Adult non-smokers' exposure to tobacco smoke

HSC Public Health Agency

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Foreword

On 30 April 2007, we saw the introduction of smoke-free legislation in enclosed and partially enclosed workplaces and public places in Northern Ireland. This legislation enables adults to enjoy a smoke-free environment in the workplace, on public transport and in social settings. However, it has no direct impact on an individual's exposure to second-hand smoke in private places including the home and car. Nonetheless, within these private settings, several populations, including non-smokers and children (especially those who live with a smoker), are particularly vulnerable to second-hand smoke.

As part of the Department of Health, Social Services and Public Safety (DHSSPS) smoke-free monitoring and evaluation strategy, the Health Promotion Agency for Northern Ireland undertook research to determine the impact of smoke-free legislation on these vulnerable groups. Using research carried out both before and after the introduction of smoke-free legislation, this study details for the first time the attitudes and knowledge of non-smoking adults living with smokers in Northern Ireland, in relation to second-hand smoke. The study also reports non-smokers' exposure to second-hand smoke in a range of environments.

The study showed that the legislation had resulted in decreased second-hand smoke exposure for non-smokers who live with a smoker. This trend was observed in both public places and private places, such as the home. Yet a large proportion of individuals are still exposed to second-hand smoke in the home and car. Given that there is no safe level of second-hand smoke exposure, these results have highlighted that further work is necessary to help individuals adopt and maintain a healthy smoke-free environment for themselves, their family and friends.

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Introduction

For more than a decade, scientific evidence has been available to demonstrate that exposure to second-hand smoke (SHS) not only harms health, but worsens existing health problems.[1] For non-smokers exposed to second-hand smoke, the best estimate of increased relative risk of heart disease is about 25%, while for lung cancer the increased risk is 24%.[1] Associations have also been observed between second-hand smoke and respiratory symptoms and reduced lung function in adults.[1]

A meta-analysis of 37 published studies has provided further support for the strong relationship between SHS and lung cancer. Lifelong non-smokers who live with a smoker demonstrate an increased risk of lung cancer (26%) compared to non-smokers who live with someone who has never smoked. In fact, a dose-response relationship was observed between the non-smokers' risk of lung cancer and both the duration of their exposure to SHS, and the number of cigarettes smoked by their spouse.[2]

More recent evidence from a report produced by the California Environmental Protection Agency has determined that a smoker's home contains 30 times more nicotine than a non-smoker's home. In addition, a smoker's car may contain nicotine levels up to 10 times higher than in the home environment.[3] The substantially higher levels of nicotine in smokers' homes and cars may account for the greater health risks to non-smokers who share these venues.

The substantive health risks of SHS to non-smokers are acknowledged in the Northern Ireland Tobacco Action Plan.[4] Moreover, the Tobacco Action Plan also outlines the importance of smokers and non-smokers being aware of the risks of SHS.[4] In 2004, the Health Promotion Agency for Northern Ireland (HPA) assessed the public's knowledge of the health risks of second-hand smoke. Key findings showed that 37% of the population (smokers and non-smokers) agreed that second-hand smoke could cause lung cancer/lung damage and only 9% believed it could lead to a heart attack/heart disease.[5]

To help address this issue, the HPA developed a public information campaign (aired in 2005) entitled 'Passive smoking – there's nothing passive about it', which centred on raising awareness of the health impact of second-hand smoke. Over recent years, the public's knowledge has greatly improved; the recent evaluation of the HPA's '4,000 chemicals' campaign showed 52% of the public were aware of the link between second-hand smoke and lung cancer, and 32% were aware of the link between SHS and heart disease.[6]

To further protect the health of non-smokers (and smokers) against the damaging impact of SHS, on 30th April 2007, legislation was introduced in Northern Ireland to prohibit smoking in all enclosed public places and workplaces. While the new legislation will aid in the protection of many adults in the workplace, it is unclear what impact it will have on individuals' exposure to SHS in private venues, such as the home or car, within Northern Ireland.

Available evidence from other countries suggests that legislation prohibiting smoking in public places may encourage the implementation of smoke-free homes, even among smokers. Research before and after the implementation of smoke-free legislation in the Republic of Ireland showed a significant decrease in the percentage of smokers' homes where smoking is allowed.[7] Likewise, another study by Borland et al. concluded that smoking prohibitions in enclosed public places (especially recreational venues) facilitated rather than inhibited the introduction of smoke-free homes in countries such as the UK, USA, Canada and Australia.[8]

Recent research in Scotland, carried out before and after the introduction of the Scottish smoke-free legislation, looked specifically at non-smokers' exposure to SHS. It considered both those living and those not living with a smoker.[9] This study found a self-reported reduction in non-smokers' SHS exposure in workplaces, pubs and bars, and other public places and transport facilities. However, no change was reported for private spaces, including the home environment or car.[9]

In addition, this study by Haw and Gruer also investigated participants' salivary cotinine levels as a biological marker of SHS exposure in non-smokers. Although overall, non-smokers showed lower cotinine levels over time, the authors reported the significant reduction in cotinine levels in non-smoking adults was limited to those who did not live with a smoker. This suggests that non-smokers who do not live with a smoker benefit from the smoke-free legislation to a greater extent than those non-smokers who live with a smoker.[9]

In Northern Ireland, in up to 22% of households, at least one adult non-smoker lives with an adult smoker.[10] Although non-smokers who live with a smoker are considered to be an especially vulnerable group regarding SHS exposure, to the best of our knowledge, no research has been carried out with this group of individuals in Northern Ireland. We, therefore, aimed to investigate the impact of the legislation on adult non-smokers, in particular those who live with a smoker. This research has been conducted as part of the Department of Health, Social Services and Public Safety (DHSSPS) monitoring and evaluation framework for the smoke-free legislation.[11]

Aim

To assess non-smoking adults' exposure to second-hand smoke after the introduction of smoke-free legislation to prevent smoking in enclosed public places and workplaces in Northern Ireland. The assessment will look, in particular, at non-smokers who live with a smoker.

Objectives

- To establish non-smokers' knowledge of the health impacts of second-hand smoke.
- To assess non-smokers' self-reported exposure to second-hand smoke.
- To examine smoking rules within the home and car before and after the introduction of the legislation.
- To determine non-smokers' attitudes towards smoking in public places and in the home.

Methods

The current study utilised a 'pre post' design to measure the impact of the smoke-free legislation. Cross-sectional surveys were conducted pre- (March 2007, phase 1) and post-legislation (March 2008, phase 2) across five sampling areas in Northern Ireland (Armagh, Ballymena, Belfast, Derry and Enniskillen), using telephone and face-to-face interviews. Quota targets were set for the number of interviews to be carried out in each location, relative to the total population in each area.

Recruitment

Given that there is no demographic information available on the make-up (ie age, gender, social class) of a non-smoker who lives with at least one smoker, participants were recruited based on a set of eligibility criteria. Each respondent had to be a) 18 years or older, b) a non-smoker, and c) currently living with a regular smoker (defined as smoking one or more cigarettes per week).

Participants in the study were recruited through one of three recruitment strategies: face-to-face recruitment in shopping centres, telephone recruitment, and combined email and face-to-face recruitment through workplaces.

Shopping centre recruitment

Shopping centres within five areas (Armagh: n=1, Ballymena: n=2, Belfast: n=5, Derry: n=2 and Enniskillen: n=1) were identified from the Northern Ireland Region of Shopping Centres (NIRSC) website, and the centre manager approached for their collaboration at both phases. All 11 shopping centres that were approached agreed to participate and permitted setting up a stand in the public area of the shopping centre. A team of between three and six survey interviewers was based at each shopping centre for one or two days. Potential participants were approached for eligibility and participation in the study. All eligible study participants received an information leaflet on the study (providing background, aim, and details of a contact person for further information). Participants were then asked to complete a questionnaire. A member of the team was available to answer any queries and to check the questionnaire upon completion.

Telephone recruitment

At both phases, a list of names and addresses was obtained from a database purchased from 192.com. The postcodes were selected to be geographically close to the shopping centres participating in the study. Telephone numbers were subsequently obtained from BT telephone directories. Upon answering the call, experienced telephone interviewers explained the reason for the call and provided background to the study. After checking eligibility, the interviewee was invited to participate and on agreement, the questionnaire was administered.

Workplace recruitment

At phase 1, city councils in four of the five geographical areas were included in the study. Council employees were informed of the study by email from the contact person within the councils (usually from the environmental health department) and were provided with details of date and location for data collection at their workplace. A leaflet providing background information, aims of the study, and contact details was attached to the email. Only 12 eligible participants were recruited from city councils: five from Armagh Council, six from Ballymena Council, one from Derry Council, and none from Belfast. Workplace recruitment was not repeated in phase 2 due to the low success rates in recruiting eligible participants in phase 1.

After completion of the questionnaire, participants recruited via shopping centres (in both phases) and via telephone (phase 1 only) received a shopping voucher worth £5.

At phase 2, the target was to achieve a sample that matched the sample recruited in phase 1, by repeating the recruitment strategy as closely as possible. Due to the limited success of the workplace recruitment at phase 1, potential participants were approached in shopping centres and by telephone only. Quotas for recruitment were based on the sample characteristics achieved in phase 1 (accounting for the removal of workplace recruitment), with a primacy of matching age and gender by area over employment status and education.

In addition to the above study, a sub-sample of respondents participated in a home nicotine measurement study (n=83) at phase 1. These respondents were followed up 12 months later to examine potential changes in airborne nicotine levels in households shared by smokers and non-smokers. The findings from the nicotine measurements have been published elsewhere.[12]

Sample

In total, 605 eligible participants were recruited in phase 1. It emerged that one participant was a double entry recruited via both phone and shopping mall. Thus, the achieved sample for phase 1 (pre) contained 604 participants.

At phase 2 (post), a total sample of 601 non-smokers who live with at least one smoker was achieved.

The majority of participants in both phases were recruited via shopping centres (n=489 pre, n=496 post), followed by telephone calls (n=104 pre, n=105 post) and workplaces (n=12 pre only).

