Submission No: 008

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Mr Brook Hastie
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Health and Ambulance Services Committee
Parliament House
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BRISBANE QLD 4000
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Cancer Council Queensland submission on the Tobacco and Other Smoking Products (Extension of Smoking Bans) Amendment Bill 2015

Dear Mr Hastie,

Please find attached Cancer Council Queensland's submission to the Queensland Parliament's Health and Ambulance Services Committee Inquiry into the Tobacco and Other Smoking Products (Extension of Smoking Bans) Amendment Bill 2015.

Please don't hesitate to contact my office if you require any further information in support of this submission.

Yours sincerely,

Professor Jeff Dunn AO
Chief Executive Officer
Cancer Council Queensland

Copy to: The Hon. Cameron Dick MP
Minister for Health

Mr Mark McArdle MP
Shadow Minister for Health

Tobacco and Other Smoking Products (Extension of Smoking Bans) Amendment Bill 2015

Cancer Council Queensland Submission to the Queensland Parliament's Health and Ambulance Services Committee Inquiry

28 August 2015

Cancer Council Queensland

Cancer Council Queensland (CCQ) is Queensland's leading non-government community organisation in cancer control. CCQ's goal is cancer control through all actions that aim to reduce the burden of cancer on all individuals and the community.

Over many decades CCQ has led anti-tobacco advocacy in Queensland, encouraging the creation of tobacco control laws and social marketing programs that have significantly reduced the prevalence of smoking in Queensland and reduced illness and deaths from tobacco-related disease. The outcomes of CCQ's endeavours include the creation of smoke-free pubs and clubs, bans on smoking in cars carrying children, and most recently a ban on retail display of cigarettes.

CCQ was established in 1961 as the Queensland Cancer Fund, in response to an increasing need for cancer-related services across the state. CCQ employs over 250 staff statewide, and relies on support from more than 1,500 registered volunteers. The organisation has offices in Brisbane, Cairns, Townsville, Mackay, Rockhampton, Bundaberg, Maroochydore, Toowoomba, and the Gold Coast. CCQ is a member of Cancer Council Australia and is affiliated with the Union for International Cancer Control (UICC). Our vision is for a cancer free Queensland.

The facts on smoking in Queensland

Tobacco smoking is a leading cause of preventable death and disease, and health inequality in Queensland. One third of smokers die in middle age losing at least 20 years of life (42% of lung cancer deaths occur in the 45–64 year old age group, and 18% of COPD deaths). Current smokers will die an average of 10 years earlier than non-smokers, with mortality rates increasing substantially with the increased intensity of smoking. Smoking accounts for 1 in 7 deaths in Queensland with 3700 Queenslanders dying annually from tobacco related conditions. About one-third of these were of working age. One in 10 people who die from smoking-related diseases have never smoked themselves.

Prevalence has decreased by 26% over the decade since 2004, but the rate of decrease has slowed over recent years – new measures are now urgently required to continue historical rates of progress.

PREVALENCE IN QUEENSLAND (2014)

- About 17% of Queenslanders are current smokers.
- 14% of Queenslanders smoke daily.
- 3% are non-daily smokers.
- 28% are ex-smokers.
- 55% have never smoked.
- 15.8 years is the age of the first full cigarette for persons aged 14 years and older.
- 15% of women still smoke at some time during their pregnancy.
- 2.6% quit before the second half of pregnancy, and 13% smoke throughout.
- 500,000 Queensland adults are current smokers.

Cancer Council Queensland Response to Proposed Amendments

Clause 4 Insertion of new ss 13C and 13D *To ban the sale of smoking products from vehicles and pop-up stores*
CCQ supports the proposed amendments • Under existing legislation smoking products are routinely sold from vehicles and pop-up stores at outdoor music festivals and events attended predominantly by younger people. • In Queensland the highest rate of smoking is among young to middle-aged adults (25–44 years), with about 1 in 5 smoking daily in 2014. • The highest proportion of non-daily smokers is among 18–34 year olds (about 4% compared with about 2% in middle-aged adults). • Considering daily and non-daily smoking together, about 1 in 5 persons aged 25 to 44 years is a current smoker. It is therefore imperative to encourage young people to avoid becoming daily smokers, and to stop them from taking up the habit in the first place. • In 2010, there were about 27,500 teenagers (14–19 years) who smoked daily. • Banning the sale of smoking products from vehicles and pop-up stores will help to discourage young people from smoking.
Clause 5 Insertion of new pt 2C, div 2B *To ban smoking at Government buildings and ensure the display of no smoking signs*
CCQ supports the proposed amendments • Banning smoking at Government buildings will discourage people from smoking and protect people from the harmful effects of second-hand smoke. • Passive smoking is associated with a 25% increase in the risk of coronary heart disease among non-smokers and an increase in the risk of stroke, cancer, and other life-limiting diseases. • Even brief exposure to passive smoking can adversely affect the health of non-smokers. • Second-hand smoke is strongly linked to heart disease, lung cancer and respiratory conditions. • The World Health Organization estimates that about 10% of deaths due to smoking are a result of second-hand smoke. • There is strong evidence that smoking bans around buildings reduce smoking prevalence and cigarette consumption, reducing smoking rates and discouraging uptake of the habit among all age groups. • Banning smoking around buildings also discourages smokers from clustering around building entrances and exposing greater numbers of people to second-hand smoke. • CCQ further recommends that this ban be broadened to encompass all non-residential buildings as well as multi-unit residential buildings.

Clause 6

Replacement of s 26ZI

People must not smoke at a prescribed outdoor swimming area

CCQ supports the proposed amendments

- Banning smoking at outdoor swimming areas will discourage people from smoking and protect people from the harmful effects of second-hand smoke.
- Passive smoking is associated with a 25% increase in the risk of coronary heart disease among non-smokers and an increase in the risk of stroke, cancer, and other diseases.
- Even brief exposure to passive smoking can adversely affect the health of non-smokers.
- Second-hand smoke is linked to heart disease, lung cancer and respiratory conditions.
- The World Health Organization estimates that about 10% of deaths due to smoking are a result of second-hand smoke.
- Smoking bans at outdoor public places reduces smoking prevalence and cigarette consumption, reducing smoking rates and discouraging uptake of the habit.
- Banning smoking at outdoor public places also discourages smokers from clustering around recreational facilities and exposing people to second-hand smoke.
- Outdoor swimming areas are routinely frequented by young people and children under 14 years of age, who are particularly vulnerable to the harmful effects of passive smoking and are influenced by adult role modelling.
- CCQ further suggests that the definition of a prescribed outdoor swimming area should specifically encompass all aquatic recreational facilities.

Clause 7

Insertion of new ss 26ZKA–26ZKC

People must not smoke at outdoor pedestrian malls, public transport waiting points, and skate parks

CCQ supports the proposed amendments

- Banning smoking at outdoor pedestrian malls, public transport waiting points and skate parks will deter people from smoking and protect people from second-hand smoke.
- Passive smoking is associated with a 25% increase in the risk of coronary heart disease among non-smokers and an increase in the risk of stroke, cancer, and other diseases.
- Even brief exposure to passive smoking can adversely affect the health of non-smokers.
- The World Health Organization estimates that about 10% of deaths due to smoking are a result of second-hand smoke.
- Smoking bans at outdoor public places reduces smoking prevalence and cigarette consumption, reducing smoking rates and discouraging uptake of the habit.
- Banning smoking at outdoor public places also discourages smokers from clustering around recreational facilities and equipment and exposing greater numbers of people to second-hand smoke.
- Outdoor pedestrian malls, public transport waiting points and skate parks are routinely frequented by young people and children under 14 years of age, who are particularly vulnerable to the harmful effects of passive smoking and are influenced by adult role modelling.
- CCQ further recommends that the ban on smoking at skate parks be extended to 10 metres, consistent with the current ban on smoking at playgrounds for children.

Cancer Council Queensland Additional Recommendations

Smoking should be prohibited within 10 metres of local sporting clubs and fields

- The proposed bans on smoking at public swimming pools, outdoor pedestrian malls, public transport waiting points and skate parks should be broadened to include local sporting clubs to further deter people from smoking and protect people from second-hand smoke.
- Passive smoking is associated with a 25% increase in the risk of coronary heart disease among non-smokers and an increase in the risk of stroke, cancer, and other diseases.
- Even brief exposure to passive smoking can adversely affect the health of non-smokers.
- Second-hand smoke is linked to heart disease, lung cancer and respiratory conditions.
- The World Health Organization estimates that about 10% of deaths due to smoking are a result of second-hand smoke.
- Smoking bans at outdoor public places reduces smoking prevalence and cigarette consumption, reducing smoking rates and discouraging uptake of the habit.
- Banning smoking at local sporting clubs will also discourage smokers from clustering around recreational facilities and equipment and exposing greater numbers of people to second-hand smoke.
- Local sporting clubs are routinely frequented by young people and children under 14 years of age, who are particularly vulnerable to the harmful effects of passive smoking and are easily influenced by adult role modelling.

The sale of tobacco products by people under the age of 18 should be prohibited

- Article 16 (7) of the World Health Organization's Framework Convention on Tobacco Control (FCTC), to which Australia is a signatory, calls for a prohibition on the sale of tobacco products by those under the age of 18 years.
- In Queensland, young persons under 18 years of age are protected from selling alcohol, but not cigarettes.
- Research has found that the sale of tobacco products by minors is linked to increased sales of tobacco products to children.
- Protecting young persons from selling tobacco products is consistent with existing laws that prevent children from being supplied and purchasing tobacco products.

