

**Socioeconomic inequalities in adolescent smoking behaviour
and neighbourhood access to tobacco products.**

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Abstract

Youth smoking is an important aspect of tobacco research as most adult smokers first experiment with and initiate tobacco use during their adolescence. Policy makers and researchers have given youth smoking issues a significant amount of attention over the last 20 years and this has led to significant reductions in youth smoking prevalence in New Zealand. More recently the decline in youth smoking prevalence has reached a plateau. Evidence now shows that while overall smoking prevalence has reduced, inequalities between ethnic and social groups has actually increased. This is an international trend. Young people living in low socioeconomic status areas and belonging to minority ethnic groups are at much higher risk of being a current smoker than their less deprived peers. A number of overseas studies have investigated the spatial relationship between aspects of the neighbourhood environment and adolescent smoking behaviour in an attempt to identify the most at risk groups. In particular the effect of neighbourhood socioeconomic status and the degree of access to tobacco outlets is believed to influence adolescent smoking behaviour. In New Zealand analysis of this type has mainly focused on adult smoking behaviour and the effect of tobacco outlet access is as yet unstudied.

This study examines the effect of neighbourhood and high school socioeconomic status on adolescent smoking behaviour, attitudes and beliefs in Christchurch. Using information from the 2006 New Zealand Census, spatial variations in reported neighbourhood smoking prevalence have been examined. In addition, analysis of responses to smoking questions in the 2008 Year 10 In-depth Survey have been carried out show how school socioeconomic status can influence underlying attitudes and beliefs young people hold towards smoking and tobacco products. Spatial analysis has also been performed on the census dataset to investigate the relationship between neighbourhood access to tobacco outlets and youth smoking behaviour after controlling for neighbourhood deprivation. To supplement each of these quantitative data sources, focus group interviews were carried out at two high schools (one low and one high socioeconomic status). Findings from these interviews are presented as further insight into adolescent attitudes and beliefs towards smoking.

Results of this research show that there is a socioeconomic effect at both a neighbourhood and school level on all adolescent smoking behaviours, attitudes and beliefs examined, except for smoking cessation. There is also evidence of greater access to tobacco outlets in low socioeconomic neighbourhoods but not so around high schools. Increased access to tobacco outlets is linked to increased adolescent smoking prevalence, more so among females than males, but this relationship disappeared in age groups 20 and above.

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List of abbreviations

ASH	Action on Smoking and Health
CAU	Census Area Unit
CCC	Christchurch City Council
CDHB	Christchurch District Health Board
DoH	Department of Health
FCTC	Framework for Convention on Tobacco Control
GIS	Geographic Information Systems
HSC	Health Sponsorship Council
MoH	Ministry of Health
NZDep2006	2006 New Zealand Deprivation Index
NZYTM	New Zealand Youth Tobacco Monitor
PEGS	Preparation Education Giving up and Staying smoke free
SE	Socioeconomic
SES	Socioeconomic Status
SFE	Smokefree Environments
WHO	World Health Organisation
YIS	2008 Year 10 In-depth Survey

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1 Introduction

“Today’s teenager is tomorrow’s potential regular customer, and the overwhelming majority of smokers first begin to smoke in their teens ... The smoking patterns of teenagers are particularly important to Philip Morris...”

(Thomson & Wilson 2002)

1.1 Introduction

It has not escaped the attention of tobacco companies that adolescent smoking behaviour varies by ethnicity, gender, social status, and neighbourhood. These differences have left many young people at high risk of smoking initiation and made them targets for increased marketing and targeting of tobacco products. The majority of adult smokers begin the habit in their teenage years before they are legally old enough to buy cigarettes for themselves. Adolescents who begin, and continue, smoking have made a decision that will affect their lives in a negative manner for many years to come. At such a young age, people are ill equipped to think through the consequences of such large decisions so it is not surprising that adolescents are a primary target market for the tobacco industry. As research ‘clears the smoke’, a better understanding emerges of factors influencing youth smoking initiation. Smoking initiation is no longer seen as decision made wholly by oneself but in the midst of a combination of compositional and contextual factors that place some people at higher risk of becoming a smoker than others. As with many other health behaviours smoking shows strong inequalities between genders, ethnic groups and social classes.

Measures of socioeconomic status (SES) for individuals, communities and the areas where they live have long indicated differences in smoking prevalence among adults (Barnett et al. 2005). It is not surprising then that youth smoking rates mirror these trends. Individuals living in lower socioeconomic (SE)

neighbourhoods are more likely to be smokers regardless of gender and ethnicity than are people of higher status. The compositional factors of people within social classes vary greatly as does the environment in which they live. Access to tobacco products is but one environmental factor that has been the focus of much research and government control. Increased access to tobacco products is linked to smoking initiation among youth through in-store marketing and normalisation of tobacco products (McCarthy et al. 2009; Pokorny et al. 2005). The spatial relationship between neighbourhood youth smoking and retail access is largely unknown in New Zealand.

1.2 New Zealand Youth Smoking Context

New Zealand, like much of the western world, has placed increasing restrictions on the sale of tobacco products and the actions of big tobacco companies. The 'war' on tobacco has shifted tobacco from a product openly endorsed and smoked by people of both high and low social standing to being a product that is viewed as somewhat of an evil consumable good with its users painted in a similar light. Yet there still remain a large number of adults who continue to smoke, and of more concern are the children and teenagers who experiment with and initiate smoking. According to Action on Smoking and Health (ASH), the Health Sponsorship Council (HSC) and the Ministry of Health (MoH) in New Zealand the average age of smoking initiation is 14.5 years (Paynter 2009) despite access laws restricting the sale of tobacco products to individuals aged 18 and over.

As youth comprise an important market for tobacco companies to secure future adult smokers, they are often the focus of tobacco policy and smoking interventions. Not all adolescents are at risk of smoking initiation as tobacco use, like so many other negative health behaviours, has a strong social and ethnic gradient (Hill et al. 2003; HSC 2009; Paynter 2009). Inequalities in rates of tobacco use have resulted in higher rates of smoking among lower SES groups, and in Maori as compared to Europeans (Barnett et al. 2005). Young people growing up in neighbourhoods with high numbers of smokers are likely to have a different attitude towards tobacco than those who have less exposure to societal pro-smoking messages. More recently research has taken this a step further to take into account factors in the urban environment that may increase the risk of smoking initiation among young people.

Retail tobacco outlets in New Zealand are the final legal area where tobacco companies can display and market their products in local communities. The passing into law of the Smoke-free Environments (SFE) Act 1990 and its subsequent amendments has restricted nearly all forms of advertising, marketing and sponsorship by tobacco companies ('Smoke-free Environments

Act' 1990). This has left point- of-purchase tobacco displays as one of the few places where companies can openly promote their products. A decade ago tobacco companies spent more money internationally on this type of marketing than all other forms of advertising combined (Feighery et al. 2006; Henriksen et al. 2004a; Henriksen et al. 2004b). Unfortunately, overseas research suggests that tobacco outlets are often concentrated in areas around schools and in low income neighbourhoods with a high proportion of teenage residents (Henriksen et al. 2008). This leaves adolescents, already faced with plenty of social cues encouraging smoking initiation, vulnerable to further inequalities in access and exposure to tobacco products in their neighbourhoods.

Youth smoking interventions in New Zealand have largely focused on four key areas: legislative or fiscal measures, mass communications, school-based interventions and community-based programmes (HSC 2005). There is a wide body of literature supporting each of these interventions although it is recognised that no single approach is effective without the support of other interventions (Fichtenberg & Glantz 2002; Friend & Levy 2002; Gallet et al. 2009; Liang et al. 2003; Rooney & Murray 1996; Sowden & Arblaster 2001; Thomas 2002). The most common youth smoking interventions at a government level are legislative restrictions on the tobacco industry. In New Zealand this is primarily achieved by access laws that restrict the sale of tobacco to young people (MoH 2007, 2009; Paynter 2009).

Government interventions in New Zealand to control the commercial sale and promotion of tobacco products to adolescents have been in the form of access laws. These aim to restrict adolescents' exposure to tobacco products and marketing in the retail environment, and also attempt to prevent the commercial sale of tobacco products to minors. These measures require compliance from retailers but, as Darling et al. (2005) and Harrison et al. (2000) state, young people do not find it difficult to purchase tobacco from commercial sources. On July 14 2010 a Bill was passed into law that will see tobacco removed from the sight of customers in stores, and retailers who sell

to underage smokers will face higher penalties (Turia 2011). This move has seen such media headlines as:

- *“Shops told to hide cigarettes”* (Young 2011)
- *“Retailers upset over tobacco changes”* (ONE News 2010)
- *“Tough law to end displays of tobacco”* (Dickison 2010)
- *“Tobacco retailers say changes will burn up \$50m”* (Stuff 2010).

Despite widespread opposition to the Bill, health advocates and anti-smoking groups are pleased with its introduction. The Honourable Tariana Turia, the Associate Minister for Health called it “a great moment for New Zealand” and went on to say, “retail displays, innocently positioned alongside everyday confectionary and sweets, are a key component of making cigarettes attractive to recruit young smokers. We’re not going to tolerate this any longer.” (Turia 2011).

1.3 Academic Context

Youth smoking has long been recognised as a major part of tobacco controls. During the 1990s research focused largely on the process of smoking initiation and the consequences of adult smoking behaviour (Everett et al. 1999; Pallonen et al. 1990; Presti & Ary 1992). These studies identified the social nature of youth smoking initiation and continuation. Everett et al. (1999) found that earlier ages of smoking initiation were directly linked to the likelihood of an individual smoking daily or regularly. The authors also associated younger ages of smoking onset with higher consumption in later adolescence and young adulthood. Much of the research at this time began to focus on factors in the environment that were influencing youth smoking initiation as researchers sought to identify factors beyond the individual level (Harrell et al. 1998; Headen et al. 1991; Karvonen & Rimpela 1996; Stanton et al. 1994; Wagenknecht et al. 1990).

The effect of contextual and compositional factors on both adolescent and adult smoking behaviour has been a major focus of research in recent years (Barnett et al. 2004; Barnett et al. 2005, 2009; Diez Roux et al. 2003; Frohlich et al. 2002). It is now widely recognised that smoking prevalence varies greatly by gender, ethnicity and SES. Young people living in communities where they are exposed to pro-smoking imagery on a regular basis are likely to consider smoking to be a more normal behaviour than it actually is (Wium et al. 2006). New Zealand research suggests that young Maori and adolescents living in low SES neighbourhoods are more likely to overestimate peer and adult smoking rates than their European and less deprived counterparts (HSC 2009). These inequalities in New Zealand youth smoking behaviour are the same as the tobacco control issues faced internationally (Hill et al. 2003; HSC 2005; Scragg 2007).

In New Zealand, research has consistently focused on ties between adult smoking prevalence and neighbourhood SES. Most of these publications are from the same group of authors and often take into account ethnic differences in smoking prevalence (Barnett et al. 2004; Barnett et al. 2005, 2009; Moon et al. 2010; Thompson et al. 2007). These authors have suggested that the spatial segregation of deprived individuals and ethnic minorities has led to the creation of virtual 'smoking islands'. These are areas of higher than average smoking prevalence where stigmatisation and feelings of isolation have served to create communities where smoking is a largely normal behaviour. Barnett (2009) has shown that variations in smoking rates are not attributable to SES alone as Maori at any position on the social scale have higher rates of smoking than their European counterparts. National youth smoking surveys have also identified trends in smoking initiation and continuation by high school deprivation (Paynter 2009). To date there has been no analysis performed on these smoking surveys that identifies how adolescent smoking attitudes and behaviours vary not only by age, gender, ethnicity and SES but also at a spatial level comparing individual schools and neighbourhoods. Such information would allow for more targeted smoking interventions and identify communities that have the greatest need for support.

Research has begun to unravel the complex relationship between neighbourhood deprivation and adolescent smoking behaviour in an attempt to find causal links between the two. One important pathway is the link between neighbourhood deprivation, access to tobacco outlets and community smoking behaviour. The effect of access to tobacco products on youth smoking behaviour is well documented both overseas (Harrison et al. 2000; Lovato et al. 2007; Novak et al. 2006) and in New Zealand (Darling et al. 2005; Paynter & Edwards 2009; Paynter et al. 2009; Paynter et al. 2006; Pearce et al. 2009). International literature has linked commercial access to tobacco products with youth smoking initiation especially when the outlets are located close to schools (Leatherdale & Strath 2007; Pokorny et al. 2005). To date, no New Zealand research has examined the relationship between neighbourhood access to tobacco outlets and youth smoking, a gap that this research seeks to fill.

1.4 Purpose

The main purpose of this thesis is to understand how the level of social deprivation that adolescents experience in their local communities affects their personal smoking behaviour and attitudes. This thesis focuses on the level of deprivation in the neighbourhoods where young people live and the schools they attend. This will provide a micro-level analysis of differences in reported youth smoking behaviour, the beliefs and attitudes young people hold towards smoking and tobacco products, and the access and exposure adolescents have to tobacco products from commercial settings in their daily lives.

1.5 Aims and Objectives

The aim of this thesis is to examine how youth smoking behaviour varies by neighbourhood and high school SES, and the effect of the latter on the attitudes and beliefs students have towards smoking and access to tobacco products.

This aim will be achieved by meeting three objectives. The objectives of this thesis are to:

1. Determine the effect of neighbourhood deprivation on adolescent smoking behaviour at a local and national level;
2. Examine the effect of high school deprivation on adolescent beliefs and attitudes held towards smoking products; and
3. Understand how access to tobacco products varies according to deprivation in local high school and neighbourhood settings.

1.6 Thesis Structure

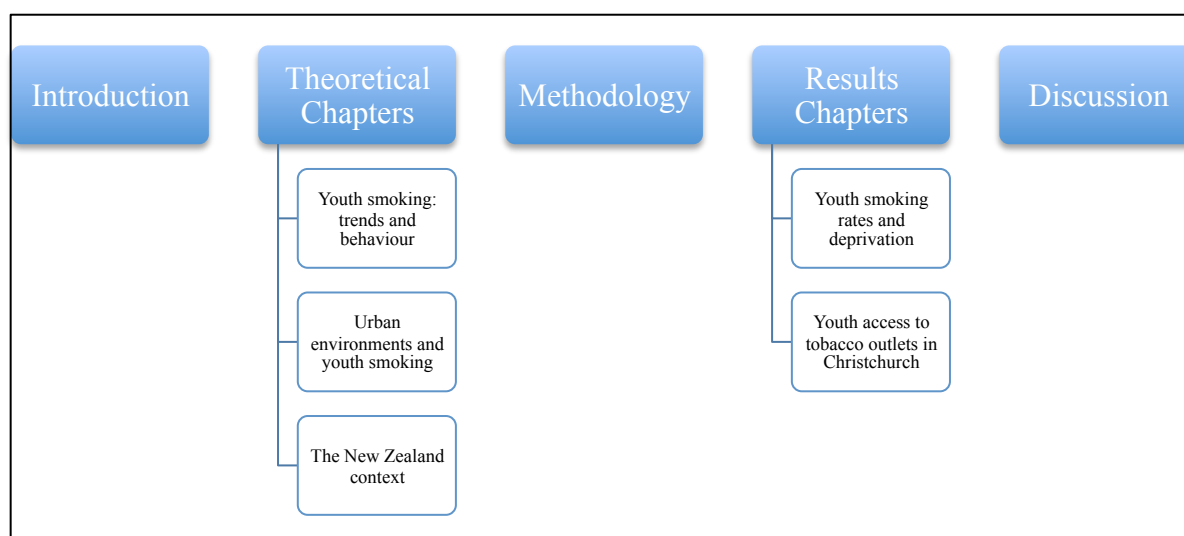


Figure 1: Thesis structure

This introductory chapter provides the reader with an introduction to youth smoking issues in a New Zealand context and relevant literature that has guided policy and research to date. The purpose, aims and objectives of this thesis are stated before going on to provide an overview of each subsequent chapter to come.

The purpose of Chapter 2 is to introduce the reader to the wider issue of youth smoking before discussing theories of youth smoking behaviour, initiation and common methods used to reduce adolescent smoking prevalence.

Chapter 3 is largely contextual and describes the current tobacco controls and youth smoking prevalence under current New Zealand legislation. First, there is an overview and timeline of significant tobacco controls. This descriptive section outlines the major players in shaping New Zealand's tobacco control history. Close attention is paid to interventions that have a youth focus at their core or are likely to impact on adolescent smoking behaviour and attitudes. A second section introduces major aspects of the SFE Act including areas of tobacco controls. The final strand presents youth smoking trends in New

Zealand for the period 1999-2008 with reference to the current situation and the effect tobacco controls have had in recent years.

Chapter 5 introduces the reader to the specific methods of analysis used to investigate the three objectives of this thesis. First, the chapter introduces Christchurch and variation in deprivation between both neighbourhoods and high schools in the city. The chapter then discusses each objective separately and includes commentary on the data sources and variables used as well as the specific analysis performed to achieve the results presented in Chapters 6 and 7. The analysis included both statistical methods and the use of geographic information systems (GIS) methods. The discussion then moves to the focus group interviews used as part of the qualitative research component of this thesis. This section outlines the use of such interviews in previous geographic research as well as their implementation and value with regard to this thesis. The final section of this chapter provides an overview of the limitations of the data sources used in this research and the effects these had in shaping the outcome of this thesis.

Chapter 6 is the first of two results chapters and attempts to satisfy Objectives 1 and 2 as listed in section 1.5 above. The chapter initially links, reported youth smoking status to both neighbourhood and high school SES, presenting the direction and strength of associations as well as comparisons between age groups and gender. The discussion then presents smoking initiation, frequency and consumption in relation to high school deprivation before discussing trends in youth attitudes and beliefs held towards smoking. The final section looks at the beliefs young people have towards smoking related harm and the difficulty of quitting smoking. This section also discusses student perceptions of smoking rates among peers and adults in New Zealand and identifies links between high school deprivation and attitudes towards tobacco use as a 'normal' behaviour.

Chapter 7 is the second and final chapter of results and focuses solely on the third objective of this thesis. The first material presented is a spatial analysis of tobacco outlet prevalence in Christchurch neighbourhoods and clustering

around local high schools. This is accompanied by a discussion of the statistical analysis used to identify relationships between measures of neighbourhood and high school SES. Responses from New Zealand high school students during the focus group interviews introduce youth tobacco purchasing behavior. There is a particular focus on variations between school deciles of youth tobacco purchases from social and commercial sources. Finally, there is an examination of the attitudes and beliefs students have towards the commercial tobacco environment.

Chapter 8 discusses the results presented in Chapters 6 and 7 drawing on both the qualitative and quantitative information examined during this research. Theoretical implications and policy recommendations are offered along with suggestions for future research. Finally, the main conclusions of this research are summarised.

1.7 Summary

This chapter has introduced the reader to the purpose, aim and objectives of this research set within a wider context of youth smoking and current paths of tobacco research. SES and access are highlighted as two of the main areas of research that are to be focused on. These are two areas that have received much attention both overseas and in New Zealand. Geographers have played a major role in examining how both compositional and contextual effects influence smoking behaviour among adolescents. Some overseas studies have looked at the spatial relationship between the two but this has not been done in a New Zealand context. The following two chapters will further outline the context of youth smoking and provide a basis for this research.

2 Youth Smoking: trends and behaviour

2.1 Introduction

Understanding why young people experiment with tobacco and initiate smoking is a critical part of tobacco control research. As this chapter will outline, most adult smokers begin the habit during early adolescence. Preventing initiation among youths, therefore, has real benefits in reducing subsequent adult smoking rates. A change in behaviour and attitudes throughout all areas of society is not an easy task. Just as there are differences in smoking prevalence between gender, ethnicity and social class, so too there is a need for different approaches to target each group to ensure that positive outcomes occur.

Chapter 2 focuses on youth smoking initiation. The chapter also introduces the major social and environmental factors influencing the uptake of smoking behaviour among young people. There is a wealth of knowledge regarding the psychosocial processes underlying youth smoking behaviour. This chapter also discusses some theories related to this; primarily, these focus on adolescent perceptions of risk, expressions of coping behaviours, and social influences. Next there is an outline of specific youth smoking interventions in a New Zealand context with supporting international research to validate their role as part of an overall tobacco control strategy. The final area of focus is youth smoking cessation. This area remains problematic from a policy and intervention viewpoint. Specific stages of smoking onset are presented followed by a discussion of the current literature on youth smoking cessation.

2.2 Youth smokers, the next generation of adult smokers

Tobacco holds the distinction of being a consumer product that, when used as directed, will kill half of its lifetime users. The World Health Organisation (WHO) estimates that 500 million people living today will be killed by tobacco. Its use is responsible for 25% of coronary heart disease and 90% of lung cancer worldwide (Asumda & Jordan 2009). Tobacco use is a contributor to six out of the eight leading causes of death worldwide and on average smokers have a life expectancy 20 years shorter than non-smokers (Branstetter et al. 2009; WHO 2008). In Western countries while adult smoking rates have been gradually declining in recent decades, this has been less true of youth smoking which, after strong reductions, has reached a plateau. A United States study found that both youth and young adult smoking prevalence had a 'rollercoaster' pattern (Nelson et al. 2008). During the late 1970s and early 1980s, smoking rates for both groups declined before leveling off. Following this, a rise in smoking rates for all groups was evident throughout the 1990s before declining again during the early 2000s. Since 2005, this research found that changes in smoking prevalence for all groups had leveled off. Interestingly this study also found a lag period between changes in youth smoking rates and those of young adults.