Demographics

Table 16 (in the appendix) provides the demographic breakdown of both samples. The sample in the second phase was comparable to the first phase in terms of gender (females 72% pre, 71% post) and employment status (full-time 37% pre, 38% post, part-time 23% pre, 26% post; not in paid employment 41% pre, 36% post).

However, the two samples differed in terms of the educational background. More respondents post-legislation were educated to school level (41% pre, 51% post), while fewer were educated to university/postgraduate level (24% pre, 16% post).

The age profile of the samples also differed across the phases, with the post sample having a lower mean age than the pre sample (43 years pre, 37 years post, p=.000). As Table 16 shows, the youngest age group (16-29 years) contains more participants, and the older age groups (45-59, 60+ years) contain fewer participants at phase 2 than phase 1. In particular, at phase 2, despite all respondents stating during recruitment they were over the age of 18 years, analysis of the date of birth revealed that 18 respondents were younger than the minimum recruitment age. Given the small number of respondents within this group in relation to the overall sample size, these cases, although not meeting the eligibility criteria of minimum age 18, were not excluded from the main analysis. However, throughout this report, where exclusion of this group of under 18s yielded a statistically significant outcome that differed from the main analysis group, this is highlighted. A further 68 respondents (11%) did not provide their age or date of birth at phase 2.

Presentation of results

To illustrate the findings of this study, tables and figures with rounded percentage responses to each question are presented. The overall base numbers are shown on the tables to indicate the number of respondents on which percentages are based. As a result of rounding, some column or row percentages may not total 100% exactly.

All questions in the survey were analysed for changes over time (ie between pre and post-legislation). Results were further analysed at each individual time point (ie pre and post-legislation) based on a number of demographic factors, including participants' gender (male, female), age band (18-29, 30-44, 45-59, 60+ years) and education (school, further education (FE) college, university/postgraduate).

Results were also analysed, where appropriate, by household characteristics, including household smoking arrangements (smoking allowed in the home, smoking not allowed in the home) and the number of smokers who live in the home (one or more than one). Significance levels for these results at each time point are referred to within tables as 'sign. within year'.

Changes over time (ie differences between pre and post-legislation) were also examined within each of the demographic and household characteristics. Statistical differences among these individual groups over time are referred to within the tables as 'sig. between phases'.

All survey results are subject to sampling variability, which means that observed differences between survey year and sub-groups may not be statistically significant (ie may be due to chance). Those results that are statistically significant are commented on throughout this report.

The chi-square statistical test has been used to report whether there are statistical differences between years and demographic groups (gender, age, educational, and household characteristics). Three levels of statistical significance are shown in tables (ie *$p \leq 0.05$, **$p \leq 0.01$ and ***$p \leq 0.001$). 'NS' denotes not statistically significant. Where data from the survey are at least interval scaled, Mann–Whitney U-tests or t-tests were used to examine differences between phases or sub-groups.

Results

Awareness of the health risks of second-hand smoke

Respondents were asked to provide their opinion on a series of statements relating to the health risks of exposure to second-hand smoke. To facilitate those respondents who may not have been familiar with the terminology 'second-hand smoke', the questions instead asked individuals about their exposure to 'other people's tobacco smoke'.

Table 1 shows that non-smokers' overall awareness of the health risks of exposure to second-hand smoke was high pre and post-legislation, with no significant changes being found between phases. Nine out of 10 respondents at both stages agreed that 'inhaling other people's tobacco smoke poses a high risk to health', that 'other people's tobacco smoke can cause significant health problems for children', and that 'other people's tobacco smoke can increase the severity of asthma in children'. Similarly high numbers of non-smokers at both stages agreed that 'children are more at risk from other people's tobacco smoke than adults' (84% pre, and 80% post-legislation).

In contrast, almost a quarter of respondents at both stages believed that 'the dangers of inhaling other people's tobacco smoke are greatly exaggerated' (23% pre, 24% post-legislation).

Table 1: Non-smokers' awareness of the health risks of other people's tobacco smoke

	Agree %	No strong opinion %	Disagree %	Base	Sig.
Inhaling other people's tobacco smoke poses high risk to health					
Pre	90	6	5	602	NS
Post	88	8	4	601	
The dangers of inhaling other people's tobacco smoke are greatly exaggerated					
Pre	23	11	66	600	NS
Post	24	15	61	601	
Children are more at risk from other people's tobacco smoke than adults					
Pre	84	8	9	595	NS
Post	80	10	10	600	
Exposure to other people's tobacco smoke can increase the severity of asthma in children					
Pre	91	7	2	596	NS
Post	89	9	2	600	
Other people's tobacco smoke can cause significant health problems for children					
Pre	94	5	2	599	NS
Post	90	8	2	600	

For each individual statement, differences by demographic (gender, age and education) were examined. Analyses were conducted separately for each phase (pre, post) and in relation to changes over time. Statistically significant results from this analysis are summarised within Table 2 and the text thereafter, with the specific frequency values being presented in Tables 17a-b in the appendix.

Table 2: Significant differences within the study populations' awareness of the health risks of SHS (analysed at each phase and over time)

	Gender	Age	Education
Inhaling other people's tobacco smoke poses a high risk to health	P1, P2	P1, P2	-
The dangers of inhaling other people's tobacco smoke are greatly exaggerated	-	P2	P1, P2, P1→P2(school)

Note: significant difference emerged by demographic stated at phase 1 (P1), phase 2 (P2), and/or over time (P1→P2)

General health statements

When the statement *'inhaling other people's tobacco smoke poses a high risk to health'* was further analysed by the demographic factors, education was not shown to have any influence on agreement with this statement. However, gender and age were shown to have a statistically significant impact on non-smokers' attitudes pre and post-legislation. At both phases, females (92% pre, 90% post) and the younger age groups (18-29 years, 94% pre, 89% post; 30-44 years, 91% pre, 92% post) were consistently more likely to agree with this statement ($p \leq 0.05$ for all). Over time, no changes were observed among any of the individual age or gender sub-groups in relation to this statement.

This research has found similar proportions of all age groups agreed with the statement *'the dangers of inhaling other people's tobacco smoke are greatly exaggerated'* (19%-26%). Nonetheless, a pattern emerged at the post-legislation phase, with 18-29 year olds being more uncertain about this statement (21%) in comparison to the older age groups (9%-11%) ($p \leq 0.05$). This may indicate a growing section of young people are perhaps complacent about the detrimental impact of SHS on an individual's health.

Educational background was also shown to have an impact on whether individuals believed *'the dangers of inhaling other people's tobacco smoke are greatly exaggerated'.* At both phases, those educated to school level (29% pre and post) were more likely to agree with this statement (pre $p \leq 0.001$, post $p \leq 0.01$). However, over time, there was a disconcerting decrease (62% to 53%) in those educated to school level who correctly disagreed with the statement, alongside a rise in the proportion who had no strong opinion (9% pre, 18% post) ($p \leq 0.01$).

Knowledge of specific health effects

Respondents were further asked to indicate whether or not they believed that a variety of specific illnesses could be caused by inhaling other people's tobacco smoke (Table 3). Awareness of the link between second-hand smoke and specific illnesses was high for many of the conditions, with 9 out of 10 respondents agreeing that lung cancer, breathing problems and coughing or wheezing can be caused by second-hand smoke.

Statistically significant positive increases in knowledge emerged for the link between SHS and cot deaths (45% pre, 52% post-legislation, p≤0.01), and SHS and meningitis (15% pre, 28% post-legislation, p≤0.001). However, knowledge of these two health effects was lower than for many of the other illnesses at the post phase, with over a third of respondents stating that they did not know of the causal link between SHS and both of these issues.

Table 3: Respondents' knowledge of illnesses caused by inhaling other people's tobacco smoke

	Yes %	No %	Don't know %	Base	Sig.
Breathing problems					
Pre	93	2	5	593	NS
Post	92	4	4	600	
Coughing or wheezing					
Pre	92	3	5	599	NS
Post	92	4	4	599	
Lung cancer					
Pre	92	3	5	603	NS
Post	90	4	7	600	
Asthma					
Pre	88	3	9	601	**
Post	87	7	7	600	
Bronchitis					
Pre	87	3	11	594	**
Post	83	6	11	598	
Cancer (general)					
Pre	76	8	17	589	NS
Post	76	9	15	599	
Heart disease					
Pre	75	7	18	589	*
Post	69	12	20	599	
Stroke					
Pre	65	10	26	590	NS
Post	66	11	24	598	
Cot deaths					
Pre	45	11	44	586	**
Post	52	13	35	599	
Pneumonia					
Pre	42	18	40	570	NS
Post	47	18	35	594	
Meningitis					
Pre	15	31	53	574	***
Post	28	29	42	591	

Despite the high awareness of an association between second-hand smoke and the majority of illnesses, a significant decline in reported knowledge was observed for asthma, bronchitis and heart disease between the pre and post phase. The percentage of respondents who believed these illnesses could not be caused by inhaling other people's tobacco smoke increased for asthma (3% pre, 7% post $p \leq 0.01$), bronchitis (3% pre, 6% post, $p \leq 0.01$), and heart disease (7% pre, 12% post, $p \leq 0.05$).

The decrease in knowledge about the causal link between second-hand smoke and asthma, bronchitis and heart disease was further examined in relation to demographic groups (gender, age, education). Significant changes between both phases are detailed in the following section, and individual results are presented in Tables 18a-c in the appendix.

A greater proportion of females believed there was no link between second-hand smoke and asthma (3% pre, 8% post, $p \leq 0.001$) or bronchitis (3% pre, 6% post, $p \leq 0.05$) following the legislation. In addition, a greater proportion of those educated to FE college level believed there was no link between second-hand smoke and bronchitis (1% pre, 4% post, $p \leq 0.05$). These rises were mainly associated with concomitant decreases in the proportion of individuals who reported they 'don't know' of a link between second-hand smoke and asthma or bronchitis.

