequalities remain imprinted upon smoking prevalence in Northern Ireland. This has implications in terms of the risk of SHS exposure in these communities. Smoking prevalence in the most deprived areas of Northern Ireland was treble that of the least deprived areas.
- People who reported a long-term illness were over-represented among smokers in Northern Ireland. This suggests that those caring for and living with persons with long-term illness may be at higher risk of SHS exposure. However, QOF data indicates that a high compliance by GPs in terms of recording smoking status and provision of smoking cessation advice to patients with defined chronic conditions.
- Median weekday and weekend day self-reported consumption of cigarettes among Northern Ireland's smokers declined in the post-ban period by around one third. Similar declines have been observed following the introduction of smoke-free legislation in other countries.

- Around one third of smokers living in the most deprived areas were heavy smokers which may have implications for the intensity and duration as well as the frequency of SHS exposure in disadvantaged households. Tackling inequalities in the prevalence of smoking will be critical to tackling inequalities in SHS exposure.
- Assuming that the majority of indoor SHS exposure occurs in the home environment the data suggests that those children and adults living with adults in the 20 to 45 year old bracket may be particularly vulnerable as are those living in the most deprived areas.
- The unborn foetus, new-born babies and infants are particularly vulnerable to harmful effects from SHS exposure. 15% of mothers in Northern Ireland reported that they smoked throughout their pregnancy. Pregnant women in the most deprived areas were three times more likely to smoke than those in the least deprived areas.
- In 2010, around one third of pregnant women in Northern Ireland lived in a household where at least one smoker was resident.¹³
- Over three-quarters of adult smokers reported that they want to give up smoking and the majority have attempted to quit at some point.
- Concern for the effect of SHS on others was identified as a reason to quit by more than half of smokers. Smoking restrictions in public places and to a lesser extent in the workplace remained relevant as reasons to quit for around 31% of smokers, even several years after the introduction of legislation.
- There has been a significant increase in the number of smokers (including young people) successfully quitting over the period 2005/6 to 2012/13.
- Further data is needed in the Northern Ireland context to assess levels and patterns of use of e-cigarettes not just in terms of smokers but also in terms of the implications for reductions in the SHS exposure among the families, friends and co-workers of smokers.
- Current evidence suggests that the vapour released from e-cigarettes is considerably less toxic than SHS. However, the lack of regulation of the products means that it is difficult to make broad conclusions on the likely toxicological profile of e-cigarette vapour.

¹³ Includes households where the pregnant woman themselves is the smoker.

- Vaping in public places may increase the overall exposure of children to smoking-type behaviours and may erode the denormalisation of smoking type behaviours achieved through various tobacco control measures in recent years.

Chapter 4. Key trends in smoking by children in Northern Ireland

4.1 Context

The *Ten Year Tobacco Control Strategy for Northern Ireland* emphasises the vulnerability of children to exposure to harms from both smoking and SHS (DHSSPS, 2012a).

Reducing the proportion of children who try a cigarette and reducing the proportion of experimenting children who become established smokers will underpin the progression towards a tobacco-free Northern Ireland (McAvoy et al, 2013). The appeal of smoking to children is affected by behaviours and cultures around smoking which are modelled by the marketing activities of the tobacco industry as well as by the smoking behaviours considered socially acceptable in the communities in which they grow up. Smoke-free legislation and other tobacco-free environments can project a significant message to children about the harmfulness of smoking and SHS.

This chapter presents key trends in smoking by children in Northern Ireland, updating and expanding upon findings presented in the *One Year and Three Year Reviews of Smoke-free Legislation in Northern Ireland* (DHSSPS 2009b; DHSSPS, 2013). The issue of children's exposure to SHS is dealt with in Chapter 5.

4.2 Prevalence of smoking among children

Table 4.1 presents data on the proportion of young people who reported every smoking in each wave of the *Young Persons' Behaviour and Attitudes Survey in Northern Ireland (YPBAS)*.

Table 4.1 Proportion of Northern Ireland boys and girls aged 11-16 who reported that they ever smoked (2000-2013)

Gender	Year				
	2000	2003	2007	2010	2013
Boys	34	30	21	20	16
Girls	39	36	27	18	11
All	37	33	24	19	13

Source: YPBAS (2000-2013)

Between 2000 and 2013, the proportion of children aged 11 to 16 years who had ever smoked¹⁴ declined from 37% to 13%. There has been a statistically significant reduction in

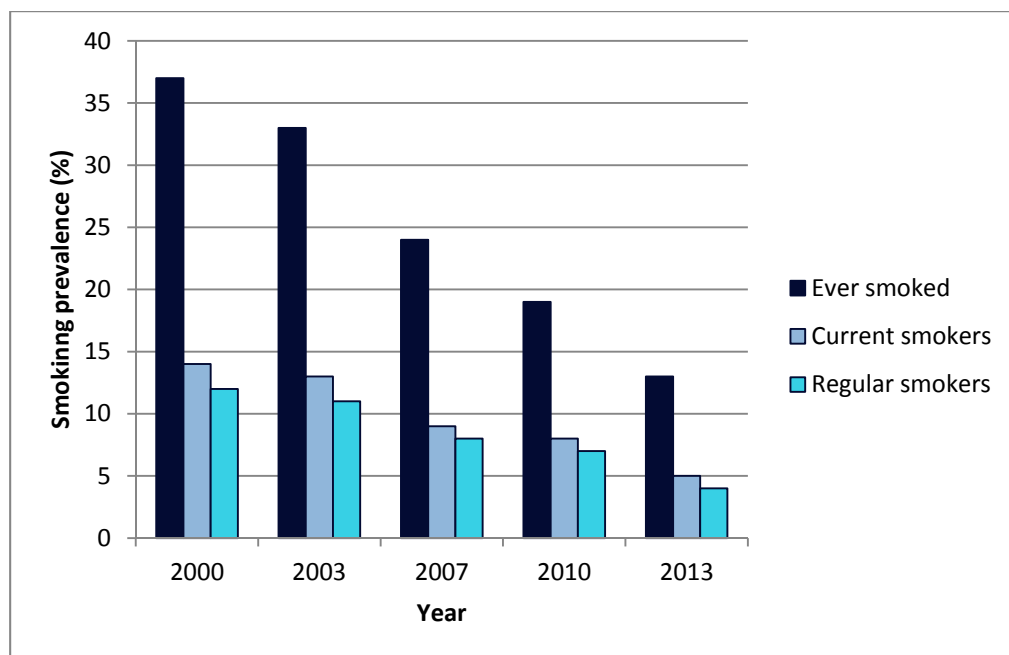
¹⁴ Ever smoked is defined as having smoked a whole cigarette, not just a puff of someone else's cigarette

smoking rates among young people year on year since 2000. In the year 2000 a higher proportion of girls than boys reported that they had ever smoked (39% versus 34%).

Convincing declines in 'ever smoking' were observed among both boys and girls. Between 2000 and 2013, the proportion of girls who reported ever having smoked fell by around two thirds while the proportion of boys who ever smoked fell by half. Interestingly, while girls were more likely to smoke than boys in pre-ban years the pattern was reversed in post-ban years.

Figure 4.1 and **Table 4.2** present data on smoking patterns among children in each of the waves of the *Young Persons' Behaviour and Attitudes Survey in Northern Ireland* in terms of ever smoking, current smoking and regular smoking.

Figure 4.1 Smoking prevalence among young people in Northern Ireland aged 11-16 years (2000-2013)



Source: YPBAS (2000-2013)

Table 4.2 Smoking prevalence among young people in Northern Ireland aged 11-16 years (2000-2013)

Smoking behaviour	Percentage of 11-16 year olds				
	2000	2003	2007	2010	2013
Ever smoked	37	33	24	19	13
Current smokers ¹⁵	14	13	9	8	5
Regular smokers ¹⁶	12	11	8	7	4

Source: YPBAS (2000 -2013)

It has been estimated that of children who try smoking around half become established smokers over time. The YPBAS data suggests that around 40% of those who ever smoked reported that they were still smoking with around 31% smoking regularly (every day or at least once a week). The observed ratios between ever and current smoking and between current and regular smoking have remained relatively consistent over the years. This suggests that the risk of progression from experimentation to established smoking has been unchanged over time.

In keeping with trends in ever smoking, the proportion of young people aged 11 to 16 years who were current and regular smokers has declined over time. The proportion of young people who were currently smoking or regular smokers halved between 2007 (the year of introduction of smoke-free legislation) and 2013.

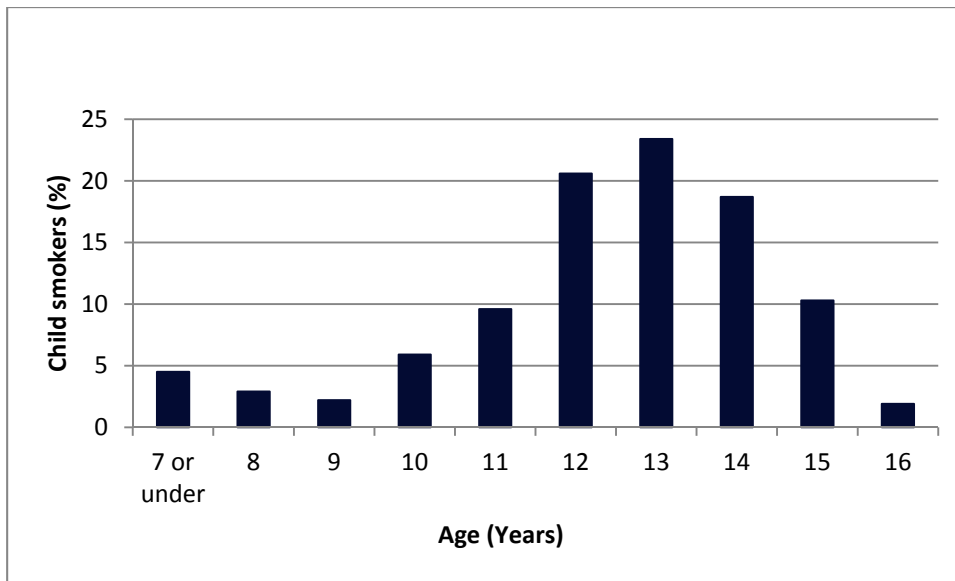
4.3 Age of smoking initiation

For those children who had ever smoked, the most common age for young people to start smoking was between 12 and 14 years (**Figure 4.2**).

¹⁵ Current smokers are defined as young people still smoking at the time of the survey.

¹⁶ Regular smokers are defined as young people who smoke every day or at least once a week.