This conclusion is expected. As a generation of adolescents move into young adulthood they take with them their behaviours and attitudes towards smoking. The identified lag merely represents ageing of younger cohorts in the study. However, it does highlight the important part that youth smoking plays in adult smoking rates. Smoking initiation rarely occurs during adulthood and a drop in smoking prevalence among young people will directly affect the adult smoking rate of this generation in the future. Findings like these have led to an increasing amount of international research focusing on youth smoking and how best to prevent initiation and reduce current smoking rates. In order to preserve their market position it is estimated that tobacco companies must recruit and retain two million new smokers each year (Brown & Witherspoon 2002). Because of this, youth are also an important target for the marketing of

tobacco products, restrictions on which have markedly increased over the last decade.

Most smokers experiment with tobacco during early adolescence and in New Zealand the average age of initiation is 14.6 years (Daley 2009). This figure is in line with most Western countries despite the prevalence of laws restricting the sale of tobacco products to young people. In the United States 80% of adults who identified themselves as regular smokers stated that they began the habit before they turned 18 (Asumda & Jordan 2009). The younger that people begin using tobacco the earlier addiction develops with a direct link to the duration and amount of smoking an individual exhibits in their adult life.

According to the WHO, the Western Pacific region, comprised of Oceania and much of Eastern Asia, had the highest prevalence of male smoking for individuals aged 15 and over compared to any other region in the world with 56.5% of this age group smoking any form of tobacco products (WHO 2011). In contrast, smoking rates for adolescent males (13-15 years old) in the Western Pacific were the lowest of all the WHO regions, with a reported tobacco use of 9.5%. The WHO acknowledges that such regional averages can be misleading as the spread of averages between countries can be vast. Adolescent smoking is lowest in Cambodia for males (4.3%) and in Vietnam for females (1.5%), whereas Palau has the highest rates of smoking for both adolescent males and females (58.3% and 42.4% respectively). Globally it is recognised that male smoking prevalence is higher than that for females among both adults and young people; however, this trend also varies among countries. The WHO Tobacco Prevalence Atlas reports male adolescent smoking rates in the Cook Islands to be 33.7% compared to 36.3% for females in 2007. New Zealand, in 2008, had higher smoking rates for female adolescents (21.5%) than for males (18.7%).

In the Western Pacific, only 19 out of 37 countries have data available post 2000 on adolescent smoking rates. Globally, only 100 countries have collected data for both adult and adolescent smoking prevalence through surveys since 2003. This information represents only 55% of the world's

population while only 36 countries (representing 34% of the world's population) have this data available periodically on at least a five yearly basis (Mackay & Eriksen 2002). These large gaps in global smoking statistics are further compounded by the fact that most substantial smoking research is carried out in wealthy developed nations. These countries commonly have put many resources into reducing their smoking rates over previous decades and analysis of adult and adolescent smoking rates in these countries is necessary to establish the effectiveness of anti-smoking campaigns and legislation. On the other hand, low- and middle- income nations, where rates of tobacco use have traditionally been low, often do not carry out such surveys. These countries are now experiencing rapidly rising rates of smoking among both adults and adolescents. The absence of strong anti-smoking legislation, education, health campaigns and associated data gathering leave these countries poorly equipped to combat this rise in tobacco use, particularly when they are confronted with tobacco companies that have long-term experience in marketing their products elsewhere to at-risk groups.

Preventing initiation of tobacco use has become a major topic of interest for researchers, health practitioners and government policy makers. If people do not take up the habit, they do not become addicted and there is no need for cessation strategies. To date, cessation success rates for adults are relatively low when compared to the number of current smokers. Hiscock et al. (Hiscock et al. 2009) found that approximately one in five smokers from Christchurch neighbourhoods had enrolled in the Preparation Education Giving up and Staying smoke free (PEGS) cessation programme. Strategies targeted at helping youth to quit smoking are even less effective and there remains no single approach to helping adolescents in need (Blokland et al. 2004). Legislation has traditionally attempted to restrict the supply of, and at same time reduce the demand for, tobacco products. Age restrictions on the access to such products have been the easiest strategy to implement at a national level and these laws have been combined with taxes intended to discourage smoking.

Much of the literature surrounding youth smoking deals with the norms of, and the attitudes held by, this section of society towards both tobacco products and the tobacco industry. Nations that have successfully reduced smoking prevalence and implemented wide-ranging tobacco controls have been able to move on from previously pro-smoking cultures to 'spoil' the identity of smokers. That is to move on from the portrayal of smoking being a positive social behavior to a highly negative one (Chapman & Freeman 2008). This stigmatisation is believed to encourage people to seek help and quit smoking. It is also believed to decrease the chance of an individual initiating smoking behaviour by highlighting the future effects on both health and social status. Along with the positive effects of painting tobacco use as a socially unacceptable behaviour a number of negative effects have also arisen. The profile of a 'typical smoker' is often portrayed as someone who belongs to a particular ethnic group, is of low social standing in the community and who lives in an area of increased deprivation; such profiling inevitably leads to individuals associating themselves with aspects of this persona (Thompson et al. 2007). People who live in these circumstances are likely to face a disproportionate number of obstacles and a disproportionate amount of risk in their lives, just one of which is smoking initiation. Overcoming these obstacles requires self-belief and awareness. Young people who place the above stated negative stereotype on themselves may find it harder to be motivated to make positive life choices and increase their chances of enhancing their work, social and health opportunities.

2.3 Youth smoking behaviour

The most effective way to reduce youth and adult smoking prevalence is to prevent initiation to, and progression of, smoking behaviour at a young age. It is important to examine the influences that continue to encourage young people to experiment with tobacco products. These pressures comprise a combination of many factors and do not provide for the creation of interventions that are successful for all groups in all settings. Youth smoking initiation is a combination of social, environmental and individual forces that play a significant role in shaping many behaviours and attitudes of

adolescents. The following section introduces the major factors in youth smoking initiation along with psychosocial theories that go some way towards explaining why young people continue to engage in risky behaviours such as tobacco use.

2.3.1 Youth smoking initiation

“What is special about adolescent smoking is smoking initiation”

(DeCicca et al. 2008)

It is estimated that 80% of adult regular smokers initiate tobacco use before the age of 18 (Poynter et al. 2008). In New Zealand, the average age of smoking experimentation is 13.3, years with an average age of initiation found to be 14.6 years (MoH 2009). Once smoking becomes a regular habit it is believed that the majority of these individuals will continue to smoke for approximately 40 years (Darling et al. 2004; MoH 2007). In the United States an estimated 4,000 youth initiate tobacco use on a daily basis. The earlier that this behaviour occurs, the more likely an individual is to go on to become an addicted, daily smoker who is less likely to quit smoking in adult life (HSC 2005). A study of almost 14,000 United States' high school students suggested that early initiators were more likely to become addicted smokers and were expected to smoke more cigarettes on a daily basis in their adult lives. This research reported that students who initiated smoking at age eight or younger were twice as likely to smoke 11 cigarettes per day on the days they smoke compared to students who initiated smoking at age 13 or older (Everett et al. 1999).

Initiation of smoking at such a relatively young age is a behaviour that occurs at a time when individuals are unable to consider fully the decision they are making. It is often a time of rebellion against authority figures, a period of life when young people seek to form their own identity and position themselves within a chosen social group. Childhood and adolescence are full of new experiences and we draw on cues from the social and physical environment

when shaping our own behaviours, attitudes and beliefs. As much as youth smokers may like to believe that they are the masters of their destiny a wide body of research suggests otherwise. External factors such as peers, family and the environment influence smoking initiation in adolescents.

The onset of smoking is most often linked to a social experience. Peers play a major role in an individual's decision to first try smoking and New Zealand research shows that the majority (66.7%) of these episodes occur in a group setting (MoH 2007). Interviews conducted with students in Portland, Oregon, indicated that they had not often expected to smoke on that day (89%) and most individuals (81%) had received their first cigarette after being offered one by another person. Interestingly, a large proportion (81%) of the respondents indicated that they had hesitated before accepting the offer and reasons for doing so included fear of the unknown (50%) and fear of being caught (19%). Only 7% of youths stated that they had hesitated because of the harmful effects of smoking on health (Presti & Ary 1992). This is indicative that, despite the widely publicised negative health effects linked to smoking, many adolescents are not motivated by the desire to live an entirely healthy lifestyle. The taboo nature of tobacco endears itself to experimentation by young people as they begin to create their own social identity. Smoking is a way of rebelling, because of the negative picture their education has painted of tobacco products, and doing something that they know carries an element of risk if they are caught.

In addition to the social nature of smoking initiation are the false perceptions that youth have towards smoking rates among their peers and wider society. Common to all youth smoking interviews internationally is the overestimation of peer smoking rates which contributes to a belief that smoking is a much more normal behaviour than it really is (Wiiium et al. 2006). In New Zealand the 2008 Year 10 In-depth Survey (YIS) found that, despite youth smoking prevalence reported at 13.3%, over half (52.5%) of respondents believed a quarter of their peers smoked and a quarter (25.6%) estimated half of their peers smoked (HSC 2009). In addition to this, researchers have found that these beliefs vary by ethnicity and school decile. Maori and adolescents in low

decile schools were more likely to overestimate peer smoking rates and to a greater extent than Europeans and students attending more affluent schools (HSC 2009). These misguided attitudes and beliefs serve to reinforce the perception that smoking is a common and normal behaviour in society. Young people are more likely to smoke if they believe that it will lead to social acceptance and help them to fit in with their peer group. Peer pressure is a major contributor towards smoking initiation, perhaps just as influential as the role of family members.

Parental smoking is a major risk factor for experimentation with tobacco products; it also plays a major role in shaping adolescents' attitudes and beliefs towards smoking. Not only are children exposed to health risks through second-hand smoke but there is also strong evidence linking parental smoking status with the risk of early smoking onset and an increased likelihood that this initial episode will lead to regular smoking (Blokland et al. 2004). Parental attitudes are also important, as children and teenagers will look to their parents for guidance when forming their own values regarding positive and negative behaviour. Adults who actively discourage smoking and make their children aware that there will be punishment if they are caught doing so are providing them with an immediate negative consequence for their actions. This is more powerful than confronting adolescents with the long-term negative health consequences, which they often do not factor into their decision-making.

The role of popular media and the tobacco companies' use of the media to promote smoking is becoming an area of increased interest as researchers look into the effect of smoking portrayals on youth smoking rates (HSC 2007). Tobacco companies must recruit two million new smokers each year to maintain their market share so marketing to youth is an effective way of creating and maintaining a large customer base (Brown & Witherspoon 2002). As a 'learned behaviour', adolescents' smoking initiation is largely influenced by decision making based on the behaviours of individuals who are close to them and role models. Non-verbal communication can be just as important as the spoken word. When the media portray role models smoking cigarettes at

parties, as opposed to smoking in negative situations like illness or stress, it presents a distorted perspective of the effects of smoking. It has been argued that the influence of the glamorous lifestyles portrayed in celebrity magazines can have a greater effect on a teenager than friends, teachers and even parents. (Blokland et al. 2004; Price 2007). Media portrayals are believed to have a direct effect on smoking initiation and can work in conjunction with peer and family influences to shape adolescents' behaviour. Magazines that associate smoking with these celebrities could potentially be reinforcing smoking behaviour by associating it with positive outcomes.

A British study in 2002 found that smoking imagery in youth magazines was portrayed to be "attractive, sociable and reassuring" and led to reinforcing young people's perceptions of smoking. The paper concluded that this portrayal of tobacco products in combined images and text has the potential to be more powerful than actual advertising of smoking in solely print media (MacFadyen et al. 2003). There is also evidence to suggest that different types of print media can have both positive and negative effects. An American study found direct links between fashion, entertainment and gossip magazines with an increased likelihood of smoking behaviour because of the presence of smoking imagery and its links to being thin and popular. Alternatively health, fitness and sport magazines were associated with decreased youth smoking behaviour because of a lack of tobacco advertising, a lack of smoking glamorisation and emphasis on the negative health effects of tobacco (Carson et al. 2005).

A number of studies have also linked SES and access to tobacco outlets with adolescent smoking experimentation and initiation. These influences will be discussed further in Chapter 3.

Following the onset of smoking it does not take long for signs of addiction to appear. Some research suggests that the first symptoms of nicotine dependence can emerge within weeks, and in some cases days, after occasional use (MacFadyen et al. 2003). Two American studies of teenage smokers (13-17 years) reported an average progression time from initial to

daily smoking of between 1.1 and 1.5 years respectively (Robinson et al. 2004; Siqueira et al. 2001). Robinson et al. (2004) conducted phone interviews with 432 American adolescent smokers to compare patterns of initiation, dependence and smoking trajectory between males and females and also African American and non-African American youth. The study found that early initiators, before 14 years old, had a much longer reported progression from experimentation to daily smoking (16 months) than late initiators (6 months). African American youth smoked fewer cigarettes on a daily basis and on average were a year older than non-African American youth when initiating smoking (12.6 vs 11.5 years) and progressing to onset of daily smoking (13.6 vs 12.8 years). Siqueira et al. (2001) also found a relatively short period (1.5 years) for progression from initiation to daily smoking in their study of young people aged 12-21 years. The study investigated links between the age of smoking initiation and subsequent nicotine dependence and quitting behaviour. Findings suggested that individuals with lower cognitive coping behaviour and higher stress levels were more likely to develop strong nicotine dependence and have less likelihood of quitting. The authors advocated the targeting of adolescents with the heaviest nicotine dependence, as they were less likely to quit on their own, rather than focusing on individuals at specific stages in the smoking cycle.

2.3.2 Theories of youth smoking behaviour

This section outlines four psychosocial theories of adolescent smoking behaviour. Each model gives insight into different driving forces that encourage adolescents to initiate and continue smoking. Smoking behaviour has a high element of risk associated with it and each of these models is important in explaining why young people still choose to experiment with tobacco.

Adolescent perceptions of risk

The risks of smoking are well-known to young people. Addiction to, and disease arising from, tobacco products are widely publicised. Young people are the predominant targets of these messages. Why do youth continue to initiate smoking at such young ages when there appear to be no benefits to them by doing so?

Frankenberger (2004) proposes that the perceived risk of smoking makes it appealing to adolescents through their creation of a 'personal fable', a belief that they are not susceptible to such risks. The author found that young people who have tried smoking previously were likely to believe that they are invulnerable to tobacco addiction. This increases the chance that these individuals will smoke again in the future as they conclude that they will not become addicted. Perceptions of addiction also vary by gender; girls are more likely than boys to believe that smoking is not addictive (Lundborg & Andersson 2008). This research found that both girls and boys take into account the risk of addiction and mortality when experimenting with tobacco. The authors proposed that this plus the varying perceptions of addiction might go some way to explain the gender gap in adolescent smoking rates given that females are more susceptible to tobacco addiction than males and fewer females successfully quit smoking.

Adolescent beliefs that they are not vulnerable to the risks associated with smoking go hand in hand with their perceptions of the benefits associated with smoking initiation. Song et al. (2009) supported the previously mentioned papers in linking perceptions of risk to youth smoking initiation. This research found that adolescents who had the lowest perceptions of long-term smoking risks were 3.64 times more likely to initiate smoking. Those with the lowest perceptions of short-term smoking risks were 2.68 times more likely to do so. The authors also looked at the perceived benefits of smoking initiation. These included "looking cool, feeling relaxed, becoming popular, and feeling grown up." Adolescents who had the highest perceptions of such benefits were 3.31 times more likely to initiate smoking.

If the health messages that seek to inform adolescents of the related risks are the very reason that they take up smoking then it will be difficult to stop adolescents from initiating smoking. Both risks and benefits are important to young people when experimenting with tobacco. Young people are likely to weigh up their perceptions of such benefits and risks when making the decision to start smoking.

Stress-coping model

The stress-coping model (Wills & Filer 1996) states that stress is an important factor in adolescent substance abuse. Smoking plays a major role in self-help strategies when dealing with stress and individuals who smoke are likely to go on to use a wider range of psychoactive substances to help them cope (Revell et al. 1985). This behaviour is considered self-reinforcing as smoking does not deal with the original source of stress while consumption increases. Smokers widely report that they feel more relaxed following a cigarette but they also report higher levels of stress than non-smokers (Long 2003). This theory is related to Marmot & Wilkinson's (2001) argument for the effect of psychosocial pathways in relation to inequalities and health. The authors, without discussing smoking directly, stated that individuals living in countries that have pronounced income inequalities are likely to experience greater stress in their lives (Marmot & Wilkinson 2001). Individuals living in deprived circumstances are more likely than less deprived adolescents to experience stress and take up smoking as a means of self-help.

Finkelstein et al. (2006) examined the relationship between stress, social status and adolescent smoking. The authors found that youth with lower social status, measured by parental education and school social status, were more likely to be current smokers. In addition, higher levels of perceived stress were associated with increased risk of an adolescent being a current smoker. Perceived stress did not explain the relationship between lower social status and adolescent smoking rates. These results suggest that interventions focused on providing young people with stress reduction techniques may be effective in reducing youth smoking initiation. Based on the research these

interventions would not be effective in reducing current social inequalities in youth smoking.

Scales et al. (2008) stated that the attitude of teens who use their smoking as a relief from stress is picked up from cultural cues. The roles of media, friends, and family are important in building the perception that smoking reduces stress. The authors also found that teen smokers often viewed smoking cessation as a stressful experience so they are less motivated to quit. An attempt to quit may result in an increase in stress levels and in turn lead to a continuation of smoking to cope with the situation.

Social-influence model

The social-influence model states that role models, in particular parents and peers, can influence adolescents' substance use through self-modeling or explicit encouragement (Wills et al. 2004). Social learning theory shows that there are three steps in adolescent involvement in substance use. First, is the observation and imitation of substance use behaviours, followed by social reinforcement for the continued use of a specific substance before the adolescent has finally created their own social and psychosocial expectations of the outcome of substance use (Petraitis et al. 1995). This suggests that peers and family members can encourage smoking initiation both actively and passively, and the continuation of adolescent smoking behaviour. Focus group interviews of African American adolescents found that many of the participants first experience with smoking was lighting cigarettes for their parents (Beech & Scarinci 2003). There was a direct link between these experiences during childhood and early adolescence and smoking initiation as the adolescents began to smoke their parents' cigarettes.

Brown et al. (2006) found that adolescents were likely to over-report on peer smoking rates. This led young people to believe that smoking is a significantly more normal and socially acceptable behaviour than is true in reality. Notably, the majority of participants believed that smoking was not a popular or desirable behaviour for young people to engage in, but over 60% stated that

the primary reason for adolescents to start smoking was to become more popular and to 'fit in'. These findings were supported by Scales et al. (2008) who found that the teenager's social environment plays a major role in defining their smoking behaviour. Adolescents begin smoking mainly to improve their social image; this attitude is developed largely by media portrayals of smoking and of smoking being an adult behaviour which young people aspire to in order to appear more mature. If smoking continues to be seen as a positive behaviour in the social environment, young people may potentially decide that the personal benefits of such behaviour outweigh the costs and continue smoking independent of external influences.

Problem-behaviour theory

Problem behaviour theory (Jessor & Jessor 1977) suggests that some adolescents are more prone than others to engage in deviant behaviour leading to the possible onset and continuation of substance use. This theory is closely tied to the previous two models, as peer and parental influences can often modify attitudes either positively or negatively. Reinforcement of deviant behaviour from social sources will likely lead to continuation of the behavior, while some evidence suggests that the reverse may also be true (Wills et al. 2004). Problem behaviour theory is also linked to stress-coping theories where the underlying cause or escalator of substance use may be stress-related. In turn, adolescents with poor coping techniques and support will likely continue with substance use, such as smoking, while those who find support and have the psychosocial ability to cope may produce better outcomes over time (Downey et al. 2010).

2.4 Reducing youth smoking prevalence

A number of approaches at a policy level have been used in New Zealand in an attempt to prevent youth smoking initiation and encourage smoking cessation. These are a mix of school and community-based programmes combined with legislative, fiscal and mass media approaches. These methods are backed by research supporting their positive influence on youth smoking

behaviour and attitudes. Each intervention will not be significantly effective on its own and, as such, is implemented as part of an overall tobacco control strategy. The following section outlines specific strategies and their effect on preventing initiation. Youth smoking cessation, a particularly problematic area of tobacco control, is then discussed.

2.4.1 Youth smoking interventions

Interventions to prevent youth smoking initiation have traditionally focused on four key areas (HSC 2005):

- legislative and fiscal regulation (e.g. access laws and taxes)
- mass communication techniques (e.g. media campaigns, counter marketing, television, radio, billboards, social media, the internet and print advertising)
- interventions delivered in specific settings (e.g. schools, the workplace, at home and in primary care situations)
- community interventions (components of policies and programmes that are delivered in the local community).

The following section outlines specific interventions used as part of each of these approaches before the effectiveness of each is discussed with regard to youth smoking behaviour.