In contrast to the above results, an increase in the proportion who stated second-hand smoke could not result in heart disease was observed among men, (4% pre, 12% post, $p \leq 0.01$), those aged 60+ years (5% pre, 12% post, $p \leq 0.01$), and those educated to school level (5% pre, 12% post, $p \leq 0.01$).

Knowledge of and attitudes to the smoke-free legislation

Support for the legislation

All survey respondents were asked if they were aware of the introduction of legislation on 30 April 2007, which would ban smoking in enclosed public places and workplaces. In all cases throughout the survey, the legislation was referred to as 'the ban', as a more commonly used term within the general population. Overall, awareness of the legislation was high, with 99% of non-smokers at the pre phase and 96% at the post phase being aware of it.

Strong support for the smoke-free legislation was observed among non-smokers, with around 9 out of 10 respondents agreeing at both phases with 'the (proposed) ban on smoking in public places'. Further positive changes were observed over time, with fewer individuals reporting that they disagreed with the legislation (6% pre and 4% post), accompanied by a concurrent increase in those who were 'undecided' (6% pre and 9% post, $p \leq 0.05$) (see Table 19 in the appendix).

Analysis by demographic and household characteristics found significant differences for gender, education, age and number of smokers in the home, primarily in terms of changes over time (see Table 19 in the appendix).

- Over time, a decrease was seen in the proportion of those who disagreed with the smoke-free legislation, specifically among those who lived with only one smoker (6% pre, 4% post, $p \leq 0.05$). This went alongside an increase in the proportion of non-smokers that were undecided about the 'ban'.

- In contrast, men (88% pre, 80% post, p≤0.05), those aged 60+ years (92% pre, 79% post, p≤0.05), and those educated only to school level (89% pre, 85% post, p≤0.05) were shown to have decreased support for the 'ban' over the course of the study. This decreased support among men resulted in significantly fewer men than women supporting the ban at the post-legislation stage (80% men, 90% women, p≤0.01). Despite this decreased support among men, older people and those educated to school level, at least 8 in 10 of each group still agreed with the 'ban' at the post-legislation phase.

Perceived impact on smokers

Non-smokers were also asked how they thought the smoke-free legislation had or would impact on smokers. Table 4 shows the responses at both the pre and post phases, and indicates whether or not there was a significant change in responses over time.

The majority of non-smokers at each phase disagreed that *'the smoking ban is an unfair restriction on smokers'* (70% pre, 65% post). Nonetheless, around a fifth of non-smokers agreed with this statement at the pre (17%) and post-study phases (21%). No change was noted in non-smokers' attitudes to this statement over time (see Table 4).

However, non-smokers were less certain about the effect of the smoke-free legislation on smokers' actual behaviour (p≤0.05). The percentage who agreed with the statement *'the smoking ban will encourage/has encouraged smokers to quit'* decreased post-legislation (54% pre, 49% post), with an associated increase in those saying they were 'undecided' (23% pre, 30% post). Nonetheless, nearly half of non-smokers still agreed that the ban would encourage smokers to quit.

When non-smokers were asked to state their views on the statement *'the smoking ban will make/has made smokers smoke more at home'*, nearly half of respondents (46% pre, 48% post) agreed at both the pre and post-legislation stages. However, a shift was seen at the post-legislation stage (p≤0.001), whereby fewer non-smokers disagreed with this finding (34% pre, 19% post) and more became 'undecided' (20% pre, 32% post).

Table 4: Non-smokers' views on the impact of the ban on smokers

	Agree %	Undecided %	Disagree %	Base	Sig.
The smoking ban is an unfair restriction on smokers					
Pre	17	13	70	598	NS
Post	21	14	65	600	
The smoking ban will encourage/has encouraged smokers to quit					
Pre	54	23	23	597	*
Post	49	30	21	598	
The smoking ban will make/has made smokers smoke more at home					
Pre	46	20	34	593	***
Post	48	32	19	599	

Differences by demographic (gender, age and education) and home smoking characteristics (number of smokers living in the home) were examined for each of the above statements. Analyses were conducted separately for each phase (pre, post) and regarding changes over time. Significant differences are summarised within Table 5 and the text below. All relevant frequency values are shown in Tables 20a-c in the appendix.

Table 5: Summary of significant differences when non-smokers' views on the impact of the ban on smokers were analysed by gender, age and education at each phase and over time

	Gender	Age	Education	No. of smokers in the home
The smoking ban is an unfair restriction on smokers	–	–	P2	–
The smoking ban will encourage/has encouraged smokers to quit	P1 P1→P2 (males)	–	P1 P1→P2 (school)	P1→P2 (live with one smoker only)
The smoking ban will make/has made smokers smoke more at home	P2 P1→P2 (males and females)	P1→P2 (all ages)	P1, P2 P1→P2 (school, uni/postgrad)	P1→P2 (for both)

Gender differences

Further analysis revealed that while males appeared initially more optimistic that *'the ban will encourage/has encouraged smokers to quit'* at the pre-legislation phase (males 67%, females 49%, p≤0.001), this was not upheld and the proportion of males agreeing with the statement significantly declined over time (67% pre, 45% post, p≤0.001).

Over time, the results showed the proportion of males and females who disagreed that *'the ban will make/has made smokers smoke more at home'* substantially decreased (p≤0.001 for both males and females), while the numbers who were undecided increased. Despite this, at each stage, a large proportion of individuals still believed *'the ban will make/has made smokers smoke more at home'*. However, over time, small increases were found in the proportion of females who agreed with this statement, alongside small decreases in the number of males agreeing. This resulted in females being more likely than males to agree that *'the ban will make/has made smokers smoke more at home'* (52% female, 41% male) at the post-legislation phase.

Age differences

For all age groups, an overall shift in pattern was observed from disagreeing pre-legislation that *'the ban will make/has made smokers smoke more at home'* to being undecided post-legislation. However, age did not appear to have any bearing on respondents' agreement or disagreement with this statement, a factor that was also true for the other statements.

Educational differences

Prior to the introduction of legislation, those educated to school level were more likely to agree that *'the ban will make/has made smokers smoke more at home'* (p≤0.001 pre), and more likely to disagree that *'the ban will encourage/has encouraged smokers to quit'* (p≤0.05).

Over time, a number of changes were observed among school-educated respondents. In relation to the statement *'the ban will encourage/has encouraged smokers to quit'*, mixed views were held. Decreases were observed in both the proportion of individuals who agreed, and in those who disagreed with the statement, resulting in a substantive increase in those who were undecided. Despite these changes, nearly half of those educated to school level agreed post-legislation that *'the ban will encourage/has encouraged smokers to quit'*.

Although the proportions of school-educated respondents who agreed that *'the ban will make/has made smokers smoke more at home'* remained similar over time (around 50% pre and post), a substantial decrease in those disagreeing (34% pre, 15% post) with the statement was observed, associated with an increase in those undecided (14% pre, 34% post). The same pattern emerged for those educated to university/postgraduate level.

In addition, post-legislation, those educated to school level were more likely to show compassion for smokers, with this group more likely to state *'the smoking ban is an unfair restriction on smokers'* (26% post, $p \leq 0.001$) than their counterparts educated beyond school (FE college 16%, university/postgraduate 18%).

Number of smokers in the home

Among those living with only one smoker ($p \leq 0.05$), there was an increase over time in the percentage who were undecided (23% pre, 31% post) on *'the smoking ban will encourage/has encouraged smokers to quit'*, alongside associated decreases in those who agreed and those who disagreed. In addition, when presented with the statement *'the ban will make/has made smokers smoke more at home'*, over time, fewer respondents disagreed and more were undecided, regardless of whether they lived with one smoker ($p \leq 0.001$) or more than one smoker ($p \leq 0.01$).

Exposure to second-hand smoke

Respondents were asked about how long they spent in various locations over the previous 24 hours, and how much of this time they were exposed to tobacco smoke in each location. Given that this resulted in reduced sample numbers, the results from this section are presented as top line figures only. Further sections of this report will look in more detail at smoking in specific venues. The mean hours of exposure to SHS decreased from 4.38 hours pre-legislation to 3.30 hours post-legislation (see Table 6).

For each venue, a ratio was calculated of the time exposed to SHS in relation to the time spent there – this is presented as a percentage value. For example, before the smoke-free legislation, a non-smoker had been exposed to SHS 78% of the time he/she had spent in a bar. After the introduction of the new legislation, this had decreased to 2%.

Post-legislation, exposure to SHS decreased primarily in locations open to the public. The percentage time spent in a location where someone was smoking declined for workplaces (10% pre, 2% post), cafés/restaurants (33% pre, 2% post) and bars (78% pre, 2% post). A small but significant decrease was also noted for individuals' own homes (21% pre, 19% post).

No changes were observed for exposure to SHS in other indoor venues (including shopping centres, gyms/leisure centres, hospitals, bingo halls, and churches). However, in Northern Ireland, the majority of these venues had already adopted smoke-free policies prior to the introduction of the legislation. In addition, no changes in exposure were observed for other private places,

including other people's homes, the car, or other transport mediums. Outdoors was the only location where individuals reported being exposed to more tobacco smoke (8% pre, 17% post).

Overall, since the introduction of the legislation, the dynamics of where non-smokers (who live with a smoker) are exposed to SHS have altered. Prior to the legislation, the majority of non-smokers' exposure to SHS occurred in bars and cafés or restaurants. However, the decline in smoking in public places has now led to the home environment being the predominant place where non-smokers (who live with a smoker) are exposed to tobacco smoke.