The sale of smoking products in vending machines should be banned

- Vending machines should be prohibited to prevent the promotion of smoking and to limit the availability of access to cigarettes in the community. A ban on vending machines, which are largely unmonitored, would prevent children from illegally obtaining smoking products.
- The Framework Convention on Tobacco Control (FCTC), to which Australia is a signatory, supports measures to prohibit sales to minors, including ensuring that vending machines are not accessible to minors and do not promote the sale of tobacco products to minors.
- Other Australian states, including the Australian Capital Territory, have moved forward with legislation to ban vending machines.

Smoking should be banned in premium gaming rooms
• Under existing legislation premium gaming rooms are exempted from indoor smoking bans. • As a result of this exemption, casino employees and patrons are routinely and frequently exposed to potentially lethal second-hand smoke. • More than 80% of respondents to the 2007 Review of Smoke-free Laws (Queensland Government, 2007) supported the removal of this exemption. • A ban on smoking in premium gaming rooms will protect casino employees and patrons from exposure to concentrated second-hand smoke in enclosed gaming rooms.
The sale of tobacco products should be regulated by a licensing scheme
• In Queensland there are currently no zoning restrictions or ordinances that limit the number, concentration, or geographical location of tobacco retailers. • A 2013 study found that cigarettes are more widely available and cheaper in disadvantaged areas compared to more affluent areas, contributing to higher rates of smoking in disadvantaged communities. • There are an estimated 13,000 tobacco retailers in Queensland. • Research shows that the more available tobacco is, the more people smoke, and the more likely it is that children will start smoking. • Licensing schemes exist in all states and territories but Queensland and Victoria. • Mandatory licensing was recommended in 2002 by the Intergovernmental Committee on Drugs, following a review of the feasibility, cost effectiveness and public health benefits of registration and licensing schemes for tobacco outlets in Australia (including retailers and wholesalers).
Smoking should be prohibited at licensed premises
• A 2007 Queensland Government review of smoke-free laws in Queensland found majority public support for further strengthening regulation of smoking in outdoor areas and banning designated outdoor smoking areas altogether. • A 2008 Queensland Health research study found that 68% of patrons who regularly attend licensed venues are non-smokers. • A total ban on smoking in licensed premises would bring licensed premises into line with all other businesses in Queensland, including restaurants, cafes and sporting facilities. • Queensland Health research suggests that the continuation of designated outdoor smoking areas is reinforcing cigarette smoking among existing smokers by providing them with a legally sanctioned zone in which to continue the habit. • Queensland Health research also shows that second-hand smoke from designated outdoor smoking areas drifts into non-smoking areas of licensed venues, exposing other patrons to the harmful effects of tobacco.

Ban smoking in motor vehicles
• Under current legislation, smoking is only prohibited in cars carrying children under 16 years of age and when more than one person is in a motor vehicle being used for business purposes. • This should be broadened to ban smoking in cars to protect people from the effects of smoking in confined spaces and eliminate risks of driver distraction. • Research has found nearly 10 per cent of Queensland adults allow smoking in their cars, and 25 per cent live in a household with a current smoker. • Second and third-hand smoke exposure caused by smoking in cars can cause cancer and other deadly illnesses and disease. • Third-hand smoke occurs when second-hand smoke reacts with the air in confined spaces, lingering on furniture and fabrics for months after active smoking occurs. • Third-hand smoke is widespread in confined environments affected by second-hand smoke, such as cars, exposing adults and children to significant health risks. • The 4000 chemicals in second-hand smoke linger long after cigarettes are stubbed out, sticking to surfaces and threatening to damage human DNA in a way that can potentially cause cancer. • Third-hand smoke can be found in cars, apartments, and any other environments where smoking takes place in an enclosed space. • In Queensland men are 65 per cent more likely than women to smoke in cars; people aged 18 to 24 have the highest rate of smoking in cars of all age groups; and rates are significantly higher in remote areas. • Smoking while driving also creates a dangerous driver distraction. • Several studies on smoking and car safety have concluded that smokers have an increased risk of being involved in motor accidents due to hazards associated with smoking.

General Evidence

Population health impacts
• Cigarette smoking is the single largest preventable cause of death and disease in Australia. • Two in three Australian smokers will die from the habit. • Tobacco smoking is a leading cause of preventable death and disease, and health inequality in Queensland. • One third of smokers die in middle age losing at least 20 years of life (42% of lung cancer deaths occur in the 45–64 year old age group, and 18% of COPD deaths). • Current smokers will die an average of 10 years earlier than non-smokers, with mortality rates increasing substantially with the increased intensity of smoking. • Smoking accounts for 1 in 7 deaths in Queensland with 3700 Queenslanders dying annually from tobacco related conditions. About one-third of these were of working age. • One in 10 people who die from smoking-related diseases have never smoked themselves. • In men, smoking causes 84 per cent of lung cancers, 73 per cent of laryngeal cancers, 43 per cent of bladder cancers and 28 per cent of kidney cancers. • In women, cigarette smoking causes 77 per cent of lung cancers, 66 per cent of laryngeal cancers, 36 per cent of bladder cancers and 21 per cent of kidney cancers.
Impacts of cigarette smoking
• Smoking is known to cause cancers of the lung, mouth, throat, oesophagus, pharynx, larynx, tongue, lips, salivary glands, stomach, cervix, vulva, penis, kidney, liver, pancreas, bladder, and blood (leukaemia and multiple myeloma). • In addition to being a leading cause of cancer, smoking is also linked to an extensive range of serious and life-threatening diseases. Smoking is linked to heart disease, stroke, peptic ulcers, chronic bronchitis, asthma, emphysema, peripheral vascular disease (a cause of gangrene), macular degeneration (a common cause of blindness). • Women who smoke during pregnancy have a greater risk of miscarriage, pregnancy complications and their babies are more likely to have a low birth weight. Parental smoking increases the risk of Sudden Infant Death Syndrome (SIDS) or cot death. • Smoking just one cigarette can have immediate health effects, including: temporary increases in blood pressure and heart rate; constriction of blood vessels, which slows down blood flow around the body; and binding of carbon monoxide to haemoglobin in the bloodstream. This reduces the amount of oxygen delivered to the tissues. • Overall, smokers have a 70% greater risk of death from coronary heart disease than non-smokers. Even smoking one to four cigarettes per day can double or triple the risk of coronary disease. • The risk increases with the number of years of smoking and number of cigarettes smoked. • Smoking cigarettes increase the risk of heart attack two to six times; increase the risk of heart disease among women using the oral contraceptive pill; increase the risk of stroke three-fold; increase the risk of peripheral arterial disease (which can lead to gangrene and limb amputation) by more than five times; and increase the likelihood of an abdominal aortic aneurysm (swelling of the body's main artery in the abdomen which may rupture) by six to seven times (for current smokers).

Passive smoking

- The effects of passive smoking are a focus of concern, particularly for children. The 2013 National Drug Strategy Household Survey found that the proportion of households with dependent children where someone smoked inside the home is about 4%.
- Second-hand smoke is strongly linked to heart disease, lung cancer and respiratory conditions. The WHO has estimated that about 10% of deaths due to smoking are a result of second hand smoke.
- Passive smoking is also associated with a 25% increase in the risk of coronary heart disease among non-smokers; and an increase in the risk of stroke.
- Even brief exposure to passive smoking (e.g. for as little as 30 minutes) can affect the cardiovascular system of non-smokers.
- Non-smokers living with smokers have about a 25% increase in risk of death from heart attack and are also more likely to suffer a stroke.
- The following health problems have been associated with passive smoking: asthma in children; sudden infant death syndrome; lower respiratory tract infections; lung cancer; coronary heart disease.
- Tobacco smoke makes blood 'stickier' and causes blood cells to clump together – this slows the blood flow and makes blockages in the bloodstream more likely; slows the blood flow, making blockages more common; helps to start (and speed up) the artery clogging process; damages the lining of the arteries where clots can form – this starts happening even in healthy young adults.
- Second-hand smoke is especially risky for children and babies. It is associated with low birth weight babies; sudden infant death syndrome (SIDS) – where babies suddenly stop breathing during sleep; bronchitis and pneumonia; middle ear infections; and the onset of asthma or increased frequency and severity of asthma attacks.

Geographic variations in prevalence

- Daily smoking rates in 2011–12 were higher in four HHSs (from 26% in Darling Downs to 66% higher in Cape York) and lower in one HHS (17% lower in Metro North).
- Smoking during pregnancy varied by HHS from over 50% to about 10% in 2009–2011.
- Quitting prior to 20 weeks gestation varied by HHS from 26% to 7%.
- Smoking after 20 weeks gestation varied by HHS from 44% to 9%.
- Disability and hospitalisation:
- About one-quarter of the total disease burden of tobacco smoking is due to disability or loss of good health (23% in 2007), and three-quarters is associated with premature death.
- The disability burden from smoking is primarily associated with the development of chronic respiratory conditions such as COPD, and with cardiovascular diseases such as coronary heart disease and stroke.
- Although tobacco smoking is the dominant cause of lung cancer death, it carries a low disability burden for this disease, in part due to the low five-year survival rate, 14% in 2010. T
- There were about 36,000 hospitalisations per year due to smoking between 2006–07 and 2008–09, where the majority were associated with cardiovascular and respiratory conditions. Smoking related hospitalisations were 2.3% of all hospitalisations.
- Adults in very remote areas are 26% more likely to have ever smoked than those in major cities in 2014.
- Daily smoking rates are about 60% higher in very remote areas of Queensland than in major cities, although non-daily smoking rates are similar.