Legislative and fiscal regulations

Implementation of tobacco legislation and fiscal regulations is achieved at a government level. With regard to youth smoking behaviour, access laws and product taxes are used to try to prevent youth smoking initiation and continuation. Access laws are made with the assumption that by restricting the commercial supply of tobacco products to young people their smoking prevalence will decrease. Similarly, by increasing the price of tobacco through taxation it is hoped cigarettes will be priced out of reach of young people and regular smoking behaviour will become both unaffordable and undesirable.

Youth access laws are a tobacco control measure specifically aimed at restricting the retail supply of cigarettes to young people. Specific methods of doing so include establishing minimum purchasing age laws, enforcement of those laws and restricting the placement of cigarette vending machines so that they are accessible to adults only (Liang et al. 2003). With proper enforcement and compliance from retailers, access laws should affect both the supply of, and demand for, cigarettes among adolescents. Suppliers would be forced to ensure that they did not sell cigarettes to minors, as the subsequent penalties would outweigh the benefits of extra sales. Demand should also drop as young people are forced to search for a retailer prepared to break the law and could expect to pay higher prices to cover the risk these vendors are taking. Because access laws require such a high rate of compliance to be effective, it is not surprising that they are often seen as a revenue gathering exercise rather than as a part of good youth tobacco control policy. An American review of eight papers which studied the effect of youth access laws on smoking prevalence stated that “Youth access interventions are not associated with consistent, positive effects on youth smoking prevalence” (Fichtenberg & Glantz 2002). The authors found that when denied access to commercial sources of tobacco products young people turned towards their many social sources. This allowed young people to initiate and maintain smoking habits with relative ease. Because of this, it could be concluded, that increased investment in the enforcement of youth access laws is wasted, and the money could be spent on more meaningful and effective interventions.

To reduce demand for tobacco products, taxes are placed on them in order to discourage people from engaging in an expensive habit. This type of fiscal regulation is founded on the idea that young people’s consumption of tobacco products is responsive to the product’s price. Some authors have presented the case that youth demand for cigarettes is elastic, that is a change in price will result in a relatively large change in demand for tobacco products. (Liang et al. 2003). These authors went on to state that an increase in price has a direct impact on adolescents’ decision to smoke. One longitudinal study of smoking behaviour on price changes in the United States found that

increased taxation had no effect on youth smoking initiation rates (DeCicca et al. 2008). The authors concluded that adults were much more responsive to changes in the price of tobacco products and that increased taxation only affected consumption and possibly cessation among youth smokers. A group of American researchers published a paper entitled “The determinants of laws restricting youth access to tobacco” (Gallet et al. 2009). This paper outlined the need for fiscal regulation of tobacco to be implemented solely as a health promotion measure and in no way intended for revenue gathering. The authors argued that the two could not be mutually effective. If policy makers intend to increase government income through taxation then their motivation to reduce tobacco sales through comprehensive access laws is diminished.

These studies suggest that implementation of youth access laws and fiscal regulation of tobacco products should be done as part of a comprehensive tobacco strategy and not be considered as effective measures on their own. Young people do not have trouble buying cigarettes from sources outside the retail environment and the costs of effective enforcement of access laws may outweigh the expected benefits. At the same time, fiscal regulation of tobacco products through taxation is not believed to have any effect on youth smoking initiation, which is where efforts should be focused. Reduced consumption and increased cessation rates following price increases are positive effects but prevention of smoking initiation is by far the most cost-effective and healthy outcome of youth smoking interventions.

Mass communication techniques – social marketing

Just as tobacco companies used social marketing techniques to effectively change the behaviour of their target audience and make that audience more receptive to using their products, so too have anti-smoking groups and governments used these techniques to do the opposite. Traditional methods of social marketing focused on education as a means to raise awareness of the dangers of tobacco and provide adolescents with skills to prevent them from smoking. By using mass media campaigns these messages are targeted towards specific groups in New Zealand. Anti-smoking campaigns often have

a predominantly Maori theme, and policy makers have attempted to address the needs, desires and motives of their target audience (HSC 2005).

Youth have both a high awareness and usage of various social media and employment of these is considered an effective way to reach a large proportion of them with counter-advertising messages (Lantz et al. 2000). These mass-media campaigns are intended to 'denormalise' tobacco use among young people and change individual attitudes and beliefs about smoking, in the expectation that this will lead to fewer adolescents experimenting with tobacco (Friend & Levy 2002). Of particular importance to youth is the portrayal of smoking as being undesirable and encouraging a 'romantic rejection' of tobacco by challenging the perception that smoking is sexy and cool (WHO 1999). Using aggressive marketing, such as messages that depict smokers as endangering their families, being unattractive and lacking in social skills has been effective in reducing young people's intentions to smoke. In New Zealand the group 'Smoking Not Our Future' has set up a Facebook page to establish a presence in modern social media. Social networking websites are popular among young people and taking this step increases the reach of youth-specific anti-smoking campaigns.

One American campaign with the theme 'Truth, a generation united against tobacco' was developed in association with adolescents (Legacy Foundation 1998). This campaign aimed to change the attitudes of Florida's teenagers towards the tobacco industry and their products. The goal of this campaign was to create a brand that teenagers could associate with and encourage them to see rebellion against the tobacco industry as a means of standing up to a "callous adult establishment". The truth campaign was an overwhelming success and many teens surveyed responded that they had changed their perception of the tobacco industry because of the messages and many had made the decision not to smoke.

In 1985 Canada used social marketing to discourage youths from smoking. This campaign, called 'Break Free', targeted 11-17 year olds and used role models to link non-smoking with leadership and positive self-concept (HSC

2005). Following this campaign further social media were used during the 1990s and 2000s. Youth remained the target audience but the messages changed. In addition to changing youth attitudes and beliefs, Health Canada targeted adults, opinion leaders and youth role models to exhibit behaviour and attitudes in their own lives that would discourage youth from smoking (Health Canada 1997).

Social marketing of anti-smoking messages through mass media is well established in both adult and youth smoking interventions, however, it is important that a 'one size fits all' approach is not taken and campaigns are targeted at specific groups for best results. An American review of counter-marketing campaigns aimed at curbing youth smoking identified differences in the messages that adults and youths are likely to respond to favourably. Adult smokers were more likely to be influenced by messages that deal with their health and the impact their smoking has on children, while youth smokers were more concerned with psychosocial factors such as appearance, bad breath and fitting in with peer groups (Farrelly et al. 2003). High rates of exposure to mass media campaigns would be required to change adolescent smoking behaviour if this was to be the sole approach. When included as part of a robust tobacco control strategy these campaigns help to raise awareness and play an educational role in anti-smoking strategies. Policy makers and marketers must ensure that they are working towards a common goal. Media campaigns should be implemented hand in hand with wider tobacco control policies and be well-researched to ensure that they build positive smoking attitudes among their target audience.

School and community-based smoking interventions

School-based smoking interventions are popular as they are the easiest way to reach a large number of young people and the content often fits well within the school curriculum. The HSC (2005c) has identified five types of school based smoking interventions:

- To distribute educational material on the assumption that through knowledge students will change their own behaviour.

- To teach social competence through the school curriculum with the intention of providing students with self-management, personal and social skills to resist the pressures to smoke.
- To influence students' social perception of smoking to 'denormalise' smoking, provide students with skills to refuse an offered cigarette and to commit to being a non-smoker.
- To combine the social competence and social influence approaches above.
- To provide multi-model programmes that combine the school curriculum with influences outside the school environment, such as parents, local communities, and government legislation and fiscal measures (HSC 2005).

There are mixed opinions surrounding the effectiveness of school-based smoking interventions. Some studies have found that using the school to target adolescents with anti-smoking messages has an important impact and there is evidence of significant reductions in smoking rates, delays in initiation and a positive change in attitudes towards smoking (Lantz et al. 2000; Rooney & Murray 1996). A review of 15 school-based interventions in America found that only eight had a positive effect on reducing smoking prevalence while the other seven showed no change at all (Thomas 2002). The author concluded that the most effective interventions were multi-model programmes that combined external social influences along with an educational perspective. Despite a lack of strong evidence in support of school-based anti-smoking programmes these settings remain the best place for accessing adolescents and are particularly important given the problems faced by cessation programmes in the recruitment and retention of youth participants. Significant challenges remain in the delivery of anti-tobacco programmes for youth, there is no consensus on the 'best' approach nor is there likely to be, given the vast differences in child and adolescent development at international, national, local and neighbourhood levels.

Community interventions are generally extensions of school-based programmes into the wider community. These include youth who are not

attending school and are intended to generate community involvement; this in turn, helps to break down smoking attitudes and behaviours at local level to encourage both adults and young people to engage in healthy lifestyles together (WHO 1999). The community can also be a driver for change; residents have the ability to raise awareness about practices such as local tobacco sales and promotions that they disagree with. Local communities have a stake in the wellbeing of their youth and are in a position to understand the specific needs of their own children. This means that they can address issues specific to their social and physical environment that are important in encouraging young people to be smoke free.

Differences in community structure as well as the gender, race and ethnic make-up of the people who live there mean that tobacco programmes are often prepared for very specific areas. The variations in anti-smoking programmes and at times a lack of thorough evaluation of the ongoing effects of such programmes have made it hard to evaluate the success of community-based interventions. Thomas and Parera (2002) in their review of school-based programmes, also identified a number of community-based interventions. The authors found that many community-based programmes showed improvements for some risk factors associated with youth smoking initiation but not for others. These factors varied between programmes and the findings appeared to reflect how community-based interventions are implemented in diverse ways in different locations by dissimilar groups. The overall success of such tobacco programmes was not discussed in depth by the authors, as the focus of the study was school-based interventions.

There is a need for more research on:

- the effectiveness of community-based interventions,
- the approaches that individual studies have taken
- how community-based interventions compare to school-based programmes in achieving long term reductions in youth smoking initiation and continuation.

Few studies showed a reduction in youth smoking rates; however, there was some support for community interventions in both delaying and preventing smoking initiation among young people (Sowden & Arblaster 2001). This review made the following recommendations for consideration when planning community-based smoking interventions:

- build upon effective existing programmes
- programmes must be receptive to community needs and allow for modification of components to achieve acceptable goals
- programme development should include representative samples of the target audience
- programme messages and activities should be linked to theoretical constructs of individual behaviour formation
- community activities must reach the intended audience (Sowden & Arblaster 2001).

Despite a lack of consensus between researchers over the effectiveness and implementation of school and community-based youth smoking interventions there remains enough evidence to support their continued use. The attitudes and behaviours these programs attempt to encourage in young people are not solely anti-smoking in nature. Building social skills and the ability to make positive decisions for oneself provides young people with values they can apply to multiple aspects of their lives. A young person who is at risk of smoking initiation may also face other challenges in their lives so promoting healthy lifestyles should be at the core of smoking interventions. Community participation may also have flow-on effects where adults take some time to consider their own behaviour and how it affects young people. If implemented in a robust and effective manner, taking into account ethnic and cultural values, these interventions have the ability to be a driving force for real change in communities with both high adult and youth smoking prevalence.

Much of the previous literature is supportive of the four youth smoking interventions that have been outlined in this section. The greatest consensus refers to the impact, or lack thereof, of trying to use any one of these interventions on their own and expecting successful outcomes. Indeed most

publications stress that the only way to make real progress in youth smoking prevention is to combine all of these approaches into a comprehensive tobacco control program.

2.4.2 Youth smoking cessation

“However intriguing smoking was at 11, 12, or 13, by the age of 16 or 17 many regretted their use of cigarettes for health reasons and because they feel unable to stop smoking when they want to. Over half claim they want to quit. However, they cannot quit any easier than adults can”

(Thomson & Wilson 2002)

Smoking cessation strategies for youth have received a lot of attention in the last decade as researchers seek to establish programmes that successfully help young people break the habit. The majority of youth smokers want to quit or reduce their current levels of smoking and most (72.3%) state that they would not smoke if they had their lives over again (Milne et al. 2009; MoH 2007). The earlier an individual quits smoking the more likely they are to reverse the negative health effects of tobacco use and look forward to a normal life span (Branstetter et al. 2009). Preventing smoking initiation is important to reduce smoking rates within society but young people who go on to become regular smokers must have effective programmes in place to help them quit. Smoking initiation among young adults is much less common than during adolescence and the proportion of non-smokers who are at risk of smoking initiation is smaller. Because of this, smoking cessation strategies are more important during late adolescence once smoking has become a regular habit. At this time the user is becoming aware of the effects that tobacco use and nicotine addiction are having on their life.

The ‘Foundation Theory’ of health promotion states that health is the basis for achievement in life. In order for individuals to engage in healthy behaviours they must have certain positive influences that encourage good health. These include: basic biological needs being met, warmth, a life purpose, good

education, access to information to allow for informed decision making, and a sense of community (Stanton & Smith 2002). It is apparent that smoking is just one of many high risk behaviours that adolescents must decide whether to participate in, but the factors influencing a wide range of these lifestyle choices are often the same. The profile of a young smoker can be defined by SES, ethnicity, family background and home environment, among other things, but more important is an individual's ability not to place the same labels on themselves as society does. Adolescents who are identified as being at risk of adopting negative behaviours into their lifestyles need to be presented with guidance and opportunities that will enable them to become motivated and confident in their abilities to set and achieve cessation goals.

Smoking cessation treatments are not worthwhile unless adolescents actively seek help to quit smoking and are motivated to do so. Research published by Branstetter (2009) has identified five stages of intervention readiness among adolescents. These are:

- pre-contemplation (do not plan to quit in the next six months)
- contemplation (plan to quit in the next six months)
- preparation (plan to quit in the next thirty days)
- action (made a serious attempt in the last six months)
- maintenance (quit less than six months ago).

Traditionally only successful quitters have been considered a positive outcome of smoking cessation programmes, but more recently the similarities between quitters and reducers have been better understood. The major difference is that quitters were found to be more likely to enter treatment during the 'preparation' stage while reducers were more likely to do so at the 'contemplation' stage (Branstetter et al. 2009). This suggests that adolescents who seek treatment at earlier stages may be less well motivated and are making the decision based on external social influences rather than their own internal desire to become smoke free.

Of importance to cessation strategies is to identify how reducers, increasers, and adolescents who do not change their smoking behaviour following

treatment can be further motivated to become successful quitters. It can be argued that a reduction in smoking rates is better than nothing and these young people need to become motivated by their progress and encouraged to reduce further their smoking until they have quit, as opposed to traditional cessation reviews that have labeled these individuals as failures.

Adult smoking cessation programmes are available in all communities while young people, especially those not attending school, do not have the same opportunities. Youth-specific programmes are most often implemented through schools but these are generally based on adult programmes or adopt aspects of preventative approaches, both of which are not necessarily effective in youth cessation programmes (Stanton et al. 1996). A national focus group study in the United States found that young smokers believed smoking cessation was achievable and desirable but that motivation to quit was low. Students saw smoking cessation as an adult behaviour and believed they would quit when their own adult responsibilities encouraged them to do so (Balch et al. 2004). Following this research an American study of adolescent quitting behaviour concluded that the majority of youth smokers would never use the cessation treatments advocated by providers, planners and policy makers (Leatherdale & McDonald 2005). The authors found that young people were neither supportive of, nor interested in, using school-based programs or visiting their doctor for treatment. Modern approaches such as the internet and phone-based help lines were also unappealing. The only approaches that all students would use were to quit on their own or with friends in a social group. Data from the Canterbury District Health Board (CDHB) suggests the majority of people who quit solo will relapse within the first week and after three months only ten percent of individuals are still abstinent (Daley 2009). This information was not youth specific but relevant to all smokers.

If students are most interested in quitting on their own, then perhaps the most beneficial school-based programmes are those that focus on building skills of young people rather than smoking cessation itself. This approach is closely tied with youth smoking interventions that aim to develop the personal skills of

young people to prevent initiation. It is possible that this adopting approach will encourage young people to seek help with cessation from external sources at an earlier age and be more motivated to succeed.

Smoking initiation among youth is considered a largely social process and this is true of adolescent smoking cessation. The role of friends is an important factor, in both negative and positive ways. Friends can be a network of individuals providing the support needed for quitters and the social reinforcement for quitting. If a group of young people decide to quit together it is believed they will be more successful than an individual attempting to do so on their own, as the need to fit in and to be accepted by their peers is a powerful social influence among teenagers. This can provide an added incentive to young people to remain smoke free, as they do not want to be seen as a failure among their friends who have also given up (Balch et al. 2004).

Alternatively, peers can play a negative role in an individual's decision to quit smoking by continuing to offer them cigarettes, harassing them over their decision to quit, and continuing to smoke around them (Presti & Ary 1992). This makes smoking cessation more than just a health-based decision it becomes a social issue. If quitters fail, or are not supported in their attempt to quit smoking some young people will perceive this as having a negative impact on their friendships, relationships, and their own self esteem. In the mind of a potential quitter these negatives may outweigh the perceived benefits of smoking cessation and cause them to try completely on their own without the help of their friends, or not try at all.

These findings suggest that if youth-focused smoking cessation programmes are to be persisted with they should have a high level of student involvement in their development and especially their implementation. Cessation programmes may be viewed as more socially acceptable if smokers have visible support from their peers. This would also give quitters someone they can relate to easily when seeking help or when they are in need of another person to talk to as they prefer not to go to an adult with their problems. This

is especially important for school-based interventions where young people will have easy access to people within their social group who understand the process they are going through and are able to provide support and encouragement.

Just as there is strong evidence of SE inequalities in smoking initiation among young people the same is true for smoking cessation. Both adults and youths living in lower SES neighbourhoods are less likely to quit smoking successfully than individuals in higher SES neighbourhoods. One Italian study found that this trend was strongest among the youngest age groups and the study advocated that youth smoking interventions focus on both prevention and cessation (Federico et al. 2006). SE inequalities of smoking initiation may also have a compounding effect on smoking cessation among youth. Adolescents of lower SES wanting to quit smoking must deal with living in a group that has higher smoking rates than individuals living in higher SE groups do. This means that they are in contact with smokers more frequently and that smoking behaviour is perceived as being normal. These issues both reduce motivation for quitting, as well as the likelihood that a quit attempt will be successful.

2.5 Summary

Despite being too young to purchase tobacco products legally, adolescent smokers comprise an important group whose needs should be included in tobacco control policies. It is during adolescence that individuals are most likely to experiment with tobacco and initiate smoking behaviour. Rates of smoking onset in adult life are comparatively low and this has led to a large body of research focusing on youth smoking initiation. The major factors that influence young people to start smoking are well documented; many are risk factors for a range of negative health behaviours. The behaviour of peers and family are considered especially significant in encouraging youth smoking behaviour. Wider sources such as mass media also play a role in glamourising or discouraging tobacco use. These factors do not affect everyone in the same way and just as there are strong ethnic, gender and social class inequalities in adult smoking behaviour there is evidence of these disparities among young smokers.

These inequalities in adolescent smoking behaviour have led to the need for at-risk groups to be identified and targeted with tobacco control strategies. The most effective way to reduce youth and adult smoking prevalence is to intervene before experimentation occurs. Youth smoking interventions are therefore the most important part of tobacco control strategies and should remain so in order to reduce the number of smokers in future generations. It is not as easy as merely educating young people about the dangers of such behaviour and expecting them to modify their attitudes and beliefs accordingly. There are a number of psychosocial theories that explain why youths willingly engage in high risk behaviours. Stress levels, personal coping strategies, feelings of invulnerability and problem behaviour increase smoking initiation risk. Many of these are closely tied to the social environment where peer influences and the support and guidance young people receive from parents, teachers and role-models all shape how a young person will view tobacco and deal with situations where they have the opportunity to initiate smoking.

Reducing youth smoking prevalence is therefore a key goal of tobacco control policies and this requires a comprehensive and targeted approach in order to be successful. Over previous decades, adolescent smoking rates in New Zealand and much of the Western world have declined or are leveling off. There is now evidence of the impact of SE inequalities on adolescent smoking behaviour. In some of the most deprived communities smoking is seen as somewhat of a normal behaviour, an image that anti-smoking campaigns have attempted to dispel. Multiple approaches have been taken to reduce youth smoking rates; legislative and fiscal regulations in the form of tax increases and age restrictions; the use of mass communication to promote anti-smoking messages; and face to face programmes implemented in school and community settings.

Youth smoking cessation has also received much attention in the literature, often for its failures to deliver desired outcomes and the relatively high cost of running such programmes. What remains is a need for more targeted interventions that take into account how attitudes, beliefs, behaviour, and social norms vary according to both social contexts (gender, ethnicity, age, social class, community functions) and environmental contexts (predominantly neighbourhoods and schools for young people).

3 Urban environments and youth smoking

3.1 Introduction

Differences in smoking prevalence and the way young people view and engage with tobacco products varies not only by individual and social factors, but there is also that inequalities in the urban environment influence tobacco use. It is recognised that neighbourhoods play a role in shaping individual health behaviours and this is true of smoking. Examining differences in smoking rates by neighbourhood within cities, allows at-risk areas to be identified and studied thus enabling the examination of the processes shaping inequalities in smoking behaviour. Neighbourhoods can be described both by their composition and by the attributes of the people living in them that contribute to the overall social structure of the community. Neighbourhoods also play a contextual role through the services and physical structure provided in them. Previous research related to tobacco products has focused on the differences in the sale and display of tobacco in commercial sources in different neighbourhoods.