Table 6: Non-smokers' exposure to SHS in the last 24 hrs: overall mean exposure and percentage exposure by location

	Pre-legislation Base~	Pre-legislation Mean (SD)*	Post-legislation Mean (SD)*	Post-legislation Base~	Sig. between phases
Overall (in hours)	481	**4.38** (5.58)	**3.30** (4.68)	516	***
Ratio of exposed time by time spent in the location					
Work	187	10% (0.26)	2% (0.12)	278	***
Café and restaurant	121	33% (0.45)	2% (0.12)	195	***
Bars	64	78% (0.40)	2% (0.08)	69	***
Home	474	21% (0.28)	19% (0.28)	508	*
Someone else's home	134	28% (0.39)	23% (0.38)	228	NS
Car	205	14% (0.09)	9% (0.27)	290	NS
Other transport	60	6% (0.23)	4% (0.18)	100	NS
Indoor activities#	150	0% (0.00)	0% (0.00)	124	NS
Time spent outdoors	236	8% (0.24)	17% (0.34)	304	*^

* (SD) Standard deviation
~ Base includes only those respondents who stated that the previous 24 hours was typical of their usual exposure to tobacco smoke.
# Includes shopping centres, gyms/leisure centres, hospitals, bingo halls, churches.
^ Finding non-significant when analysis carried out, excluding under 18s from study sample.

Smoking in the workplace

All individuals who were in employment (60% pre and 64% post-legislation) were asked to provide information on their current and preferred smoking policy at work. Table 7 shows that, overall, 75% of respondents' workplaces were completely smoke-free (indoors) prior to legislation. This figure was composed of just over half of respondents who stated the workplace was completely smoke-free (54%), and an additional 21% who reported the workplace had designated outdoor smoking facilities. These figures significantly increased to 66% and 34% respectively at the post-legislation phase ($p \leq 0.001$). At the pre stage, 25% of respondents worked in an environment where smoking was allowed inside to some extent; however, this was completely eliminated at the post-legislation phase.

Overall, the majority of respondents preferred to have a workplace that was completely smoke-free (indoors) (92% pre and post). However, post-legislation, there was a significant change, with a larger proportion of respondents indicating that designated outdoor smoking areas should be provided for smokers (12% pre, 19% post, $p \leq 0.05$). Five percent of non-smokers thought there should be smoking rooms provided indoors for smokers, while a small minority (3% pre, 4% post) stated that smoking should be allowed either throughout, or in the majority of the workplace.

Table 7: Current and preferred smoking polices at work

	Current smoking policy at work			Preferred smoking policy at work		
	Pre %	Post %	Sig.	Pre %	Post %	Sig.
Smoke-free indoors	75	100	-	92	92	-
Completely smoke-free	54	66	***	81	73	*
Non-smoking but designated outdoor smoking areas	21	34		12	19	
Mainly non-smoking but designated indoor smoking areas ^	15	0		5	5	
Mainly smoking but separate non-smoking areas ^	3	0		1	2	
Smoking allowed throughout ^	7	0		2	2	
Base #	365	392		372	393	

^ For the purposes of statistical analysis of current policy at work, mainly non-smoking but designated indoor smoking areas, mainly smoking but separate non-smoking areas, and smoking allowed throughout were grouped as one category due to their non-existence after the introduction of legislation.

Base included only those in current employment.

All respondents (regardless of their working status) were presented with the statement *'the ban is/was needed to protect the health of workers'* (see Table 21 in the appendix). Prior to legislation, more than 9 in 10 respondents agreed; however, post-legislation, agreement decreased (94% pre, n=597; 85% post, n=600) ($p \leq 0.001$), alongside a concomitant increase

in those who reported they were ‘undecided’ (3% pre, 11% post). While a high proportion of individuals still agreed with the statement post-legislation, it is not apparent whether the decreased exposure to SHS evident from the legislation has resulted in a decline in the public perception of need for smoke-free venues.

This pattern of change was evident over time among all the demographic groups; however, it reached significant levels for males ($p \leq 0.05$), females ($p \leq 0.001$), those aged 18-29 years ($p \leq 0.05$) and 30-44 years ($p \leq 0.01$), and those educated to school ($p \leq 0.001$) and university level ($p \leq 0.01$). No significant associations were observed between the gender, age or educational status of respondents and the statement, at either the pre or post-legislation phases.

Smoking in the home

Profile of household smokers

To provide a profile of the type of smoker a non-smoker lives with, respondents were asked to detail the number of smokers they live with, their relationship with the smoker(s), and the number of cigarettes the smoker smoked. The majority of respondents in the survey reported living with only one smoker (81% pre, 80% post). However, the range of smokers varied considerably, with individuals living with up to five smokers in the pre survey, and up to 10 smokers in the post survey.

A wide variety of relationships were reported between the non-smoker and the smoker(s) they share their home with, the most common one being a spouse (55% pre, 50% post) (see Table 8). A large proportion of non-smokers lived with a parent or child who smoked, yet these two groups varied between the pre and post-legislation surveys. Post-legislation, non-smokers were more likely to live with a parent, step-parent or in-law who smoked (23% pre, 36% post) and less likely to live with a son or daughter (in-law) who smoked (23% pre, 18% post). This change in the relationship between the non-smoker and smoker is most likely due to the recruitment of a younger sample population at the post phase. This, in effect, has resulted in more individuals saying they lived with an older figure (parent) who smoked, rather than a younger figure (child).

The majority of respondents said the smokers they lived with smoked over 10 cigarettes a day (10-20 per day, 44% pre, 44% post; more than 20 a day, 41% pre, 40% post). In comparison, around a quarter (24%) of non-smokers lived with someone who smoked between 5-10 cigarettes a day pre-legislation, and a fifth (21%) did so post-legislation.

Table 8: Profile of household smokers that non-smokers live with [#]

Relationship to smoker	Pre (%)	Post (%)
Spouse/partner	55	50
Parent/step-parent/parent in-law	23	36
Son/daughter/son or daughter in-law	23	18
Sibling/cousin	7	13
Friend/flatmate/housemate	8	5
Nephew/niece/grandson	1	0.3
Grandparent	0.2	1
Aunt/uncle	0.2	0.2
Other (eg worker, nanny)	0.8	0.3
Base	604	601
Number of cigarettes smoked daily by each smoker		
<5	7	10
5-10	24	21
10-20	44	44
>20	41	40
Don't know	6	10
Base	604	601

Percentages may total greater than 100% due to respondents living with more than one smoker. Statistical analysis is not carried out due to multiple response nature of question. Information not provided on relationship by 7.9% at the pre stage and 0.3% at the post stage. Information not provided on number of cigarettes smoked by 3.8% at the pre stage and 0.5% at the post stage.

Attitudes towards smoking within the home

The majority of non-smokers in our study said they did mind people smoking in their home and in the same room. The more enclosed the environment, the more likely respondents were to mind people smoking. For example, 81% of respondents at the pre stage and 85% at the post stage said they minded people smoking in the same room, compared to 79% pre and 84% post who were likely to mind someone smoking inside their home. (Table 9).

Table 9: Respondents' views of smoking in the home and in the same room

	Mind a lot	Mind a bit	Don't mind very much	Don't mind at all	No opinion	Base	Sig. between phases
View smoking inside your home							
Pre	57	22	11	9	0.7	603	NS
Post	58	26	9	7	0.5	601	
View smoking in same room							
Pre	62	19	10	8	0.5	581	NS
Post	64	21	8	6	0.5	600	

Pre-legislation, males, those educated to school level and those aged over 45 years were more likely to say they 'don't mind at all' in relation to someone smoking in their home ($p \leq 0.001$ for all) or someone smoking in the same room ($p \leq 0.001$ for gender and $p \leq 0.01$ for age and education (see Tables 22a-b in the appendix).

Post-legislation, these associations remained significant only for gender, with more males than females saying they 'don't mind at all' in relation to someone smoking in the home or someone smoking in the same room (10% males, 5% females, for home and same room).

A number of changes were observed in individual sub-groups over the course of the study:

- Post-legislation, there were statistically significant differences among some individual age groups. There was a larger proportion of 45-59 year olds who reported minding smoking inside the home 'a bit or a lot' (77% pre, 84% post, $p \leq 0.05$). In addition, post-legislation, more individuals aged 30-44 years and 45-59 years reported minding 'a bit or a lot' someone smoking in the same room (aged 30-44: 81% pre, 90% post; aged 45-59, 82% pre, 91% post).

- There was a statistically significant difference over time for those who were university/ postgraduate educated ($p \leq 0.01$). Post-legislation, they were less likely to state that they 'don't mind very much' someone smoking in the same room (15% pre compared to 4% post) and more likely to state that they 'mind a lot' (62% pre compared to 75% post).

The number of smokers a non-smoker lived with did not appear to impact on whether or not non-smokers minded someone smoking in the home or in the same room.

Rules on smoking in the home

Respondents were asked a series of questions relating to rules that apply to smoking in their own homes. They could select as many rules as appropriate. Post-legislation, 66% of the sample population stated that smoking was allowed in the home. However, this had decreased substantially from 73% pre-legislation (Table 10). The percentage of respondents stating that smoking was not allowed in the home increased between phases (27% pre, 36% post, $p=0.001$). In line with this, the percentage of respondents who stated that smoking was allowed 'anywhere in the home' decreased from 24% pre to 19% post-legislation ($p \leq 0.05$).

Table 10: Rules that relate to smoking in the home

	Pre %	Post %	Sig. between phases %
Allowed at all#	73	66	***
Not allowed in the home	27	36	***
Certain places only	45	42	NS
Only when no children are present	7	6	NS
On special occasions only	1	1	NS
Anywhere in the home	24	19	*
Base	597	601	

Smoking 'allowed at all' is defined as 'allowed in certain places, on special occasions, when no children are present or anywhere in the home'.

Demographic differences in home smoking rules

Table 11 shows the demographic and household characteristics of respondents who allowed smoking in the home. Pre-legislation, those who allowed smoking in the home were more likely to be:

- male (83% male compared to 70% female, p≤0.001);
- the youngest or eldest (81% 18-29 years, 79% 60+ years, compared to 65% 30-44 years old, p≤0.01).

Within the demographic groups, there were a number of changes that occurred over time. These were all reductions in the percentage of respondents allowing smoking in the home. For example, a significant reduction was seen for both males and females between the phases (p≤0.01 for males and p≤0.05 for females). Significant reductions over time also occurred among those educated to school level (78% pre, 63% post, p≤0.001) and those aged 18-29 years (81% pre, 69% post p≤0.01).