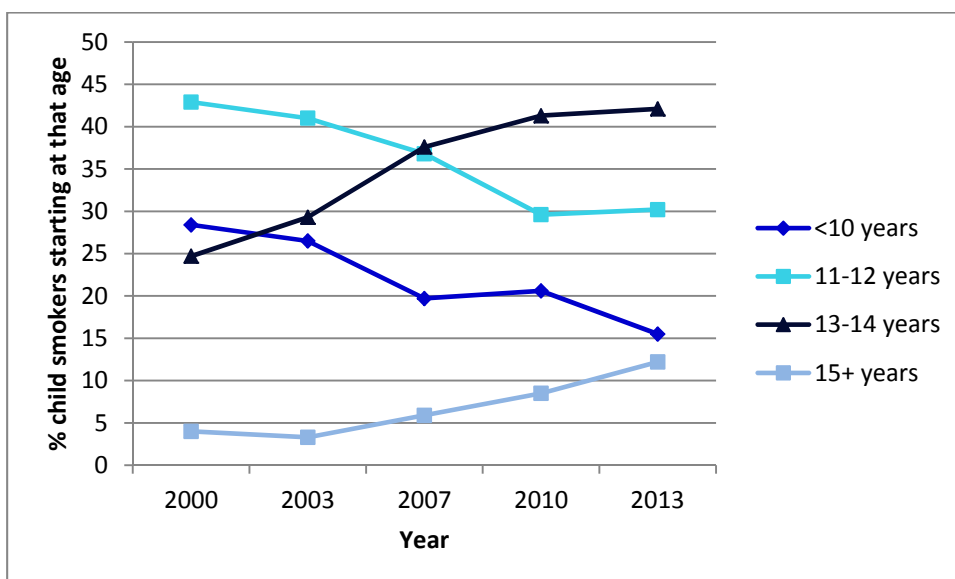
Figure 4.2 Age of smoking initiation among those Northern Ireland children aged 11-16 who reported ever smoking (2013)



Source: YPBAS (2013)

There is some evidence of a reduction in the proportion of children who reported ever smoking at or below the age of 13. In 2000, over 70% of children who had ever smoked a cigarette had started smoking before the age of 13 years and this had reduced to less than half of 'ever smokers' in 2013. **Figure 4.3** illustrates this changing pattern of smoking behaviour across the age groups, with evidence of a shift towards young people trying their first cigarette at an older age.

Figure 4.3 Age at which children aged 11-16 years smoked their first whole cigarette (2000-2013)



Source: YPBAS (2000-2013)

4.4 Frequency of smoking by child smokers

Around a quarter of children who reported ever trying a cigarette also reported that they smoked every day in the period 2000 to 2010. By 2013, there was a small reduction in the number of ever smokers reporting daily smoking.

Table 4.3 Frequency of smoking among 11-16 year olds who reported they had ever smoked (2000-2013)

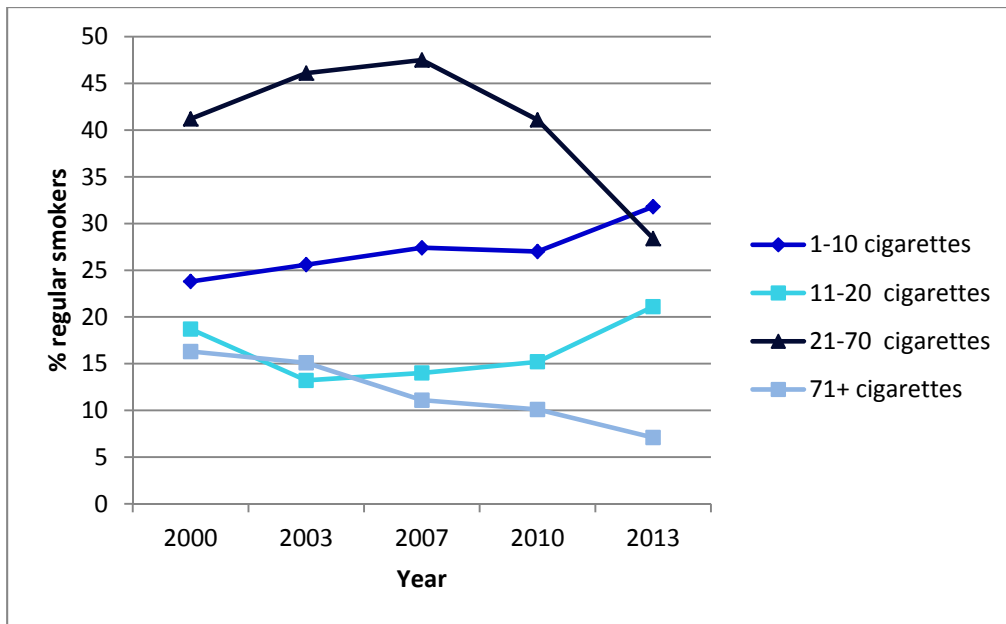
Frequency of smoking	Percentage of 11-16 year olds who have smoked at least one whole cigarette				
	2000	2003	2007	2010	2013
Every day	25.6	27.5	24.9	25.2	20.4
At least once a week, but not every day	7.7	6.7	6.4	9.5	8.3
Less than once a week	6.5	6.1	4.9	9.4	8.6
Do not smoke now	60.2	59.7	63.8	56.0	62.2
Total	100	100	100	100	100

Source: YPBAS (2000-2013)

4.5 Intensity of smoking among child smokers

The number of cigarettes smoked per week among children who identified themselves as regular smokers was analysed (**Figure 4.4 / Table 4.4**). A shift towards lower consumption over consecutive survey waves was observed. In particular there were convincing declines in heavier smoking. The proportion of child smokers smoking more than 70 cigarettes per week (equivalent to a 10 a day pattern) halved between 2000 and 2013.

Figure 4.4 Number of cigarettes smoked per week by 11-16 year old regular smokers (2000-2013)



Source: YPBAS (2000-2013)

Table 4.4 Number of cigarettes smoker by per week by 11-16 year old regular smokers (2000-2013)

Number of cigarettes	% 11-16 year olds (regular smokers)				
	2000	2003	2007	2010	2013
1-10	23.8	25.6	27.4	27.0	31.8
11-20	18.7	13.2	14.0	15.2	21.1
21-70	41.2	46.1	47.5	41.1	28.4
71+	16.3	15.1	11.1	10.1	7.1
Unanswered	-	-	-	6.6	3.0
Don't know	-	-	-	-	8.6

Source: YPBAS (2000-2013)

Declines in youth smoking are a testament to the introduction of a range of tobacco control measures which have reduced the appeal and accessibility of tobacco to young people. The low levels of regular smoking among children and their lighter consumption of cigarettes (McAvoy et al, 2013) means that school-children aged 16 and under are unlikely to pose a significant concern as a source of SHS exposure to others.

4.6 Quitting among children & young people

In the 2013 *Young Persons' Behaviour and Attitudes Survey in Northern Ireland*, 78% of pupils (aged 11-16) who smoked at least once a week indicated that they would like to give up smoking altogether.

When asked what they would be most likely to try for help with giving up, 25% indicated nicotine products such as chewing gum or patches, 10% reported that they would ask family or friends for help/advice, 9% would go to see their family doctor or GP, 8% indicated they would ask an adult in school, 4% would attend a stop smoking group or see a counsellor and 3% of pupils who smoke would phone a smoker's helpline.

With respect to the specialist smoking cessation services, in 2012/13, 2% of those setting a quit date were under 18 years of age. **Table 4.5** outlines the relevant data for this age-group. The proportion of young people that remained not smoking at the four-week follow-up in 2012/13 (44%) was significantly higher than in other years. Lower quit rates were observed among young people than among adults in all years of SCSNI data.

Table 4.5: Outcome at 4 weeks of young people aged 11-16 years who had set a quit date through specialist smoking cessation services (2005/06 to 2012/13)

Smoking Cessation Outcome	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13
Number setting a quit date	214	174	271	529	572	858	532	423
Number quit at 4 week follow-up (based on self-report)	54	63	86	168	203	284	175	186
% quit at 4 week follow-up (based on self-report)	25%	36%	32%	32%	35%	33%	33%	44%

Source: SCSNI (2005/06 to 2012/13)

4.7 Key points

- The *Ten Year Tobacco Control Strategy for Northern Ireland* emphasises the vulnerability of children to harms from both smoking and exposure to SHS.
- This chapter presents key trends in child smoking in Northern Ireland, updating and expanding upon findings presented in the *One Year and Three Year Reviews of Smoke-free Legislation in Northern Ireland* (DHSSPS 2009b; DHSSPS, 2013).

- Between 2000 and 2013, the proportion of children aged 11 to 16 years who had ever smoked declined by almost two thirds from 37% to 13% in 2013. There have been convincing declines in youth smoking in both genders with the rate of decline among girls greater than that of boys.
- The most common age for 11 to 16 year olds to try their first cigarette is between 12 and 14 years. There is a shift to the right evident over time with children trying their first cigarette later in childhood. The data did not allow for an assessment of late uptake among children and young adults aged 17 and over.
- Around 40% of children who reported ever smoking become smokers, with around a third of those smoking every day or at least one a week. The ratio of ever smokers to current and regular smokers has remained consistent over time.
- Among 11 to 16 year old smokers, between one quarter and one third of child smokers smoke between and 1 and 10 cigarettes a week. There was a shift towards lower consumption over time with steepest declines in child smokers of more than one packet of cigarettes a week. The proportion of child smokers who reported smoking >70 cigarettes a week (roughly equivalent to a 10 a day smoker) halved between 2003 and 2013 (15.1% of child smokers in 2003 and 7.1% of child smokers in 2013).
- The pattern in many domains of child smoking including the number of children smoking, age of trying smoking and the amount smoked are positive.
- With relatively few child smokers and a pattern of low frequency and intensity smoking, it is unlikely that school children act as a significant source of exposure to SHS to others.

Chapter 5. Second-hand smoke in the workplace and in other public places

5.1 Context

The smoke-free legislation introduced in April 2007 in Northern Ireland prohibited smoking in the workplace including in commercial vehicles. In keeping with the findings from other countries, the legislation in Northern Ireland has been highly effective in protecting workers from SHS. In addition the legislation enjoys a significant degree of public acceptance with acceptability of the measure growing over time (DHSSPS, 2009; Callinan et al, 2010).

As with all legislation, monitoring compliance is paramount to ensuring the legislation remains effective and in identifying what is working well and what may need to be enhanced. This section presents data on compliance with smoke-free legislation in Northern Ireland building on data presented in the *One Year* and *Three Year Reviews*.

5.2 Compliance with smoke-free legislation in the workplace

District Council Environmental Health departments advise and educate businesses with a view to securing compliance with the smoke-free legislation. In the first year of introduction of smoke-free legislation, from 30 April 2007 to 30 April 2008, 38,074 premises were inspected and judged for compliance. Compliance levels were 97% in respect of the smoking prohibition and 94% in respect of displaying the correct signage. Figures for the Republic of Ireland during the initial nine months after legislation was introduced were 94% and 86% respectively (Office of Tobacco Control, 2005).

Between 1 April 2012 and 31 March 2013, 12,142 premises were inspected for compliance. The compliance rate for no smoking was 98.5% and the compliance for displaying correct signage was 93.7%. **Table 5.1** outlines the compliance levels by the type of premises inspected in the first year post-introduction of workplace legislation and for the most current available data.