This chapter contains two main areas of interest. First, neighbourhood variations in youth smoking behaviour are discussed. Neighbourhood SES is an important influence on youth smoking behaviour as adolescents living in the most deprived neighbourhoods are more likely to initiate and continue smoking than their less deprived peers. This has led to anti-smoking campaigns and interventions targeting these groups in an attempt to discourage smoking behaviour among both youth and adults. An undesirable outcome of this approach has been stigmatisation of low SES communities. In the current smoking climate, these groups generally have smoking rates far above the national average and individuals living in such communities may feel an association with the persona of a smoker of low social standing rather than aspiring to move away from such an image. The second major focus of this chapter is commercial access to tobacco products and how

neighbourhood variations contribute to inequalities in youth smoking behaviour and attitudes. The retail environment is a major area where tobacco companies can market their products in New Zealand and there is believed to be a significant link between exposure to such advertising and youth smoking behaviour.

3.2 Neighbourhood variations in youth smoking behaviour

Youth are much more constrained by their neighbourhood environment than their adult counterparts. Transportation is more limited and schools are often located close to home. The importance of neighbourhood influences on adolescent smoking behaviour has become an increasingly important area of tobacco control research. In particular, neighbourhood SES, functions of the community and access to tobacco products are believed to be the most relevant to youth smoking. This section will discuss how neighbourhoods affect youth smoking behaviour, with a particular focus on SE inequalities and variations that young people from different social backgrounds have in access to commercial tobacco outlets.

“...it would run counter to the evidence to assume that people’s patterns of smoking, drinking, eating and sexual activity are determined by individual choices that are unaffected by social, economic or legislative factors...”

(Duncan et al. 1993)

3.2.1 Socio-economic status

Throughout the 1980s and 1990s, a significant amount of research identified area-level effects on individual health behaviours. At a local level it was recognised that neighbourhoods play a role in shaping the health behaviours of residents independent of individual effects (Duncan et al. 1999). This is not surprising, as neighbourhood SES is based on the characteristics of the population living there. Two European studies examined the links between SES and adolescent smoking behaviour as well as the exposure of young people to tobacco in their daily lives. The first, a German study, involved over 12,000 pre-school children and included their parents’ self-reported smoking behaviour (Bolte & Fromme 2008). The authors found strong links between a number of SE indicators and child exposure to smoking in the home. In particular, low parental education levels, unemployment, and low household income were considered to be predictors of increased tobacco presence in

the home environment. The study did not link SES with smoking initiation among youth. However, the effect of adult smoking in the home is a well-documented predictor of adolescent smoking experimentation and continuation (Blokland et al. 2004). The second study investigated the effect of parental SES on youth smoking behaviour over time (1977-2000) in Finland (Doku et al. 2010). The authors found strong links between SES and the likelihood of young people experimenting with tobacco as well as the likelihood of being a current smoker. As in the German study, the education and income of parents were the most important factors associated with youth smoking behaviour.

Neighbourhood SES is therefore a good predictor of the location of areas of increased risk for youth smoking initiation. In New Zealand, the majority of research has looked at the effect of socio-economic inequalities on adult smoking behaviour with little focus on youth smoking. The MoH released a report in 2003 that stated that smoking rates in New Zealand were closely tied to SES where the most deprived have the highest smoking prevalence and the least deprived have the lowest (Hill et al. 2003). The authors found that over the study period (1981-1996) inequalities in smoking prevalence, taking into account both relative and absolute deprivation, had increased. SE variations in patterns of smoking cessation were also identified and the study's findings were largely consistent with the theory of 'diffusion of innovation' as it relates to smoking. Doku (2010) described this as a four stage process, namely:

- adolescents of high SES initiate smoking before other groups (the 'innovators')
- the rest of the population engages in smoking behaviour (the 'laggards')
- individuals of high SES begin to quit, in particular men, giving rise to gender inequalities in smoking rates
- smoking prevalence in high SES groups declines while it remains high in the long-term for low SES groups.

The effect of social inequalities, predominantly measured by income, have been the major focus of New Zealand research seeking to determine what effects there are on smoking behaviour. These studies have focused on adult smoking behaviour in relation to neighbourhood deprivation. Youth smoking in the context of neighbourhood SES is detailed through descriptive statistics that suggest there is a relationship between the two, but this has not been explored at a macro level to investigate the influence of SES between neighbourhoods in New Zealand cities. The same is true for school SES and youth smoking research in New Zealand. There is a wealth of data available from two youth smoking surveys carried out in New Zealand. The National Year 10 ASH Snapshot Survey (Paynter 2009), and the Year 10 In-Depth Survey (HSC 2009) both contain data on the smoking behaviour, attitudes, and beliefs of young people throughout the country. To date there has been no local research into the effects of high school SES and aspects of the surrounding urban environment on reported student smoking behaviour.

Internationally, research has largely focused on measures of individual and parental SES when examining inequalities in youth smoking. A United States study from Lee and Cubbin (2002) was the first study to examine if neighbourhood effects on adult health behaviours were also present for youth. The authors found that ethnic SES was a predictor for youth smoking inequalities but neighbourhood SES did not provide clear conclusions. The authors did not discount neighbourhood effects based on their results and pointed to the need for further, more refined research in this field. Frohlich et al. (2002) provided an analysis of individual-level characteristics as well as the relationship between neighbourhood level social structures and youth smoking behaviour in Canada. The authors found that both individual-level and area-level factors were associated with youth smoking initiation. Furthermore, area effects explained variations in youth smoking initiation beyond that explained by individual-level factors. The following year a United States study concluded that, after controlling for individual-level SE factors, individuals living in the most deprived neighbourhoods were significantly more likely to be smokers (Diez Roux et al. 2003).

Matheson et al. (2011) have provided the most recent analysis of neighbourhood effects on youth smoking behaviour. This Canadian research found that youth living in the most deprived neighbourhoods were 22% more likely to smoke than those in the least deprived areas were. The influence of neighbourhood deprivation on youth smoking behaviour was weakened, but statistically significant nonetheless, when controlling for individual-level factors. The most important factor contributing to a large reduction (33%) in the effect of material neighbourhood deprivation on adolescent smoking behaviour was the presence of a smoker in the household.

To date, none of these studies has been replicated in New Zealand despite previous research linking adult smoking behaviour with neighbourhood SES. Such research would allow for greater targeting of at-risk groups in specific neighbourhoods as part of tobacco control interventions. This approach would support current 'blanket' messages that target groups based on ethnic and social factors nationwide. There is also evidence in tobacco literature that messages that inadvertently 'tar' entire populations with 'the same brush' can serve to increase inequalities rather than reduce them. This process is discussed in further detail in the following section.

3.2.2 Stigmatised communities

Stead et al. (2001) used a qualitative approach to explain area effects on adult smoking behaviour among residents in a disadvantaged Glasgow community. The authors suggest that perceived isolation from the wider community was experienced by a number of respondents. The difference between the pro-smoking culture of this neighbourhood compared to a more negative viewpoint in other areas was seen to increase "smoking prevalence, consumption and expenditure". The authors stated that some residents felt stigmatised because of the area where they lived and later research took this further to examine the effects on smoking behaviour.

One American paper stated that the strategy to 'denormalise' smoking had allowed for increased stigmatisation of smokers (Bayer & Stuber 2006). This social stigmatisation was considered to be partly responsible for a decline in smoking rates at the time by discouraging smoking initiation and encouraging cessation. Consideration is given to how stigmatisation may serve to increase current social inequalities in smoking behaviour and queries if there will be any negative effects in the long-term on tobacco control efforts. The authors question what such an approach does at an individual level by spoiling the identities of those who continue to smoke, often people living in the most deprived communities.

This question is answered by Thompson et al. (2007) who interviewed residents from a deprived suburb in Christchurch, New Zealand. 'Smoking islands' were created when entire communities were attributed with stigma e.g. smokers are often poor, uneducated and belong to particular ethnicities. Individuals living in these neighbourhoods may actively engage in smoking behaviour to align with this stigma and further separate themselves from the rest of society. Feelings of helplessness will provide individuals little motivation to avoid or stop smoking further strengthening the effect of 'smoking islands' on neighbourhood smoking prevalence.

Such 'smoking islands' have the potential to undermine current tobacco control policies and may be attributable to the current levelling off in smoking prevalence in recent years. The unwanted consequence of stigmatisation in deprived communities may be that smoking behaviour is in part encouraged and seen as normal. Adolescents living in these neighbourhoods will frequently be exposed to perceived positive effects of tobacco products from social stimuli. There is also an increased chance a parent or someone in the home may be a smoker and this is known to increase the likelihood of a young person beginning to smoke. Policy approaches should be careful not to treat smokers in such a negative light that they feel shunned by the rest of society. Instead, initiatives that develop positive community connections and encourage positive lifestyle choices should be promoted.

3.3 Commercial access to tobacco products

It is not only the social neighbourhood environment that influences both adult and youth smoking behaviours. This section introduces the reader to the retail tobacco environment and its relationship to youth smoking issues. First, access to tobacco outlets is discussed with reference to illegal purchasing of tobacco products among underage smokers. Then the in-store marketing of tobacco products in retail outlets is detailed in the context of how exposure to these messages is believed to influence adolescent smoking behaviour. Finally, inequalities in access to tobacco outlets in neighbourhoods and around schools are presented with reference to both national and international studies.

“The retail environment exerts a unique influence in promoting smoking as a desirable social norm. Specifically, it serves many traditional advertising functions including brand promotion, creating positive brand image, and encouraging maintenance or reuptake of daily smoking together in one context.”(Lovato et al. 2007)

3.3.1 Why is access important?

It is difficult to establish the effect that access to commercial sources of tobacco has on smoking experimentation and initiation, as these adolescents are more likely to obtain cigarettes through social sources. Better access to tobacco products is linked to increased consumption. However, as discussed previously, adolescents are not fixed in their sources of supply for tobacco. As restrictions on commercial sources of tobacco are increased, social sources become more important suggesting that young people are not loyal to a specific source and will modify their behaviour based upon price and ease of accessibility. Despite this, the retail environment is believed to influence youth susceptibility towards smoking through the display and promotion of tobacco products. This serves to reinforce social norms that smoking is acceptable, encourage the development of negative attitudes, and encourage negative smoking behaviour (Harrison et al. 2000). Despite the presence of a legal

tobacco purchasing age in New Zealand, commercial retailers are the most common source of supply for underage smokers, with 74.2% reporting they purchase cigarettes themselves (MoH 2007), with dairies being the most common source. A 2008 MoH survey reported that 63.6% of young smokers had bought cigarettes from a dairy in the previous month followed by petrol stations (39.9%), and supermarkets (25.0%) (MoH 2009). Daily smokers were more likely than occasional smokers to use commercial sources suggesting that they have a need for a more regular and reliable source of tobacco products.

In order for age restrictions on tobacco products to be effective there needs to be a high rate of compliance. Retailers that flout the law and continue the sale of cigarettes to minors are often well-known to young people, who may actively frequent these stores in their local neighbourhood or even travel to areas where they know retailers are less strict (Harrison et al. 2000). The 2002 New Zealand Year 10 In-depth Survey reported that 38% of adolescent smokers had been asked to present identification in the previous month when buying cigarettes and only 35.7% had been refused a sale based on their age (Darling et al. 2005). In New Zealand, compliance with smoking laws is monitored through the use of controlled underage purchasing. However, these statistics suggest the need for stricter policing of tobacco sales. Darling (2005) argues that poorly enforced legislation “may be at least as harmful as having no legislation.”

Most research points to social sources as being a supplement for commercial sources when young smokers cannot buy cigarettes themselves. A number of studies (Harrison et al. 2000; Lovato et al. 2007; Novak et al. 2006) believe that as access to commercial sources is restricted, social sources become more important and it is impossible for authorities to stop this kind of tobacco supply. Nonetheless, an increased frequency of store visits, when compared to visiting a tobacco outlet less than once a week, is related to the increased likelihood that an individual will be susceptible to and experiment with smoking (Paynter et al. 2009). In New Zealand, tobacco outlets are not licensed and there is no restriction on the density and location of these stores.

Efforts to reduce smoking rates and change youth attitudes towards tobacco products may be best served with both increased enforcement of sales laws and a reduction in the number of tobacco stores in certain areas. This would not only make access for youth more difficult but it would also affect adult smoking rates and help to reduce the 'normality' of smoking imagery and behaviour in individuals' daily lives. Because smoking rates exhibit strong SE and ethnic differences it is likely that disadvantaged groups experience inequalities in exposure to environmental pro-smoking cues.

3.3.2 Marketing of tobacco products in a commercial setting

“You can't sell if the consumer can't see the cigarettes because they are kept behind a perspex glare ... You wouldn't sell baked beans that way, so why sell cigarettes like that ... basic retailing principles hold that the product must be visible or it won't sell.”

(Glasser 1999)

Children and adolescents represent the majority of smoking initiators, making this group a prime target for marketing of tobacco products. In order to maintain their market position it is estimated that tobacco companies must attract over two million new smokers annually. Tobacco companies market their products by normalising them and using imagery to evoke an emotional response from the viewer. These marketing techniques are effective at encouraging young people to smoke when they are not of an age to be making mature and informed decisions about their lives (Paynter et al. 2006). New Zealand has strict controls over tobacco advertising and sponsorship leaving the retail environment as one of the last avenues through which companies can market their products. The importance of point-of-purchase marketing to tobacco companies has been widely reported, the industry spends more on this type of marketing than all other forms of advertising combined. In 2001 it was estimated that US\$9.5 billion of a US\$11.2 billion marketing budget was spent on in-store advertising and by 2003 this had

risen to US\$12.7 billion of a total US\$15.1 billion marketing budget (Feighery et al. 2006; Henriksen et al. 2004b).

This investment in retail tobacco marketing and legislative restrictions has given rise to 'Power Walls'. These are displays with extensive rows of cigarettes that provide the maximum possible exposure to the consumer (Greaves 2003). The quantities displayed are well in excess of that required to supply customers and serve to reinforce brand position. Often these displays are provided by and kept stocked by a particular company. In New Zealand, these displays must be no closer than one metre to products attractive to children, but because they are most often located behind the counter they are in full view of all customers both young and old. This continual exposure to smoking imagery and tobacco products reinforces the idea that smoking is a common behaviour and is socially acceptable.

Current smoking status is linked to exposure to tobacco marketing even in environments with strict controls. A Norwegian study of youth exposure to tobacco advertising under a national advertising ban found that youth who reported seeing tobacco imagery in five different locations over the preceding week were twice as likely to be current smokers than their peers who reported no exposure (Braverman & Aaro 2004). Even low levels of exposure (one or two locations) were related to smoking status and the belief among current smokers that they would continue to smoke into their 20s. There are issues with perceived tobacco exposure in youth surveys as adolescents who visit the same store with the same frequency may report different levels of exposure. This is indicative of the sub-conscious nature of tobacco advertising where messages are picked up on by young people without them being consciously aware of the effect they are having on their attitudes and behaviour (Feighery et al. 2006).

The relationship between point-of-purchase marketing and smoking initiation has not been proven to be causal. However, weekly or more frequent exposure to retail marketing was associated with a 50% increase in the odds of an individual ever smoking (Henriksen et al. 2004b). Having a parent or

other household member who smokes is strongly linked to smoking initiation while in-store marketing of tobacco products is believed to increase the risk of smoking experimentation by 40% after controlling for the influence of families' and friends' smoking behaviour (Schooler et al. 1996). Issues with all of the studies centre on the validity of self-reported smoking behaviour among youths. There is a possible response bias to questions on exposure and variation between individuals over their personal perceptions of exposure to retail advertising. Accuracy between reported smoking rates can be compared to known smoking rates from census and youth health surveys, providing a good basis from which to estimate the validity of results. Because of the consistency in results the evidence supporting a causal relationship between exposure and smoking behaviours, such as experimentation and consumption among current youth smokers, is growing.

Retail tobacco advertising is more likely to be concentrated in stores that young people visit frequently. This is especially important in school neighbourhoods and Maori and Pacific communities where households are more likely to have more children (Brown & Witherspoon 2002). A 2007 study of Miami tobacco advertising found that 74% of retail outlets within 2,000 feet of schools had higher than average levels of tobacco advertising in them as were stores located in low income areas and neighbourhoods with a high proportion of African Americans (Asumda & Jordan 2009). School neighbourhoods are important for access to tobacco outlets because of the high numbers of young people who frequent these stores. This marketing opportunity has not been lost on the tobacco industry and these stores have been found to contain more cigarette advertising than outlets further from schools (Pucci et al. 1998; Rogers et al. 1995). These results suggest that not only do youth smokers experience inequalities in health outcomes due to the compositional and contextual factors in their local neighbourhood but also they are actively targeted by the tobacco industry. This practice of further increasing the risk of smoking initiation among youth has helped to create long standing ethnic and SE influences on individual smoking behaviour. To date, New Zealand research has not looked into targeting of tobacco outlets and differences in advertising around schools.

3.3.3 Inequalities in access to tobacco retailers

Adolescents should, under the law, be equally protected from access to tobacco products to ensure that there is no targeting of specific groups who, due to other compositional and contextual factors, are predisposed to smoking initiation (Asumda & Jordan 2009).

Unfortunately, the same factors that place youth at risk of experimentation and continuation of smoking behaviour make them targets for increased access to tobacco products. Tobacco outlets are often concentrated around schools and in neighbourhoods that have a high proportion of teenage residents. Also, higher densities of retailers are located in more deprived neighbourhoods and in the US African American and Hispanic communities are often targeted (Henriksen et al. 2008; Hyland et al. 2003; Yu et al. 2010). Novak et al. (2006) presented similar findings concluding that outlets were more densely concentrated in low SES neighbourhoods. This research also found that areas with increased access to tobacco outlets had high youth populations.

These findings suggest that young people living in low SES neighbourhoods are disproportionately exposed to tobacco products during a time when their risk of smoking initiation is highest. Much of the literature linking outlet density with youth smoking behaviour has looked at how controlling neighbourhood access to tobacco may reduce initiation among young people. Novak et al. (2006) did not find a difference in the effect of outlet access on smoking rates between adolescents and individuals who are legally able to purchase cigarettes. They did agree with previous and subsequent findings that the effect of outlet access on smoking behaviour is stronger for initiators than established smokers.

Links between tobacco outlet densities near schools and reported school smoking rates are mixed. One American study found that higher levels of

retail commercial access to tobacco were associated with an increased likelihood that a youth had initiated smoking but there was no connection to smoking continuation (Pokorny et al. 2005). McCarthy et al. (2009) also found that an increased density of tobacco outlets around high schools was associated with high rates of experimental smoking but had no impact on established smoking.

One Canadian study conducted in 2001 investigated the links between the number of tobacco retailers and student smoking behaviour. The relationship between the prevalence of youth smoking in schools and neighbourhood tobacco outlet density was not found to be significant. However, youth in communities with high outlet densities were more likely to purchase cigarettes and school smoking rates were related to close proximity of retail outlets to school grounds (Leatherdale & Strath 2007). A similar study of youth and schools in Canada also found that tobacco outlet density was not related to youth smoking rates in school neighbourhoods, but there was a significant relationship between high smoking prevalence in schools (>20.6%) and in-store tobacco promotions in surrounding stores as well as access to low-priced cigarettes. Stores in neighbourhoods around schools with a low smoking prevalence were found to display more health warning signs outlining the dangers of smoking. When this research was conducted in 2007 the display of such signs in Canada was optional but not mandatory under federal laws. These factors were linked to youth smoking rates in school neighbourhoods (Lovato et al. 2007).

Each of these studies suggest that while it is difficult to link increased access to tobacco products with youth smoking rates, a better indicator of the retail smoking influence is the effect on adolescent attitudes and beliefs. Increased exposure throughout childhood will influence how individuals perceive tobacco use among their peer group and the wider society and may contribute to constant overestimation of peer smoking rates by youth. To date little GIS analysis has been on the access or targeting of tobacco products towards New Zealand youth. One national study examined the effects of access to tobacco outlets on individual smoking behaviour for all adults (Pearce et al.

2009). This research reported that, after controlling for individual-level demographic and SE factors, people living in neighbourhoods with the greatest access to tobacco outlets were more likely to be current smokers than those with the worst access to commercial sources. Once deprivation and rurality were included these effects were not apparent, a result that is attributed to the strong links between neighbourhood deprivation and tobacco outlet density.

School neighbourhoods are also seen as important because outlets in these areas have high rates of youth patronage. It is more likely that among these stores will be retailers willing to sell to underage individuals to capitalise on the large market they comprise. Tobacco retailers in these territories may also be influencing adult smoking rates as the increased access to tobacco makes it harder to quit and encourages continuation of smoking. This in turn serves to further establish 'smoking islands' in certain areas and contribute to smoking continuing to be a major part of the social environment for these communities.

3.4 Summary

There is a growing body of literature that has linked measures of neighbourhood SES with smoking prevalence irrespective of individual factors. The majority of this research has focused on adult smokers but recently some international studies have turned their attention to youth. Findings from these studies suggest that young people living in the most deprived neighbourhoods are more at risk of smoking onset than their less deprived counterparts. There is debate about the strength and significance of this effect compared to individual-level factors but the influence is recognised nonetheless. In New Zealand, this relationship has not been studied on a spatial basis. Evidence from youth smoking surveys suggests that there is a link between neighbourhood SES and adolescent smoking prevalence but how this relationship operates within the confines of a city has not been studied. There is a real need for further research in this area so that interventions can be successfully developed and tailored to the groups that need them the most. If interventions are mismanaged, even if provided with the best intentions, unexpected negative outcomes may arise.