In addition, analysis by the number of smokers the non-smoker lived with showed that over time, those non-smokers living with only one smoker reported less smoking in the home (72% pre, 62% post, p≤0.001).

Table 11: The percentage of respondents living in homes where smoking is allowed at all, by demographic (gender, education, age, previous smoking status) and household characteristic (live with one/more than one smoker)#

	%	Pre Base	Sig. within phase	%	Post Base	Sig. within phase	Sig. between phases
ALL	73	600	-	66	600	-	***
Male	83	167	***	69	176	NS	**
Female	70	433		63	423		*
18-29 years	81	168	**	69	210	NS	**
30-44 years	65	149		61	149		NS
45-59 years	69	165		66	117		NS
60+ years	79	114		68	56		NS
School	78	238	NS	63	304	*	***
FE college	73	212		72	191		NS
University/postgraduate	67	138		56	97		NS
Live with 1 smoker	72	487	NS	62	483	*	***
Live with 2 or more smokers	79	113		74	117		NS

Smoking 'allowed at all' is defined as 'allowed in certain places, on special occasions, when no children are present or anywhere in the home'.

Locations where smoking is allowed in the home

In this study, we have observed a large proportion of non-smokers who reported smoking was allowed in certain places within the home (45% pre, 42% post). Those respondents who stated that smoking was allowed in certain places only, were asked to specify these locations. The most frequently reported location at both stages was the kitchen/utility room (66% pre, 71% post) (see Table 12).

There was a significant reduction in the percentage of people stating that smoking was allowed in the living room/lounge ($p \leq 0.001$), other living area ($p \leq 0.05$), and bedroom ($p \leq 0.05$). There was a concomitant increase in the proportion of respondents stating that smoking was allowed in an attached garage ($p \leq 0.001$). This suggests that some respondents have restricted smoking away from the main living areas since the introduction of legislation.

Table 12: Locations where smoking is allowed in the home

	Pre %	Post %	Sig. between phases
Kitchen/utility room	66	71	NS
Living room/lounge	26	14	***
Bedroom	12	6	*
Attached garage	7	22	***
Other living area	7	3	*
Dining room	6	5	NS
Open door	4	1	NS
Bathroom	3	.8	NS
Base#	258	250	

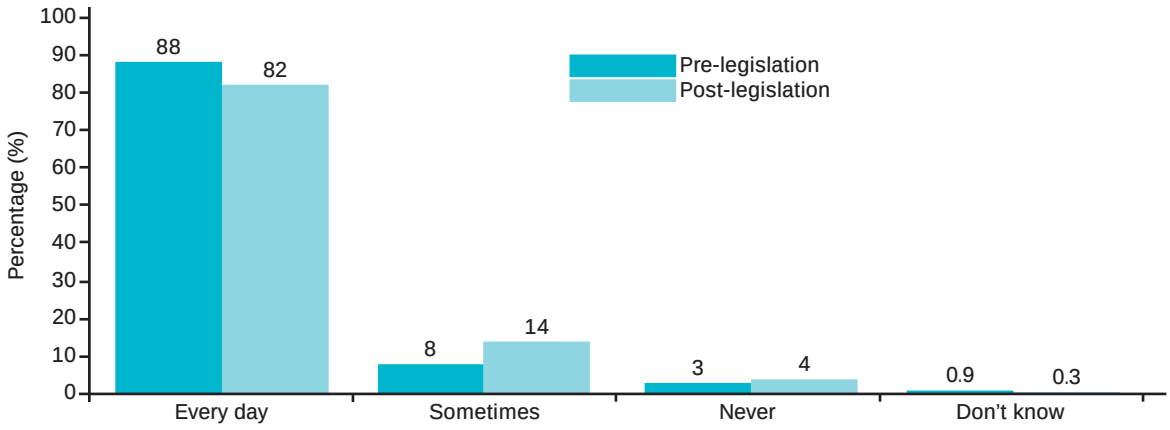
Respondents who previously stated that 'smoking is allowed in certain places only'.

Frequency of smoking in the home

Where respondents had stated that smoking is allowed in the home (pre n=440, post n=388), they were asked to state for each of the smokers who share their home, how often each individual smokes there. Where more than one person smokes in the home, the highest smoking frequency was recorded.

Pre-legislation, there were more respondents who said that someone who lived with them smoked every day (88% pre, 82% post) (see Figure 1). However, at the post stage, non-smokers were more likely to say that the smokers who lived with them smoked sometimes (8% pre, 14% post) ($p \leq 0.05$).

Figure 1: Frequency of smoking inside the home pre and post-legislation, as reported by non-smokers



Base: pre n=426, post n=380 (excluding those who previously stated 'smoking not allowed in the home') $p \leq 0.05$

Pre-legislation, the frequency with which smokers smoked in the home was not influenced by the demographic characteristics of the respondent (gender, age or educational status), or the number of smokers the non-smoker lived with (results not shown). However, some changes occurred over time for some individual sub-groups.

- Post-legislation, those in the 18-29 year old age group were less likely to report that someone was smoking in their home 'every day' (91% pre, 79% post, $p \leq 0.05$). Correspondingly, those 18-29 year olds who reported that smokers were smoking in their home 'sometimes' increased (7% pre, 17% post, $p \leq 0.05$) (see Table 23 in the appendix). Interestingly, the 18-29 age group had the highest frequency of initial exposure to second-hand smoke pre-legislation. However, the decrease noted above brought levels in line with the other age groups.

- Those respondents who had only one smoker living in the household said the frequency of the individual smoking in the home 'every day' decreased over time (87% pre, 79% post). Accordingly, the proportion of individuals who reported that the one smoker in the household smoked 'sometimes' increased (9% pre, 16% post, $p \leq .05$) (see Table 23 in the appendix).

Non-smokers' reactions to smoking inside the home

When non-smokers were provided with the statement *'I would ask someone who smokes to smoke outside my house'*, over half the sample said they agreed (57% pre, 59% post). However, post-legislation, significant changes were observed, with fewer individuals disagreeing with this statement (30% pre, 22% post, $p \leq 0.01$), and a consequent rise in those who were unsure or who agreed with the statement (see Table 24 in the appendix).

This pattern of change over time occurred among the majority of the demographic groups and reached significance for females, 18-29 year-olds, 30-44 year-olds, those who lived with only one smoker, and those who lived in homes where smoking was allowed. In contrast, those who lived in homes where smoking was not allowed reported less agreement with the statement following the legislation (93% pre, 83% post) (this result is not significant when analysis is carried out with the under 18s in phase 2 excluded).

At the post-legislation phase, those most likely to ask a smoker to smoke outside their house were females, those aged 30-44 years and those who said they did not allow smoking in the home.

Smoking in the car

Attitudes to smoking in the car

Respondents generally reported that they 'mind a lot' people smoking in the car when they are present (70% pre, 71% post). Only a very small proportion said they 'don't mind at all' (7% pre and post) (see Table 25 in the appendix). There were no changes in the overall group between the pre and post stages; however, specific changes were noted over time in those aged 30-44 years. Post-legislation, these individuals were more likely to 'mind a lot' someone smoking in the car when they are present (70% pre, 82% post). This consequently lead to a relationship between age and attitudes towards smoking in the car post-legislation, with 30-44 year olds being most likely to mind someone smoking in the car when they are present.

Smoking rules in the car

Beyond the home environment, the car is another place where non-smokers may potentially be exposed to high levels of SHS. In terms of those respondents who owned a car (pre n=423, post n=362), over half did not allow smoking in it (58%). This figure increased to 68% following the introduction of legislation (see Table 13). As a result, post-legislation, there was a concomitant decrease in the proportion of individuals who said smoking is always allowed in the car (25% pre, 15% post). In addition, a greater proportion of individuals were likely to state that smoking did not occur in the car if a non-smoker was present.

For those individuals who reported sharing a car (n=310, post n=288), there was no change to the rules on smoking in the car post-legislation. However, smoking was more likely to be allowed in a shared car (50% pre, 45% post) than in an individual's own car (42% pre, 32% post).

Table 13: Respondents' rules about smoking in their own car and shared cars

	Smoking rules in own car			Smoking rules in shared car		
	Pre %	Post %	Sig. between phases	Pre %	Post %	Sig. between phases
Allowed at all	42	32		50	45	
Smoking is not allowed	58	68	**	50	55	NS
Smoking not allowed if a non-smoker is present	4	7		8	9	
Smoking not allowed if children are present	11	8		14	11	
Smoking is always allowed in the car	25	15		27	25	
Other rules	3	1		1	.0	
Base	406	354		305	282	

Smoking rules in own car

Analysis by gender, age and educational status showed that these factors did not influence smoking being allowed in the respondents' own car (see Table 14). However, over the course of the year, significant deceases in the proportion of individuals who allowed smoking in the car were noted. These significant decreases occurred among the groups most likely to initially allow smoking in their own car, ie females (45% pre, 30% post, $p \leq .0.001$), those educated to school level (47% pre, 33% post, $p \leq 0.05$) and those aged 30-44 years (50% pre, 28% post, $p \leq 0.001$).

Table 14: Demographic breakdown of the percentages of respondents allowing smoking in their own car

	Pre	Base	Sig. within phase	Post	Base	Sig. within phase	Sig.between phases
All	42	406	-	32	354	-	**
Male	36	110	NS	36	116	NS	NS
Female	45	296		30	237		***
18-29	40	91	NS	31	90	NS	NS
30-44	50	118		28	111		***
45-59	42	119		34	79		NS
60+	34	74		49	33		NS
School	47	150	NS	33	164	NS	*
FE college	42	139		35	122		NS
University/postgraduate	35	110		21	63		NS

Smoking rules in a shared car

Pre-legislation, significantly more females (54%) than males (39%) said smoking was allowed in a shared car. Similarly, significantly more of those educated to school and FE college level (56% and 53% respectively, compared to 37% university/postgraduate, $p \leq 0.05$) said smoking was allowed in a shared car. However, these associations were not apparent at the post-legislation stage (see Table 15). As noted above, over time, decreases were observed in the proportion of individuals who were likely to say smoking was allowed in a shared car. These decreases reached significance for those educated to school level (56% pre, 42% post, $p \leq 0.05$) and those aged 30-44 years (57% pre, 38% post, $p \leq 0.05$).