Table 5.1 Compliance with smoke free legislation in Northern Ireland by type of premises (2007/08 and 2012/13)

Type of premises	2007/08					2012/13				
	Number of premises inspected	Compliant				Number of premises inspected	Compliant			
		No smoking		Displaying correct signage			No smoking		Displaying correct signage	
		No.	%	No.	%		No.	%	No.	%
Hotels/ Hostels/ Guest Houses	1,175	1,134	96.5	1,111	94.6	344	339	98.5*	330	95.9*
Restaurants/ Cafés	5,304	5,213	98.3	5,078	95.7	1,381	1,369	99.1*	1,286	93.1*
Licensed Pubs/ Clubs	6,161	5,767	93.6	5,969	96.9	1,557	1,525	97.9*	1,465	94.1*
Other Licensed Premises (e.g. theatres)	195	186	95.4	181	92.8	65	63	96.9*	64	98.5*
Bookmakers/ Snooker Halls/ Bingo Halls/ Taxi Depots	1,488	1,403	94.3	1,400	94.1	543	523	96.3*	508	93.6*
Other premises (e.g. offices, shops, garages)	23,761	23,291	98.0	22,012	92.6	8,252	8,190	99.2*	7,665	92.9
Total	38,074	36,998	97.2	35,755	93.9	12,142	12,009	98.9*	11,318	93.2*

Source: Group Environmental Health Committees and Belfast City Council

Note: Where an * is used in the table above this denotes cases where there is a significant difference (i.e. increase or decrease) between 2007/08 and 2012/13.

Table 5.2 presents data on issuing of written warnings and fixed penalty notices as well as cases referred for prosecution. During the period 1 April 2012 to 31 March 2013, 811 written warnings were distributed: 44% of which related to smoking occurring in a commercial smoke-free vehicle, with a further 21% related to failing to prevent smoking in a commercial smoke-free vehicle. 586 fixed penalty notices were issued. 94% of fixed penalty notices related to smoking in a commercial smoke-free vehicle, and 26 cases were referred for prosecution. During this same time period, 260 complaints and 96 enquiries were received.

Table 5.2 Smoke free legislation enforcement 1 April 2012 to 31 March 2013

	Written warnings given	Fixed penalty notices issued	Cases referred for prosecution
Premises failing to display no-smoking signage	155 (19.1%)	2 (0.3%)	0
Smoking in a smoke-free place	39 (4.8%)	24 (4.1%)	0
Failing to prevent smoking in a smoke free place	76 (9.4%)	n/a	3 (11.5%)
Vehicles failing to display no smoking signage	9 (1.1%)	7 (1.2%)	0
Smoking in a smoke free vehicle	358 (44.1%)	553 (94.4%)	23 (88.5%)
Failing to prevent smoking in a smoke free vehicle	174 (21.5%)	n/a	0
Total	811	586	26

Source: Group Environmental Health Committees and Belfast City Council

5.3 Evidence of air quality pre- and post- legislation

Evidence from the *One Year and Three Year Reviews of Smoke-Free Legislation in Northern Ireland* (DHSSPS, 2009b; DHSSPS, 2013) demonstrate that the legislation was highly effective in reducing the exposure of workers to SHS in the workplace. A multi-agency study assessed the impact of the smoke-free legislation on indoor air quality in a sample of bars throughout Northern Ireland concluded that twelve months after the introduction of the legislation, air quality was classified as good or moderate in 97% of bars (CIEH NI, 2010). These results reflect the findings of a systematic review which concluded consistent and strong evidence of improvements in the air quality of workplaces and the SHS exposure of hospitality sector workers in other countries with similar legislation (Callinan et al, 2010).

Chapter 8 presents findings relating to trends in smoking-related mortality and morbidity in pre- and post- legislation periods.

5.4 Evidence of expansion of smoke-free places beyond the workplace legislation

The Western Health and Social Care Trust was the first Health and Social Care Trust in Northern Ireland to become completely smoke free on 12 March 2014, by prohibiting smoking anywhere on its grounds or premises.

In addition, smoke-free bye-laws have been adopted by Northern Ireland Railways which covers the rail platform as well as the cover provided under the main smoke-free legislation relating to the train interior. In addition, a number of schools in Northern Ireland have developed smoke-free policies but there does not appear to be any central register of this activity.

Under current legislation, there are exemptions for designated bedrooms in hotels and guesthouses, care homes and hospices and prisons.

5.5 Impact of smoke-free legislation on the hospitality sector

The economic impact of the smoking ban on the hospitality sector in Northern Ireland has been monitored through a number of indicators and is detailed in the *One Year and Three Year Reviews of Smoke-Free Legislation in Northern Ireland* (DHSSPS, 2009b; DHSSPS, 2013). A recently published systematic review concluded that there was no association between smoking bans and changes in absolute sales or employment in the hospitality industry and no evidence for associated economic losses (Cornelson et al, 2014).

5.6 Key Points

- Over 12,000 business premises in Northern Ireland were inspected for compliance with smoke-free legislation in the year 2012/2013. A high level of compliance was evident with overall levels of compliance increasing over time.
- There was evidence of very slight slippage over time in the display of correct signage in certain types of premises in the category of restaurants and cafés, licensed pubs/clubs, bookmakers, snooker halls, bingo halls and taxi depots.
- There were 811 written warnings and 586 fixed penalty notices issued in respect of smoking in a smoke-free commercial vehicle in the year 2012/2013. This was the most common category in terms of non-compliance with legislation.

- In keeping with the findings from other international studies the introduction of smoke-free legislation was associated with a highly significant improvement in the air quality in pubs and bars in Northern Ireland.

Chapter 6. Second-hand smoke in domestic settings – the home and car

6.1 Context

The family home is a significant source of SHS exposure for both adults and children. Children are especially vulnerable to harms associated with exposure and they also tend to experience exposure more often than adults (Öberg, 2010). Both the frequency, intensity and the duration of exposure are significant in determining health outcomes for infants and children. Babies exposed to SHS are at a greater risk of sudden infant death syndrome and children who regularly breathe SHS are more likely to experience asthma, ear infections and respiratory tract infections. A recent review estimated that around 22,600 new cases of wheeze and asthma in children were attributable to SHS exposure in the UK every year (Royal College of Physicians, 2010).

Several reviews have concluded that the introduction of smoke-free legislation in the workplace did not result in increasing SHS exposure in the home. A trend towards decreased exposure in the home in post-ban periods has been reported in many countries (Callinan et al, 2010; Mons, 2012).

This chapter presents data on patterns of SHS exposure in the home and car environment based on surveys of adult and school-child respondents in Northern Ireland.

6.2 Second-hand smoke in Northern Ireland homes

6.2.1 Rules on smoking in the home – findings from adult surveys

Table 6.1 presents data on rules in smoking in the home in Northern Ireland for the period 2007/08 to 2012/13. Around 4 out of every 5 respondents to *Health Survey Northern Ireland* (78%) in 2012/13 reported that smoking is **not** allowed anywhere in their home. This compares with 61% in 2007/08.

Table 6.1 Rules about smoking in Northern Ireland homes (2007/08 to 2012/13)

Rules about smoking in the home	Percentage of Respondents					
	07/08	08/09	09/10 ¹⁷	10/11	11/12	12/13
Smoking is not allowed at all	61	64	n/a	72	72	78*
Only allowed in certain places	18	16	n/a	13	14	11*
Only allowed on special occasions	5	5	n/a	3	3	1*
Allowed anywhere in my home	16	15	n/a	11	11	10*

Source: CHS (2007/08 to 2009/10); HSNi (2010/11 to 2012/13)

Note: Where an * is used in the table above this denotes cases where there is a significant difference (i.e. increase or decrease) between 2007/08 and 2012/13

Table 6.1 indicates a trend towards more stringent rules on smoking in the home over time. However, one in ten respondents still reported that smoking was allowed anywhere in the home in the most recently available survey data.

In 2011/12, almost one fifth of smokers (19%) stated that the smoke-free legislation made them stricter about the amount they smoked at home while less than 1% reported that the new law made them smoke more at home.

Findings from the *Adult Non-smokers Exposure to Tobacco Smoke Study (ANETS)* conducted in the immediate pre- and post-ban years are presented in the *One Year* and *Three Year Reviews* (DHSSPS, 2009b; DHSSPS, 2013). ANETS collected data on non-smokers living with smokers. The proportion of respondents reporting that smoking was not allowed in the home increased between the two phases (pre-legislation 27%, post-legislation 36%), while the number of those allowing smoking 'anywhere in the home' decreased (pre-legislation 24%, post-legislation 19%).

More recent data on the situation of non-smokers living with smokers is available from the 2012/13 *Health Survey Northern Ireland*. Among non-smokers who live with a smoker/smokers, 71% reported that smoking was not allowed at all in their homes, 18% reported that it was allowed only in certain places and 10% reported that it was allowed

¹⁷ Question not asked in 2009/10

anywhere in the home. This represents further significant progress in tightening of the rules compared with the post-legislation year of ANETS.

Table 6.2 below presents data on the rules on smoking in Northern Ireland homes according to whether or not children were also resident in the household and for post-ban years.

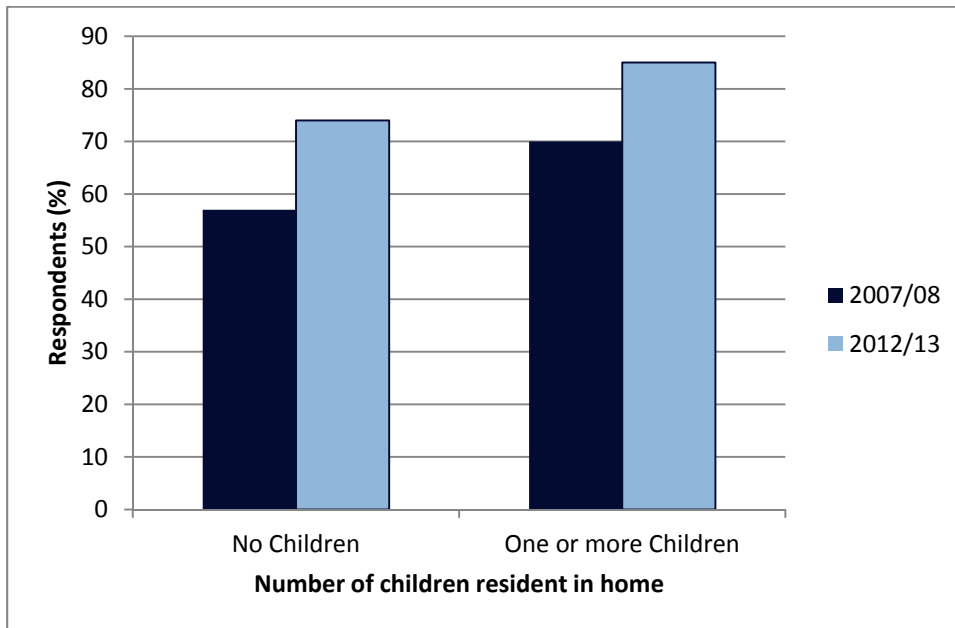
Table 6.2 Rules about smoking in Northern Ireland homes by whether or not children are resident (2007/08 and 2012/13)

Rules about smoking in the home	Percentage of Respondents			
	2007/08		2012/13	
	No Children	1 or more Children	No Children	1 or more Children
Smoking is not allowed at all	57	70	74	85
Smoking is allowed anywhere in the family home	19	8	13	4
Smoking is only allowed in certain places	18	19	11	10
Smoking is only allowed on special occasions	3	2	1	0
Smoking is only allowed on special occasion in certain places	2	2	1	1

Source: CHS (2007/08); HSNI (2012/13)

The presence of children in the household was consistently associated with more stringent rules on smoking in the home (**Figure 6.1**). Significant tightening of the rules about smoking in the home was evident among respondents resident in adult-only households as well as those with child occupants. Among those resident in households with child occupants, smoking was not allowed at all in 70% of cases in 2007/08 and in 85% of cases in 2012/13.