Impacts on Indigenous Queenslanders

- Adults in disadvantaged areas continue to smoke at about double the rate of advantaged areas.
- Indigenous Australians smoke at 2.5 times the rate of non-Indigenous people, with no change in this disparity since 2002.
- Indigenous Queenslanders, teenagers and women from disadvantaged areas smoke during pregnancy at about 3 to 6 times the rate of others.
- The variation in smoking rates explains a substantial proportion of differences in life expectancy among populations.
- The prevalence of daily smoking in 2012–13 among adult Indigenous Queenslanders (45% non-age standardised) was 2.5 times that of non-Indigenous Queenslanders after adjusting for age differences.
- The prevalence of daily smoking among Indigenous Queenslanders is similar to the national prevalence.
- Indigenous Australians living in remote areas are about 25% more likely to smoke daily than those in non-remote areas. Although daily smoking is decreasing among Indigenous Australians, the gap between Indigenous and non-Indigenous Australians has remained essentially unchanged since 2002.
- In 2012, Indigenous Queenslander women were 3.7 times more likely to smoke at some time during pregnancy than non-Indigenous women (48% compared with 13%). Although Indigenous Queenslander women were more likely to quit before 20 weeks gestation (5.3% compared with 2.4%), the smoking rates after 20 weeks was about 4 times the non-Indigenous rate (43% compared with 11%).
- The rate of smoking during pregnancy among teenage Indigenous Queenslanders was similar to that for other Indigenous Queenslander women (47% compared with 49%), although for non-Indigenous women, rates among teenagers were 2.6 times the rates of women aged 20 years and older (31% compared with 12%).

Impacts on expectant mothers

- The percentage of women smoking at some time during their pregnancy varies from 10% to 50% across Queensland Hospital and Health Services – the state prevalence is 15%.
- On average 13% of Queensland women smoke throughout pregnancy – the rate in disadvantaged areas is six times that of advantaged areas.
- Young women are 2.5 times more likely to smoke at some time during their pregnancy than older women –35% of teenagers in 2012 compared with 14% of older women. Although quit rates are higher in teenagers (6.5% compared with 2.4%), the relative difference in smoking rates during the second half or pregnancy remained (28% of teenagers and 12% of older women). The lowest rate of smoking was among older non-Indigenous women during the last 20 weeks of their pregnancy, 10%.
- Women from remote and very remote areas are 2 to 3 times more likely to smoke during pregnancy than those in cities. In 2011, 13% of women in major cities were smoking before 20 weeks gestation, while 25% of those in remote areas and 42% of those in very remote areas did so.
- Women in remote and very remote areas were less likely to quit before 20 weeks than women in major cities: 1 in 8 did so, while for women in cities, 1 in 6 quit.
- The rate of smoking during pregnancy among teenage Indigenous Queenslanders was similar to that for other Indigenous Queenslander women (47% compared with 49%), although for non-Indigenous women, rates among teenagers were 2.6 times the rates of women aged 20 years and older (31% compared with 12%).

Sex differences
• Daily smoking prevalence is 37% higher in males than females in Queensland, 16% compared with 12% respectively in 2014. • Males are 26% more likely to have ever smoked than females, they are 22% more likely to be ex-smokers, with older males more than three times as likely as older females to be ex-smokers (aged 75 years and older). • Males have a longer duration of daily smoking. They are more likely to have started smoking at a younger age than females (15.3 years compared with 16.4 years for females in 2010), to become daily smokers at a younger age (17.6 years compared to 18.3 years for females) and be older when they quit smoking daily (35.0 years compared with 32.9 years).
Life expectancy, morbidity, and mortality
• Variation in smoking rates explains a substantial proportion of the difference in life expectancy among populations. • Eliminating smoking altogether would enhance life expectancy. The two-year gain in Australia over the past decade (2.3 years for males and 1.6 years for females) would have been almost three years if nobody smoked (3.1 years for males and 2.3 years for females). • If the prevalence of smoking were reduced to 10%, the life expectancy gains would have been 2.6 years for females and 2.0 years for males. Focussing on smoking reduction in those aged under 60 years would have the greatest effect on extending life. • Cigarette smoking killed more than six million people worldwide in 2010. • Smoking causes death, with two-thirds of long-term smokers eventually killed by their addiction. • Cigarette smoking killed more than six million people worldwide in 2010. In 2007, 1 in 4 cancer deaths in Queensland were caused by smoking. • In Australia in 2010, smoking was estimated to cause 20,000 deaths (about 14% of all deaths) where about one-third occurred in people aged 15–69 years. It is estimated that about 3700 of these deaths occurred in Queensland. Almost half (45%) of these deaths were due to lung cancer, 25% to COPD, 15% to cardiovascular diseases and the remainder were due to other cancers and respiratory conditions. • Second-hand smoke is strongly linked to heart disease, lung cancer and respiratory conditions. The World Health Organization estimates that about 10% of deaths due to smoking are a result of second hand smoke. • Globally, tobacco smoking including second-hand smoke was the second largest cause of disease burden in 2010 (largest cause for males and fourth largest cause for females). • In 2010, tobacco smoking was the third largest cause in Australia, accounting for 8.3% of total burden. Data for Queensland for 2010 is not available. Considering the 2007 Queensland study, smoking caused about 50% more burden for Indigenous Queenslanders than for all Queenslanders. Smoking increases the risk of lung cancer, cardiovascular disease, chronic lung disease, and other conditions. About 80% of lung cancer was caused by smoking.

Age differences

- The highest rate of smoking is among young to middle-aged adults (25–44 years), with about 1 in 5 smoking daily in 2014.
- The highest proportion of non-daily smokers is among 18–34 year olds (about 4% compared with about 2% in middle-aged adults). Considering daily and non-daily smoking together, about 1 in 5 persons aged 25 to 44 years is a current smoker. It is therefore imperative to encourage young people to avoid becoming daily smokers, and to stop them from taking up the habit in the first place.
- In 2010, there were about 27,500 teenagers (14–19 years) who smoked daily.
- Middle-aged and older males were more likely to be ex-smokers than any other group. While the prevalence of smoking is based on cigarette smoking, overseas studies show the uptake of non-conventional tobacco products is increasing among young people. These products include electronic cigarettes, hookahs and, in some groups, cigars.
- Socio-economic status and occupation:
- Smoking rates are higher in disadvantaged areas than advantaged areas – 87% higher for daily smoking in 2014.
- In 2010 in Australia, rates of smoking of blue collar workers were about double those of white collar workers. For workers in lower blue collar employment (semi-skilled, unskilled and farm workers) 30% were regular smokers, 25% of upper blue collar workers (skilled workers), 13% of upper white collar workers (professionals, business owners, executives, farm owners, semi-professionals) and 20% of other white collar workers.
- In 2012, about 9,500 women smoked at some time during their pregnancy with a greater proportion from disadvantaged areas. Women from disadvantaged areas were 6 times more likely to smoke during pregnancy than those in advantaged areas – 26% compared with 4%.
- Quit rates in advantaged areas were double those in disadvantaged areas; about 1 in 8 women in disadvantaged areas quit before 20 weeks, while in advantaged areas about 1 in 4 quit.

Toxicity and cancer-causing properties of cigarettes

- Cigarettes contain more than 4000 chemicals. More than 69 of these are known carcinogens, or cancer-causing agents.
- Carbon monoxide, a poisonous gas produced by burning tobacco, decreases the amount of oxygen available to the body, forcing the heart to work harder. Carbon monoxide is also found in car exhaust fumes.
- Nicotine is the addictive drug in tobacco which increases the smoker's blood pressure and heart rate. Concentrated nicotine is a deadly poison and is widely used as an insecticide. Nicotine is more addictive than cocaine or heroin.
- 30 metals have been detected in tobacco smoke including nickel, arsenic, cadmium, chromium and lead. Evidence suggests that many of these compounds may be carcinogenic.
- Other chemicals found in cigarettes include: turpentine – commonly used as paint stripper; butane – a key ingredient of gasoline; ammonia – a component of toilet and floor cleaner; acetone – more commonly used as nail polish remover; formaldehyde – a chemical used by embalmers to preserve dead bodies; methoprene – a flea repellent.

Economic impacts

- Smoking is estimated to cost the Queensland economy more than $6 billion each year, causing more than 3,700 deaths and resulting in over 36,000 hospitalisations. Of serious concern, smoking-related illness and disease is responsible for one in five male deaths and one in 10 female deaths in Queensland each year, and 46% of these are people younger than 75 years of age.
- In 2004–05, tobacco smoking was estimated to cost Australian society $31.49 billion annually.
- Of the total costs:
- 38% related to tangible costs ($12.03 billion).
- These include health system, labour, crime and other quantifiable impacts. The tangible costs of tobacco smoking were 38 times higher outside the health system than within:
- Net labour costs including reduced employment and loss of productivity and the net effect on households due to premature death and illness were estimated to be $11.71 billion.
- Net healthcare costs were $0.32 billion and include hospital, medical, related nursing home, ambulance and pharmaceutical costs.
- 62% related to intangible costs ($19.46 billion), all due to the impact of loss of life.
- Based on Queensland's share of the Australian population alone, in 2004–05, the cost of tobacco smoking to Queensland society was estimated at $6.1 billion, with $0.06 billion spent on healthcare and $1.15 billion on lost production in the workplace.
- Of the tangible costs of smoking, 97% were associated with lost production and impact on household finances, with the remainder associated with health system impacts.