Table 15: Demographic breakdown of the percentages of respondents allowing smoking in a shared car

	Pre	Base	Sig. within phase	Post	Base	Sig. within phase	Sig.between phases
All	50	304		45	282		NS
Male	39	80	*	46	87	NS	NS
Female	54	224		44	194		NS
16-29	53	89	NS	51	95	NS	NS
30-44	57	72		38	69		*
45-59	44	82		53	49		NS
60+	45	58		53	32		NS
School	56	110	*	42	142	NS	*
FE college	53	104		48	94		NS
University/postgraduate	37	83		46	44		NS

Other implications of the legislation on non-smokers

This study also examined further influences that the legislation may have had on non-smokers' behaviour. When presented with the statement *'I am less likely to visit a pub after/since the smoking ban'*, only a small percentage of respondents agreed (13% pre, 16% post; n=594 pre, n=597 post). Agreement with the statement was shown to be influenced by educational status, with those less educated (ie to school level) more likely to agree (pre, $p \leq 0.001$, post $p \leq 0.05$) than better-educated respondents (see Table 26 in the appendix).

Over time, the only change observed was an increase in the proportion of respondents with university/postgraduate qualifications who agreed with the statement ($p \leq .05$). Pre-legislation, more respondents from the older age group (60+ years) agreed, and fewer disagreed than those from the other age groups ($p \leq 0.05$). However, small but non-significant shifts in attitude meant this relationship was not noted at the post-legislation phase.

Just over 6 in 10 respondents at both stages (65% pre, 62% post; n=593 pre, n=597 post) agreed that they would *'challenge someone smoking in a non-smoking area'* (no significant change between phases). No changes were evident over time among the demographic groups or by household characteristics. However, at the post phase, the 30-44 year olds and 45-59 year olds were most likely to agree ($p \leq 0.01$), as were those who lived with only one smoker ($p \leq 0.05$) and those who lived in households where smoking was not allowed ($p \leq 0.001$) (see Table 27 in the appendix).

Discussion

The present survey aimed to investigate non-smokers' self-reported exposure to second-hand smoke before and after the introduction of legislation preventing smoking in workplaces and enclosed public places. In addition, the survey sought to examine non-smokers' awareness of, and attitudes to, the legislation and tobacco exposure, as well as how they felt the legislation had impacted on smokers' smoking habits. Above and beyond this, the survey looked in detail at smoking in private places not governed by the legislation, including the home and car.

Overall, the study showed high awareness and agreement towards the legislation. Key results from the study showed the legislation had resulted in decreased SHS exposure for non-smokers who live with a smoker. This decrease was in relation to the time they were exposed to others' tobacco smoke in public places, but also in private places such as the home. Overall, the proportion of time non-smokers reported being exposed to tobacco smoke over the previous 24 hours declined significantly from 4.4 hours to 3.3 hours following the introduction of legislation.

Exposure to second-hand smoke in public places

Exposure to tobacco smoke decreased in the majority of locations governed by the legislation, including workplaces, cafés/restaurants and bars. In contrast, no such decline was seen in other indoor venues (including shopping centres, gyms/leisure centres, hospitals, bingo halls and churches) or on non-private sources of transport. This is most likely owing to the fact that smoke-free policies were evident in these locations prior to the introduction of legislation.

In addition, we have shown that non-smokers perceive increased exposure to second-hand smoke when spending time outdoors. Many bars, cafés and restaurants now provide outside facilities to cater for their patrons, in particular their smoking clientele. This may result in non-smokers spending more time using these facilities to accommodate the needs of their smoking friends or family. However, when the small number of participants aged under 18 years (who were recruited within the second phase of the study) were eliminated from the analysis, this increased exposure outdoors did not achieve statistical significance, suggesting this increase is primarily driven by the younger population.

Exposure to second-hand smoke in private places

Our current study has also shown a small decline in the time non-smokers' have been exposed to second-hand smoke in private places, with this reaching significance for the home environment, suggesting there has been no shift/increase in smoking in homes. However, the introduction of smoke-free legislation that prohibits smoking in enclosed public places has consequently resulted in a change to the main venues where non-smokers are now exposed to SHS. This has changed from social venues (eg bars, cafés and restaurants) prior to legislation, to private places (such as the home and car) post-legislation. Indeed, post-legislation, non-smokers (who live with a smoker) were still exposed to second-hand smoke for a fifth of the time they spent in their own home, nearly a quarter of the time they spent in someone else's home, and nearly a tenth of the time they spent in a car.

Nonetheless, this study has shown that, in line with the decrease in proportionate exposure to second-hand smoke in the home, fewer respondents reported living in homes where smoking is allowed (73% pre, 66% post). Other studies conducted among a range of population groups, including children, smokers, non-smokers or the general population, have produced similar

reports of smoking restrictions in the home following the introduction of smoke-free legislation, both in Northern Ireland and elsewhere.[7,9,13,14] However, despite the increase in home smoking restrictions reported in the current study, it should be noted that smoking is still much more prevalent in the homes of this study population (66% where a non-smoker lives with a smoker) than the homes of the general public in NI (39%).[14]

Our study has also shown that individuals are not limiting smoking prohibitions to the home environment, as they are also being applied in the car. Furthermore, we have observed that these home and car smoking prohibitions are not restricted to certain demographic profiles, but are evident throughout the majority of the study population. Nonetheless, some trends (highlighted below) have been observed in individuals' knowledge, attitude and behaviour in relation to SHS, which may be linked to demographic and household characteristics.

Gender and age influences

While age or gender had no significant influence post-legislation on whether smoking was allowed in the car or home, a trend was observed, with lower numbers of females and 30-44 year olds allowing smoking in these locations. Indeed, post-legislation, these two groups were also more likely to report that: inhaling other people's tobacco smoke poses a high risk to health; they mind others smoking in their home, the same room or car when they are present; they would ask someone to smoke outside their house.

The strong knowledge and attitudes among these groups translates into their behaviour to instigate a smoke-free environment. Indeed, this generation may be most likely to have young children in the home and, therefore, may be more determined to try and establish smoke-free environments. Despite these factors, the pressures that non-smokers (who live with a smoker) face in implementing a smoke-free environment remain evident. Around 6 in 10 females and those aged 30-44 years still live in homes where smoking is allowed, and around 3 in 10 in each group allow smoking in their own car.

In contrast, the older age groups (45-59, 60+ years) were least likely to agree that inhaling other people's tobacco smoke poses a high risk to health. They were also most likely to report that they don't mind others smoking in their home, the same room or car when they are present, and among the most likely to report that smoking was allowed in the home. It may be speculated that the older generation (smokers and non-smokers) may be more skeptical of the health impacts of SHS, or simply tolerate SHS exposure, possibly due to the length of time they have smoked themselves, or have lived with a smoker. These factors may make this group more reluctant to instigate changes in smoking rules within the home or car.

Influence of education

This study has shown that those who were least educated were most likely to initially allow smoking in the home or car. However, on a positive note, over the course of this study we have observed substantial decreases in the proportion of these individuals who said smoking was allowed in the home or car. Nonetheless, post-legislation, greater tolerance and acceptance of smoking was observed among this group, with these individuals more likely to say *'the ban is an unfair restriction on smokers'*, and *'the dangers of inhaling other people's tobacco smoke are greatly exaggerated'*. They also remained the least likely to say they would 'challenge someone smoking in a non-smoking area'.

The current study used educational status as a proxy indicator of socioeconomic group (SEG), with those respondents educated to school level only considered to correspond to the lower SEGs. Given that smoking is more prevalent in the lower SEGs, those educated to school level may be in contact with greater numbers of smokers throughout their lifespan, and this may therefore influence this group's overall acceptance of smoking.[15] Indeed, evidence has shown that by the age of seven, children who live with a parent who smokes begin to lose the negative connotations of smoking – they accept and rationalise their parents' smoking behaviour.[16] Despite these factors, it is important to note that educational status varies across generations, with higher educational status being less common in the older generation. As such, this potentially limits its ability to fully reflect SEG.[17]

Implementing changes in home/car smoking rules

From the study results, it is not feasible to determine who is the main driver of smoking restrictions or prohibitions in the home or car. However, a hierarchy of where smoking prohibitions were in place was evident: the non-smoker's own car was the most likely, followed by a shared car, with their home being the least likely. While the current study did not determine whether the non-smoking respondent was the householder or simply a member of the household, the results suggest that non-smokers may easily be able to instigate smoke-free rules in their own personal setting/spaces, but have more difficulty incorporating smoke-free environments in shared living or transportation arrangements, especially when these are shared with a smoker. Indeed, a recent Scottish evaluation found smoking bans were more likely to be commonplace in the cars and homes of non-smokers who lived in non-smoking households than those who lived in smoking households.[9]

In addition, we have found evidence that suggests a direct relationship between the number of smokers in a non-smoker's household and how easy it is to implement smoking prohibitions (ie the fewer the smokers, the easier it is to implement a smoke-free policy). This was illustrated by a decrease in the proportion of non-smokers (who lived with only one smoker) who said smoking was allowed in the home at all, and there was consequently a decrease in the proportion of non-smokers who said they were exposed to tobacco smoke in the home every day. These changes did not occur for those who lived with multiple smokers. This suggests that non-smokers in households with a single smoker may have greater control or 'say' about the smoking behaviour in the home. Furthermore, those non-smokers who lived with only one smoker were more likely to say they would ask someone to smoke outside their home.