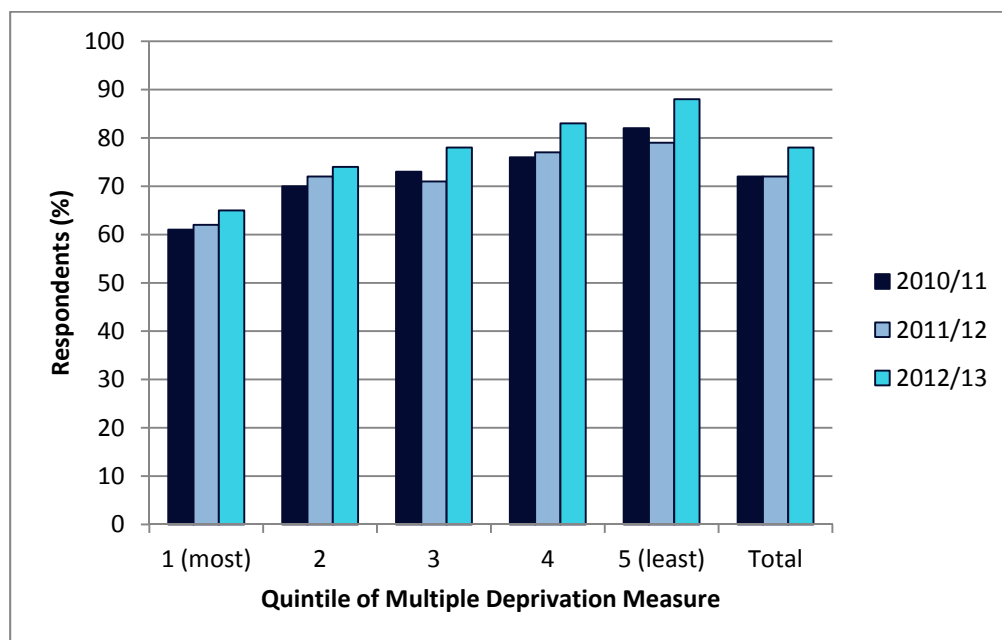
Figure 6.1 Proportion of Northern Ireland adults (aged 16+) reporting that smoking was not permitted in the home by whether or not children were resident (2007/08 and 2012/13)



Source: CHS (2007/08); HSNI (2012/13)

Smoking patterns inside the family home were analysed by socioeconomic indicators for the post-ban years 2012/13. Data did not allow for such an analysis in pre-ban periods. Rules on smoking in the home were analysed according to quintiles of the MDM (**Figure 6.2**). There was an overall trend towards a tightening of the rules on smoking in the home in all deprivation quintiles over time, with a more linear pattern observed in the least deprived quintile. Rules on smoking in the home were most stringent in the least deprived quintile across all the years but the differences were small in comparison to social gradients for smoking (see **Chapter 3: Figure 3.5**).

Figure 6.2 Proportion of Northern Ireland adults (aged 16+) reporting that smoking was not permitted in the home by multiple deprivation measure (2010/11 to 2012/13)



Source: HSNi (2010/11-2012/13)

6.2.2 Second-hand smoke exposure in the home – findings from children’s surveys

Previous analyses have found significant differences in estimates of smoking rules and SHS exposure in the family home depending on whether child or adult respondents were surveyed (McAvoy et al 2013; Nowatzki et al, 2010). In general, estimates based on children’s reports exceed those of adults (Ding et al, 2011). This phenomenon of discordant reporting poses a significant challenge in understanding the true extent of children’s exposure. In addition, the exposure of babies, infants and very young children remains unclear as these children cannot respond to a survey - yet they may be most vulnerable.

This section presents findings from *Young Persons’ Behaviour and Attitudes Survey (YPBAS)* on rules on smoking in the home based on the report of school-age children in Northern Ireland.

6.2.3 Children living with an adult smoker and with adults who smoke inside the house

In YPBAS, pupils aged 11-16 were asked if any adults in their household smoked. In 2003, almost 52% of children lived with an adult smoker, but by 2013 this had fallen to 38% (**Table 6.3**). Substantial reductions were also evident in terms of the proportion of children who lived with a smoker and reported that adults smoked inside their home. 79% of these 11 to 16 year olds indicated that adults smoked inside their home in 2003, falling to 42% in 2013.

The potential exposure of young people to SHS was analysed by MDM for 2010 and 2013 (**Table 6.4**). More than twice the number of young people in the most deprived quintile reported that an adult in their household smoked compared with those in the least deprived quintile. The pattern over this three year period shows a reduction in the number of young people reporting that an adult in their household smokes, particularly in the most deprived quintile.

Table 6.3 Young people (aged 11-16 years) reporting adult smoking patterns in the home (2003-2013)

Smoking in the home	Percentage young people (11-16 years)			
	2003	2007	2010	2013
Children living with an adult that smokes	51.8	42.8	41.8	38.4

Source: YPBAS (2003-2013)

Table 6.4 Proportion of young people (aged 11-16 years) reporting that they are co-resident in a household with an adult smoker by multiple deprivation measure (2010-2013)

Deprivation Quintile	Percentage 11-16 year olds reporting they live in a household with an adult smoker	
	2010	2013
1 (Most)	65.6	57.9
2	41.7	40.8
3	38.1	32.4
4	35.4	31.8
5 (Least)	25.8	25.2
Total	41.6	38.3

Source: YPBAS (2010 and 2013)

Table 6.5 highlights smoking patterns inside the home as reported by young people. Smoking inside the home has been in decline across all quintiles, with the most notable reductions apparent in deprivation quintiles one and two. A slight increase in smoking inside the home was noted between 2010 and 2013 for the least deprived quintile. The

overall pattern would appear to represent a narrowing of inequalities in SHS exposure in the home for young people in Northern Ireland.

Table 6.5 Proportion of young people (aged 11-16 years) co-resident in a household with an adult smoker, who report that an adult smokes inside the home, by multiple deprivation measure (2010-2013)

Deprivation Quintile	Percentage reporting that an adult smokes inside the home	
	2010	2013
1 (Most)	53.0	41.3
2	54.0	41.3
3	48.8	43.5
4	45.2	40.2
5 (Least)	42.6	43.7
Unavailable/missing	-	41.3
Total	49.9	41.7

Source: YPBAS (2010 and 2013)

6.3 Second-hand smoke in the car

6.3.1 Context

This section of the report relates to SHS in family cars. Issues relating to exposure to SHS exposure in commercial vehicles in Northern Ireland have been addressed in section 5.2.

Smoking in cars is known to be particularly hazardous as SHS accumulates rapidly in the enclosed space of the car interior, even when the car windows are open.

The House of Commons passed an amendment to the Children and Families Bill in early 2014 which applied only to England and Wales, but not Northern Ireland. Article 6 in the *Smoking (Northern Ireland) Order 2006* contains a provision which allows the Department to make regulations providing for vehicles to be smoke-free. However, the scope of the *Smoking (Northern Ireland) Order 2006* is such that an additional regulation-making power may be required in order to regulate in relation to private vehicles. In response to a recent parliamentary question the then Minister for Health, Social Services and Public Safety indicated that he will continue to monitor developments on smoking restrictions in

private vehicles in other parts of the UK, as they may have an impact on plans for similar legislation in Northern Ireland in the future.

In the Republic of Ireland, *The Protection of Children's Health (Tobacco Smoke in Mechanically Propelled Vehicles) Bill* prohibiting smoking in cars with children is in the final stages of the legislative process and is expected to be enacted in 2015.

6.3.2 Rules on smoking in family cars – findings from adult surveys

Analysis of *Health Survey Northern Ireland* was undertaken to provide estimates on rules for smoking in the family car as a proxy measure for SHS exposure occurring in this context. However, there are several limitations to this measure, including the fact that many respondents report that they do not own a family car which clearly affects the estimates derived. In addition, the rules on smoking in family cars may not be abided by and there is no way to assess the relationship between those rules and who might be exposed and in what way exposure occurs.

The proportion of adult respondents reporting that smoking was allowed in the family car for the years 2007/08 to 2012/13 is presented in **Table 6.6**.

Table 6.6 Rules about smoking in the family car(s) (2007/8 to 2012/13)

Rules about smoking in the family car(s)	Percentage Respondents				
	2007/08	2008/09	2010/11	2011/12	2012/13
Smoking is never allowed in any car	60	62	67	65	70
Smoking is allowed sometimes in some cars	11	11	10	8	7
Smoking is allowed in all cars	9	8	6	6	5
Smoking is not allowed when children are travelling in the car	-	-	-	4	2
Do not have a family car	20	19	17	17	16

Source: CHS (2007/08 to 2008/09); HSNi (2010/11 to 2012/13)

Among those who reported they had a family car, 84% of respondents reported that smoking is never allowed in any car, 8% indicated that it is allowed sometimes or in some

cars and 2% reported that smoking is not allowed when children are travelling in the car. The remaining 6% of car-owners stated that smoking is allowed in all cars. In keeping with the findings on smoking rules in the home, the presence of children in the household appeared to show associations with rules on smoking in the family car. 77% of those respondents from households with children reported that smoking was never allowed in the family car compared with 66% of respondents from adult-only households (**Table 6.7**).

Table 6.7 Rules about smoking in the family car(s) by whether or not there are children in the household (2012/13)

Rules about smoking in the family car(s)	Percentage Respondents		
	No Children	1 or more children	Total
Smoking is never allowed in any car	66	77	70
Smoking is allowed sometimes in some cars	7	6	7
Smoking is allowed in all cars	7	2	5
Smoking is not allowed when children are travelling in the car	1	4	2
Do not have a family car	19	11	16
Total	100	100	100

Source: HSNi (2012/13)

Between 2010/11 and 2012/13 there was a small increase (three percentage points) in the proportion of cars where smoking was not permitted.

In terms of MDM, as levels of deprivation decreased, the likelihood of smoking being permitted in the car also decreased (**Table 6.8**).