Distribution by payer of the tangible social costs of tobacco abuse in Australia, 2004–05 ($m)

	Households	Business	Government	Total
Workforce labour	0.0	4 517.4	1 231.6	5 749.1
Household labour	9 843.1	0.0	0.0	9 843.1
Health care				
Hospitals	7.3	37.6	178.5	223.4
Medical	17.6	16.1	124.8	158.4
Nursing homes	(37.2)	(0.4)	(139.6)	(177.3)
Pharmaceuticals	12.7	0.0	64.6	77.3
Ambulances	11.4	4.2	21.0	36.6
Total health care	11.8	57.5	249.3	318.4
Fires	16.4	36.5	10.2	63.0
Resources used in abusive consumption (purchase of tobacco)	0.0	3 635.6	0.0	3 635.6
Total	9 871.2	8 247.0	1 491.1	19 609.3
Percentage of total costs	50.3%	42.1%	7.6%	100%

Source: Collins and Lapsley 2008

Tangible social costs of tobacco use in Australia, 2004–05 ($m)

Cost category	$m
Labour	
Labour in the workforce	
Reduced workforce	4 969.5
Absenteeism	779.6
Total	5 749.1
Labour in the household	
Premature death	9 156.4
Sickness	686.7
Total	9 843.1
Total workforce and household labour	15 592.2
Less consumption resources saved	(7 583.1)
Net labour costs	8 009.1
*Health care (net)**	
Medical	158.4
Hospital	223.4
Nursing home	(177.3)
Pharmaceuticals	77.3
Ambulances	36.6
Total net health care costs	318.4
Fires	63.0
Resources used in abusive consumption (purchase of tobacco)	3 635.6
Total tangible costs	12 026.2

Source: Collins and Lapsley 2008

Please note that this submission is supported by a 668 page dossier of medical and scientific evidence, submitted as a separate attachment to the Health and Ambulance Services Committee Inquiry on the *Tobacco and Other Smoking Products (Extension of Smoking Bans) Amendment Bill 2015*.

Literature relating to the Tobacco and Other Smoking Products (Extension of Smoking Bans) Amendment Bill 2015

Dreyfuss JH. Thirdhand Smoke Identified as Potent, Enduring Carcinogen. CA A Cancer Journal for Clinicians 2010:60(4);203-204. 23

Mangiaracina G, Palumbo L. *Smoking while driving and its consequences on road safety.* Ann Ig 2007. 19(3):253-67. 24

Matt GE, Quintana JE, Zakarian JM, Fortmann AL, Chatfield DA, Hoh E, Uribe AM, Hovell MF. *When smokers move out and non-smokers move in: residential thirdhand smoke pollution and exposure.* Tobacco Control 2011;20:e1. 24

Schick S. *Thirdhand smoke: here to stay*. Tobacco Control January 2011: 20(1)..... 24

Singer BC, Hodgson AT, Guevarra KS, Hawley EL, Nazaroff WW. *Gas-Phase Organics in Environmental Tobacco Smoke. 1. Effects of Smoking Rate, Ventilation, and Furnishing Level on Emission Factors.* Environ. Sci. Technol. 2002, 36, 846-853..... 24

Sleiman M, Gundel LA, Pankow JF, Jacob P, Singer BC, Destaillats H. *Formation of carcinogens indoors by surface-mediated reactions of nicotine with nitrous acid, leading to potential thirdhand smoke hazards*. Proc Natl Acad Sci U S A. 2010 Apr 13; 107(15): 6576–6581. 24

Thomas JL, Hecht SS, Luo X, Ming X, Ahluwalia JS, Carmella SG. *Thirdhand Tobacco Smoke: A Tobacco-Specific Lung Carcinogen on Surfaces in Smokers' Homes*. Nicotine Tob Res 2014. 16(1);26–32. 24

Vardavas C. I. *Environmental tobacco smoke exposure in motor vehicles: a preliminary study.* Tob Control 2006; 15: 415. 25

Health effects of second-hand smoke

California Environmental Protection Agency. Air Resources Board. Office of Environmental Health Hazard Assessment. *Proposed identification of Environmental Tobacco Smoke as a toxic air contaminant: as approved by the Scientific Review Panel* on June 24, 2005. Part B: Health effects. Sacramento, Calif: California EPA, 2005.

> Children are particularly vulnerable to second-hand smoke as they have higher breathing rates and greater lung surface area relative to adults. Available at: http://oehha.ca.gov/air/environmental_tobacco/2005etsfinal.html

U.S Department of Health and Human Services. *The Health Consequences of Smoking – 50 Years of Progress. A Report of the Surgeon General.* Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014.

> SHS exposure causes lung cancer, stroke, nasal irritation and coronary heart disease in non-smoking adults; asthma, wheeze illnesses, respiratory illnesses and reduced lung function in children; and reduced birth weight and sudden infant death syndrome in infants. No safe level of exposure to SHS has been identified. Available at: http://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/

Supply and availability of tobacco products

The Allen Consulting Group 2002, *Licensing of Tobacco. Retailers and Wholesalers: Desirability and Best Practice Arrangements*, Sydney. December 2002. Report to the Commonwealth Department of Health and Ageing. Endorsed by the Intergovernmental Committee on Drugs. Chapter 4 - Economic rationales for the regulation of tobacco sales. Page 17.

> Regulation of tobacco retailing and supply is justified and addresses two key market failures. Consumers, particularly minors may not fully understand when they try smoking their potential to become addicted and how much smoking will affect their health and finances either immediately or in years to come. Secondly, market intervention is justified as smoking has very significant negative externalities. This includes the adverse health effects of second-hand smoke and the high cost of tobacco related death and disease. Licensing is the most effective way of ensuring tobacco retailers understand their obligations. It would also provide enforcement officers with more information on tobacco retailers and be accompanied by consequences should they fail to comply with tobacco control laws. Available at: http://www.health.gov.au/internet/main/publishing.nsf/Content/tobacco-res-license

Chapman S, Freeman B. *Regulating the tobacco retail environment: beyond reducing sales to minors.* Tobacco Control 2009 ;18:496-501

> When compared with the regulation of pharmaceutical, it is very appropriate to regulate the retailing of tobacco products, including the number and location of retailing outlets, and nature of the retail display. The controls on retail outlets should create strong incentives for strict adherence to all laws on the supply of tobacco.

Cummings KM, Morley CP, Horan JK, Steger C, Leavell NR. *Marketing to America's youth: evidence from corporate documents.* Tobacco Control 2002;11(Suppl I):i5–i17

The tobacco industry markets their product to adolescents, monitors adolescent smoking behaviour, and depends on adolescent uptake as a source of sales revenue.

DiFranza JR, Savageau JA, Fletcher K, O'Loughlin J, Pbert L, Ockene JK, et al. *Symptoms of tobacco dependence after brief intermittent use: the Development and Assessment of Nicotine Dependence in Youth-2 study.* Archives of Pediatrics & Adolescent Medicine. 2007;161(7):704-10.

Smoking as few as seven cigarettes per month can lead to nicotine addiction in half of the adolescent smokers. Many adolescents do not have to smoke daily to become addicted to tobacco.

DiFranza JR, Wellman RJ, Sargent DJ, Weitzman M, Hipple BJ, Winickoff JP. *Tobacco Promotion and the Initiation of Tobacco Use: Assessing the Evidence for Causality.* Pediatrics Vol. 117 No. 6 June 1, 2006. pp. e1237 -e1248

Exposure to tobacco promotion causes children to initiate smoking, and the greater the exposure the greater the risk of smoking initiation. Tobacco promotion create positive attitudes, beliefs and expectations of about smoking in youth.

Doubeni CA, Li W, Fouayzi H, DiFranza JR. *Perceived Accessibility as a Predictor of Youth Smoking.* Ann Fam Med 2008:6;323-330.

Perceived accessibility of cigarettes increases the risk for smoking initiation among non-smoking youth in a dose-response fashion. There was also a dose-response relationship between perceived accessibility of cigarettes and the risk of regular smoking among all participants and the risk of smoking progression.

Healton C, Farrelly MC, Weitzenkamp D, Lindsey D, Haviland ML. *Youth Smoking Prevention and Tobacco Industry Revenue.* Tobacco Control 2006;15:103-106.

The tobacco industry is motivated to market their products to adolescents to ensure they have a new customers and revenue does not decline.

Henriksen L., Feighery E. C., Schleicher N. C., Cowling D. W., Kline R. S., Fortmann S. P. *Is adolescent smoking related to the density and proximity of tobacco outlets and retail cigarette advertising near schools?* Prev Med 2008; 47: 210–4

Smoking in schools in neighbourhoods with the highest tobacco outlet density had a smoking prevalence 3.2 percentage points higher than the current smoking rate in schools in neighbourhoods without any tobacco outlets. Fewer tobacco retail outlets in a neighbourhood may reduce the smoking prevalence of adolescents in schools within that neighbourhood.

Intergovernmental Committee on Drugs. *National Tobacco Strategy 2012-2018.* Commonwealth 2012.

The Intergovernmental Committee on Drugs recognised that availability of tobacco contributes to the notion that tobacco products are a normal part of everyday life and are relatively harmless. At Action item 6.7.8., the Committee recommended and

consider placing controls on the number and type of tobacco outlets in the community. Available at: http://www.nationaldrugstrategy.gov.au/

Kite J, Rissel C, Greenaway M, Willliams K. *Tobacco outlet density and social disadvantage in New South Wales, Australia.* Tob Control 2014. 23(2)181-182.

There is an association between tobacco outlet density and social disadvantage and remoteness in NSW, even after controlling for smoking prevalence. This may be suggestive of a deliberate marketing strategy by the tobacco industry. Available at: http://tobaccocontrol.bmj.com/content/23/2/181.full.pdf+html

McKenzie N, Baker R. *Big Tobacco seeks data on children*. Sydney Morning Herald, Sydney. 20 August 2015

British American Tobacco has sought, under Freedom of Information (FOI), to obtain data from surveys of Australian schoolchildren and teenagers that reveal their attitudes to smoking. Available at: http://www.smh.com.au/national/tobacco-company-wants-schools-survey-for-insights-into-children-and-teens-20150819-gj2vto.html

Slater SJ, Chaloupka FJ, Wakefield M, Johnston LD, O'Malley PM. *The Impact of Retail Cigarette Marketing Practices on Youth Smoking Uptake.* Arch Pediatr Adolesc Med. 2007;161(5):440-445.