Even in those homes where smoking was still allowed, there were noticeable changes in the specific areas of the home where smoking occurred. Smoking in living rooms/lounges and bedrooms declined, while simultaneously, attached garages were increasingly reported as the smoking location. This has resulted in a decrease in the frequency with which non-smokers report they are exposed to second-hand smoke in their own home – fewer were exposed 'every day' and more were exposed 'sometimes', in line with the results of other studies.[9,13] While, to the best of our knowledge, no studies are available to illustrate the impact of home smoking restrictions on markers of adult SHS exposure, studies carried out with children indicate that SHS exposure is considerably reduced (but not eliminated) if the smoker does not smoke within the home environment.[13,18,19]

Non-smokers' views on the legislation's impact on smokers' behaviour

Despite no significant increase in the proportion of non-smokers who thought *'the ban will make/ has made smokers smoke more at home'*, 48% still agreed with this statement post-legislation, and significantly fewer disagreed (19% post compared to 34% pre, $p \leq 0.001$). While the number of cigarettes smoked in the home environment was not recorded within this cross-sectional research study, the associated home nicotine portion of this research found no subsequent rise in the amount of cigarettes smoked in the home.[12] Nonetheless, it is not possible to determine without further research whether a sub-set of smokers is indeed smoking more in the home. Similarly, further research would be needed to determine whether non-smokers simply perceive that smokers are smoking more in the home, possibly because of the greater contrast they now experience between the home and smoke-free public places.

Non-smokers appear to have been initially optimistic that *'the ban will encourage/has encouraged smokers to quit'*, yet the significant decrease in those agreeing with this statement post-legislation indicates these hopes were not fulfilled. It is, however, important to note these results may be more reflective of issues around how individual non-smokers define 'quitting'. For some non-smokers, it may include failed quit attempts, yet others may consider only sustained quit attempts. Quitting smoking involves smokers moving through the 'stages of change' cycle, a process that may involve many quit attempts before a smoker finally quits for a sustained period. However, this cross-sectional study specifically recruited non-smokers who live with at least one current smoker.[20] This study population therefore primarily sampled non-smokers living with at least one smoker who had either not attempted to quit at all, or who had not maintained successful quit attempts.

Nonetheless, given the fact that, post-legislation, there was no change in the level of disagreement with the statement, and the fact that around half of non-smokers still agreed that *'the ban will encourage/has encouraged smokers to quit'*, it indicates that a large proportion of smokers have been making quit attempts since the introduction of legislation. Indeed, the Northern Ireland smoking cessation services have recorded a substantial rise in the number of individuals setting a quit date in Northern Ireland (13,795 in 2006/07 and 21,476 in 2007/08), with around 50% of these sustaining the quit attempt at a four-week follow-up.[21]

Future directions

Overall, this study shows that non-smokers are supportive of the smoke-free legislation and have experienced some protection from the dangers of SHS since its introduction in public and private spaces. Yet smoking in the home and car are still commonplace in our culture and, therefore, further work needs to be done to encourage and promote the benefits of these environments being smoke-free. This is especially important given the evidence of large differences between the proportion of smoke-free homes in the general population and those in our current study sample. Establishing a smoke-free environment in the home or car not only limits non-smokers' exposure to SHS, but has added benefits for smokers as well. Previous research has shown a link between smoke-free homes and quitting behaviour; however, the direction of this relationship is not yet clear.[22]

Given the large proportion of individuals who live in homes where smoking is allowed in certain places, further work needs to be carried out to explore individuals' understanding of the value of implementing a smoke-free home, instead of restricting smoking to certain places within it.

In addition, formative research on a population-wide scale is needed to explore the factors (both motivators and barriers) that individuals have in relation to implementing and maintaining a smoke-free home or car. This information could be effectively used to develop guidance on why and how individuals (regardless of whether they live with a smoker) should establish and maintain a healthy smoke-free environment for themselves, their friends and family.

Furthermore, despite the fact that nearly 9 in 10 respondents in the current study remain in agreement that the legislation is needed to protect the health of workers, we have shown a reduction in support for this statement since the introduction of legislation. Indeed, we have also shown that over a fifth of non-smokers (who live with a smoker) believe *'the health effects of inhaling other people's tobacco smoking are greatly exaggerated'*. It is, therefore, vitally important to continually reinforce the health effects of SHS. Given the reduced population exposure to SHS since the introduction of legislation, noted in this and other studies, care needs to be taken that individuals do not become complacent about the dangers of even small amounts of SHS exposure. Further work needs to emphasise on a population-wide scale that there is no safe level of SHS exposure, and that even occasional or limited exposure to SHS poses a risk to health.[23]

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Appendix

Table 16: Demographic characteristics of the study samples pre and post-legislation

	Pre		Post		Sig. between phases
	Base	%	Base	%	
Male	169	28.0	177	29.5	NS
Female	435	72.0	423	70.5	
Full-time	219	36.6	228	38.0	NS
Part-time	136	22.7	155	25.8	
Not in paid employment	244	40.7	217	36.2	
18-29	170	28.3	210	39.4	***
30-44	150	25.0	149	28.0	
45-59	166	27.7	117	22.0	
60+	114	19.0	57	10.7	
Mean age	43.14 (18, 81)		37.47 (16, 85)		***
School	240	40.5	305	51.4	***
FE college	213	36.0	191	32.2	
University/ postgraduate	139	23.5	97	16.4	
Overall base	604		601		

Tables 17a-b: Non smokers' knowledge of the health risks of other people's tobacco smoke, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

a: Inhaling other people's tobacco smoke poses a high risk to health

		Agree	No strong opinion	Disagree	Base	Sig. within phase	Sig. between phases
		%	%	%			
Pre	Female	92	4	4	433	*	NS
	Male	85	9	7	169		NS
Post	Female	90	6	4	423	*	
	Male	83	12	5	177		
Pre	18-29	94	4	2	170	*	NS
	30-44	91	4	5	150		NS
	45-59	87	9	4	166		NS
	60+	87	4	9	113		NS
Post	16-29	89	8	3	210	*	
	30-44	92	5	3	149		
	45-59	88	6	6	117		
	60+	75	14	11	57		

b The dangers of inhaling other people's tobacco smoke are greatly exaggerated

		Agree	No strong opinion	Disagree	Base	Sig. within phase	Sig. between phases
		%	%	%			
Pre	18-29	24	17	59	169	NS	NS
	30-44	23	10	67	150		NS
	45-59	19	8	72	166		NS
	60+	26	8	66	111		NS
Post	18-29	24	21	55	210	*	
	30-44	22	9	70	149		
	45-59	21	11	68	117		
	60+	25	11	65	57		
Pre	School	29	9	62	237	***	**
	FE college	23	13	64	213		NS
	University/ postgraduate	10	12	78	138		NS
Post	School	29	18	53	305	**	
	FE college	18	12	70	191		
	University/ postgraduate	20	11	69	97		

Tables 18a-c: Respondents' knowledge of specific illnesses caused by second-hand smoke, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

a: Asthma

	%	Yes %	No %	Don't know	Base	Sig. within phase	Sig. between phases
Pre	Female	89	3	8	431	NS	***
	Male	86	4	10	169		NS
Post	Female	88	8	5	423	**	
	Male	84	5	11	176		

b: Bronchitis

	%	Yes %	No %	Don't know	Base	Sig. within phase	Sig. between phases
Pre	Female	86	3	11	426	NS	**
	Male	87	2	11	167		NS
Post	Female	85	6	9	421	NS	
	Male	79	6	15	176		
Pre	School	84	4	12	233		NS
	FE college	88	1	11	210	NS	*
	University/postgraduate	87	4	9	139		NS
Post	School	79	7	14	303		
	FE college	89	4	7	191	*	
	University/postgraduate	83	8	8	96		

c: Heart disease

	%	Yes %	No %	Don't know	Base	Sig. within phase	Sig. between phases
Pre	Female	72	8	20	421	*	NS
	Male	83	4	13	167		**
Post	Female	69	11	20	422	NS	
	Male	69	12	19	176		
Pre	18-29	65	10	25	167		NS
	30-44	76	6	18	144	**	NS
	45-59	77	7	17	163		NS
	60+	88	5	7	110		**
Post	18-29	64	14	21	210		
	30-44	68	12	21	148	NS	
	45-59	69	9	22	117		
	60+	68	12	19	57		
Pre	School	80	5	16	231		**
	FE college	75	6	19	209	*	NS
	University/ Postgraduate	67	12	20	137		NS
Post	School	68	12	20	303		
	FE college	71	11	18	191	NS	
	University/ Postgraduate	66	13	21	97		

Table 19: Respondents' views on the statement ***'I agree with the (proposed) ban on smoking in public places'***, by demographic and household characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	ALL	88	6	6	600	-	*
Post	ALL	87	9	4	600		
Pre	Female	88	6	5	432	NS	NS
	Male	88	5	7	168		*
Post	Female	90	7	2	422	**	
	Male	80	14	6	177		
Pre	18-29	87	7	6	170	NS	NS
	30-44	91	3	6	148		NS
	45-59	86	8	7	166		NS
	60+	92	4	4	113		*
Post	18-29	87	10	3	210	NS	
	30-44	89	7	4	148		
	45-59	92	6	2	117		
	60+	79	16	5	57		
Pre	School	89	5	6	236	NS	*
	FE college	86	8	7	213		NS
	University/postgraduate	91	4	4	139		NS
Post	School	85	11	4	304	NS	
	FE college	90	7	4	191		
	University/postgraduate	91	7	2	97		
Pre	Live with 1 smoker	88	6	6	485	NS	*
	Live with 2 or more smokers	90	7	4	115		NS
Post	Live with 1 smoker	88	9	4	482	NS	
	Live with 2 or more smokers	86	10	3	118		

Tables 20a-c: Non-smokers' attitudes on how the smoke-free legislation would/has impacted on smokers, by demographic and household characteristics (results presented for only those demographic variables where statistically significant differences are found)

a: 'The smoking ban is an unfair restriction on smokers'

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	School	18	16	66	235	NS	NS
	FE college	17	13	70	213		NS
	University/postgraduate	12	9	80	138		NS
Post	School	26	17	57	304	***	
	FE college	16	9	75	191		
	University/postgraduate	18	11	71	97		

b: 'The smoking ban will encourage/has encouraged smokers to quit'