Table 6.8 Smoking not permitted in the family car(s) by smoking status and multiple deprivation measure (2012/13)

Deprivation Quintile	Smoking not permitted in family car(s) (% respondents)		
	Smoker	Non-smoker	Total
1 (Most)	28	60	48
2	34	77	65
3	35	84	73
4	44	88	79
5 (Least)	52	87	83
Total	36	81	70

Source: HSNi (2012/13)

6.3.2 Second-hand smoke exposure in the family car – findings from children’s surveys

This section presents information on smoking in the family car as reported by school-age children aged 11 to 16 years in Northern Ireland. The findings are based on analysis of the YPBAS.

There is no source of data suitable for examining SHS exposure of younger children and infants.

Data for smoking in the family car was only available for 2013. 30.2% of Northern Ireland pupils age 11 to 16, who formed part of a smoking household, reported that smoking was permitted in the family car compared with 41.7% permitted in the family home. In keeping with the patterns in other countries, children were less likely to be exposed in the car than in the home (Kabir et al, 2009b).

6.3 Key points

- Around 78% of adults (aged 16 and older) reported that smoking was not allowed in the home.
- There is consistent evidence from several survey sources of a tightening of the rules on smoking in the home over time since the introduction of workplace legislation. One in five Northern Ireland smokers reported that the workplace smoke-free legislation made them stricter in terms of smoking rules in the home.
- A social gradient was evident in terms of rules on smoking in the home. 88% of adult respondents in the least deprived quintile reported that smoking was not allowed in the home, compared with 65% of adult respondents in the most deprived quintile. The gradient was evident in respect of both smoking and non-smoking respondents. Socioeconomic gradients in rules on smoking inside the home were less steep than those relating to smoking prevalence.
- Increases in the proportion of households where smoking is not allowed at all were evident across the socioeconomic spectrum.
- There were significant differences in rules on smoking in the home according to whether children were resident in the home. Among households with one or more children, 85% did not allow smoking at all in the home. Among households with no children, 74% did not allow smoking at all in the home.
- In the period 2010/11 to 2012/13, the proportion of all respondents resident in households with one or more children reporting that smoking was not allowed at all in the home increased from 81% to 85%. Among those resident in adult only households, an increase from 68% to 74% was observed.
- There are significant differences observed in estimates of smoking inside the home between surveys of adult and child respondents.
- In 2013, 38.4% of 11 to 16 year olds reported that they lived with a smoker. 41.7% of those children reported that an adult smokes inside their home.
- There has been a significant stepwise decline in the proportion of 11 to 16 year olds living with a smoker and living in a house where smoking occurs in the house in the last decade. In 2003, over half of these children lived with a smoker compared with 38.4% in 2013. In 2003, 78.6% of children resident in smoking

households reported that someone smoked inside their home compared with 41.7% in 2013.

- Over half of children living in the most deprived area quintile live with an adult smoker. Children living in the most deprived area quintile were twice as likely to live with a smoker as those children resident in the least deprived quintile.
- There appeared to be a narrowing of inequalities over time in respect of children resident in smoking households reporting that an adult smokes in their home when comparing the most and least deprived areas.
- 84% of adults who reported there was a family car reported that smoking was not allowed in the family car in Northern Ireland. Between 2010/11 and 2012/13 there was a small increase (three percentage points) in the proportion of cars where smoking is never allowed but, unlike smoking in homes, no clear trend is evident.
- Rules on smoking in the car differed according to whether or not children were part of the household. Among respondents who formed part of adult only households, smoking was never allowed in 66% of cars compared with 77% of cars among respondents who were members of households with children.
- There was a consistent and steep gradient in terms of the rules on smoking in cars according to area-based deprivation. Among the most deprived quintile, smoking was never allowed in less than half of cars (48%) compared with 83% of cars in the least deprived quintile.
- Reporting on rules for smoking in cars did not differ by gender of the adult respondent.
- 30.2% of Northern Ireland school-children aged 11 to 16 years living in smoking households reported that smoking was permitted in the family car compared with 41.7% reported that smoking was permitted in the family home. There was no data suitable for providing estimates of exposure among younger children or infants.

Chapter 7. Public perceptions relating to smoking and exposure to second-hand smoke in Northern Ireland

7.1 Context

The introduction of smoke-free legislation in workplaces and public places heralded a sea-change in how governments and the public had to engage with the issue of SHS. When governments legislate to protect the public from exposure this can directly imprint on the public perception of the harmfulness of that exposure.

This chapter presents information based on Northern Ireland survey data on public awareness of the degree of harmfulness of SHS and the types of harms associated with that exposure. Trends in public attitudes to restrictions on smoking are also presented.

The chapter also considers data on the beliefs and attitudes of children with regards to smoking and SHS in pre- and post-ban periods.

7.2 Beliefs and attitudes to second-hand smoke exposure among adults

Table 7.1 presents the proportion of adult survey responses to the question 'what illnesses do you believe can be caused by inhaling other people's tobacco smoke' and a list of specified illnesses. In 2010/11, almost two-thirds of respondents (63%) reported cancer (in general) while around half reported respiratory problems (51%) and 49% reported damaged lungs/lung cancer. More than a third of respondents mentioned asthma (37%) and bronchitis (35%). There is a general trend towards increase awareness of the association between SHS exposure and general harms to health. The data is particularly suggestive of an increased awareness over time of the relationship between SHS exposure and respiratory illnesses and symptoms.

Table 7.1 **Frequencies of adult responses: ‘What illnesses do you believe are caused by inhaling other people’s tobacco smoke?’**

Response	% agree	
	2007/08	2010/11
Cancer (in general)	57	63*
Damaged lungs/lung cancer	51	49
Respiratory problems	35	51*
Asthma	32	37*
Heart attack/heart disease	29	23*
Bronchitis	27	35*
Coughing or wheezing	19	27*
Generally damaging or high risk to health	12	16*
Stroke	11	13*
No risks or problems	2	2

Source: CHS 2007/08 & HSNi 2010/11

Note: Where an * is used in the table above this denotes cases where there is a significant difference (i.e. increase or decrease) between 2007/08 and 2010/11.

In relation to smoke-free areas, over half of respondents in 2011/12 (53%) would challenge someone smoking in a non-smoking area which is similar to 2007/08 (52%).

7.3 Beliefs and attitudes about smoking and exposing children to second-hand smoke

Many adults in Northern Ireland will recall the childhood experience of being around smokers in cinemas, cafés and other public places. Children born around the time of the introduction of the legislation will be enjoying their eighth birthday in April 2015, having grown up in a Northern Ireland where smoking in indoor public places was neither legal nor socially acceptable.

Chapter 4 of this report presents key trends in smoking by children in Northern Ireland based upon the *Young Persons’ Behaviour and Attitudes Survey (YPBAS)* which records the responses of Northern Ireland pupils aged 11 to 16 years. A consistent and significant decline in the proportion of children trying smoking and the proportion of children becoming regular smokers has been noted previously. In addition, a trend towards children trying their first cigarette at a higher age was indicated.

Table 7.2 presents data from the YPBAS on the extent to which pupils agreed with statements relating to smoking across five years spanning pre- and post-ban periods. Unsurprisingly, significant changes in children’s beliefs and attitudes about smoking were paralleled with significant declines in the uptake of smoking.

In *Health Survey Northern Ireland 2011/12*, most respondents (91%) agreed that children are more at risk from passive smoking than adults (compared with 78% in 2007/08) and 91% agreed that babies exposed to passive smoking are more at risk of cot death (compared with 65% in 2007/08). This would indicate a significant increase in sensitivity to the harms associated with children’s exposure to SHS since the introduction of smoke-free legislation.

In addition, findings from chapter 6 suggest that the presence of children in a household is associated with more stringent rules on smoking both in the home and in the family car.

Table 7.2 Young people’s attitudes and beliefs about smoking (2000-2013)

Statement	Agreement with statements (% 11-16 year olds)				
	2000	2003	2007	2010	2013
Internal beliefs					
Smoking can help calm you down	41.8	41.1	34.3	35.8	27.9
Smoking can put you in a better mood	26.9	27.0	22.2	26.0	18.8
Smoking helps you feel more confident	19.1	17.6	12.8	12.9	8.8
External beliefs					
Smokers tend to be more ‘hard’	43.6	40.7	36.2	36.1	31.3
Smokers are more boring	33.7	34.5	34.3	33.6	28.3
Smoking can help you stay slim	25.3	24.0	20.7	21.0	11.2
Smoking can help you make friends more easily	11.8	11.5	7.1	7.7	5.2
Smoking makes you look more grown up	11.0	9.9	9.9	10.4	8.4
Smokers are more likely to have boyfriends or girlfriends	10.1	9.9	6.1	6.3	5.4
Smokers have more fun	5.1	5.3	3.4	3.7	3.5

Source: YPBAS (2000-2013)

There have been some notable changes in young people's attitudes and beliefs about smoking since 2000. The most striking changes relate to young people's belief that smoking can help you stay thin; smokers tend to be more 'hard'; smoking can help you calm down; and smoking helps you feel more confident. There is an increasing recognition among young people that smoking does not increase confidence, contribute to a sense of calmness nor improve your image - key attributes commonly promoted through tobacco advertising.

7.4 Key Points

- The vast majority of adults in Northern Ireland recognise that inhaling other people's tobacco smoke poses a high risk to health.
- Cancer and respiratory problems were among the most commonly identified illnesses associated with SHS exposure.
- There is evidence of an increasing sensitivity to the extent and range of harms associated with SHS over time, particularly in terms of the harms to respiratory health and to children. The presence of children in a household is also related to the behaviour of smokers in terms of smoking inside the home or car.
- Over half of adults aged 16 and over in Northern Ireland indicated that they would challenge someone smoking in a non-smoking area. There was no evidence in change over time in the proportion of adults indicating their willingness to challenge.
- Public acceptance of smoke-free legislation in Northern Ireland is high.
- Children born around the time of the introduction of the legislation will be enjoying their eighth birthday in April 2015, having grown up in a Northern Ireland where smoking in indoor public places was neither legal nor socially acceptable.
- Significant declines in youth smoking indicators have been paralleled by a shift in attitudes and beliefs about smoking. There is an increasing recognition among young people that smoking does not increase confidence, contribute to a sense of calmness or improve your image – key attributes commonly promoted through tobacco advertising.

Chapter 8. Smoking-related illness and mortality

8.1 Context

This chapter presents estimates of hospital admissions and deaths in Northern Ireland attributable to smoking. Data have been obtained from hospital admissions data (Hospital Inpatient System) and mortality data (Northern Ireland Statistics and Research Agency (NISRA)). It is acknowledged that there will be a lag period before any reduction in smoking prevalence is seen by the health service in terms of its impact on hospital admissions and deaths.