Adolescents are more likely to move from experimentation to regular smoking when there is greater availability of promotions. Available at: http://www.ncbi.nlm.nih.gov/pubmed/17485618

Surgeon General National Center for Chronic Disease Prevention and Health Promotion (A Report of the) (US) Office on Smoking and Health. Atlanta (GA). *Preventing Tobacco Use Among Youth and Young Adults.* Centers for Disease Control and Prevention (US); 2012. Chapter 5. The Tobacco Industry's Influences on the Use of Tobacco Among Youth.

The tobacco industry has sought to locate tobacco products conveniently to adolescents. Increasing access and availability of tobacco products to adolescents is related to experimenting with smoking and outlet density is related to higher prevalence of adolescent smoking. Greater availability and accessibility of tobacco products will stimulate impulse purchases and create environmental cues for smoking and trigger relapse in adolescents. Available at: http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/prevent_youth_by_section.html

Wood LJ, Pereira G, Middleton N, Foster S. *Socioeconomic area disparities in tobacco retail outlet density: a Western Australian analysis.* MJA 2013: 198(9):489-491

Towns and suburbs in Western Australian that were the most socioeconomically disadvantaged had more than four times the number of tobacco retail outlets than towns and suburbs that were most socioeconomically advantaged. This trend was the same when the analysis was restricted to metropolitan or regional areas. Low socioeconomic town and suburbs in regional WA had five times the number of tobacco retail outlets as high socioeconomic regional areas.

Outdoor second-hand smoke exposure

Boffi R, Ruprecht A, Mazza R, Ketzel M, Invernizzi G. *A day at the European Respiratory Society Congress: passive smoking influences both outdoor and indoor air quality.* European Respiratory Journal 2006:27(4):862-863.

> With particulate matter concentration measure during one day in an open car park, inside a public building, at the entrance to the public building, along a motorway, and inside a smoking restaurant. Smoking at the entrance of the building and in the restaurant was significantly higher than background levels of particulate matter. Second-hand smoke is both an indoor and outdoor pollutant.

Cameron M, Brennan E, Durkin S, Borland R, Travers MJ, Hyland A, Spittal MJ, Wakefield MA. *Secondhand smoke exposure (PM2.5) in outdoor dining areas and its correlates.* Tobacco Control 2010;19:19-23.

> The levels of exposure to SHS in outdoor dining is substantial, particularly so when under overhead covers or umbrellas. This indicates the potential for high levels of exposure in outdoor public places were crowds gather. Outdoor smoking restrictions can minimising SHS exposure.

Chapman S, Hyland A. *Environmental tobacco smoke in outdoor areas: a rapid review of the research literature. A report commissioned by the Sax Institute for NSW Health.* Dec 15, 2010.

> Occupational exposure to SHS in outdoor places is likely to be far higher than the exposure experienced by patrons. The exposure rates of staff indicated by ambient air quality studies is associated with an increase in all-cause mortality.

Hyland A, Barnoya J, Corral JE. *Smoke-free air policies: past, present and future.* Tobacco Control 2012;21:154e161.

> Smoke-free policies can change societal norms and individual's beliefs, reduce cigarette consumption and smoking initiation by adolescents. The success and acceptability of past smoke-free policies and changing community view of smoking behaviour will likely drive adoption of additional smoke-free policies.

Invernizzi G, Ruprecht A, De Marco C, Paredi P, Boffi R. *Residual tobacco smoke: measurement of its washout time in the lung and of its contribution to environmental tobacco smoke.* Tob Control 2007;16:29-33

> A designated smoking area may also concentrate second-hand smoke where smokers re-enter indoor common-areas. The wash-out residual tobacco smoke from the lungs after the smoker's last puff with 10 repeated re-entries increases the particulate matter in the indoor area from low background levels of 0.56 µg/m3 to 3.32 µg/m3.

Kaufman P, Zhang B, Bondy SJ, Klepeis N, Ferrence R. *Not just 'a few wisps': real-time measurement of tobacco smoke at entrances to office buildings.* Tobacco Control, 2011. 20:212-218.

> This study measured real-time particulate matter from second-hand smoke within 9 metres the entrances of 28 buildings in downtown Ontario. Particulate matter from

second-hand smoke with five or more smokers was on average 2.5 times higher than background levels. Peak levels were considerably higher.

Kaufman P, Griffin K, Cohen J, Perkins N, Ferrence R. *Smoking in urban outdoor public places: Behaviour, experiences, and implications for public health.* Health & Place 2010:16:961-968.

Based on observations of where people smoked in Toronto, Canada, approximately 37% of smoking occurred within 9 metres of a building entrance. Based on interviews with smokers, shelter, convenience, the social culture of smoking, visibility and the presence of non-smokers influenced where they smoked. No-smoking rules at building entrances should account for the re-location of smoking to other places.

Klepeis NE, Gabel EB, Ott WR, Switzer P. *Outdoor air pollution in close proximity to a continuous point source.* Atmospheric Environment, 2009. 43:3155-3167.

The level of second-hand smoke drops by half as the distance from the smoking increases. During active smoking there are sharp spikes in concentration of second-hand smoke. When smoking stops, outdoor levels of second-hand smoke will return to background levels. Emmissions from a single smoker will be high within 0.5 to two metres from the source. However, second-hand smoke from a group may extend more than 10 metres. Regularly spending time near outdoor smoking could result in significant amounts of second-hand smoke exposure.

Klepeis NE, Ott WR, Switzer P. *Real-time measurement of outdoor tobacco smoke particles.* J Air Waste Manag Assoc. 2007;57(5):522-34.

Secondhand-smoke can be detectable over 4 metres from a single source. Average second-hand smoke near active smoking outdoors can be comparable to well-mixed indoor second-hand smoke levels. While utdoor second-hand smoke dissipates when smoking ends, exposure close to the source during active smoking can reach very high levels. The exposure for a person close to a succession of smokers could exceed 24 hour ambient air standards for particular matter. Being near active smoking outdoors can be a nuisance or hazard. Outdoor smoking bans would protect people from the acute effect on health and the effect on the health of vulnerable populations, like people at increased risk of heart disease.

Prignot JJ. *Recent Contributions of Air-and Biomarkers to the Control of Secondhand Smoke (SHS): A Review.* Int. J. Environ. Res. Public Health, 2011. 8:648-682.

Studies of air quality and biomarkers provide biological validity to the epidemiological surveys on the health effect of second-hand smoke. The relationship of second-hand smoke markers in the air and in blood, urine and hair samples confirms that second-hand smoke causes cardiovascular and respiratory disease, affects pregnancy and fertility, and causes cancer. For example, cotinine levels in blood samples of US non-smokers dropped from 83.9% to 46.4% between 1988-1994 to 1999-2004, and dropped significantly again from 52.5% to 40.1% between 1999-2000 to 2007-2008. Also, after testing over 11,000 non-smoking children it was found that children who live in non-smoking homes in towns with extensive smoke-free laws had levels of cotinine in their blood 0.61 times lower than children in non-smoking homes in towns with no protection from smoke-free laws. Further, in non-smoking children, a drop in

blood cotinine is significantly associated with a drop in C-reactive protein, a marker for cardiovascular disease.

Repace J. *Banning outdoor smoking is scientifically justifiable.* Tobacco Control 2000;9:98

Individual cigarettes are point sources of pollution and smoking in groups becomes an area source of pollution justifying outdoor smoking bans. Second-hand smoke can saturate public outdoor gathering places. For people with asthma, second-hand smoke can trigger an attack. Second-hand smoke also causes eye, noise and throat irritation. If there are local laws requiring people not to cause a nuisance by letting their dog foul public streets and parks, people should be likewise protected from hazardous second-hand smoke.

Repace J. *Measurements of Outdoor Air Pollution From SHS at UMBC* (2005). Baltimore, Maryland, USA.

SHS does not immediately dissipate in outdoor environments. Levels of SHS decline with greater distance from the smoker, but do not reach background levels of pollution until at least 7 metres away. Carcinogens are detectable at varying distances from burning cigarettes and up to 7 metres from the source. The more smokers, the greater potential for the plumes of SHS to overlap and increase the exposure.

Sureda X, Martínez-Sánchez JM, López MJ, Fu M, Agüero F, Saltó E, Nebot M, Fernández E. *Secondhand smoke levels in public building main entrances: outdoor and indoor PM2.5 assessment.* Tobacco Control, 2012. 21:543-548.

The presence of overhead covering will affect the intensity of second-hand smoke exposure, as will the proximity to entrances and the frequency with which nearby doors are opened and closed. Designated smoking areas should not be located near entrances or pathways where people enter or exit a building, near ventilation intakes, children's play equipment or other facilities, like pools, where children play frequently.

Effect of smoking bans on youth

Alesci NL, Forster JL, Blaine T. *Smoking visibility, perceived acceptability, and frequency in various locations among youth and adults.* Prev Med. 2003;36(3):272-81. Epub 2003/03/14.

Reducing the visibility of smoking in public places reduces the perceived acceptability of smoking to adolescents. There is an association between how frequently adolescents see others smoke in various outdoor locations, and their perception that smoking is socially acceptable.

Australian Institute of Health and Welfare 2014. *National Drug Strategy Household Survey detailed report 2013.* Drug statistics series no. 28. Cat. no. PHE 183. Canberra: AIHW. Chapter 3 – Tobacco smoking in the general population. Page 22.

The majority of smokers start smoking as adolescents. Smoking at a young age is a predictor of adult addiction. The average age at which adolescent have their first full cigarette has steadily risen over the last two decades to 15.9 years in 2013. Policies which prevent or delay youth uptake would ultimately save lives. Available at: http://www.aihw.gov.au/publication-detail/?id=60129549469

Guo HJ, McGee R, Reeder T, Gray A. *Smoking behaviours and contextual influences on adolescent nicotine dependence.*

Adolescents smokers are likely to become addicted smokers, with children from the highest socio-economic areas having markedly lower addiction scores. Adolescent addiction is associated with earlier onset of monthly smoking, heavier overall consumption and peers smoking. These finding suggest a need for youth oriented prevention policies.