One important example of this is the stigmatization of entire communities through anti-smoking campaigns. Smokers have largely been 'branded' as individuals of low social class, low employment status, uneducated, living in deprived areas, and belonging to an ethnic minority. This in turn has prompted much of society to view smoking as behaviour of the 'poor' and people who identify with this persona may actually smoke to fulfill this image. This process can lead to whole communities of smokers where such behaviour is the norm and they are provided with few incentives to break the habit. Such interventions, while reducing the overall smoking rate, actually may have increased social inequalities in smoking behaviour because of such outcomes.

Along with social factors in neighbourhoods, the built environment is considered to play a role in promoting smoking behaviour and further

entrenching existing inequalities. In this case it is the commercial sale of tobacco products that varies by neighbourhood and is targeted towards specific groups. The retail environment is a major source of pro-tobacco imagery through display stands that create a positive brand image and the perception among young people that cigarettes are as normal as milk, bread and lollies. Exposure to this type of tobacco advertising begins during early childhood and frequent exposure has a conditioning effect on young people to the point where they are so used to seeing tobacco products behind the counter in neighbourhood stores that they no longer consciously think about them. International research has found that there is a higher density of tobacco outlets in neighbourhoods with high youth patronage, such as school areas, and in areas with high numbers of individuals considered to be at risk of smoking initiation and maintenance.

4 The New Zealand Context

4.1 Introduction

New Zealand has been recognised as one of the world leaders in restricting the tobacco industry's influence and avenues from which to market and sell their products. As discussed in Chapter 2, the onus is on the national government to implement and support a wide range of interventions to discourage youth smoking initiation. The aim of this chapter is to introduce the reader to the range of tobacco controls implemented in New Zealand and to the main national smoking legislation, the Smoke-free Environments Act (1990). A discussion of the main areas of tobacco control implemented under the act is coupled with an exploration of relevant national and international literature to determine the reasoning behind the introduction of specific interventions. The effectiveness of these interventions in reducing smoking prevalence among both youth and adults is discussed. Finally, New Zealand youth smoking trends from 1999-2008, a period of increased tobacco controls, are described with regard to gender, ethnicity and SES.

4.2 New Zealand tobacco controls

4.2.1 New Zealand tobacco control history

The health effects of tobacco use were identified as early as the 1930s. Early research pointed towards fatal diseases of the heart and lungs, the most common of these being lung cancer. It was some time before society and, more importantly, health officials and policy makers began to accept this evidence and seek to reduce smoking-related harm. During the 1960s, the first voluntary agreements with tobacco companies were entered into to restrict advertising of their products. Following this, further restrictions on the sale of tobacco to youth were implemented but it was not until the mid-1970s that anti-smoking legislation began to be passed in earnest (Thomson & Wilson 1997).

After the signing of some voluntary agreements with the tobacco industry in the 1980s, the New Zealand Government began to more actively regulate and educate to reduce tobacco use. The sale of tobacco to those aged under 16 years was banned and various groups were established to conduct tobacco research and lobby for stricter controls. These groups were successful in getting cigarette advertising removed from some magazines and having health warnings placed on cigarette packets. Many of the objectives of these groups had youth smokers in mind and sought to reduce rates of youth initiation to smoking. These efforts contributed to New Zealand having one of the fastest rates of decline in tobacco consumption among the Organisation for Economic Development (OECD) countries and helped gain support for the next major round of tobacco controls (CCC 2008).

The Smoke-Free Environments Act of 1990 was the most significant piece of tobacco legislation to have been passed in New Zealand. It placed restrictions on tobacco advertising and promotion, and banned smoking in many public places, including restaurants and bars, and further restricted the sale of tobacco to those aged under 18 years. This Act was subject to strong

opposition. Many people, including politicians, celebrities and members of the public believed that many of the restrictions were unnecessary and impinged too much on individual freedoms. Present day attitudes have changed significantly and these restrictions are widely accepted, even by smokers.

Tobacco legislation in New Zealand has been combined with widespread media campaigns to educate the public about the dangers posed by tobacco use. Separate promotions have been used to target youth who are recognised as a high-risk group that is notoriously hard to reach. The same high profile people who were once used to promote smoking are now being used to act as role models to discourage teen smokers. Anti-tobacco groups would like to see stronger enforcement of existing legislation and for many nothing will be enough until a total ban is introduced on both the sale of tobacco and smoking.

Today, the majority of anti-tobacco campaigns are focused on youth. Even those targeting adults use children as a way of encouraging people to become role models and quit the habit for the good of our younger generations. A range of cessation services is available to adolescents in New Zealand, but we, like the rest of the world, are experiencing significant issues in recruiting and retaining patients in these programmes. The focus now is on creating environments that are truly smokefree for young people. There are moves to remove all tobacco advertising and displays within stores to stop the known effect these have on smoking initiation and attempts to quit. Because of the problems faced in encouraging youth to quit smoking, cessation services must be relevant to this group and above all they must be readily accessible.

4.2.2 Timeline of tobacco controls

Table 1 details the major tobacco controls implemented in New Zealand in chronological order. The major players in the lobbying for and implementation of tobacco controls are introduced and special attention has been given to controls that target some aspect of youth smoking.

4.3 The Smoke-free Environments Act and amendments

As stated the Smoke-free Environments Act is the single most important piece of legislation in New Zealand's tobacco control history. The Act incorporated previous New Zealand tobacco controls as well as setting out a raft of new interventions. Many of the measures it introduced were world leaders in their day and set a vision for the future of smoking in New Zealand. An overview of the specific laws set out in the Act is undertaken below (Table 1) before outcomes are discussed with regard to three major areas of tobacco control.

Table 1: Timeline of New Zealand tobacco controls, 1903-present day

Year	Intervention
1903	Sales to, and consumption of tobacco by, youth under the age of 16 was made illegal.
- 1940s	The New Zealand Government implemented and increased taxation on tobacco products as a revenue gathering initiative.
1948	The DoH produced the first posters to raise public awareness of the link between smoking and lung cancer.
1962	The tobacco industry agreed not to target youth with their advertising. This was not enforced and not adhered to by the industry.
1963	Cigarette advertising is banned on New Zealand television and radio. This was not legislatively binding but was implemented by media groups.
1973	Tobacco advertising on billboards and in cinemas was banned and print media advertising was restricted to ½ of a newspaper page.
1974	The first public health warnings were printed on tobacco packets.
1981	Prohibition of tobacco sales to under 16s was repealed.
1982	The first smoking intervention kits were issued to New Zealand schools. ASH was founded. (Throughout their history they have lobbied for government policy, called for cuts to tobacco advertising and sponsorship and carried out youth smoking surveys.)
1983	Tobacco is defined as a toxic substance under legislation. This allowed for many future restrictions of tobacco products to be possible.
1985	The Minister of Health called for government action on a range of tobacco control and smoking issues: <ul style="list-style-type: none"> • adult cessation clinics • restrictions on youth access to tobacco products • increased taxation • tobacco advertising and sponsorship bans • public involvement • health education.
	The DoH set a goal of increasing the number of non-smokers from 72% to 80% by 1990.
	ASH began to lobby for restrictions on all advertising and promotion of tobacco products.

1986	Increased taxation led to a 53% increase in the price of tobacco in New Zealand. The Tobacco Substances Board recommended the government ban both the advertising and promotion of tobacco products. This was repeated in 1988 by the board's Tobacco Subcommittee. Introduction of the 'Great Smoke-free Week'.
1987	The DoH went smokefree.
1988	Taxes increased on tobacco products.
1989	Smokefree New Zealand was established to lobby for smokefree workplaces. New Zealand's national airline (Air New Zealand) went smokefree. The tobacco industry launched its own pro-tobacco campaigns entitled 'New Zealanders for the Right to Decide', and 'Sportspeople for Freedom for Sport', in a bid to gain support against the forthcoming legislation (later passed as the Smoke-free Environments Act in 1990)
	Tax increased again on tobacco products.
1990	The SFE Act (1990) was passed in May and became law in August. To this day it remains the single most important part of New Zealand's tobacco control history. The HSC was founded. Their first anti-smoking campaigns began in 1991 and in 1993 they began a campaign targeting Maori and young women — 'Be Smart, Don't Start'.
1994	ASH brought legal action against a retailer for selling tobacco products to minors as well as selling single cigarettes. ASH won the case and the retailer was fined \$100, of greatest importance was the precedent set by the court in declaring the sale of single cigarettes to be illegal. HSC sponsorship begins to replace tobacco sponsorship under the 'Smokefree' brand.
1995	All tobacco sponsorship of sports and the arts came to an end on the 1 st of July. All tobacco advertising in shops was banned, except for point-of-sale notices. Taxation of loose tobacco increased to match that of pre-rolled cigarettes.
1996	Beginning of the media campaign 'Why Start which aims at preventing youth smoking initiation .
1997	The SFE Amendments Act (1997) came into law. This legislation raised the youth purchasing age from 16 to 18 years and increased restrictions surrounding the sale and advertising of tobacco in retail outlets.
2003	New Zealand signs the Framework for Convention on Tobacco Control (FCTC). This international public health treaty aimed to reduce the impact of tobacco on both an individual's health and on national economies. The SFE Amendments Act (2003) came into law. The focus of this legislation was to establish smokefree environments (schools, workplaces and all licensed premises), further retail restrictions, and increased restrictions on access to tobacco products for minors.
2007	ASH gave the government a 20,000 signature petition in support of a ban on retail tobacco displays. The SFE Amendments Bill (2010) passed its first reading in parliament on February 3 rd , 2011.
2008	Graphic images were introduced to health warnings on cigarette packaging following three years of lobbying by ASH.
2010	Tax on loose-leaf tobacco rose by 24% and 10% for pre-rolled cigarettes on April 28 th .
2011	Tobacco tax rose a further 10% on January 1 st , this will be repeated on January 1 st 2012 bringing the total tax rate to \$596.37 per kilogram of tobacco at this time.

4.3.1 Outline of legislation under the Act

In 1989, the then Deputy Prime Minister, Helen Clark, was appointed as the Minister of Health. By this time the anti-tobacco movement had gained a lot of support in top-level government and with the backing of the Prime Minister and other senior ministers Helen Clark was able to place the Smoke-free Environments draft bill on the legislative timetable. The bill was passed by Parliament in May 1990 and became law in August that same year. The Act retained all of the previous bans that had been set in place and introduced some new measures. Two of these were particularly relevant to young people:

- banning the sale of tobacco to persons aged under 16
- providing for the formation of the HSC ('Smoke-free Environments Act' 1990).

The SFE Amendment Bill was introduced to Parliament in October of 1995 and was passed into law two years later. This bill became the SFE Amendment Act (1997) and made some noteworthy changes with regard to youth tobacco controls:

- the sale of tobacco to anyone under 18 years was banned
- retailers were no longer allowed to be given or accept incentives to promote tobacco products in their store ('Smoke-free Environments Act' 1990).

In 2003, a second SFE Amendment Bill was passed, becoming the SFE Amendment Act (2003). This latest Act required a number of changes, some of which had a focus on young people:

- the buildings and grounds of schools and early childhood centres were to become smokefree.
- further restrictions were placed minors' (under 18) access to tobacco products ('Smoke-free Environments Act' 1990).

The Act in its current form is made up of three parts. Part 1, "Smoke-free workplaces and public areas", aims to reduce the harm caused to others by

second-hand smoke and also to reduce the exposure of children to smoking during their development. Part 2, “Control of smoking products”, has a strong focus on youth smoking controls. This section aims to reduce the social approval of smoking among people by restricting tobacco marketing, prohibiting sales to minors, requiring health warnings on packets and in retail stores, and providing a legal background for enforcement of these bans. Part 3 of the Act, “Health Sponsorship Council”, aims to promote health and encourage healthy lifestyles by replacing tobacco sponsorship with funding under the ‘Smokefree’ brand.

4.3.2 The Act and youth smokers

The SFE Act 1990 has significantly affected adolescent smoking behaviour through measures both directly and indirectly targeted at this group. The most obvious, and perhaps the most important, measure set out in the legislation is the age restriction on the purchase of tobacco products. Under the original Act passed in 1990 this was set at 16 years before being raised to 18 in the 1997 amendment to the Act. It is now illegal for a person over 18 to give tobacco products to a minor in a public place. It is also illegal for retailers to sell cigarettes to persons aged under 18. However, prosecution can be brought against only the shop owner and there is no restriction on the possession or consumption of tobacco by minors ('Smoke-free Environments Act' 1990). This legislation places the onus on retailers to avoid selling tobacco products to underage youth. New Zealand research into adolescent tobacco purchasing behaviour suggests that shop owners are not always compliant however as adolescents report frequently buying cigarettes from commercial sources (HSC 2009; Paynter 2009). A recent Dutch study of compliance with age restrictions on tobacco purchasing reported retailer and hospitality industry claims of 97% compliance with the law (van Hoof et al. 2010). This figure was well above findings from mystery shopper visits that reported a zero to 30% compliance rate.

A similar situation exists in New Zealand, where nearly two thirds of the students involved in a 'Youth Lifestyle Survey' stated that they usually purchased tobacco products from commercial sources (Darling et al. 2005). This research suggests that there is a need for stronger enforcement of the laws regarding access to tobacco for minors. The authors state that it is possible for poorly enforced legislation to be just as, or even more, harmful than having no legislation at all. As discussed in Chapter 2, youth access laws are not seen to affect the initiation of smoking but their presence helps to reinforce the idea that smoking is an undesirable behaviour (Fichtenberg & Glantz 2002).

Since 2004, the Act has required virtually all indoor workplaces, hospitality venues, schools, and public spaces to be completely smoke free. The primary goal of this legislation is to reduce the harm caused by second-hand smoke to workers and non-smokers. However, its effects are far more reaching than this. Smoke free policies are an integral part of the FCTC and, after being ratified by a number of countries, an international working group undertook an assessment of peer reviewed published work to examine the effects of such legislation (Pierce & Leon 2008). The authors released a number of cause and effect statements following this research. A selection of these relevant to youth follows:

- "There is strong evidence suggesting that smokefree policies decrease tobacco use in youths."
- "There is sufficient evidence that voluntary smokefree home policies decrease children's second-hand smoke exposure."
- "There is strong evidence to suggest that smokefree home policies decrease smoking in youths."

In New Zealand, smokefree environment policies have served to 'denormalise' tobacco use and reduce youth exposure to adult smoking. While not covered in the legislation it is believed the Act has contributed to adults implementing their own smokefree policies in their homes and cars. Mass media campaigns have also encouraged individuals to make these decisions (Waa & McGough 2006). Reduced exposure to smoking at home, at school

and in the wider community reduces youth perceptions of smoking prevalence among adults and peers.

A major goal of the SFE Act 1990 was to eliminate the advertising and promotion of tobacco products by the industry. Two major steps were taken to achieve this in 1990 through restrictions on tobacco advertisements in New Zealand print media and restrictions on the sponsorship of products, services and events. The 1990 New Zealand Commonwealth Games and the 1998 Whitbread Round the World Race were both targeted for their ties to tobacco sponsorship (Thomson & Wilson 1997). In response to this, the tobacco industry recruited well-known New Zealand sporting personalities to front campaigns opposing cuts to sponsorship. Concerned about a potential loss of income athletes got behind the campaign, but the law was still passed as part of the Act in 1990 (CCC 2008). As discussed, the HSC was established to fill this gap in sponsorship and was quick to begin sponsorship of sporting and arts events. Interestingly, national sporting and media personalities are now used to front anti-smoking campaigns. One author (Strasburger & Donnerstein 1999) has suggested that celebrities are seen by young people as 'super peers' and play a major role in shaping and developing adolescent smoking behaviour and attitudes. Exposure to smoking in the media has been linked directly to youth smoking prevalence and is believed to be particularly influential in smoking initiation (Price 2007). The mechanisms for this are not fully understood but literature points to the normalisation of smoking behaviour and social influence modeling when smoking is shown in a socially rewarding manner, as discussed in Chapter 2.

These restrictions left the retail environment as the only place where tobacco products could be promoted so it is not surprising that the 1997 and 2003 amendments to the Act targeted this area. The first changes prohibited retailers from being given, or accepting, incentives to promote tobacco products in their stores and a maximum size was introduced for point-of-sale advertising in a bid to reduce its visibility. The sale of cigarettes in packets smaller than 20 was also prohibited in 1997. This followed a landmark court ruling in 1994 that saw a retailer convicted of selling single cigarettes. This

was the first time a ruling of this nature had been handed down and it set a precedent for future cases (CCC 2008).

The 2003 amendment went further in restricting the placement and volume of tobacco displays inside stores and made it mandatory for a "Smoking Kills" sign to be erected near the display. Currently, a bill, which should be passed into law in 2012, is before Parliament to remove all tobacco displays from the view of customers. These displays are termed 'Powerwalls' for their large size and visibility and they often contain many more facings than would be necessary in order to sell cigarettes. They are being used as in-store marketing tools and the repetition of cigarette packets combined with distinctive colours and branding are believed to influence children's attitudes towards smoking (Paynter et al. 2006). Regular exposure to these retail displays may lead young people to believe that smoking is a normal and attractive behaviour. While no such research has been carried out in New Zealand a Californian study reported that stores close to schools and in areas with high youth patronage have more in-store marketing of tobacco products than other areas (Henriksen et al. 2004a).

4.4 New Zealand youth smoking trends: 1999-2008

The above tobacco control strategies have shaped the rates of adolescent smoking in New Zealand. Since 1999, ASH has collected smoking data for year 10 (14-15 year old) students in New Zealand providing some insight into progress that has been made in reducing smoking prevalence. In 2008, the survey included 30,702 respondents aged 14-15 years, which was approximately half of the total Year 10 student population in New Zealand. The survey report states that the adolescent smoking rates are declining overall, but that the rate of decline has slowed in recent years (Paynter 2009).

Youth smoking prevalence has strong gender, ethnic and socio-economic differences, some of which will be described shortly. The statistics discussed

in Table 2 and Figures 1 to 4 below are drawn from the published results of this survey.

Table 2 outlines youth smoking rates in New Zealand for both boys and girls over the ten-year period 1999-2008. Boys have had significantly lower rates of both daily and regular smoking than girls, as well as a greater portion who have never tried smoking at all. Male daily and regular smoking rates decreased more rapidly between 1999 and 2005 than they have in recent years. For girls there are mixed results. The fastest drop in daily smoking was between 2002 and 2005, while regular smoking was steadily declining between 2002 and 2008.

In 2003, the second amendment to the SFE Act was passed into law, with most changes coming into effect in 2004. This may explain the increased drop in smoking prevalence for girls over this period, as many public spaces, including schools, became smoke free. The fact that reductions in smoking prevalence appear to be flattening out is in line with the assertion from Thomson et al. (2010) that smoking interventions are not as effective as they are when implemented in conjunction with fiscal measures. It would be interesting to examine this data for current and future years to determine the effect of recent and planned tax increases on tobacco products.

Table 2: Smoking prevalence among New Zealand adolescents

Smoking Status	Boys %				Girls %			
	1999	2002	2005	2008	1999	2002	2005	2008
Daily	14.1	9.9 -4.2	7.2 -2.7	5.8 -1.4	17.1	14.9 -2.2	10.7 -4.2	7.9 -2.8
Regular*	24.7	17.3 -7.4	12.9 -4.8	9.8 -3.1	32.4	26.7 -5.7	20.4 -6.3	14.1 -6.3
Experimented**	28.0	30.6 +2.6	28.1 -2.5	22.5 -5.6	23.1	26.2 +3.1	24.3 -1.9	21.8 -2.5
Never	33.3	41.2 +7.9	52.5 +11.3	63.0 +9.5	29.9	35.8 +5.9	46.6 +10.8	58.1 +11.5

* Percent who smoke daily plus weekly plus monthly

** Those who have tried smoking but do not currently smoke

Original data from (Paynter 2009)

Trends in ethnic smoking have been reported separately for girls and boys, with each set of results showing strong evidence of differences in smoking prevalence based on race. Maori consistently have had the highest smoking rates for both males and females between 1999 and 2008, with Pacific peoples most often rating second highest. Rates of smoking for all ethnicities have decreased over the survey period but again the rates of decline have varied between groups (Figures 2 and 3).