8.2 Smoking-related hospital admissions – adults

The number of smoking-attributable deaths was calculated based on an established methodology using the relative risks of diseases for current and ex-smokers, compared with non-smokers (Twigg et al, 2004). Those same 'attributable percentages' are used in this report to assign proportions of hospital admissions to smoking-related causes for men and women.

Table 8.1 shows cause of admission to hospital with a smoking-related condition between 2008/09 and 2012/13. Nearly 16,000 hospital admissions were considered to be attributable to smoking in 2012/13 representing a significant proportion of overall hospital admissions. Over half of all smoking-related hospital admissions relate to admissions for COPD, ischaemic heart disease or cerebrovascular disease. A further third of smoking-related admissions relate to cancers, the majority of which are lung cancer related.

Smoking-related hospital admissions were more common amongst men in all years. Amongst men, the most common cause of smoking-related hospital admission was ischaemic heart disease followed by 'other cancers'. Over 2007/08 to 2010/11, the most common cause of admission to hospital with a smoking-related condition for women was COPD, followed by lung cancer, ischaemic heart disease and 'other cancers'.

Table 8.1 Estimated number of hospital admissions attributable to smoking (2006/7 to 2012/13)

Cause of Admission	2006/07			2007/08			2008/09			2009/10			2010/11			2011/12			2012/13		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
Lung Cancer	1,721	1,020	2,741	1,897	1,272	3,169	1,823	1,187	3,009	1,875	1,262	3,137	2,084	1,183	3,266	1,781	1,106	2,887	1,885	1,138	3,023
Other Cancers ¹⁸	2,254	564	2,819	2,108	572	2,679	2,172	564	2,736	2,156	544	2,700	2,173	527	2,701	2,059	519	2,578	2,098	656	2,754
Chronic Obstructive Lung Disease	1,981	1,914	3,895	1,850	1,847	3,697	2,106	2,290	4,396	1,805	1,994	3,799	1,984	2,229	4,214	1,911	2,101	4,012	2,147	2,434	4,582
Pneumonia	367	317	683	392	348	740	508	440	948	549	451	1,000	633	521	1,154	738	630	1,368	878	720	1,598
Ischaemic Heart Disease	2,994	1,032	4,024	2,937	952	3,889	3,013	983	3,996	2,753	858	3,611	2,729	841	3,570	2,648	817	3,465	2,745	874	3,619
Cerebrovascular Disease	489	401	891	577	448	1,024	719	538	1,257	520	388	908	575	440	1,015	429	379	808	370	390	760
Aortic Aneurysm	243	73	316	248	62	310	240	83	323	207	93	300	204	67	271	191	86	277	231	71	302
Other Circulatory Diseases	13	10	23	15	9	24	18	10	28	23	12	35	16	6	22	22	11	33	30	14	43
Stomach / Duodenal Ulcer	328	329	657	279	322	601	291	325	616	277	255	533	264	273	537	251	264	516	249	232	482
Total	10,390	5,660	16,050	10,303	5,832	16,135	10,889	6,420	17,310	10,166	5,857	16,023	10,662	6,088	16,751	10,030	5,914	15,944	10,633	6,530	17,163

¹⁸ Other Cancers includes upper respiratory cancer, cancer of the oesophagus, bladder cancer, kidney cancer, stomach cancer, cancer of the pancreas, myeloid leukaemia and unspecified site. Source: Hospital Information System (2006/7 to -2012/13) **Note:** Admissions are estimated using discharge episodes.

8.3 Smoking-related deaths – adults

Smoking history is not routinely recorded on death certificates. The *Health Development Agency* work has previously estimated that between 1998 and 2002, 2,300 deaths in Northern Ireland were attributable to smoking every year (Twigg et al, 2004).

Although lung cancer, attributable to smoking, is not the most common cause of admission to hospital (**Table 8.1**), it is the most common cause of death due to smoking in all years between 2007 and 2012. Estimates of the number of deaths attributable to smoking are shown in **Table 8.2**. These estimates find that 2,215 deaths were attributable to smoking in 2012, of which half were smoking-related cancers and just under a quarter were smoking-related COPD.

Table 8.2 Estimated total number of deaths (all causes) attributable to smoking (2006-2012)

Year	Men			Women			All Persons		
	Total number of deaths (all causes)	Total number of smoking attributable deaths	Percentage deaths attributable to smoking	Total number of deaths (all causes)	Total number of smoking attributable deaths	Percentage deaths attributable to smoking	Total number of deaths (all causes)	Total number of smoking attributable deaths	Percentage deaths attributable to smoking
2006	7062	1336	19	7470	839	11	14532	2175	15
2007	7208	1328	18	7441	836	11	14649	2164	15
2008	7227	1387	19	7680	881	11	14907	2269	15
2009	6914	1303	19	7499	928	11	14413	2232	15
2010	7066	1274	18	7391	877	12	14457	2152	15
2011	6918	1278	18	7286	865	12	14204	2143	15
2012	7094	1325	19	7662	890	12	14756	2215	15

Source: Northern Ireland Health and Social Care Inequalities Monitoring System (2006-2012)

Table 8.3 Estimated number of deaths attributable to smoking by cause of death (2006-2012)

Cause of Death	Number of Smoking Attributable Deaths Among All Persons						
	2006	2007	2008	2009	2010	2011	2012
Cancer							
Lung	732	742	798	777	781	786	819
Upper Respiratory	27	16	20	25	27	19	24
Oesophagus	114	114	124	131	110	106	115
Bladder	0	0	0	0	0	0	0
Kidney	25	26	23	18	29	28	28
Stomach	39	40	30	35	32	43	30
Pancreas	54	57	63	59	52	57	69
Unspecified site	45	39	41	40	13	40	42
Myeloid leukaemia	7	7	8	9	10	13	11
Respiratory							
Chronic obstructive lung disease	499	519	555	586	543	556	588
Pneumonia 35-64	17	21	21	18	16	14	10
Pneumonia 65+	136	131	134	126	113	113	127
Circulatory							
Ischaemic heart disease 35-54	82	80	73	73	77	56	66
Ischaemic heart disease 55-64	0	0	0	0	0	0	0
Ischaemic heart disease 65-74	109	105	100	101	97	90	83
Ischaemic heart disease 75+	109	108	109	102	99	87	88
Cerebrovascular disease 35-54	25	25	22	19	24	18	15
Cerebrovascular disease 55-64	20	16	21	18	23	16	17
Cerebrovascular disease 65-74	38	36	35	31	36	31	24
Cerebrovascular disease 75+	26	27	26	23	24	21	21
Aortic aneurysm	89	84	92	90	74	75	74
Myocardial degeneration	0	1	1	0	0	0	0
Atherosclerosis	4	2	2	3	2	1	1
Digestive							
Stomach/Duodenal Ulcer	28	22	22	23	26	26	19
Diseases prevented by smoking							
Parkinson's Disease	-46	-50	-50	-68	-50	-46	-54
Endometrial Cancer	-3	-3	-3	-4	-5	-5	-4
TOTAL	2175	2164	2269	2232	2152	2143	2215

Source: Northern Ireland Health and Social Care Inequalities Monitoring System (2006-2012)

Table 8.4 Estimated number of deaths attributable to smoking among men by cause of death (2006-2012)

Cause of Death	Smoking Attributable Proportion	Number of Smoking Attributable Deaths Among Men						
		2006	2007	2008	2009	2010	2011	2012
Cancer								
Lung	0.90	471	467	511	470	488	504	489
Upper Respiratory	0.77	24	14	16	20	21	16	18
Oesophagus	0.70	79	74	79	88	65	68	76
Bladder	0.49	0	0	0	0	0	0	0
Kidney	0.41	23	24	20	16	26	25	25
Stomach	0.35	33	33	23	29	26	36	25
Pancreas	0.26	24	28	31	29	23	22	27
Unspecified site	0.33	36	30	34	32	3	31	33
Myeloid leukaemia	0.19	4	5	5	6	8	9	8
Respiratory								
Chronic obstructive lung disease	0.87	260	284	301	281	282	267	317
Pneumonia 35-64	0.33	8	11	11	11	7	6	8
Pneumonia 65+	0.23	69	68	66	67	59	57	69
Circulatory								
Ischaemic heart disease 35-54	0.55	64	64	58	54	57	43	50
Ischaemic heart disease 55-64	0.41	0	0	0	0	0	0	0
Ischaemic heart disease 65-74	0.25	80	79	75	74	74	71	65
Ischaemic heart disease 75+	0.09	67	68	70	65	63	58	57
Cerebrovascular disease 35-54	0.56	14	13	11	11	14	10	8
Cerebrovascular disease 55-64	0.33	11	8	10	11	13	10	8
Cerebrovascular disease 65-74	0.16	15	11	12	11	12	12	10
Cerebrovascular disease 75+	0.04	14	14	14	12	14	11	11
Aortic aneurysm	0.64	53	55	58	53	43	40	43
Myocardial degeneration	0.27	0	0	0	0	0	0	0
Atherosclerosis	0.21	2	1	1	1	1	1	0
Digestive								
Stomach/Duodenal Ulcer	0.53	15	13	12	9	12	12	12
Diseases prevented by smoking								
Parkinson's Disease	0.51	-31	-35	-32	-48	-36	-30	-36
Endometrial Cancer	N/A	0	0	0	0	0	0	0
TOTAL		1336	1328	1387	1303	1274	1278	1325

Source: Northern Ireland Health and Social Care Inequalities Monitoring System (2006-2012)

Table 8.5 Estimated number of deaths attributable to smoking among women by cause of death (2006-2012)

Cause of Death	Smoking Attributable Proportion	Number of Smoking Attributable Deaths Among Women						
		2006	2007	2008	2009	2010	2011	2012
Cancer								
Lung	0.79	261	275	287	306	294	282	330
Upper Respiratory	0.58	3	2	4	5	5	3	5
Oesophagus	0.72	34	39	46	42	46	38	39
Bladder	0.20	0	0	0	0	0	0	0
Kidney	0.07	2	2	3	2	3	3	3
Stomach	0.10	6	7	7	5	6	7	5
Pancreas	0.30	31	29	33	30	30	34	42
Unspecified site	0.07	8	9	7	8	10	9	8
Myeloid leukaemia	0.10	3	2	3	2	3	4	3
Respiratory								
Chronic obstructive lung disease	0.83	238	236	254	304	261	289	271
Pneumonia 35-64	0.53	9	11	10	6	9	8	3
Pneumonia 65+	0.13	67	63	67	59	54	56	58
Circulatory								
Ischaemic heart disease 35-54	0.63	18	16	15	18	20	13	16
Ischaemic heart disease 55-64	0.36	0	0	0	0	0	0	0
Ischaemic heart disease 65-74	0.18	30	26	26	27	22	19	18
Ischaemic heart disease 75+	0.05	42	40	39	38	36	29	31
Cerebrovascular disease 35-54	0.53	11	12	11	8	10	8	7
Cerebrovascular disease 55-64	0.38	9	8	11	8	10	6	8
Cerebrovascular disease 65-74	0.31	23	24	23	19	24	19	14
Cerebrovascular disease 75+	0.02	12	12	12	11	11	10	10
Aortic aneurysm	0.66	36	29	34	37	30	35	32
Myocardial degeneration	0.18	0	1	1	0	0	0	0
Atherosclerosis	0.21	2	2	1	2	1	0	1
Digestive								
Stomach/Duodenal Ulcer	0.59	12	9	9	15	14	14	7
Diseases prevented by smoking								
Parkinson's Disease	0.30	-16	-15	-18	-21	-13	-16	-18
Endometrial Cancer	0.16	-3	-3	-3	-4	-5	-5	-4
TOTAL		839	836	881	928	877	865	890

Source: Northern Ireland Health and Social Care Inequalities Monitoring System (2006-2012)

8.4 Estimates of morbidity and mortality associated with second-hand smoke exposure

Estimates of morbidity and mortality from SHS exposure are small in comparison to estimates for smoking. However, while the relative risks may be smaller, the health impact should not be underestimated as it relates to common diseases and it falls particularly heavily on children.