IARC Working Group on the Evaluation of the Effectiveness of Smoke-free Policies. *Evaluating the effectiveness of smoke-free policies.* Lyon, France: International Agency for Research on Cancer; 2009 [cited 2010 June 07].

A systemic review of the effective of smoke-free policies concluded that smoking bans reduce tobacco use among youth. Available from: http://www.iarc.fr/en/publications/pdfs-online/prev/handbook13/index.php.

Klein EG, Bernat DH, Forster JL. *Young adult perceptions of smoking in outdoor park areas.* Health Place. 2012 Sep;18(5):1042-5.

Banning smoking in parks is associated with a heightened perception of difficulty in smoking for young adult smokers. Living in an area with a smoke-free park is associated with a 1.4 times higher odds of perceiving difficulty to smoke compared to those living in an areas without such a policy.

Kobus K. *Peers and adolescent smoking.* Addiction 2003; 98(Suppl 1);37-55.

Adolescent exposure to other smoking adolescents and peers can lead to the uptake of smoking as they perceive smoking to be socially acceptable.

Surgeon General National Center for Chronic Disease Prevention and Health Promotion (A Report of the) (US) Office on Smoking and Health. Atlanta (GA). *Preventing Tobacco Use Among Youth and Young Adults.* Centers for Disease Control and Prevention (US); 2012. Chapter 4. Social, Environmental, Cognitive, and Genetic Influences on the Use of Tobacco Among Youth.

Smoke-free public places create anti-smoking social norms and discourage smoking by forcing smokers not to smoke in those places. In this way, smoke-free public places create broad social disapproval of smoking and make smoking in these places inconvenient. Available at: http://www.surgeongeneral.gov/library/reports/preventing-youth-tobacco-use/prevent_youth_by_section.html

Wakefield MA, Chaloupka FJ, Kaufman NJ, Orleans CT, Barker DC, Ruel EE. *Effect of restrictions on smoking at home, at school, and in public places on teenage smoking: cross sectional study.* British Medical Journal. 2000;321(7257):333-7.

Smoking bans in public places will reduce adolescent smoking uptake.

White VM, Warne CD, Spittal MJ, Durkin S, Purcell K, Wakefield M. *What impact have tobacco control policies, cigarette price and tobacco control programme funding had on Australian adolescents' smoking? Findings over a 15-year period.* Addiction 2011;106: 1493–1502.

Tobacco control policies directed towards adults, like smoke-free indoor places and increase cigarette price, as part of a well-funded tobacco control program are associated with lower adolescent smoking rates.

Effect of smoking bans on communities

Australian Institute of Health and Welfare 2014. *National Drug Strategy Household Survey detailed report 2013.* Drug statistics series no. 28. Cat. no. PHE 183. Canberra: AIHW. Chapter 3 – Tobacco smoking in the general population. Page 28.

Smoking bans in public areas remains a strong motivation for people trying to quit smoking. Eight per cent of people wanting to quit nominating smoke-free public areas as a reason for quitting. Available at: http://www.aihw.gov.au/publication-detail/?id=60129549469

Borland R, Yong H-H, Cummings K M, Hyland A, Anderson S, Fong G T. *Determinants and consequences of smoke-free homes: findings from the International Tobacco Control (ITC) Four Country Survey.* Tobacco Control 2006;15

Having smoke-free public places is an independent predictor of having or implementing smoke-free homes. Smoke-free public places causes a diffusion of smoke-free preferences in other aspects of community and private life.

Chapman S, Freeman B. *Markers of the denormalisation of smoking and the tobacco industry.* Tobacco Control 2008;17:25–31.

Smoke-free public places 'denormalised' smoking. When public places become smoke-free, smoking is excluded from the community's everyday social life at these places. As a result, smoking can no longer part of the convivial social life shared by the community. It also reinforces societal values, which carry over into home life, that it is unacceptable to exposure others to second-hand smoke.

Christakis NA, Fowler JH. *The collective dynamics of smoking in a large social network.* N Engl J Med. 2008;358(21):2249-58.

The collective intentions of a group of connected people to be non-smokers or to quit has a significant impact on the intentions of an individual in that group. Policies that lower smoking prevalence can have a ripple effect through a community, as positive health behaviours spread through personal connections.

Hopkins DP, Razi S, Leeks KD, Priya Kalra G, Chattopadhyay SK, Soler RE. *Smokefree policies to reduce tobacco use. A systematic review.* Am J Prev Med 2010. 38, S275–S289.

Of 37 studies of indoor smoke-free policies in workplaces and communities, 21 reported reduced prevalence of 3.4%, another 11 studies reported increased cessation of 6.4%, and 4 studies were able to demonstrate economic benefits.

Intergovernmental Committee on Drugs. *National Tobacco Strategy 2012-2018.* Commonwealth 2012.

The Intergovernmental Committee on Drugs agreed to action item 6.8.7.: "Encourage adoption of policies that restrict smoking outdoors where people gather or move in close proximity – commercial outdoor eating areas; public playgrounds; public swimming pools and public recreation centres; sporting stadiums; public sports grounds; enclosed or covered bus stops and taxi ranks; near entrances to public buildings etc." Available at: http://www.nationaldrugstrategy.gov.au/

Kim SH, Shanahan J. *Stigmatizing smokers: public sentiment toward cigarette smoking and its relationship to smoking behaviors.* J Health Commun 2003;8:343–67.

Policies to denormalise smoking have created an unfavourable 'smoking climate' where smoking is rejected as anti-social behaviour. Smokers who have experienced unfavourable sentiment are more willing to quit smoking than those who have not.

Parry R, Prior B, Sykes AJ, Tay JL, Walsh B, Wright N, Pearce K, Richmond G, Robertson A, Roselan J, Shum PY, Taylor G, Thachanamurthy P, Zheng TT, Wilson N, Thomson G. *Smokfree Streets: A Pilot Study of Methods to Inform Policy*. Nicotine & Tobacco Research 2011: 13(5):389–394

While walking a standard route on major streets in Wellington, NZ, a total of 932 smokers where observed, with an average of 7 smokers every 10 minutes. Particulate matters from air monitoring was 1.5 times higher during periods when smoking was observed then when they were not. Dose-response patterns were observed: the closer the smokers and the more smokers the higher the second-hand smoke exposure. More than half the pedestrians surveyed supported smoke-free streets, most citing the health hazards of exposure.

Pierce JP, León ME. *Effectiveness of smoke-free policies*. Lancet Oncology. 2008;9(7):614-5.

Smoke-free policies protect people from harmful exposure to second-hand smoke and are a vital and effective part of the tobacco control policy.

Poland B, Frohlich K, Haines RJ, Mykhalovskiy E, Rock M, Sparks R. *The social context of smoking: the next frontier in tobacco control?* Tob Control 2006;15:59-63

Policies should strive to effect the social context, which includes the places, in which people live. When public places that are a hub of social activity are smoke-free, they have the ability to influence the community's collective lifestyle.

Queensland Health. *The health of Queenslanders 2014. Fifth report of the Chief Health Officer Queensland.* Queensland. Queensland Government. Brisbane 2014.

Great gains have been made in reducing the smoking rate in Queensland over the last decade. However, without ongoing investment and commitment by government and community, these gains could be lost. The must be a continued focus on preventing the uptake of youth smoking and supporting middle aged people to quit. At page 105. Available at: https://publications.qld.gov.au/dataset/the-health-of-queenslanders-2014-fifth-report-of-the-chief-health-officer-queensland

Siahpush M, Borland R and Scollo M. *Factors associated with smoking cessation in a national sample of Australians.* Nicotine and Tobacco Research, 2003. 5(4):597-602.

> Quitting is more challenging if the smokers social environment is filled with smokers. Smokers who live in no-smoking households or have few or no friends who smoke are significantly more likely to be able to quit. Smoking cessation should target the social environment, as well as the behaviour of the individual smoker. Smoking cessation interventions will be more effective when combined smoke-free social places.

West R. *The multiple facets of cigarette addiction and what they mean for encouraging and helping smokers to stop*. COPD. 2009 Aug;6(4):277-83.

> Cue-drive impulses to smoke, along with nicotine hunger and adverse mood and beliefs about the benefits of smoking are important causes of relapse. To combat nicotine addiction requires attention to all of these factors.

Wilson LM, Tang EA, Chander G, Hutton HE, Odelola OA, Elf JL, Heckman-Stoddard BM, Bass EB, Little EA, Haberl EB, Apelberg BJ. *Impact of Tobacco Control Interventions on Smoking Initiation, Cessation, and Prevalence: A Systematic Review.* J Environ Public Health. 2012;2012:961724

> Smoking bans can have an impact of smoking prevalence by creating fewer smoking opportunities and denormalization. The effectiveness of smoking bans on prevalence is influenced by the strength of previous legislation, comprehensiveness of the legislation, level of enforcement and public support.

State-wide bans to achieve health equity

Freeman B, Gartner C, Hall W, Chapman S. *Forecasting future tobacco control policy: where to next?* Aust NZ J Public Health. 2010; 34:447-50.

> Smoke-free public places and regulation of tobacco retailing are important strategies to ensure Australia meets reaches the policy target of a 10% smoking rate by the year 2020.

Mark AJ, Sanders SC, Mitchell JA, Seale H, Richmond RL. *Smoke-free outdoor areas: supporting local government to introduce tobacco control policies.* Aust NZ J Public Health. 2014.

> Adoption of smoke-free outdoor policies by local government in NSW is an indication of the broad community support for these health strategies, with 64% adopting such a policy. However, delegation of the power to create smoke-free laws meant each council had to invest time and resources into research and development of their policy, and this effort was a duplicated across all councils that adopted such policies. Adoption of local smoke-free laws also depended in part of whether the council had a ‘champion’ of the policy. While more urban councils had smoke-free policies than rural councils, smoking prevalence is higher in rural areas. The most common reason councils did not adopt smoke-free policies was lack of resources, including staff time and finances and enforcement issues. Lack of councillor support and a high rate of smoking in the community were also a barriers to adoption.