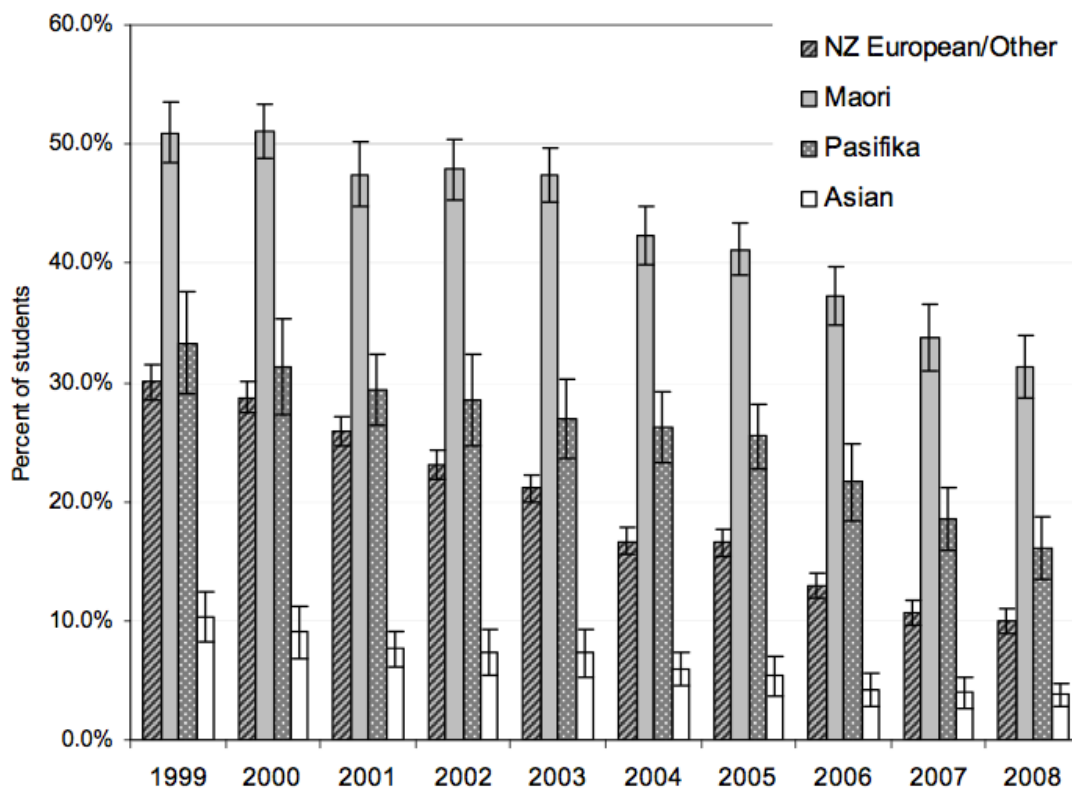


Figure 2: New Zealand adolescent female smoking rates by ethnicity

Reproduced from (Paynter 2009)

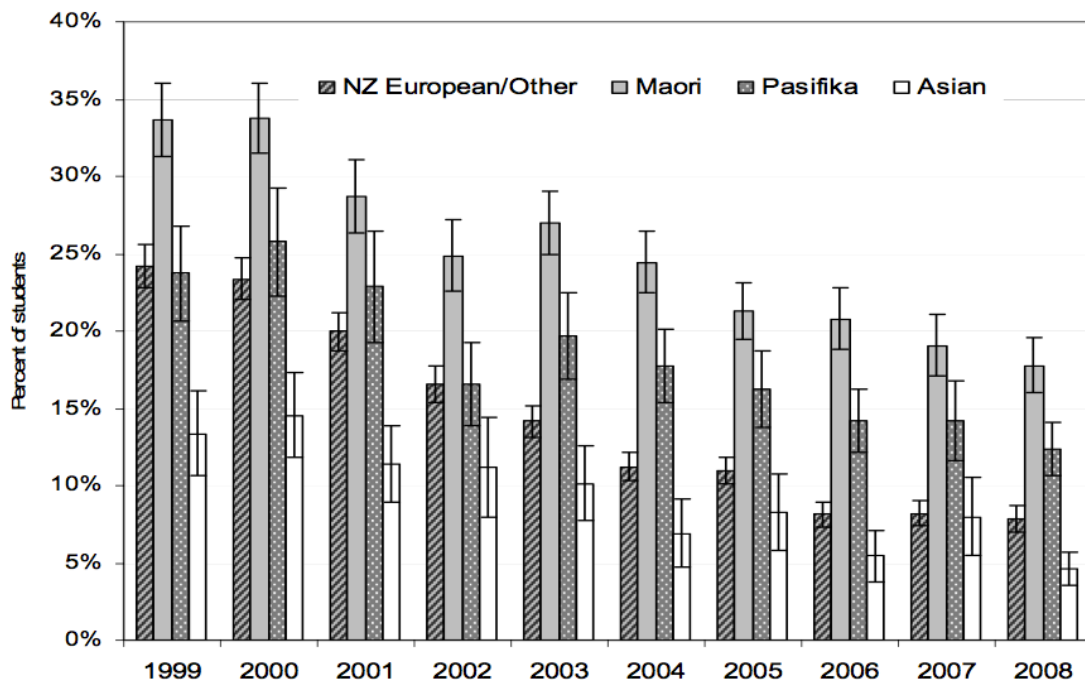


Figure 3: New Zealand adolescent male smoking rates by ethnicity

Reproduced from (Paynter 2009)

Of particular interest are the significantly higher rates of smoking for Maori females compared to other groups. As previously mentioned, Maori females have among the worst smoking rates in the developed world and this trend is well-established at a young age.

School SES is measured by school decile (these are explained in full in Chapter 5) rankings in the Year 10 Snapshot Survey. Due to school zoning it is unlikely that students will live in communities with a significantly different level of deprivation to their school decile rating so school decile rankings are considered accurate proxies for SES. Figures 4 and 5 show that rates of regular smoking are consistently higher among students from low decile schools. Daily smoking for both girls and boys is also higher in low decile schools than for high decile schools (16% - 4% respectively for girls and 11% - 3% respectively for boys).

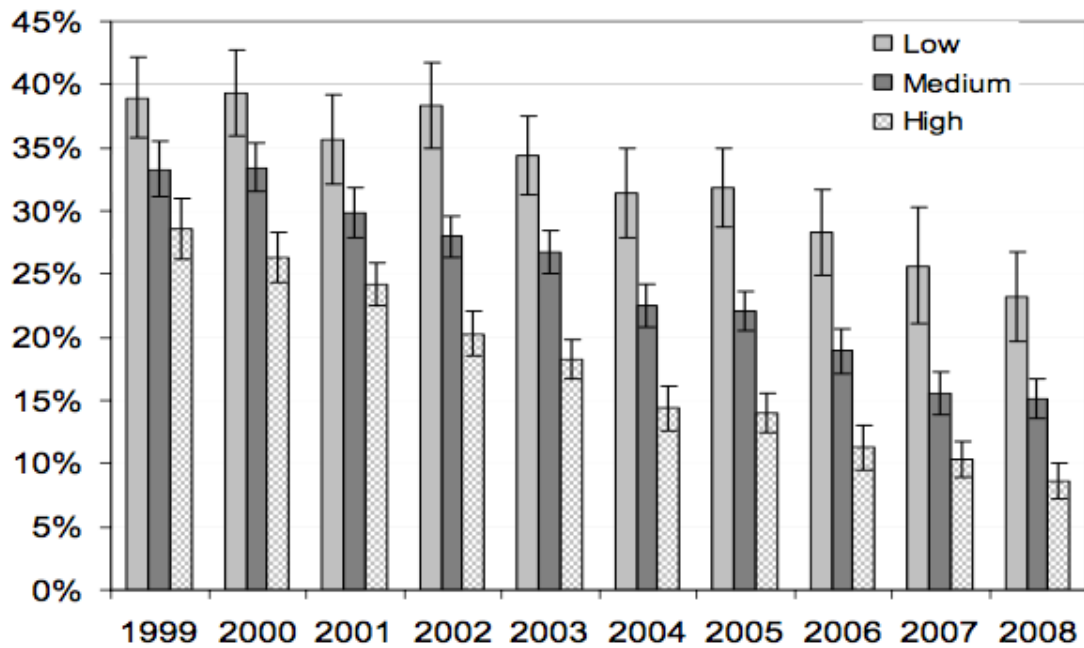


Figure 4: New Zealand adolescent female smoking rates by school SES

Reproduced from (Paynter 2009)

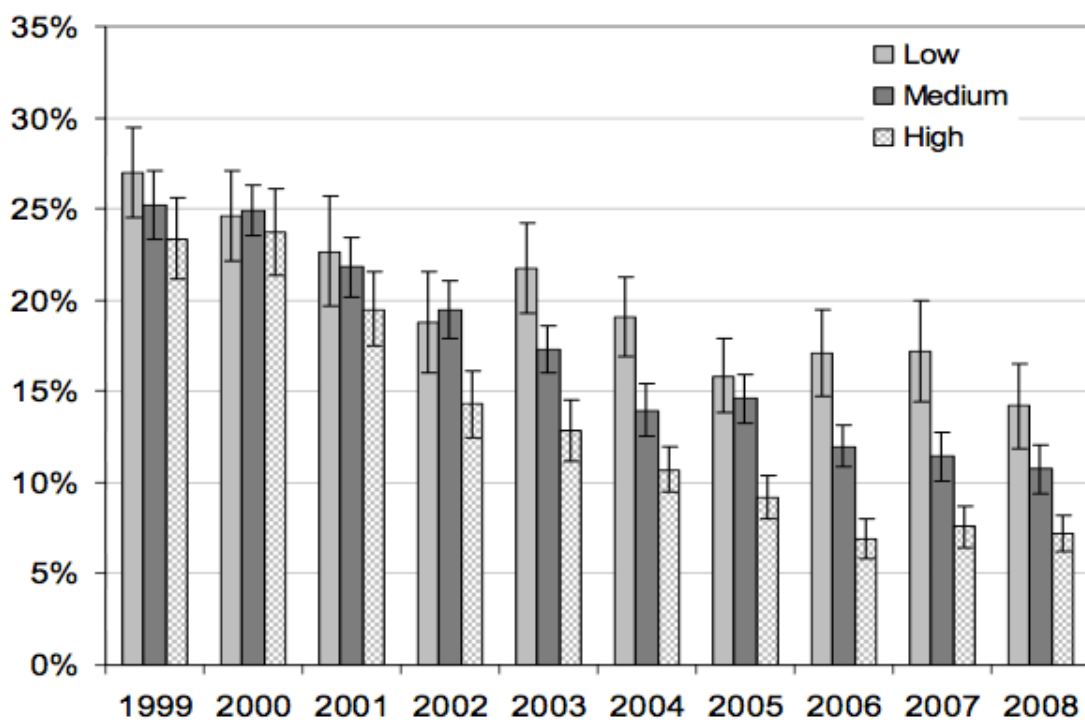


Figure 5: New Zealand adolescent male smoking rates by school SES

Reproduced from (Paynter 2009)

These statistics show that as youth smoking interventions over the last decade have increased adolescent smoking rates have fallen. The effect

however cannot be determined to be causal from this evidence. Rates of decline have slowed in recent years suggesting that new policy approaches are required for further improvements in adolescent smoking behaviour. Regular smoking rates for boys have begun to plateau, but girls still show high rates of smoking particularly among Maori. Many of these youth smoking rates mirror those of adults and are possibly a reflection of smoking in wider society.

4.5 Summary

New Zealand has been very proactive in its implementation of tobacco controls when compared to the majority of Western countries. Since the first legislation restricting sales of tobacco to persons aged under 16 in 1903, a wide range of initiatives have been used to try to reduce smoking prevalence. As links with poor health became clearer, these efforts have increased with the majority of tobacco controls having been put in place from the 1980s until present day. Tobacco controls in New Zealand have included purchasing laws, fiscal regulations, youth access restrictions, mass media campaigns, and banning pro-tobacco industry marketing and promotion in the public arena. These controls were tied together into a single piece of legislation, the Smoke-free Environments Act 1990. This Act, with its two current amendments, is the single most important tool the government has to combat the effects of smoking on the health of New Zealanders. As the Act becomes more restrictive the New Zealand tobacco industry finds its operations becoming more difficult. Many of the measures set out in the Act target youth smoking behaviour and attempt to reduce rates of initiation.

Youth smoking prevalence in New Zealand has largely declined in previous decades but recent evidence suggests that youth smoking rates are leveling off. While still low compared to most OECD countries there remain some problem groups, like Maori girls, who have extremely high rates of smoking even on the world stage. There are also inequalities in youth smoking rates between genders, ethnicities and SES. These differences should be examined with regard to external factors to develop a better understanding of the relationship between compositional and contextual effects on youth smoking behaviours.

5 Methodology

5.1 Introduction

This chapter introduces the reader to the methods used throughout this research to achieve each of the three objectives presented in Chapter 1.

1. Determine the effect of neighbourhood deprivation on adolescent smoking behavior at a local and national level;
2. Examine the effect of high school deprivation on adolescent beliefs and attitudes held towards smoking products; and
3. Understand how access to tobacco products varies according to deprivation in local high school and neighbourhood settings.

This chapter is presented in four sections. The first three sections relate to each of the thesis objectives. These sections identify what data sources have been used and the relevant analysis performed on this information to achieve the stated objective. The fourth section details the four focus group interviews that were conducted at two local high schools for this research. The rationale for conducting these focus groups is given along with a description of the dynamics and details of the interview process, which included gaining ethical approval, parental permission and the creation of a moderator's guide to be followed during each focus group.

5.2 Data sources

Two sources of quantitative information were used for analysis in this research. They were the 2006 New Zealand Census and the HSC 2008 YIS. In addition, qualitative data was also gathered from focus group interviews run at two Christchurch high schools. Details of each data source follow.

5.2.1 Christchurch neighbourhood smoking data

The data for reported smoking status in individual neighbourhoods of Christchurch City was obtained from Statistics New Zealand. Questions regarding smoking have been asked four times in the New Zealand Census, in 1976, 1981, 1996, and 2006. This thesis uses information from the 2006 Census only. The dataset from the census was formatted in three different ways in order to gain the most value from the information. The first table provided smoking status by Census Area Unit (CAU) divided into ethnic groupings and age groups (15-19, 20-24 and 25-29). The second table displayed smoking status by CAU broken down by age group and gender, and the third table combined the previous two tables with CAU, ethnicity and smoking status organised by age group and gender.

The youngest age group of 15-19 includes individuals who can (18 years and over) and who cannot legally (less than 18 years) buy tobacco products due to age restrictions. The base of this age range has been used as this is the youngest age for which smoking rates are available from the 2006 Census. While the age group could have been made 15-17 to include only underage teenage smokers, it was decided to expand the range after talking to staff at Statistics NZ. The primary reason for doing so was to increase the number of valid cases in the dataset for each CAU as even with a wider age range there is still some suppression of data. The age range of 15-19 is still a good representation of young New Zealand adolescents and provides good comparisons with the 20-24 and 25-29 year olds who have moved into young adulthood.

Because of the sensitive nature of the dataset and the potential to identify individuals owing to small numbers within each CAU, the final data were rounded to the nearest multiple of three. In cases where the value was less than three, the data was suppressed and represented as ‘.C’, the exception being zero, which was recorded as such. Because of this suppression of some information not all of the tables supplied contained enough valid responses for all CAUs and ethnic groups. The second table provided the only full dataset that could be used for reliable analysis across age groups and gender for each CAU in Christchurch. Although the first table had good data available for European respondents, there was a lot of suppressed data for other ethnicities. The second table was not used in the analysis because it lacked good information across all groups. The third table was also considered unsuitable for analysis in this research, as the suppression of information contained in the second table also existed in the third. In particular, no data on ex-smokers was available for the majority of CAUs, also by including so many sorting variables (CAU, gender, age, ethnicity and smoking status) many other records were not available.

There were two questions on smoking in the 2006 Census. The first asked for the current smoking status of individuals aged over 15 and is the basis of the data used in this research. The three options available to respondents were ‘regular smoker’, ‘ex-smoker’, and ‘never smoked regularly’. Responses to the latter cannot provide a distinction between individuals who have never smoked a cigarette in their life and people who have smoked infrequently and at levels they do not consider regular. Responses to this question were used as dependent variables in the analysis while the independent variables were neighbourhood deprivation and ethnicity, both compositional independent variables.

Deprivation was measured using the 2006 New Zealand Deprivation Index (NZDep2006). The index is calculated following each Census using the following nine variables (White et al. 2008):

- income – aged 18-64 years receiving a means-tested benefit
- income – living in households with equivalised income below an income threshold
- owned home – not living in own home
- support – aged under 65 years living in a single-parent family
- employment – aged 18-64 years and unemployed
- qualifications – aged 18-64 years and without any qualifications
- living space – living in households below an equivalised bedroom communication – with no access to a telephone
- transport – with no access to a car.

Based on this information a Deprivation Index of 1 to 10 was created by Salmond et al. (2007) whereby a decile ranking of 10 represents a small area in the most deprived 10% of small areas in New Zealand while Decile 1 is the 10% of least deprived small areas. These ordinal scale rankings are made from a deprivation score that each small area is given after each weighted factor has been calculated. The NZDep2006 is scaled to have a mean score of 1,000 with less deprived areas being under this mark and more deprived areas above it (Salmond et al. 2007). All analysis of the census dataset in this thesis uses the principal component score attributed to each CAU. This is because some areas within each decile ranking are still slightly more/less deprived than others with the same value. Using the deprivation score treats each area individually and allows for small variations in the relationship between youth smoking rates and neighbourhood deprivation to be examined.

5.2.2 New Zealand high-school smoking data

In 2008, the HSC carried out the YIS as part of the New Zealand Youth Tobacco Monitor (NZYTM). The survey covered 3,036 Year 10 (14-15 year old) students from 149 high schools across New Zealand. The author applied for a copy of the data, which was received in September 2010 after satisfying controls around privacy and ensuring that this research was not duplicating other youth smoking research in New Zealand. The final dataset contained

responses for individual cases. The only modification that was required to ready it for analysis was the creation of an extra school decile variable. This new variable combined 10 deciles into five quintiles where Deciles 1 and 2 became Quintile one, Deciles 3 and 4 became Quintile two and so on. The YIS is run bi-annually; however, data from the 2010 survey was not available for use during this research. In addition to reporting on participants' smoking behavior, the YIS seeks to examine further the processes and influences that increase the risk of adolescent smoking initiation. It also identifies the attitudes and beliefs held by young people towards smoking and tobacco products.

In New Zealand, school deciles are calculated every five years based on the previous census. The specific rankings are indicative of the proportion of students attending a school from lower SE communities. A decile ranking of one represents the 10% of schools nationally with the highest proportion of students living in low SE areas while Decile 10 schools are the 10% of schools that have the lowest proportion of these students on their roll.

The decile rankings are based on five factors. They are:

- household income – the percent of households with equivalent income in the lowest 20% nationally
- occupation – the percent of employed parents in occupations that are at skill levels 4 or 5 irrespective of sector/ type/ profession involved
- household crowding – the percent of households with an equivalised crowding index greater than one
- educational qualifications – the percent of parents with no tertiary or school qualifications
- income support – the percent of parents who directly received a Domestic Purposes Benefit, Unemployment Benefit or Sickness and Invalids Benefit in the previous year (MoH 2009).

Data from this survey were not made available on a school-by-school basis. This is due to the ability to identify individual respondents and access personal information. Also because of the sensitivity of the topic, schools are

unwilling to have data surrounding their culture and student behaviour released in this fashion. As a result, this information was provided based upon school decile rankings and was generalised to Christchurch high schools. These data are not fully representative of young people in New Zealand and cannot be used in specific locations or areas. Also children who are most at risk, and therefore among the individuals the survey seeks to help, are more likely to be away from school when the survey takes place due to health reasons or they may have stopped attending school altogether (HSC 2009). Despite this, using schools to administer surveys is the most feasible option to reach a wide audience in a cost-effective manner.

The purpose of using the HSC data was to both support and build upon the trends shown at a neighbourhood level from the 2006 Census and to identify more detail of youth smoking initiation and continuation. The in-depth questioning regarding individual attitudes and beliefs was looked at based upon school deciles to see how, even in the face of mass anti-smoking campaigns, the perceptions and education surrounding tobacco use differs between SE groups. Although differences in smoking rates between the most and least deprived individuals is well documented and rates of adolescent smoking in New Zealand have declined significantly over the past decade, there remain some problem groups. The YIS is a good opportunity to identify what false perceptions of smoking young people continue to have that may increase an individual's risk of smoking initiation.

5.2.3 Focus groups

Focus group interviews were used to support the statistical data provided on attitudes and beliefs in the 2008 HSC YIS as previously mentioned. In contrast to the standardisation found in questionnaires, focus groups allow participants to describe their life experiences in their own words. The focus is on “considering the meanings people attribute to their lives and the processes which operate in particular social contexts” (Flowerdew & Martin 1997). Interviews can be conducted on an individual basis or in a group setting, each approach has advantages and disadvantages depending on the research topic and aims.

When conducting one-on-one interviews the interaction takes place primarily between the participant and interviewer. This interaction may influence the points of view offered by the participant and the interviewer must work to ensure that they do not guide or facilitate a line of answering with their own input. Focus groups, on the other hand, place emphasis on interaction between participants, with the acting as a moderator to guide the group towards specific topics and points of interest, and to observe and record individual points of view that emerge during these discussions (Morgan 1988).

Focus groups were chosen for this research for a number of reasons. First, the group took place on school grounds during school hours making it easier to talk to students than arranging individual interviews. Second, because of the age of the students (ranging from 13 to 17 years), it was felt that they would be more comfortable talking to an unknown interviewer in a group environment. Finally, because the purpose of these interviews was to gain insight into not only individual opinions and behaviours but also those of their peers, it was decided that the group atmosphere would encourage interaction between participants. In addition, it would provide a more informative observation of the general attitudes and beliefs towards smoking and tobacco products among high school students in Christchurch.