2004 estimates suggest that 75% of global deaths attributable to SHS occurring among non-smokers occur among women and children. There are an estimated 172,300 deaths in Europe attributed to SHS exposure (Tobacco Atlas, 2004).

An analysis of illness and disability attributable to SHS exposure in 179 countries concluded that the largest disease burden related to lower respiratory tract infection in children under 5 years of age, ischaemic heart disease in adults and asthma in both adults and children (Öberg, 2011). It has been estimated that around 2700 deaths in people aged 20 to 64 in the UK are attributable to domestic SHS exposure with a further 8000 deaths per year attributable to second-hand exposure among those aged 65 and over (Jamrozik, 2005).

Producing estimates of mortality and morbidity attributable to SHS in Northern Ireland were beyond the scope of this report and may be limited by small numbers. The contribution of smoking and SHS to outcomes for new-born babies and infants in Northern Ireland has also not been estimated. There are around 1,542 low birthweight babies, 165 perinatal deaths and 90 infant deaths annually in Northern Ireland and meaningful assessment would probably require a UK-wide analysis.

8.5 Key points

- This chapter has provided estimates of hospital admissions and deaths attributable to smoking in Northern Ireland, updating estimates provided in the *One Year and Three Year Reviews of Smoke-free Legislation in Northern Ireland*.
- Around 2,200 deaths in Northern Ireland are attributable to smoking annually, representing 15% of all deaths.
- The overall burden of smoking attributable deaths is patterned by gender. In 2012, 19% of male deaths were attributable to smoking (n=1325 deaths) and 12% of female deaths were attributable to smoking (n=891 deaths).

- Of deaths attributable to smoking, 37% related to lung cancer, 27% related to COPD and 18% related to vascular diseases including ischaemic heart disease, cerebrovascular disease and aortic aneurysm. Other cancers and pneumonia were also significant in the profile of smoking-related deaths.
- In the seven year period 2006 to 2012, there were around 3,400 smoking-attributable deaths from lung cancer among men in Northern Ireland. There were 2,036 smoking attributable deaths from lung cancer among women in the same period.
- In 2012, there were 588 smoking-attributable deaths from COPD among men in Northern Ireland and 272 deaths such deaths among women.
- In 2012, there were 17,163 hospital admissions attributable to smoking in Northern Ireland.
- In 2012, 62% of all smoking-attributable hospital admissions were male.
- In 2012, one third of smoking-attributable hospital admissions related to cancer, the majority of which related to lung cancer. COPD accounting for 27% of all smoking-attributable admissions and ischaemic heart disease accounted for 21% of all smoking-attributable admissions.
- Estimates of morbidity and mortality from SHS exposure are small in comparison to estimates for smoking. However, while the relative risks may be smaller, the health impact should not be underestimated as it relates to common diseases and it falls particularly heavily on children.
- Estimates of mortality and morbidity attributable to SHS for Northern Ireland have not been produced in this report and may be limited by small numbers for some outcomes. Meaningful assessment would require an all-island or UK-wide approach.

Chapter 9. Conclusions

Reducing second-hand smoke exposure is a central component of tobacco control strategy. SHS is very harmful; a fact now widely accepted by the general public as well as those with a specialist interest in public health.

The Northern Ireland Government and its respective agencies have been very successful in terms of the introduction of smoke-free legislation in the workplace and in supporting ongoing monitoring and enforcement of the legislation. It is one of only a handful of governments internationally which have produced comprehensive, publicly available assessments of the impact and enforcement of the legislation over time. This demonstrates a commitment not just to transparency and accountability in public health policy making but also to informing the ongoing development of public health policies to protect and enhance the health of the Northern Ireland population.

The findings of this report, in conjunction with the findings in the *One Year and Three Year Reviews of Smoke-Free Legislation in Northern Ireland*, clearly show that smoke-free legislation in the workplace has been a success. The success is evident in pre- and post-ban studies of air quality in commercial premises. In keeping with other countries, a temporary but unsustainable drop in general adult smoking prevalence was observed. However, the data suggest declines in the number of cigarettes smoked by both adult and child smokers between pre- and post-ban periods. The significant declines in smoking prevalence among pregnant women and among children in pre- and post-ban periods are also notable. Young people in Northern Ireland are increasingly recognising that smoking does not increase confidence, contribute to a sense of calmness or improve your image. The findings also suggest an increased sensitivity to the harms caused by SHS exposure among the general public, particularly in terms of respiratory and child health effects. While inequalities in smoking prevalence remain, there is no suggestion from our analyses that the smoke-free legislation led to any widening of inequalities over time. It can be difficult, if not impossible, to attribute such changes directly to any one particular tobacco control intervention but the international evidence base is now pointing to the fact that smoke-free legislation was instrumental in achieving progress in such tobacco control goals.

In keeping with other countries, the introduction of smoke-free legislation in the workplace has been associated with positive trends in terms of smoking behaviour in the home. It was strongly argued at the time of the legislation that banning smoking in the workplace and public places would lead to increased smoking in home environments thus placing children and other vulnerable citizens at risk. The findings in this report show conclusively that this was not the case - rather, the workplace legislation has led to a change in attitudes and behaviour that has positively affected behaviour in home environments.

Estimating SHS exposure in domestic environments is challenging and our analyses are rather limited. The estimates are based upon self-report by either adult or child survey respondents in the context of subjective questions e.g. rules on smoking in the home and a yes/no response to whether someone smokes inside the house. In this way, survey data cannot describe the exposure frequency, duration or intensity, only whether it is allowed or whether it occurred or not. This reinforces the importance of bespoke environmental health studies such as the CHETS and ANETS studies which occurred in the context of smoke-free legislation, and raises the question whether such studies should now be initiated in the context of other public environments. A recent analysis of exposure to SHS in cars and homes among 10 to 11 year old children in Wales reported broadly similar trends to those presented in this report (Moore et al, 2014).

Despite significant improvements over time, the prevalence of smoking inside the home remains high. In particular, the high proportion of pregnant women resident with a smoker and the particularly high levels of smoking in adults of child-bearing age present a worrying picture in terms of the potential risk of exposure for young children in domestic environments in Northern Ireland. While our crude analyses showed that rules on smoking in the home and car differed according to whether or not children formed part of the household, further multivariate analyses would be required to better understand the extent to which parents may modify their smoking habits in the presence of children. The high prevalence of smoking among adults with chronic conditions is also of concern not just in terms of the risk of further disease and disability for the sufferer but also in terms of the risk of SHS exposure for those engaged as formal and informal carers.

Rules on smoking in the home and other proxy measures of SHS exposure in the home were patterned according to a social gradient. However the observed gradients in home smoking rules were not as profound as those for smoking prevalence. Furthermore, rules on smoking in the home had become more stringent over time in both advantaged and disadvantaged households.

It is important to note that while positive trends were evident in terms of SHS exposure in the home, there was little evidence of positive trends in respect of SHS exposure in the car. This may merely be a reflection of a shorter timeline of data collection. There was some evidence of declining exposure in cars evident in Wales (Moore et al, 2014). However this finding increases the urgency for consideration of legislation to limit the particularly toxic exposure of children in this setting. Evidence on the health impacts of SHS exposure has grown significantly and is increasingly highlighting the extent and severity of the disease burden for all children, and in particular babies in utero, new-borns and the under fives.

The issue of e-cigarettes and vaping in public places was briefly addressed in this report. However, there was a lack of data available to make conclusive statements on use in the Northern Ireland context. As e-cigarette vapour is considerably less toxic than SHS, the use

of such devices may have a role in contributing to reductions in SHS exposure. Concerns emerging in this context relate to the lack of regulation of e-cigarette vapour content and the potential for e-cigarettes to renormalize smoking-type behaviours in indoor places and bring a renewed appeal for vaping and smoking to young people. Such concerns are the subject of new variables in survey data in Northern Ireland which will shortly be available.

This report did not extend to a comprehensive estimate of the disease burden and mortality associated with SHS exposure in Northern Ireland. International evidence tells us that while the risks from SHS are dwarfed by those of smoking, the impact remains significant as it relates to common diseases seen every day in clinical practice such as respiratory and ear infections/ otitis media in children as well as heart and respiratory disease in adults. This burden is carried in particular by children, by those in disadvantaged communities and by those with existing medical conditions. While men are certainly still disadvantaged when it comes to both smoking prevalence and smoking-related illness and death, analyses are now suggesting that it is women who are more disadvantaged in terms of SHS exposure and related harms. There is a need to further explore the broader burden of SHS exposure in the context of key population health indicators as well as in terms of health service use.

In conclusion, this report highlights the success of workplace smoke-free legislation in Northern Ireland. A number of other 'wins' for tobacco control occurring in the context of pre- and post-ban periods were highlighted including clear shifts in the public acceptability of exposing others to SHS and progress on indicators relating to child smoking and smoking in pregnancy. Challenges remain in terms of a high smoking prevalence, persistent inequalities and significant exposure in domestic environments in general and particularly in the context of children. The time to build on the success of the workplace smoke-free legislation is now. Investment in a comprehensive programme for expansion and monitoring of smoke-free spaces in Northern Ireland is recommended. This can be confidently progressed in the context of high public awareness of the harmfulness of SHS and a significant potential for enhancement of population health.

Chapter 10. Recommendations

Policy

Continue to implement in full the recommendations of the *Ten-Year Tobacco Control Strategy for Northern Ireland* including evidence-based tobacco control measures with the capacity to reduce the appeal and accessibility of tobacco products.

Consider the evidence on SHS contained in this report and in other sources in the context of the mid-term review of the implementation of the *Ten-Year Tobacco Control Strategy for Northern Ireland*, with a particular focus on the identified target groups: children and young people; disadvantaged people who smoke; pregnant women and their partners who smoke.

Consider the introduction of smoke-free legislation in privately owned cars carrying children in line with developments in the rest of the UK and the Republic of Ireland.