National Health Performance Authority. *Tobacco smoking rates across Australia, 2011–12.* inFocus Healthy Communities. October 2013.

> Smoking rates vary widely across local areas in Australia. For example, the affluent Sydney North Shore and Beaches area (a vanguard for local government adoption of smoke-free public places) has a smoking rate of 6%. By contrast, Far North Queensland has a smoking rate of 25%. Smoking rates in local areas consistently follow a socio-economic gradient: wealthy inner city areas have the lowest smoking rates and disadvantaged rural areas have the highest smoking rates.

Satterlund TD, Cassady D, Treiber J, Lemp C. *Barriers to Adopting and Implementing Local-Level Tobacco Control Policies.* J Community Health (2011) 36:616–623

> A survey of California local health departments responsible for carrying out tobacco control programs showed three main barriers to adoption of local tobacco control policy: politically polarizing barriers, organisational barriers and local political orientation. The authors suggested several strategies to encourage adoption: having a champion; using youth supporters; using local data as a persuasive tool; educating the community on the need for the policy; working strategically within the local political climate; and demonstrating local community support for the policy.

Community support for tobacco control

Thomson G, Wilson N, Edwards R. *At the frontier of tobacco control: a brief review of public attitudes toward smoke-free outdoor places.* Nicotine Tob Res. 2009 Jun;11(6):584-90.

> Sixteen survey reports between 1988 to 2007 in North American, Britain, Ireland, Australasia and elsewhere, show that the majority of the public support for smoke-free public places, and this support is increasing over time. Reasons for supporting smoke-free public places include litter control, positive smoke-free role models for youth, reducing opportunities for youth smoking, and avoiding secondhand smoke exposure.

Queensland Government. *2007 Review of Smoke-free Laws Public Consultation Summary of Feedback.*

> The majority of the community surveyed supported more smoke-free laws. The overwhelming majority of people commenting supported a smoke-free malls, increasing the ban at building entrances, removing the licensed premises entrance exemption, bans at public transport waiting points, and modifying provisions for designated smoking areas. The most common theme in the feedback received on outdoor smoking bans was concern about exposure to second-hand smoke, particularly at public transport waiting points and building entrances.

Smoke-free licensed premises

Barnoya J, Glantz SA. *Cardiovascular Effects of Secondhand Smoke Nearly as Large as Smoking.* Circulation. 2005;111:2684-2698.

> “Evidence is rapidly accumulating that the cardiovascular system—platelet and endothelial function, arterial stiffness, atherosclerosis, oxidative stress, inflammation, heart rate variability, energy metabolism, and increased infarct size—is exquisitely

sensitive to the toxins in secondhand smoke. The effects of even brief (minutes to hours) passive smoking are often nearly as large (averaging 80% to 90%) as chronic active smoking."

Brennan E, Cameron M, Warne C, Durkin S, Borland R, Travers MJ, Hyland A, Wakefield MA. *Secondhand smoke drift: Examining the influence of indoor smoking bans on indoor and outdoor air quality at pubs and bars.* Nicotine Tob Res 2010:12(3); 271-277.

While bans on smoking in indoor areas of pubs are improving air quality both indoors and outdoors, the smoke-free indoor areas may be compromised by smoking in adjacent outdoor areas, suggesting adequate protection for the health of employees and patrons is needed at hospitality venues.

Callinan JE, Clarke A, Doherty K, Kelleher C. *Legislative smoking bans for reducing secondhand smoke exposure, smoking prevalence and tobacco consumption.* Cochrane Database of Systematic Reviews 2010, Issue 4. Art. No.: CD005992. DOI

"Introduction of a legislative smoking ban does lead to a reduction in exposure to passive smoking. Hospitality workers experienced a greater reduction in exposure to SHS after implementing the ban compared to the general population. There is limited evidence about the impact on active smoking but the trend is downwards. There is some evidence of an improvement in health outcomes. The strongest evidence is the reduction seen in admissions for acute coronary syndrome. There is an increase in support for and compliance with smoking bans after the legislation." Available at: http://www.update-software.com/BCP/WileyPDF/EN/CD005992.pdf

Edwards R, Wilson N. *Smoking outdoors at pubs and bars: is it a problem? An air quality study.* New Zealand Medical Journal, 2011. 124(1347): 27-37.

Across seven pubs, the air quality in semi-enclosed outdoor smoking areas was often very poor, with particulate matter measurements (PM2.5) above the World Health Organisation (WHO) 24-hour PM2.5 quality threshold for ambient air. Outdoor smoking in designated smoking areas caused PM2.5 levels in indoors areas to exceed the WHO threshold for nine of the 12 measurements. The more air flow between the indoor and outdoor areas (i.e. doors always or intermittently open) the greater level of PM2.5. The exposure levels are of particular concern to pub workers. The levels of second-hand smoke exposure are likely to be problematic for non-smoking customers with respiratory conditions or cardiovascular disease.

Fong G, Hammond D, Laux FL, Zanna MP, Cummings KM, Borland R, Ross H. *The near-universal experience of regret among smokers in four courntries: Findings from the International Tobacco Control Policy Evaluation Survey.* Nicotine & Tobacco Research 2004. 6(3):S341-S351.

About 90% of smokers agreed or strongly agreed with the statement "If you had to do it over again, you would not have started smoking". Regret is more likely to be experienced by smokers who are older, women who had tried to quit more often, perceive quitting as beneficial, perceive themselves to have higher levels of addiction, worried about future damage to health, perceived smoking as lowering their quality of life, as having high monetary costs, and smokers who perceive smoking to be socially unacceptable.

Kahende JW, Loomis BF, Adhikari B, Marshall L. *A Review of Economic Evaluations of Tobacco Control Programs.* Int. J. Environ. Res. Public Health 2009, 6, 51-68.

A review of the scientific literature on economic evaluations of tobacco control interventions found smoke-free laws provide significant health benefits and saving to society and that smoke-free laws were more cost effective than NRT programs. Additionally, smoke-free laws in bars and restaurants are not associated with a change in gaming revenue, have no impact of sales or employment, and in some cases increase revenue.

Meyers DG, Neuberger JS, He J. *Cardiovascular Effect of Bans on Smoking in Public Places - A Systematic Review and Meta-Analysis*. Journal of the American College of Cardiology, 2009; 54:1249-1255.

Smoking bans in public places and workplaces are significantly associated with a reduction in acute myocardial infarction (AMI) incidence, particularly if enforced over several years. AMI risk decreased by 17% overall.

Mulcahy M, Evans DS, Hammond SK, Repace JL, Byrne M. *Secondhand smoke exposure and risk following the Irish ban: an assessment of salivary cotinine concentrations in hotel workers and air nicotine levels in bars.* Tobacco Control 2005;14:384–388.

Passive smoking and associated risks were significantly reduced but not totally eliminated by the ban on smoking in Irish pubs. Exposure to second-hand smoke is still possible where smoke may migrate from outdoor areas. There were higher air nicotine levels in pubs with outdoor smoking areas than in pubs without such areas.

Pearson AL, Nutsford D, Thomson G. *Measuring visual exposure to smoking behaviours: a viewshed analysis of smoking at outdoor bars and cafés across a capital city's downtown area.* BMC Public Health 2014, 14:300.

Smoking in outdoor social gathering places, like cafes and bars, can be highly visual display of smoking. Smoke-free public places can counteract the normalisation of smoking that happens when it is commonly seen in community gathering places.

Scollo M, Lal A, Hyland A, Glantz S. *Review of the quality of studies on the economic effects of smoke-free policies on the hospitality industry.* Tob Control. 2003;12(1):13-20.

Research funded by the tobacco industry into the impact of smoke-free policies in the hospitality industry is four times more likely to have a subjective (rather than objective) outcome measure and 20 times more likely not to be peer reviewed. Unsurprisingly, 94% of this tobacco industry research concluded tobacco control in hospitality would have a negative economic impact.

Wilson N, Edwards R, Parry R*. A persisting secondhand smoke hazard in urban public places: results from fine particulate (PM2.5) air sampling.* NZMJ 2011. 124(1330):34-47.

Outdoor smoking areas of hospitality venues (including restaurants and bars) had the highest particulate level (compared to other indoor settings where smoking is banned and outdoor areas like street and parks) such that they would create a health hazard to patrons and workers. Areas inside bars that were adjacent outdoor smoking areas also had high levels of particulate matter. In national surveys in New Zealand, these

are venues most likely to be indicated as places where non-smokers reported exposure to second-hand smoke. It was noted that the most disadvantaged quintile of workers were more likely to be exposed to second-hand smoke at work than the most advantaged quintile of workers. Most respondents to a survey agreed or strongly agreed (61.6% Maori to 70.5% European/other) that it bothers them if someone is smoking within a couple of metres of them.

Sale from vending machines banned

Clark, L.; Burton, S.; and Bollerup, J., "Environmental Influences on Tobacco Consumption by Smokers Intending to Quit" (2008). *Partnerships, Proof and Practice - International Nonprofit and Social Marketing Conference 2008 - Proceedings.* Paper 13.

Smokers intending to quit are more likely to continue smoking if there are smokers in their vicinity and cigarettes available for sale. That is, they are influenced to continue smoking by both social and market factors. Prolific distribution of a product means that people will be more likely to see it, and therefore more likely to buy it.

Smoke-free premium gaming rooms

AIRAH (Australian Institute of Refrigeration, Airconditioning and Heating) *Discussion paper: Revision of AS 1668.2-2002.* At 2.3. Environmental Tobacco Smoke.