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	Female	49	27	24	430	***	NS
	Male	67	13	20	167		***
Post	Female	51	29	20	420	NS	
	Male	45	32	24	177		
Pre	School	55	17	28	234	*	**
	FE college	54	25	21	213		NS
	University/postgraduate	54	29	17	138		NS
Post	School	49	30	22	303	NS	
	FE college	50	30	21	190		
	University/postgraduate	53	27	21	97		
Pre	Live with 1 smoker	53	23	24	482	NS	*
	Live with 2 or more smokers	57	24	19	115		NS
Post	Live with 1 smoker	48	31	21	480	NS	
	Live with 2 or more smokers	53	25	22	118		

c: 'The smoking ban will make/has made smokers smoke more at home'

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	Female	47	21	32	427	NS	***
	Male	44	18	39	166		***
Post	Female	52	30	18	421	*	
	Male	41	38	22	177		
Pre	18-29	49	21	30	170	NS	**
	30-44	38	22	40	147		**
	45-59	51	19	30	162		*
	60+	44	20	36	110		*
Post	18-29	51	30	19	210	NS	
	30-44	51	26	23	148		
	45-59	50	32	19	117		
	60+	34	41	25	56		
Pre	School	52	14	34	231	***	***
	FE college	47	25	29	213		NS
	University/postgraduate	34	23	43	137		***
Post	School	51	34	15	303	**	
	FE college	50	26	24	191		
	University/postgraduate	37	41	22	97		
Pre	Live with 1 smoker	44	21	35	479	NS	***
	Live with 2 or more smokers	55	18	27	114		**
Post	Live with 1 smoker	48	32	20	481	NS	
	Live with 2 or more smokers	52	34	14	118		

Table 21: Respondents' views on the statement ***'the smoking ban is needed to protect the health of workers'***, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	Female	94	2	3	430	NS	***
	Male	92	5	3	167		*
Post	Female	87	10	3	422	NS	
	Male	82	14	5	177		
Pre	18-29	94	4	3	169	NS	*
	30-44	95	2	3	148		**
	45-59	92	5	4	165		NS
	60+	95	2	4	112		NS
Post	18-29	86	12	2	210	NS	
	30-44	83	11	6	148		
	45-59	90	9	1	117		
	60+	86	7	7	57		
Pre	School	92	4	5	235	NS	***
	FE college	94	4	2	212		NS
	University/postgraduate	96	1	3	138		**
Post	School	82	14	4	304	NS	
	FE college	89	7	4	191		
	University/postgraduate	87	10	3	97		

Tables 22: Respondents' views on people smoking inside the home, by demographic and household characteristics (results presented for only those demographic variables where statistically significant differences are found)

a: View on smoking inside the home

		Mind a lot %	Mind a a bit %	Don't mind very much %	Don't mind at all %	No opinion %	Base	Sig. within phase	Sig. between phases
Pre	Female	61	23	9	7	1	434	***	NS
	Male	47	22	15	15	1	169		NS
Post	Female	61	26	8	5	0	423	**	
	Male	51	25	12	10	2	177		
Pre	18-29	46	35	12	6	1	170		NS
	30-44	63	21	11	4	1	150	***	NS
	45-59	64	13	12	10	1	165		*
	60+	56	18	9	17	0	114		NS
Post	18-29	56	29	8	8	1	210		
	30-44	63	26	7	5	0	149	NS	
	45-59	59	25	13	3	0	117		
	60+	53	28	7	11	2	57		
Pre	School	54	22	10	15	<1	239		NS
	FE college	58	25	9	6	1	213	***	NS
	University/ postgraduate	62	19	16	3	0	139		NS
Post	School	56	25	10	8	1	305		
	FE college	57	30	7	6	0	191	NS	
	University/ postgraduate	66	22	7	5	0	97		

b: View on smoking in the same room

		Mind a lot %	Mind a a bit %	Don't mind very much %	Don't mind at all %	No opinion %	Base	Sig. within phase	Sig. between phases
Pre	Female	64	21	9	6	0	418	***	NS
	Male	58	15	14	12	2	163		NS
Post	Female	68	20	7	5	0	423	**	
	Male	55	25	9	10	2	176		
Pre	18-29	57	27	10	5	1	168		NS
	30-44	58	23	14	4	1	144	**	**
	45-59	68	14	9	9	0	158		*
	60+	65	11	9	14	0	107		NS
Post	18-29	56	27	10	7	1	210		
	30-44	74	16	6	5	0	148	NS	
	45-59	66	25	6	3	0	117		
	60+	63	18	9	9	2	57		
Pre	School	60	17	8	13	<1	225		NS
	FE college	63	21	9	6	1	208	**	NS
	University/ postgraduate	62	21	15	2	0	137		**
Post	School	61	22	9	7	1	305		
	FE college	63	24	8	5	0	191	NS	
	University/ postgraduate	75	15	4	6	0	96		

Table 23: How often smokers smoke inside the home they share with a non-smoker, by demographic and household characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Smokes in home every day %	Sometimes smokes in the home %	Does not smoke in the home %	Don't know %	Base	Sig. within phase	Sig. between phases
Pre	18-29	91	7	2	1	133		*
	30-44	89	8	3	0	93	NS	NS
	45-59	89	7	4	0	108		NS
	60+	82	10	5	3	89		NS
Post	18-29	79	17	4	0	144		
	30-44	80	12	7	1	90	NS	
	45-59	82	12	5	0	74		
	60+	92	8	<1	0	36		
Pre	Live with 1 smoker	87	9	3	1	339	NS	*
	Live with 2 or more smokers	92	6	2	0	87		NS
Post	Live with 1 smoker	79	16	5	<1	293	NS	
	Live with 2 or more smokers	90	9	1	0	87		

Table 24: Respondents' views on the statement ***'I would ask someone who smokes to smoke outside my house'***, by demographic and household characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Agree %	No strong opinion %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	Female	60	12	28	425	NS	**
	Male	49	15	36	167		NS
Post	Female	62	19	20	421	*	
	Male	54	17	29	177		
Pre	18-29	49	20	32	168	**	*
	30-44	67	7	26	148		**
	45-59	58	13	29	165		NS
	60+	52	11	37	108		NS
Post	18-29	60	21	20	210	NS	
	30-44	64	18	19	148		
	45-59	57	13	30	116		
	60+	53	14	33	57		
Pre	Smoking not allowed in the home	93	3	4	160	***	**
	Smoking allowed in the home	43	17	40	428		*
Post	Smoking not allowed in the home	83	12	5	212	***	
	Smoking allowed in the home	47	22	32	386		
Pre	Live with 1 smoker	57	12	31	478	NS	*
	Live with 2 or more smokers	56	16	28	114		NS
Post	Live with 1 smoker	60	17	23	482	NS	
	Live with 2 or more smokers	58	24	18	117		

Table 25: Respondents' views on smoking in the car when they are present, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Mind a lot %	Mind a a bit %	Don't mind very much %	Don't mind at all %	No opinion %	Base	Sig. within phase	Sig. within phases
Pre	Female	73	12	9	5	1	413	**	NS
	Male	63	13	11	10	4	162		NS
Post	Female	73	15	6	6	1	421	NS	
	Male	65	17	6	10	3	176		
Pre	18-29	69	16	11	3	1	167	NS	NS
	30-44	70	15	8	4	3	144		*
	45-59	73	10	8	8	1	154		NS
	60+	69	9	9	12	1	106		NS
Post	18-29	62	20	9	8	2	210	*	
	30-44	82	9	4	5	0	147		
	45-59	72	19	4	3	1	116		
	60+	72	12	5	9	2	57		
Pre	School	66	11	9	12	2	221	**	NS
	FE college	72	150	8	4	1	207		NS
	University/postgraduate	75	11	13	2	0	136		*
Post	School	66	17	8	7	2	304	NS	
	FE college	73	15	5	6	1	190		
	University/postgraduate	80	10	3	6	0	96		

Table 26: Respondents' views on the statement ***'I am less likely to visit a pub after/since the smoking ban'***, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Agree %	Undecided %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	18-29	9	9	82	169	*	NS
	30-44	13	8	79	148		NS
	45-59	11	15	74	166		NS
	60+	19	19	63	108		NS
Post	18-29	16	9	75	209	NS	
	30-44	20	9	72	148		
	45-59	13	12	75	116		
	60+	14	11	75	56		
Pre	School	16	16	69	233	***	NS
	FE college	13	13	76	212		NS
	University/postgraduate	6	4	90	137		*
Post	School	19	15	67	302	*	
	FE college	14	6	80	190		
	University/postgraduate	14	8	77	97		

Table 27: Respondents' views on the statement ***'I would challenge someone smoking in a non-smoking area'***, by demographic characteristics (results presented for only those demographic variables where statistically significant differences are found)

		Agree %	No strong opinion %	Disagree %	Base	Sig. within phase	Sig. between phases
Pre	18-29	65	20	15	167	NS	NS
	30-44	72	10	18	148		NS
	45-59	62	19	19	164		NS
	60+	62	14	24	111		NS
Post	18-29	56	26	18	206	**	
	30-44	66	12	22	149		
	45-59	70	15	15	117		
	60+	56	12	32	57		
Pre	School	63	12	24	234	*	NS
	FE college	66	19	15	211		NS
	University/postgraduate	67	18	15	136		NS
Post	School	60	18	22	302	NS	
	FE college	62	21	17	190		
	University/postgraduate	66	14	20	97		
Pre	Smoking not allowed in the home	72	9	19	157	*	NS
	Smoking allowed in the home	63	19	19	433		*
Post	Smoking not allowed in the home	75	12	11	212	***	
	Smoking allowed in the home	55	21	25	384		
Pre	Live with 1 smoker	65	16	20	479	NS	NS
	Live with 2 or more smokers	68	17	16	114		NS
Post	Live with 1 smoker	63	16	21	481	*	
	Live with 2 or more smokers	59	26	16	116		

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