It is generally accepted that researchers have a higher level of control over individual interviews and can more effectively gather the data required and meet research goals. One-on-one interviewing also allows for new lines of information that arise to be pursued while other unwanted or non-applicable lines of questioning can easily be skipped over. In contrast, it is much easier for group interviews to stray off their topic and cover material that is not important to the research aims. As such, it is necessary for the researcher to develop a moderating guide to ensure that specific questions and topics of interest are covered (see Appendix 1).

Focus groups have been used previously in youth smoking studies; this type of data collection is primarily used to identify how attitudes and behaviours vary between target groups. Beech and Scarinci (2003) focused on sociocultural influences in the smoking attitudes and behaviours of African-American youths. Flyers and professional liaison were used to recruit participants to take part in these interviews and participants were given refreshments and a small gift as a thank you for their time. Similarly Scales et al. (2008) used focus groups to investigate how adolescents use smoking as part of stress coping techniques. Participants were assigned to specific focus group interviews based on their ethnicity and gender and participants were financially rewarded for their time.

A more recent focus group study provided much of the basis for the methods used in this thesis. Rothwell & Lamarque (2010) compared the smoking attitudes and behaviours of adolescents in urban and rural settings. This study used semi-structured and open-ended questions to encourage participants to share their experiences and opinions. Recruitment of participants was through teen smoking cessation classes as well as schools. School recruitment was made by staff who had experience dealing with teen smokers. Participation was voluntary and those who did participate were provided with food for their time.

This research used focus groups to interview adolescents at two Christchurch High Schools, one a Decile 2 school, and the other Decile 8. These two

schools were chosen primarily for their SES as measured by these decile rankings. Having decided to choose a school of low SES and one of high SES, the neighbourhood environment surrounding the school was taken into consideration. Because the school decile ranking is assigned based on the SES of the neighbourhoods where students actually live and not where the school is located it is possible for a high SES school to be located in a low SES neighbourhood. The two schools used in this research had SES rankings that corresponded with the surrounding neighbourhood, that is relatively high SES CAUs surround the relatively high SES school and vice versa.

Students were recruited through school staff who provided them with information about what the research entailed and the role they would play. Participants were involved in discussion regarding their personal smoking behaviour and the attitudes and beliefs that they and their peers hold towards tobacco products and their use. This information was to build on the quantitative data provided by the 2008 HSC YIS survey by providing some more in-depth insights and opinions in a local context. Because of the age of the participants, parental consent was required. This was obtained by the corresponding teachers from each high school prior to the commencement of the focus groups. University ethical approval was also sought and was given on 28 June 2010.

A major issue for focus groups is that of confidentiality, both on the part of the moderator and the group participants. Not only must the researcher ensure that data is kept anonymous but participants must ensure that they keep private their discussions and what they hear during the discussion (Litoselliti 2003). Participants were assured of their privacy when participating in these groups and as such no distinguishing features of participants or the schools they attend are included in this final document (see Appendix 2)

The focus groups were run in four sessions, two at each school, during the lunch hour where food and drink was provided as an incentive to participate. Groups at the Decile 2 school were run on 30 August and 2 September 2010 and groups at the Decile 8 school were conducted on 31 August and 3

September 2010. Participants had a range of smoking experience including 'never smokers', current smokers and ex-smokers. This mix of backgrounds was intended to encourage interaction and discussion on topics from differing viewpoints. There were five participants at the first group in the Decile 8 school, then seven at the second group at the Decile 2 school, the remaining two groups both had six participants. The length of each group varied depending on the mix of smoking backgrounds, groups with more 'never smokers' took less time to discuss questions on smoking history and motivations to smoke, as well as the nature of individual participants, some were much more vocal than others and happy to speak at length about their personal experiences.

Transcripts of audio recordings from each focus group were made (see Appendix 3). These were the basis for analysis of the conversations and provided data for comparisons to be made with the information contained in the 2008 HSC YIS. Presenting the results of focus group is very different from presenting quantitative research, and graphs and charts cannot be used because of the qualitative nature of the information gathered (Edmunds 1999). The information gathered was not suitable for statistical analysis selected but selected comments have been included in Chapters 6 and 7 to provide greater insights into the relationships shown by the relevant graphs, tables and charts. Comments that were supported by multiple participants were given increased weight because some groups only contained two or three individuals with current or previous smoking experience. One-off comments also feature prominently. Interactions between individuals in each group were taken into account to determine if the wider group agreed with statements being made. Conflict between participants was not evident at any stage during the focus groups.

5.3 Quantitative data analysis

5.3.1 Objective 1: determine the effect of deprivation on adolescent smoking behaviour at a local and national level

Analysis for objective one used data from both the 2006 Census and the 2008 YIS. Census data was used to examine the effect of neighbourhood SES on adolescent and adult smoking prevalence. The HSC survey provided data for analysis of the relationship between high schools SES and selected youth smoking behaviours. Details follow of the specific analyses performed as part of objective one.

Neighbourhood SES and youth smoking behaviour

To determine age specific smoking rates the reported smoking behaviour for males and females aged 15-19, 20-24 and 25-29 years old were first calculated as a proportion of the relevant age group population in each CAU in Christchurch. ArcMap GIS software was used to map the proportion of male and female smoking rates for each CAU across Christchurch city. Each CAU was ranked as a quintile of the average reported youth smoking rates from the census. This information provides a visual examination of the distribution of smoking rates across Christchurch and is the basis of the next statistical analysis performed on this data.

Linear regression was used to determine the strength and nature of the relationship between neighbourhood SES and youth smoking rates. The independent variable used in this analysis was the NZDep 2006 decile for each Christchurch CAU. Dependent variables were reported as neighbourhood rates for 'regular smoker', 'never smoked regularly', and 'ex-smoker'. Each of these has been broken down by gender (male/female) and age group (15-19, 20-24, and 25-29). The variable 'ex-smoker' has been analysed as a proportion of 'ever smokers' using the equation $(\text{ex-smoker} / (\text{ex-smoker} + \text{regular smoker}))$ for each CAU in Christchurch City. The group

'ever smokers' is comprised of individuals who stated that they are currently a regular smoker or are an ex-smoker. Regression analysis provided the correlation between each variable (R) and the slope coefficient of the regression equation (B). Significant R-values were those that had a p-value less than 0.05.

High school SES and youth smoking behaviour

Because the 2008 YIS was made up of categorical data, Chi-square analysis was used to examine differences in reported smoking behaviour between school quintiles of deprivation. The Pearson X^2 value was used to determine the strength of any relationships for a given number of degrees of freedom that were present while significant relationships were those that fell within a 95% confidence interval ($p=0.05$). This analysis calculated the proportion of students from each decile who would be expected to provide a particular answer to one of the questions from the survey, e.g. the expected proportion of students who have ever smoked. These expected proportions could then be compared to observed response rates to identify what quintiles had higher or lower than expected response rates. The comparisons of between-group and within-group responses were most important for this research. The outputs in Chapters 5 and 6 show the proportion of students from within each decile who gave a specific response to particular questions as well as the distribution of responses across each quintile for each variable.

Table 3 shows the four questions examined for this objective using chi-square analysis. Categories relate to each option provided for the students when completing the survey, along with the coding provided by the HSC data dictionary for this information.

Table 3: YIS survey questions used for Objective 1

Question	Categories
27. <i>'Have you ever smoked a cigarette even just a few puffs?'</i>	1 = Yes 2 = No 99 = No Response
28. <i>'How old were you when you first tried a cigarette?'</i>	91 = Never smoked 02 = 7yrs or younger 03 = 8 yrs 04 = 9 yrs 05 = 10 yrs 06 = 11 yrs 07 = 12 yrs 08 = 13 yrs 09 = 14 yrs 10 = 15 yrs 11 = 16 yrs or older 99 = No response
31. <i>'During the past 30 days (one month), on how many days did you smoke cigarettes?'</i>	1 = 0 days 2 = 1 or 2 days 3 = 3 to 5 days 4 = 6 to 9 days 5 = 10 to 19 days 6 = 20 to 29 days 7 = All 30 days 99 = No response
32. <i>'During the past 30 days (one month), on the days you smoked, how many cigarettes did you usually smoke?'</i>	91 = None 2 = Less than 1 cig per day 3 = 1 cig per day 4 = 2-5 cigs per day 5 = 6-10 cigs per day 6 = 11-20 cigs per day 7 = More than 20 cigs per day 99 = No response

No GIS analysis was performed on this section of the data, as the data could not be attributed to specific high schools within Christchurch city. Attributing national decile information to individual schools would not be relevant to this research and would be inaccurate when trying to examine links between neighbourhood and school smoking rates.

The progression from smoking experimentation to regular smoking is a complex and not fully understood process among young people. Analysis of these four questions set out to examine the effect of high school deprivation in smoking initiation and the development of regular smoking behaviour.

5.3.2 Objective 2: examine the effect of high school deprivation on adolescent beliefs and attitudes held towards tobacco products

Differences in smoking rates among SE groups are well documented. Higher smoking rates are evident for the most disadvantaged individuals despite mass media campaigns that aim to create a negative image of smoking along with education about the long-term effects of tobacco use. Responses to four questions were examined (Table 4) to establish if all adolescents were picking up these messages in the same way. These questions were important to this research because they focus on the perceptions students have towards smoking rather than their personal smoking behaviour itself. The same chi-square analysis outlined in section 5.3.1 was performed on this data.

The first two questions (45 and 46) are concerned with the health implications of smoking for individuals. Smoking related disease and addiction are two widely publicised negative effects of smoking tobacco and this thesis is interested in how uptake of such messages varies among students attending more and less affluent schools. The second two questions (56 and 58) relate to students' perceived prevalence of tobacco use among their peers and adults. Responses to these questions provide an insight into the daily interactions individual students have with smokers. It is likely that students who believe smoking rates are far higher than they actually are, encounter and pay attention to smokers in their local communities more frequently than students who believe smoking rates are low. Unfortunately, the breakdown of this question provided students with categories that spanned a 25% portion of the population. This means that students who believe smoking rates are very low, for example 10%, could only provide the answer 'About a quarter' as the lowest option above zero.

Table 4: YIS questions used for Objective 2 – attitudes and beliefs

Question	Categories
45. <i>'Do you think cigarette smoking is harmful to your health?'</i>	1 = Definitely not 2 = Probably not 3 = Probably yes 4 = Definitely yes 99 = No response
46. <i>'Once someone has started smoking, do you think it would be difficult to quit?'</i>	1 = Definitely not 2 = Probably not 3 = Probably yes 4 = Definitely yes 99 = No response
56. <i>'Out of 100 people your own age, how many do you think smoke cigarettes at least once a day?'</i>	1 = None 2 = About a quarter 3 = About half 4 = About three-quarters 5 = Everyone 99 = No response
58. <i>'Out of 100 adults in New Zealand, how many do you think smoke cigarettes at least once a day?'</i>	1 = None 2 = About a quarter 3 = About half 4 = About three-quarters 5 = Everyone 99 = No response

5.3.3 Objective 3: understand how access to tobacco products varies according to deprivation in local high school and neighbourhood settings

Commercial tobacco outlets remain a commonly used source of cigarettes for young people, despite the restriction on sale to people younger than 18 in New Zealand. This research separated tobacco outlets into convenience stores and supermarkets, the former including all dairies and service stations that sell consumer goods. The research assumes that all of these businesses sell tobacco products. Bars and restaurants were not included as the barriers to an underage person entering one of these premises and purchasing tobacco products are much higher. Nationally, the response rates for Year 10 students buying tobacco away from a dairy, service station, or supermarket were also very low.

Neighbourhood access to tobacco outlets

This section of analysis sought to examine the presence of inequalities in access to tobacco outlets based on neighbourhood SES. First, a population-

weighted centroid was created for each CAU in Christchurch city so that a buffer zone could be established around each point location. Pearce et al. (2008a) used this method in previous New Zealand research that examined neighbourhood access to retail food and alcohol outlets. In this study, buffer zones of 800 metres and 3,000 metres were used from each population-weighted centroid. This approach was again used by Pearce et al. (Pearce et al. 2008b) in a study focused on neighbourhood access to gambling opportunities. In this case, the buffer zone used was 5,000 metres as this is believed to be the maximum extent to which neighbourhood resources can influence individual health outcomes.

This research uses neighbourhood buffer zones of 800 metres and 3,000 metres as these represent respectively an approximate 10 minute walking time and the realistic distance an individual will drive to reach local stores (Bryn Austin et al. 2005; Donkin et al. 2000). Although this research deals with adolescent smoking behavior, driving distance is still relevant as in New Zealand young people have the opportunity to drive a vehicle on their own from age 16½. The census data supplied for analysis in this research is relevant to individuals aged 15 and above so there is potential for these people to be drivers.

Bivariate correlation analysis was used to determine the strength and nature of the relationship between neighbourhood SES and access to tobacco outlets. Significant R-values were those with a *p*-value of 0.05 or less.

Differences in access to tobacco outlets between school neighbourhoods and non-school neighbourhoods were also examined. School neighbourhoods were CAUs within 800 metres of a high school in Christchurch. For this analysis, tobacco outlets were counted within each CAU and the results were compared using an independent samples test for variance. Significant test statistics (*t*) were those with a *p*-value of 0.05 or less.

High school access to tobacco outlets

A similar approach was taken when examining the relationship between high school smoking rates and the presence of tobacco outlets in the school environment. In this case, buffer zones of 400 metres and 800 metres were created around the geocoded point location of each school in Christchurch city. These distances are intended to represent approximately five and 10 minute walking times respectively. Because the buffer zones are created around a point location, often the main gate of the school, there is a bias towards outlets located closer to this point than those near the school boundary, which may be just as accessible to students leaving from alternate exits.

Because data from the HSC was not available at a school level, this analysis could not specifically examine the effect of high school access to tobacco products on student smoking rates. Instead, a Pearson correlation coefficient was calculated to identify any significant relationships between high school access to tobacco outlets and high school deprivation. This analysis investigates if the most at-risk students face inequalities in access and exposure to tobacco products and subsequently in-store marketing of tobacco products in their school neighbourhoods.

High school deprivation was correlated with tobacco outlet density in the local area, represented by the buffer zones. This was a Pearson correlation with all schools and the number of individual outlets around them grouped into decile rankings for analysis. Significant R-values were those with a p -value of 0.05 or less. During analysis, some schools showed a higher proximity to a greater number of tobacco outlets than other schools in Christchurch city. On further investigation it was found that these schools were located in the central business district (CBD) and the analysis was then performed excluding four schools — Catholic Cathedral College, Hagley Community College, Unlimited Paenga Tawhiti and Christ's College.

Neighbourhood access to tobacco outlets and youth smoking behaviour

Building on the relationships examined between neighbourhood SES and tobacco outlet access, this section of analysis aimed to find out if there was a relationship between increased neighbourhood access to tobacco and youth smoking prevalence. Using the counts of stores located within 800 metres and 3,000 metres of the population-weighted centroid of each CAU, multiple correlations were performed. First, simple correlation between reported neighbourhood rates of regular, never and ex-smokers, and access to tobacco outlets was carried out. Following this, partial correlations were performed on the same two variables while controlling for neighbourhood SES. This control variable was the NZDep 2006 raw score for each CAU. Significant R-values are those with a p -value of 0.05 or less.

Youth tobacco purchasing behaviour and attitudes

Despite age restrictions on the sale of tobacco products to young people in New Zealand the retail environment is still a major source of cigarettes for underage youths. The questions presented in Table 5 relate to the commercial sale of tobacco products. The first two questions (33 and 34) examine what commercial sources of tobacco young people purchase from and how frequently they do so. The final two questions (72.1 and 75.4) provide insight into how New Zealand adolescents view the retail tobacco environment and their opinion on the effect such a market has on youth smoking initiation. This research aims to identify if purchasing behaviour and attitudes towards commercial tobacco sources vary by school SES.

Table 5: YIS questions used for Objective 2 - youth purchasing behaviour & attitudes

Question	Categories
33. <i>'During the past 30 days (one month), from which of these places did you get your own cigarettes?'</i>	33.2 – Shop 33.3 – Bought from other person 33.4 – Friends 33.5 – Given by parents/caregiver 33.6 – Taken from parents/caregiver 33.7 – Stole 33.8 – Another adult in family/household 33.9 – Someone else bought 33.10 – Other 0 = No 1 = Yes 91 = Didn't get 99 = No response
34. <i>'Which places did you buy cigarettes from in the past 30 days (one month)?'</i>	34.1 – Dairy 34.2 – Liquor Store/Hotel 34.3 – Service Station 34.4 – Supermarket 34.5 – Takeaway shop 34.6 – Vending Machine 34.7 – Other shop 1 = Never 2 = Once 3 = 2-3 times 4 = 4 times or more 99 = No response
72.1. <i>'A ban on cigarette displays in shops would make children less likely to smoke (agree/disagree).'</i>	1 = Strongly agree 2 = Agree 3 = Neither 4 = Disagree 5 = Strongly agree 99 = No response
75.4. <i>'Tobacco companies should not be allowed to sell their products in the dairy at the checkout (agree/disagree).'</i>	1 = Agree 2 = Disagree 94 = Don't know 99 = No response

5.6 Summary

Chapter 5 has introduced the reader to the two quantitative datasets used for analysis in this research. They are the 2006 New Zealand Census and the HSC 2008 Year 10 In-depth Survey. The nature of each dataset was explained and the analysis that was carried out on each dataset was discussed. Focus groups with local high school students provided a local context to this research and were a valuable source of qualitative information. The process for setting up and running the focus groups was explained as well as how the results have been used to support findings from the quantitative analysis. The three objectives of this thesis were outlined along with how quantitative data sources have been used to meet these goals.

6 Youth smoking rates and deprivation

6.1 Introduction

This chapter aims to analyse SE differences in smoking behaviour, attitudes and beliefs among adolescents in Christchurch City and New Zealand. Two of the objectives of this research are examined. They are:

- To determine the effect of deprivation on adolescent smoking behaviour at a local and national level.
- To examine the effect of high school deprivation on adolescent beliefs and attitudes held towards tobacco products.

To achieve these objectives a variety of data were used, including quantitative data from the 2006 New Zealand Census and the 2008 HSC YIS. Supporting this information was qualitative data gathered from four focus groups at two high schools in Christchurch City during August and September 2010. The census data has been analysed as a proportion of the total population within each CAU within Christchurch City. The data for schools are part of a New Zealand wide survey and generalisations to Christchurch high schools were based upon school decile rankings.

This chapter is structured as follows. First, the relationship between youth smoking behaviour and SES are examined for CAUs and schools in Christchurch. Census data are used to examine the effect of neighbourhood deprivation on reported current smoking status for adolescents, as well as older age groups, to provide a point of reference. The examination of the effect of high school SES on adolescent smoking looks at a wider range of behaviours from experimentation to patterns of consumption. Second, the attitudes and beliefs held by students towards smoking are examined. This section looks at issues of health, cessation and peer smoking rates and how high school SES may shape individual perceptions of these.

6.2 Deprivation and youth smoking behaviour in Christchurch City

Less deprived neighbourhoods have a higher proportion of adolescents who report that they have never been a regular smoker when compared with more deprived suburbs. In Christchurch, this varies from over 70% of the population (males 74% and females 75%) in Decile 1 to approximately 50% in the most deprived group, Decile 10 (males 56% and females 51%). Following this, it would be expected that not only does SES have an impact on an individual having never smoked or having done so infrequently, but will influence the likelihood that a person will become an addicted, regular smoker. Figure 6 shows the effect that living in more deprived neighbourhoods has on youth smoking behaviour. A visible increase in smoking prevalence can be seen in low SES areas (NZDep2006 > 7) while high SES areas (NZDep2006 < 3) have lower reported rates of regular smoking.