The Building Code of Australia continued to reference Australian Standard 1668.2-1991 for ventilation, when the standard was revised in 2002 to include ventilation rates for second-hand smoke. Health authorities and a number of State and Territory Building Control Administrations objected to the environmental tobacco smoke provisions in Australian Standard 1668.2-2002, as this could be construed as permitting smoking in buildings. Mechanically ventilated buildings in which smoking is permitted will not comply with the revised AS 1668.2-2012 standard.

AIRAH. *Introduction to Indoor Air Quality*. HVAC&R Skills Workshop. Module 81. HVAC&R National. May 2015.

Environmental tobacco smoke in indoor environments has been associated with a range of respiratory conditions, including exacerbation of asthma and lung cancer. Employers should provide a workplace free from tobacco smoke. Ventilation systems in workplaces should be designed and maintained to comply with AS 1668.2.

ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers). *ASHRAE Position Document on Environmental Tobacco Smoke.* Approved by the ASHRAE Board of Directors October 22, 2010 and reaffirmed by ASHRAE Technology Council June 25, 2013. Atlanta GA.

The only strategy that provides the lowest achievable exposures for non-smokers and is the only effective control method for environmental tobacco smoke is smoking bans.

Australian Standard *1668.2-2012*

The current Australian Standard for mechanical ventilation no longer contains ventilation rates for second-hand smoke. Available at: http://www.standards.org.au

Larsson M, Boethius G, Azelsson S, Montgomery SM. *Exposure to environmental tobacco smoke and health effects among hospitality workers in Sweden-before and after the implementation of a smoke-free law.* Scand J Work Environ Health 2008;34(4):267–277.

> Frequency of respiratory systems in workers halved after introduction of smoking bans in bingo halls, casinos, bars and restaurants. Gaming workers experienced the highest pre-smoking ban exposure. Implementing smoke-free legislation was associated with a substantial reduction in respiratory symptoms among non-smoking hospitality and gaming workers. Exposure to second-hand smoke was substantially reduced by the smoking bans.

McGowan S. *AS 1668.2 is finally resolved*. HVAC&R Nation. March 2013

> Removing all references to environmental tobacco smoke in AS 1668.2-2012 ensured the agreement of the Australian Building Codes Board and State and Territory building and health regulators. This change allowed AS 1668.2-2012 to be referred in the Australian Building Codes, Volume 1 as a deemed to satisfy solution.

National Occupational Health & Safety Commission. *Guidance Note on the Elimination of Environmental Tobacco Smoke in the Workplace* [NOHSC:3019(2003)]. Commonwealth of Australia.

> The National Occupational Health & Safety Commission (now Safe Work Australia) did not endorse the previous Australian Standard for mechanical ventilation, AS 1668.2-2002, as it contained ventilation rates for indoor smoking. Endorsement of indoor smoking in an Australian Standard implies an acceptance of the safety of indoor smoking. (This guide is currently under review.)

'Positive' licensing of tobacco retailers

Australian Government. **Preventative Health Taskforce**. *Australia: the Healthiest Country by 2020. Technical Report 2: Tobacco control in Australia: Making smoking history.* Including addendum for October 2008 to June 2009.

> In 2009 the Preventative Health Taskforce recommended that Victoria and Queensland amend their tobacco control Acts to bring them into line with all the other States and Territories which have a positive licensing schemes. Positive licensing require all retailers to hold a license to sell tobacco products. At page 28. Available at: http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/tech-tobacco

Intergovernmental Committee on Drugs. *National Tobacco Strategy 2012-2018.* Commonwealth 2012.

> The Intergovernmental Committee on Drugs agreed that a positive licensing scheme is best practice as it links compliance with tobacco control legislation to the right to sell tobacco products. Positive licensing is a means by which potential vendors can be vetted to ensure they are aware of their responsibilities and are a 'fit and proper' person to sell tobacco. At Action items 6.7.7 the Committee recommended further regulatory options for tobacco licensing of retailers and wholesalers. Available at: http://www.nationaldrugstrategy.gov.au/

Stead LF, Lancaster T. *Interventions for preventing tobacco sales to minors.* Cochrane Database of Systematic Reviews 2005, Issue 1. Art. No.: CD001497. DOI: 10.1002/14651858.CD001497.pub2.

> "If young people are unable to purchase cigarettes it may reduce the number who start to smoke. Various interventions including warnings and fines for retailers who illegally make sales to underage youth have been shown to reduce the proportion of retailers who are willing to sell tobacco during compliance checks. However it has been difficult to demonstrate a clear effect on young smokers' perceptions of how easily they can buy cigarettes, or on their smoking behaviour." Available at: http://onlinelibrary.wiley.com/enhanced/doi/10.1002/14651858.CD001497.pub2

Smoke-free cars

Australian Competition and Consumer Commission. *Product Safety Australia. Cigarette (reduced fire risk)*

> According to the ACCC cigarettes and smoking materials cause over 4500 fires in Australian annually, and discarded cigarettes account for 7% of Australian bushfires. Smoking is the leading cause of resident and total fire death. Available at: https://www.productsafety.gov.au/content/index.phtml/itemId/974709

Brison R. J. *Risk of automobile accidents in smokers.* Can J Public Health 1990; 81: 102–6. (NIC)

> Smokers were 1.5 times more likely to have a motor vehicle accident than non-smokers and the risk was two time more when smokers had a greater tendency to smoke while driving. Increase risk of accidents may be due to distraction, behavioural differences of smokers, or carbon monoxide toxicity.

Bryant C. *Understanding bushfire: trends in deliberate vegetation fires in Australia. Technical and background paper no. 27.* Canberra: Australian Institute of Criminology, January 2008

> Based on analysis of data provided by the Queensland Fires and Rescue Service, between 1997-98 and 2001-02 in Queensland, smoking related materials caused 12% of fires where the form of ignition was known. The form of ignition was known in 16.8% of cases. Smoking-related materials started 909 fires in this five-year interval in Queensland. Available at: http://www.aic.gov.au/publications/current%20series/tbp/21-40/tbp027.html

Dreyfuss JH. Thirdhand Smoke Identified as Potent, Enduring Carcinogen. CA A Cancer Journal for Clinicians 2010:60(4);203-204.

> Tobacco specific nitrosamines are persistent, accumulate, and levels can become higher and higher as smokers regularly smoke in their car. Third-hand smoke cannot be easily removed by washing with soap and water or dry cleaning. It requires an acidic, not alkaline cleaner.

Mangiaracina G, Palumbo L. *Smoking while driving and its consequences on road safety.* Ann Ig 2007. 19(3):253-67.

Smoking causes driver distraction. The average measured distraction was 12 seconds, which is equivalent of 160 metres at 50 Km/h. Smoking while driving creates second-hand smoke and carbon monoxide in the car. Available at: http://www.ncbi.nlm.nih.gov/pubmed/17658112

Matt GE, Quintana JE, Zakarian JM, Fortmann AL, Chatfield DA, Hoh E, Uribe AM, Hovell MF. *When smokers move out and non-smokers move in: residential thirdhand smoke pollution and exposure.* Tobacco Control 2011;20:e1.

Third-hand smoke persists in the homes of smokers after they have moved out and even when they have been vacant to two months and professionally cleaned. Non-smokers in environments that have been occupied by smokers encounter third-hand smoke on indoor surfaces and in indoor dust.

Schick S. *Thirdhand smoke: here to stay*. Tobacco Control January 2011: 20(1)

"We don't yet know whether exposure to third-hand smoke is harmful to human health, but we now know that most of the nicotine from every cigarette smoked indoors stays indoors, where it lingers for months, is taken up by the occupants and also reacts to form nitrosamines, formaldehyde and other harmful chemicals."

Singer BC, Hodgson AT, Guevarra KS, Hawley EL, Nazaroff WW. *Gas-Phase Organics in Environmental Tobacco Smoke. 1. Effects of Smoking Rate, Ventilation, and Furnishing Level on Emission Factors.* Environ. Sci. Technol. 2002, 36, 846-853.

The gas component of tobacco smoke, including nicotine, 3-ethenylpyridine, phenol, cresols, naphthalene and methylnaphthalenes, are absorbed into and re-sorbed from soft furnishing and fabrics.

Sleiman M, Gundel LA, Pankow JF, Jacob P, Singer BC, Destaillats H. *Formation of carcinogens indoors by surface-mediated reactions of nicotine with nitrous acid, leading to potential thirdhand smoke hazards*. Proc Natl Acad Sci U S A. 2010 Apr 13; 107(15): 6576–6581.

Residual nicotine from tobacco smoke is absorbed to indoor surfaces and reacts with ambient nitrous acid to form carcinogenic tobacco-specific nitrosamines (TSNAs). Substantial levels of TSNAs were measured on surfaces inside a smoker's vehicle. Given the rapid sorption and persistence of high levels of nicotine on indoor surfaces and clothing and human skin this can be a health hazard through dermal exposure, dust inhalation, and ingestion.

Thomas JL, Hecht SS, Luo X, Ming X, Ahluwalia JS, Carmella SG. *Thirdhand Tobacco Smoke: A Tobacco-Specific Lung Carcinogen on Surfaces in Smokers' Homes*. Nicotine Tob Res 2014. 16(1);26–32.

Tobacco smoke creates third hand smoke, that is, particulate matter and gases from second-hand smoke is deposited on surfaces and absorbed into walls, carpet, soft furnishings and fabrics. The tobacco specific lung carcinogen NNK (4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone) was found on surfaces of 33 of 37 smoker's homes.

Vardavas C. I. *Environmental tobacco smoke exposure in motor vehicles: a preliminary study.* Tob Control 2006; 15: 415.

Second-hand smoke in cars is much higher than has generally been measured in public or private indoor spaces, including bars and restaurants. This is a very high level of exposure for non-smoking passengers, especially children.