Develop a programme of support for the development of smoke-free spaces in Northern Ireland. Key elements of such a programme could include:

- Supporting expansion of smoke-free health service facilities, building on the experience in the Western Health and Social Care Trust.
- Setting of targets and indicators in respect of the reach of smoke-free spaces in the health service and other settings.
- Development of a central register of smoke-free spaces, ideally on an all-island basis.
- Fostering leadership within the public sector including the potential development of smoke-free government buildings and estates.
- Providing guidance and support to the new local Council structures in Northern Ireland to develop smoke-free Council owned amenities including playgrounds and leisure facilities.

In view of the shift to the right in age of uptake of smoking, focussed attention is required on understanding the issue of later uptake of smoking in the 17 to 24 year old age bracket with a view to developing recommendations for policy and practice.

Consider the strengths and limitations of the use of the manual/non-manual socioeconomic categories and the use of multiple deprivation measures in assessing the nature of inequalities in smoking, with consideration of issues relating to gender and unemployment.

Service design and delivery

Explore the feasibility of enhanced referral pathways to smoking cessation for parents of those children who are attending primary care or specialist services with respiratory or middle ear disease.

Enhance support in respect of smoking cessation and reducing harmful SHS smoke exposure within the context of antenatal, early years and family support programmes and services.

Integrate smoking cessation and understanding of reducing harmful SHS smoke exposure within the context of training and support programmes for those involved in both the formal and informal care of children and adults with chronic conditions.

Services

Continue to invest in enhanced smoking cessation services on the principle of proportional universalism, targeting the services most intensively in areas of disadvantage.

Invest in enhanced smoking cessation services for patients with existing long-standing conditions.

Public awareness

Support the Public Health Agency in the development and evaluation of public awareness campaigns on smoking and SHS smoke exposure.

Data and research

Maintain the investment in nationally representative surveys of adults and children which provide evidence to inform tobacco control policy, in particular *Health Survey Northern Ireland* and the *Young Persons' Behaviour and Attitudes Survey*.

Develop appropriate tools to assess SHS smoke exposure within surveys and other health information systems with a view to providing better information on the nature of the exposure.

Explore the feasibility of developing an all-island smoking toolkit study similar to that operating in England, with a view to enhancing the quality of information on quitting behaviours and pathways to successful quitting.

Investigate the most appropriate way to develop periodic estimates of the level of exposure among pregnant women, babies and infants to SHS. Consider the use of additional variables in existing child and maternity health information systems, hospital and GP information systems or indeed through bespoke studies.

Seek to evaluate the role of smoking and SHS smoke exposure in the context of perinatal deaths and in the occurrence of pre-term and low birthweight babies with a view to inclusion in existing reporting systems.

Integrate the use of appropriate variables on e-cigarette use within all data systems relevant to smoking and quitting behaviours. Include variables on public attitudes to their use in public and indoor places.

Enhance cooperation with tobacco control research programmes across the UK and Republic of Ireland with a view to conducting qualitative research on children's experiences of e-cigarettes.

References

- Balanda, KP. Barron, S. Fahy, L. McLaughlin, A. (2010) *Making Chronic Conditions Count: Hypertension, Stroke, Coronary Heart Disease, Diabetes. A systematic approach to estimating and forecasting population prevalence on the island of Ireland*. Dublin: Institute of Public Health in Ireland
- Bauld, L. Angus, K. De Andrade, M. (2014) *E-cigarette uptake and marketing: A report commissioned by Public Health England*. London: Public Health England
- Britton, J. Bogdanovica, I. (2014) *Electronic Cigarettes: A Report Commissioned by Public Health England*. London: Public Health England
- Callinan, JE. Clarke, A. Doherty, K. Kelleher, C. (2010) *Legislative smoking bans for reducing second-hand smoke exposure, smoking prevalence and tobacco consumption*. Cochrane Database of Systematic Reviews. Issue 4. Art. No.: CD005992. DOI: 10.1002/14651858.CD005992.pub2
- CIEH NI (2010) *The impact of smoke-free legislation on indoor air quality in bars in Northern Ireland. A study undertaken by the CIEH in partnership with Health Service Executive, University of Ulster and Public Health Agency*. Belfast: Chartered Institute of Environmental Health Northern Ireland
- Cornelsen, L. McGowan, Y. Currie-Murphy, LM. Normand, C. (2014) Systematic review and meta-analysis of the economic impact of smoking bans in restaurants and bars. *Addiction* 109 (5) pp. 720-727
- Department of Health (2013) *Tobacco Free Ireland - Report of the Tobacco Policy Review Group*. Dublin: Department of Health
- DHSSPS (2009a) *Service Framework for Respiratory Health and Wellbeing*. Belfast: Department of Health, Social Services and Public Safety
- DHSSPS (2009b) *Smoke-free Legislation in Northern Ireland - A One Year Review*. Belfast: Department of Health, Social Services and Public Safety
- DHSSPS (2012a) *Ten Year Tobacco Control Strategy for Northern Ireland*. Belfast: Department of Health, Social Services and Public Safety
- DHSSPS (2012b) *Northern Ireland Health and Social Care Inequalities Monitoring System Fourth Update Bulletin 2012*. Belfast: Department of Health, Social Services and Public Safety

DHSSPS (2013) *Smoke-free Legislation in Northern Ireland - A Three Year Review*. Belfast: Department of Health, Social Services and Public Safety

DHSSPS (2014a) *Revised Service Framework for Cardiovascular Health and Wellbeing April 2014 – March 2017*. Belfast: Department of Health, Social Services and Public Safety

DHSSPS (2014b) *Making Life Better. A Whole system Strategic Framework for Public Health*. Belfast: Department of Health, Social Services and Public Safety

DHSSPS (2014c) *Proposal for a Draft Bill -The Health (Miscellaneous Provisions) Bill (NI) Consultation Document*. Belfast: Department of Health, Social Services and Public Safety

Ding, D. Wahlgren, DR. Liles, S. Matt, GE. McKenzie, O. Jones, JA. Hovell, MF. (2011) *Second-hand smoke exposure in cars and respiratory health effects in children*. Dublin: Tobacco Free Research Institute, Respiratory Medicine, Asthma Society of Ireland and Dublin Institute of Technology

Faculty of Public Health (2014) *UK Faculty of Public Health Policy Statement on Electronic Cigarettes*. London: Faculty of Public Health of the Royal Colleges of Physicians in the UK

Jamrozik, K. (2005) Estimate of deaths attributable to passive smoking among UK adults: database analysis. *British Medical Journal* 2005; 330: 812 doi:10.1136/bmj.38370.496632.8F

Kabir, Z., Clarke, V., Conroy, R., McNamee, E., Daly, S. Clancy, L. (2009a) Low birthweight and preterm birth rates 1 year before and after the Irish workplace smoking ban. *BJOG: An International Journal of Obstetrics and Gynaecology* 116(13):1782-7

Kabir, Z. Manning, PJ. Holohan, J. Keogan, S. Goodman, PG. Clancy, L. (2009b) Second-hand smoke exposure in cars and respiratory health effects in children. *European Respiratory Journal*. 2009;34(3):629-33

Leonardi-Bee, J. Britton, J. Venn, A. (2011) Second-hand smoke and adverse fetal outcomes in non-smoking pregnant women: a meta-analysis. *Pediatrics* 127:734-41

MacKay, D. Haw, S. Ayres, JG. Fischbacher, C. Pell, JP. (2010) Smoke-free legislation and hospitalizations for childhood asthma. *New England Journal of Medicine* 16; 363(12):1139-45

McAvoy, H. Kabir, Z. Reulbach, U. McDaid, O. Metcalfe, O. Clancy, L. (2013) *A Tobacco-Free Future – an all-island report on tobacco, inequalities and childhood*. Dublin: Institute of Public Health in Ireland and TobaccoFree Research Institute Ireland

Mons, U. Nagelhout, GE. Allwright, S. Guignard, R. Van Den Putte, B. Willemsen, MC. Fong, GT. Brenner, H. Potschke-Langer, M. Breitling, LP. (2012) Impact of national smoke-free legislation on home smoking bans: findings from the International Tobacco Control Policy Evaluation Project Europe Surveys. *Tobacco Control* doi:10.1136/tobaccocontrol-2011-050131

Moore, G. Moore, L. Ahmed, N. Littlecott, H. Lewis, S. Sulley, G. Jones, E. Holliday, J. (2014) *Exposure to seondhand smoke in cars and homes, and e-cigarette use among 10-11 year old children in Wales: CHETS Wales 2*. Cardiff: Welsh Government

NICE (2013) *Tobacco: harm-reduction approaches to smoking*. Public Health Guidance 45. Manchester: National Institute for Health and Care Excellence

NISRA (2010) *Northern Ireland Multiple Deprivation Measure 2010*. Belfast: Northern Ireland Statistics and Research Agency

NISRA (2014) *Census 2011 Population Tables*. Available at: <http://www.nisra.gov.uk/archive/census/2011/results/population-estimates/summary-tables.pdf>

Nowatzki, J. Schultz, AS.Griffith, EJ. (2010) Discrepancies between youth and parent perceptions of their household environment relevant to smoking: a secondary analysis of the 2004/05 Canadian Youth Smoking Survey. *Chronic Diseases Canada* 30(3):78-83

Öberg, M. Jaakkola, M. Prüss-Üstun, A. Schweizer, C. Woodward, A. (2010) *Second-hand smoke – Assessing the burden of disease at national and local levels*. Environmental Burden of Disease Series No. 18. Geneva: World Health Organization

Office of Tobacco Control (2005) *Smoke-Free Workplaces in Ireland: A One-Year Review*. Kildare: Office of Tobacco Control

Orr, M.S. (2014) Electronic cigarettes in the USA: a summary of available toxicology data and suggestions for the future. *Tobacco Control* 2014;23:ii18–ii22
doi:10.1136/tobaccocontrol-2013-051474

Royal College of Physicians (2010) *Passive smoking and children. A report by the Tobacco Advisory group of the Royal College of Physicians with funding from Cancer Research UK*. London: Royal College of Physicians

Schneider, S. Schütz, J. (2008). Who smokes during pregnancy? A systematic literature review of population-based surveys conducted in developed countries between 1997 and 2006. *The European Journal of Contraception and Reproductive Health Care*, 13:138-147

Tobacco Atlas (2004) *Distribution of global deaths from second-hand smoke exposure.*

Available at:

http://www.tobaccoatlas.org/harm/secondhand_smoking/distribution_death/

Twigg, L. Moon, G. Walker, S. (2004) *The smoking epidemic in England.* London: Health Development Agency

WHO (2003) *WHO Framework Convention of Tobacco Control.* Geneva: World Health Organization

Institute of Public Health in Ireland

5th Floor
Bishops Square
Redmond's Hill
Dublin 2

Forestview
Purdy's Lane
Belfast
BT8 7AR

Ph: 00 353 1 4786300
Fax: 00 353 1 478 6319

0044 28 9064 8494
0044 28 9069 4409

www.publichealth.ie



Department of
**Health, Social Services
and Public Safety**

www.dhsspsni.gov.uk