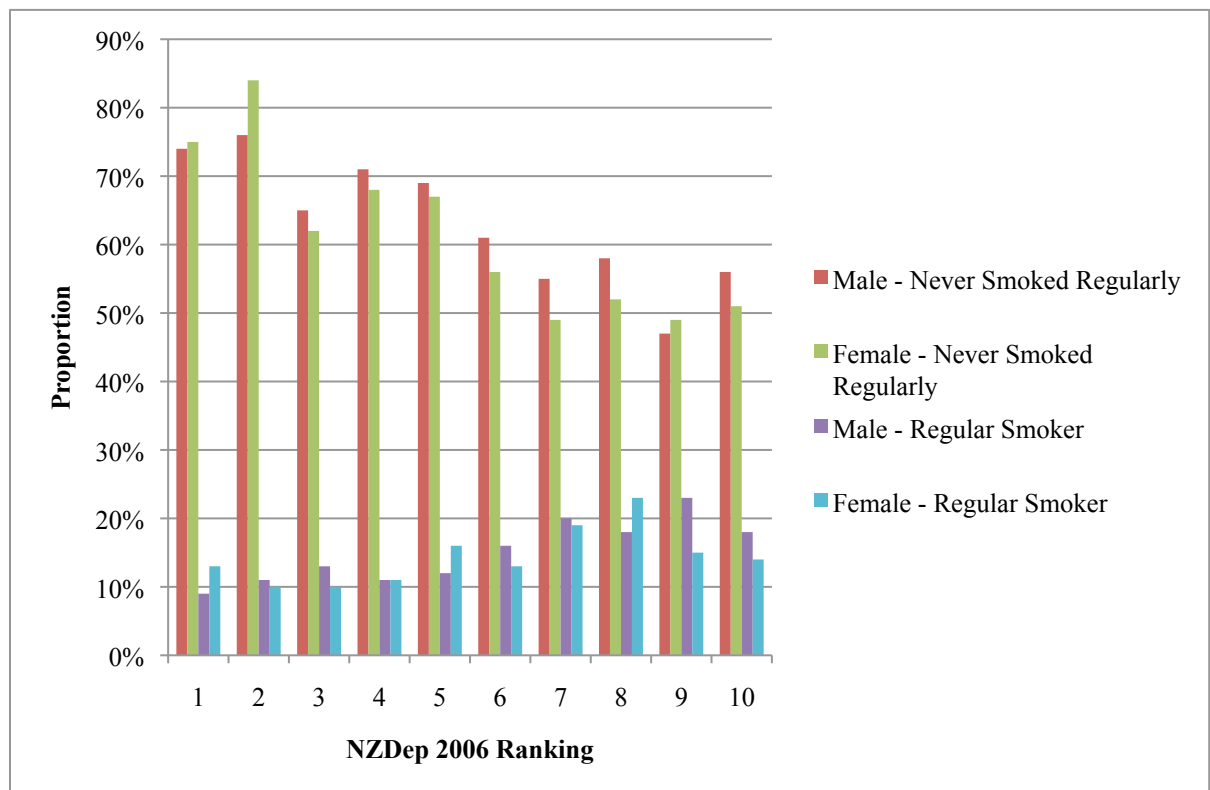


Figure 6: Percentage 15-19 year olds who are regular smokers and who have never smoked regularly

6.2.1 Christchurch CAU data

These differences in smoking rates between neighbourhoods of varying SES are supported by the statistical analysis shown in Table 6. Regular smoking was positively associated with deprivation while there was a negative relationship between deprivation and never having been a regular smoker for both male and female adolescents and young adults. This suggests that as deprivation increases so too do the chances of an individual engaging in habitual smoking behaviour. As discussed in Chapter 5, ex-smokers have been measured as a proportion of 'ever smokers' (ex-smokers / (ex-smokers + regular Smokers)). No association between smoking cessation and neighbourhood deprivation was found for either male or female adolescents, however there was evidence of a significant relationship between smoking cessation and deprivation for both older female age groups.

Table 6: Correlation and regression coefficients between reported male and female smoking behaviour and neighbourhood SES

	Males			Females		
	15-19	20-24	25-29	15-19	20-24	25-29
'Regular Smoker'	R 0.520** B 1.313	R 0.308** B 0.636	R 0.395** B 0.832	R 0.574** B 1.493	R 0.391** B 0.955	R 0.435** B 0.929
'Ex-Smoker'	R 0.011 B -0.011	R -0.116 B -0.136	R -0.118 B -0.168	R 0.140 B 0.165	R -0.064 B -0.074	R -0.083 B -0.139
'Never Smoked Regularly'	R -0.477** B -2.605	R -0.230* B -1.001	R -0.297** B -1.328	R -0.555** B -3.316	R -0.315** B -1.652	R -0.341** B -1.580

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

The relationship between regular smokers and those who have never smoked regularly is much stronger for both males and females aged 15-19 than the other groups examined in Table 6. This analysis suggests neighbourhood deprivation has a greater influence on individuals during adolescence than when they reach young adulthood. Of further interest is evidence of this relationship being stronger for the 25-29 year old age group than the 20-24 age group. This relationship is not as strong as the youngest smokers but was consistent for both males and females who are regular, ex-smokers and never

smokers. This trend suggests that the effect of neighbourhood deprivation on individual smoking behaviour may grow as individuals move into their adult lives.

Figures 7 and 8 show the distribution of Christchurch City adolescents who regularly smoke, based on the proportion of the total 15-19 year old population in each neighbourhood as derived from the 2006 New Zealand Census data. Each of these maps show how closely tied smoking rates are to SES, with the highest concentrations of adolescent smoking attributed to inner city suburbs and those previously identified as experiencing higher levels of deprivation.

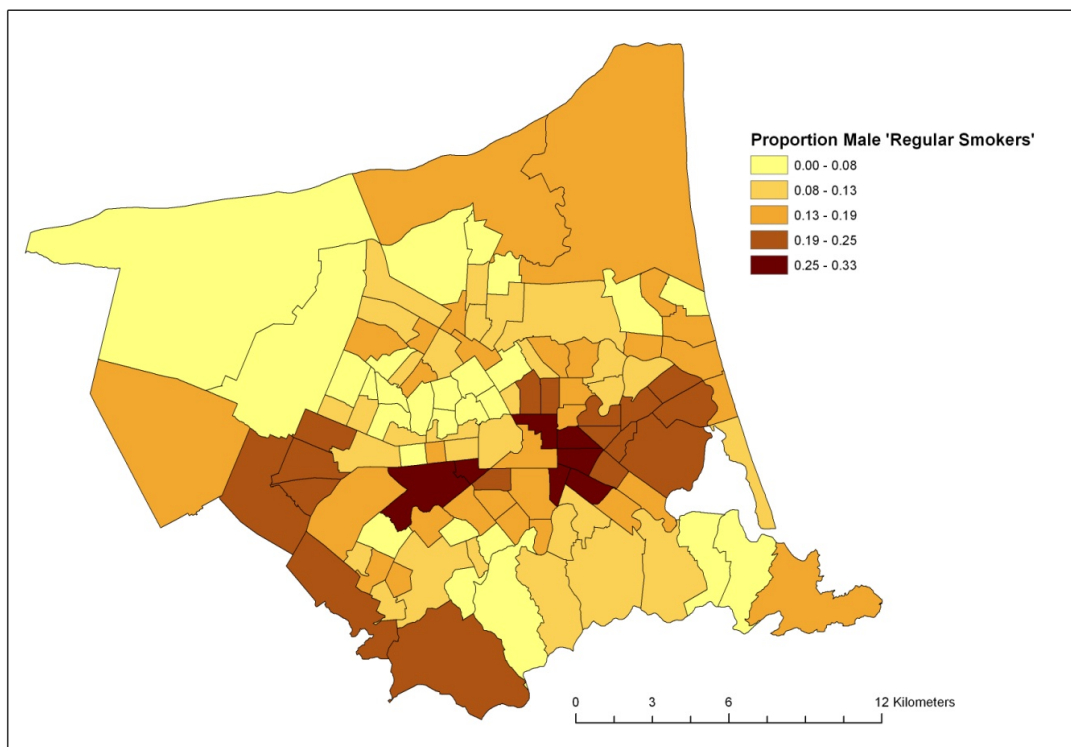


Figure 7: Christchurch neighbourhood rates of regular smoking among adolescent males

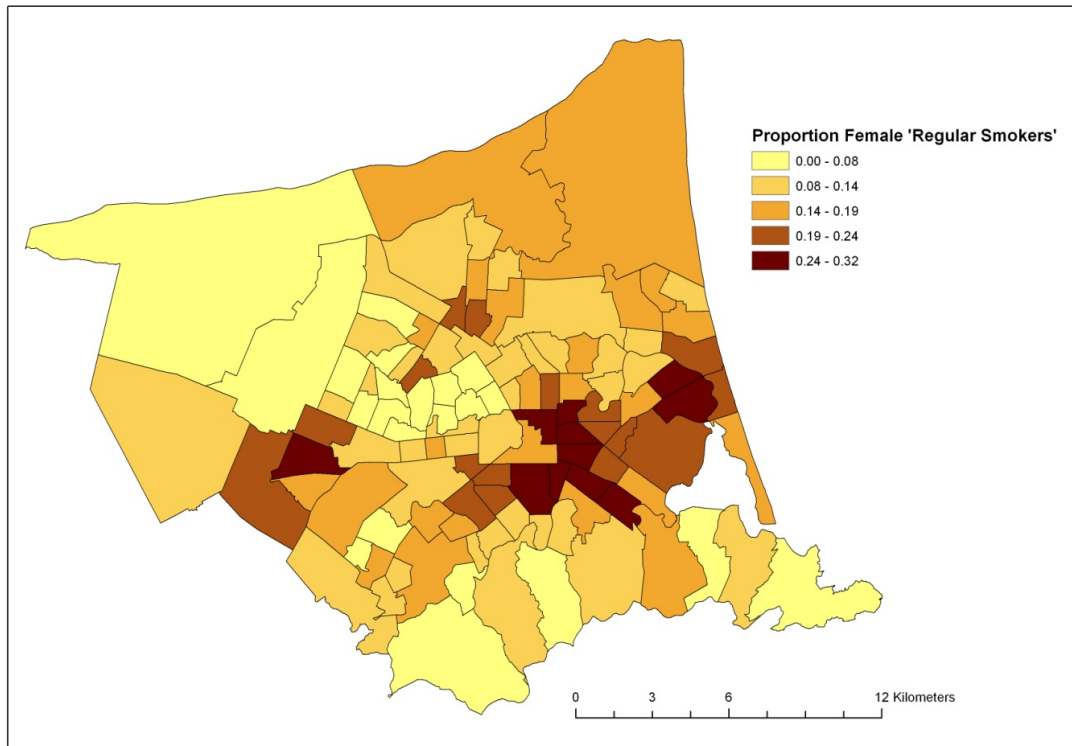


Figure 8: Christchurch neighbourhood rates of regular smoking among adolescent females

This spatial distribution of youth smoking rates within the Christchurch Urban environment was analysed using linear regression as described in Chapter 5. As seen in Figures 9 and 10, both male and female regular smoking rates are strongly linked to SES when linked with the NZDep2006 score (males $p=0.000$ and females $p=0.000$). These results are in line with both national and international smoking research and provide a micro-scale view of neighbourhoods in Christchurch City that present the highest risk of smoking initiation for youth.

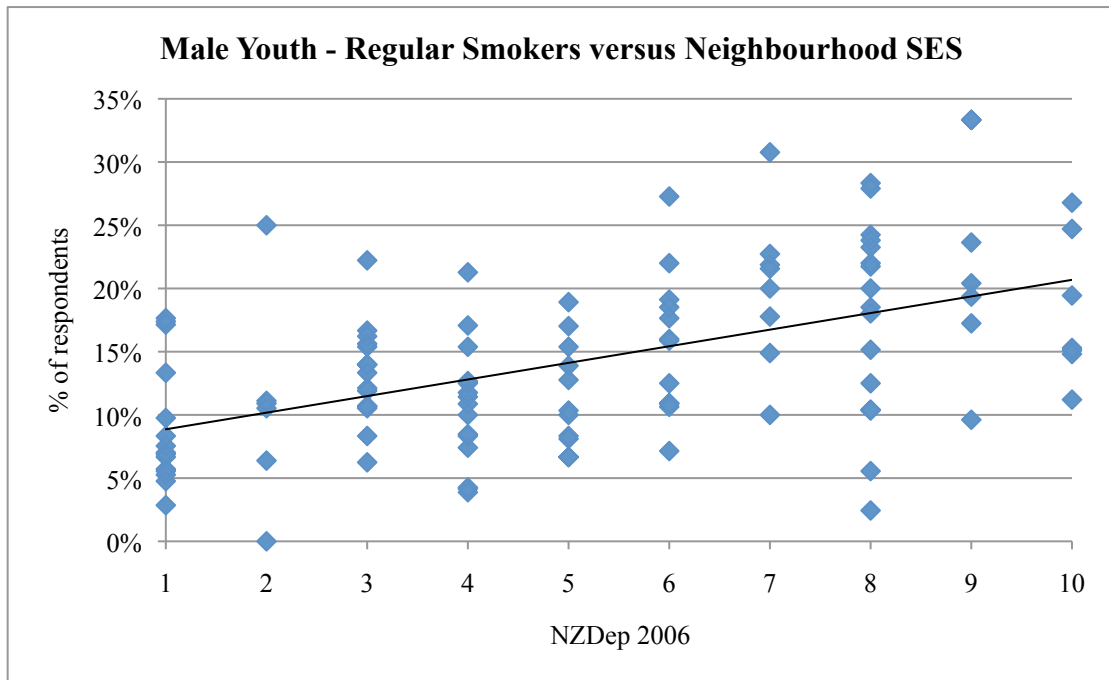


Figure 9: Adolescent male regular smokers & NZDep2006 in Christchurch

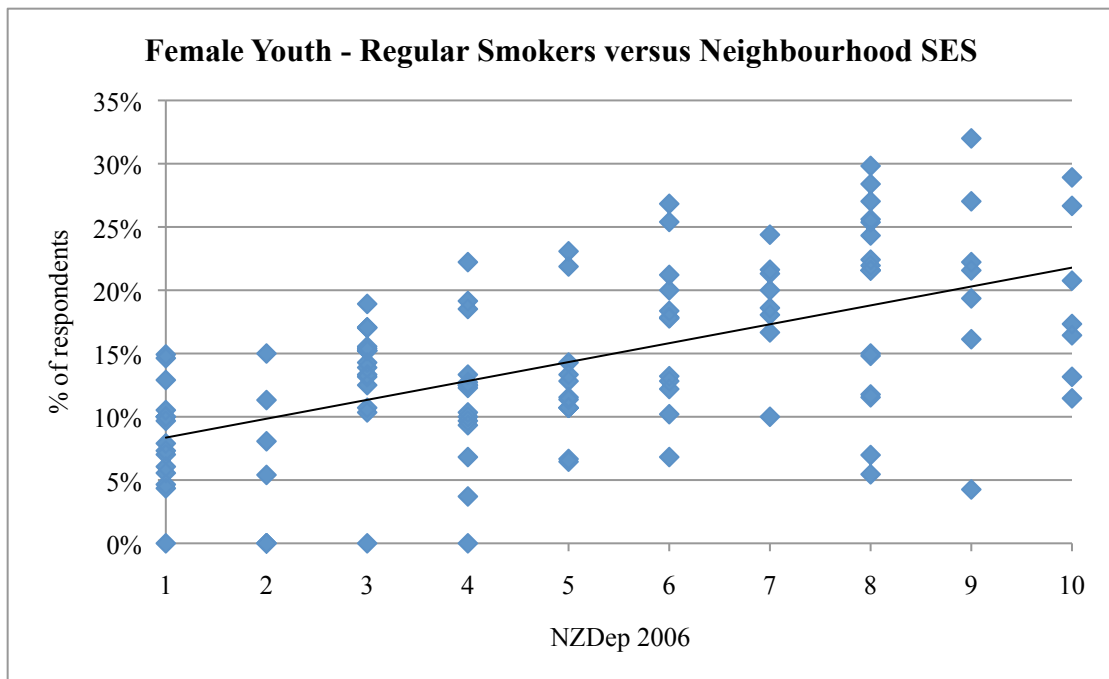


Figure 10: Adolescent female 'regular smokers' & NZDep2006 in Christchurch

In contrast to the previous analysis, Figures 11 and 12 display the proportions of youth populations in Christchurch neighbourhoods who have not smoked cigarettes on a regular basis. This includes people who smoke infrequently, smoke socially or who have never smoked at all and provides an indication

not only of who is less likely to initiate smoking behaviour, but also those who do initiate smoking and who do not go on to become addicted. The transition from experimentation to frequent smoking in adolescents is a complex and largely unknown process as discussed in Chapter 2 and if this information could be further broken down to display irregular smokers and those who have never smoked it could be valuable in analysing trends youth smoking progression. As expected, based on the previous analysis, suburbs with high proportions of teenagers who have never smoked regularly are more affluent neighbourhoods and this trend is the same for both young males and females.

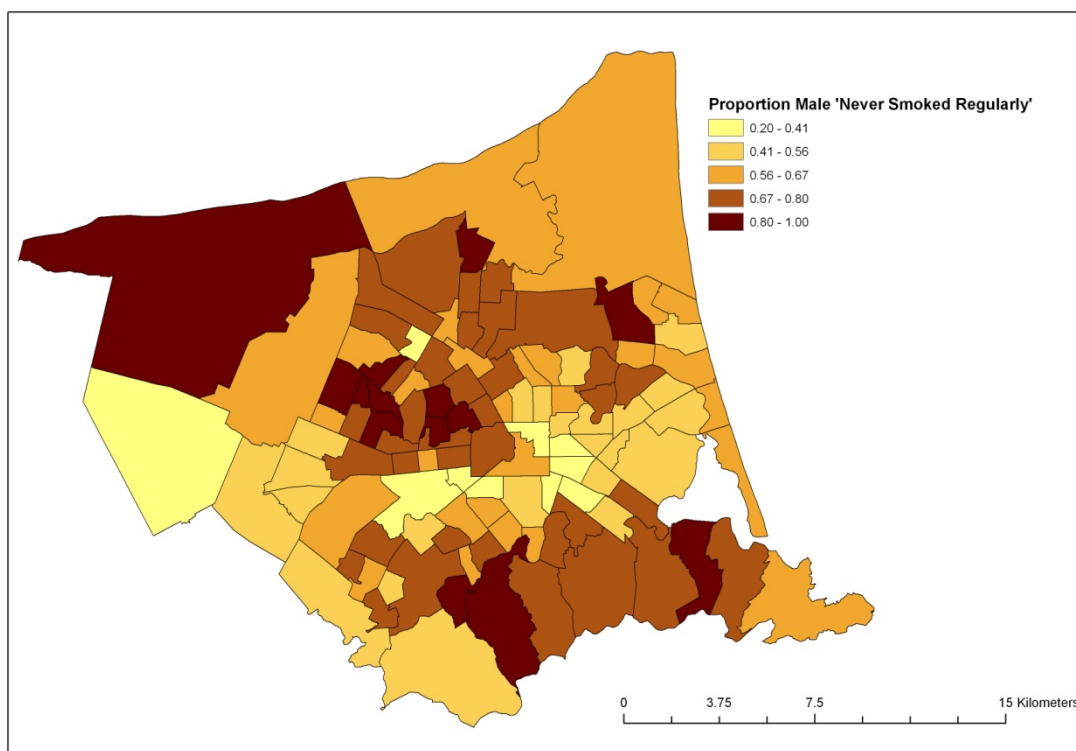


Figure 11: Neighbourhood rates of adolescent males who have never smoked regularly in Christchurch

The negative association between deprivation and never smoking regularly is displayed in Figures 13 and 14 as both males and females are less likely to engage in smoking behaviour when they live in less deprived neighbourhoods. This relationship was significant for both groups (males $p=0.000$ and females $p=0.000$).

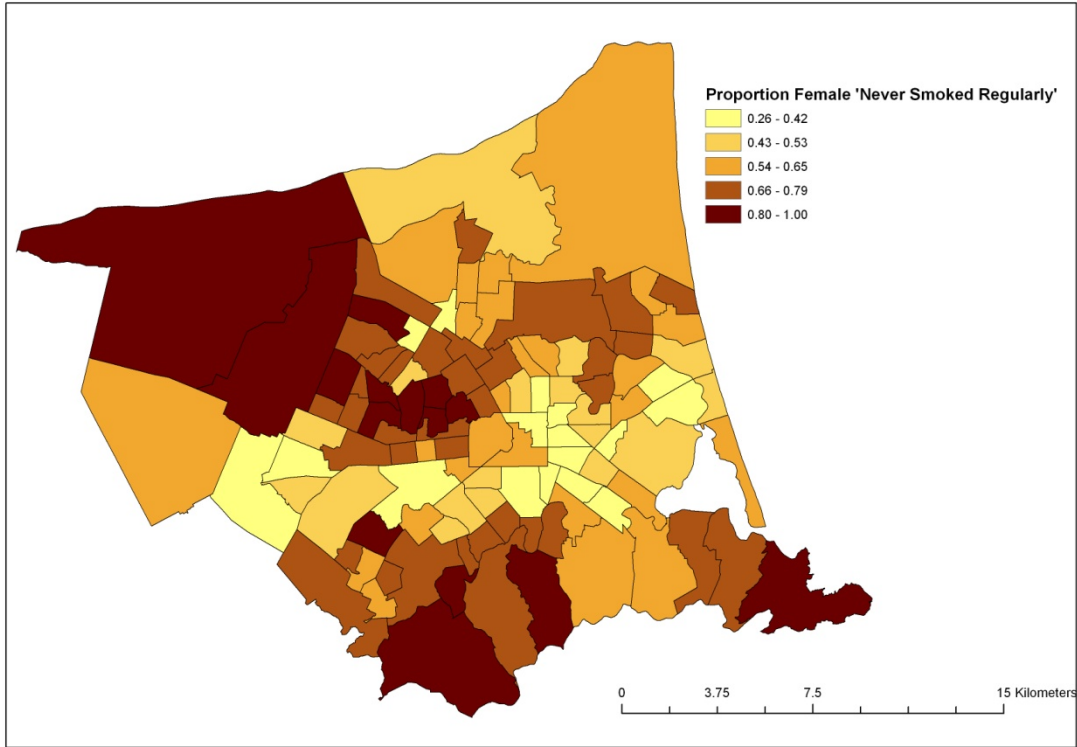


Figure 12: Neighbourhood rates of adolescent females who have never smoked regularly in Christchurch

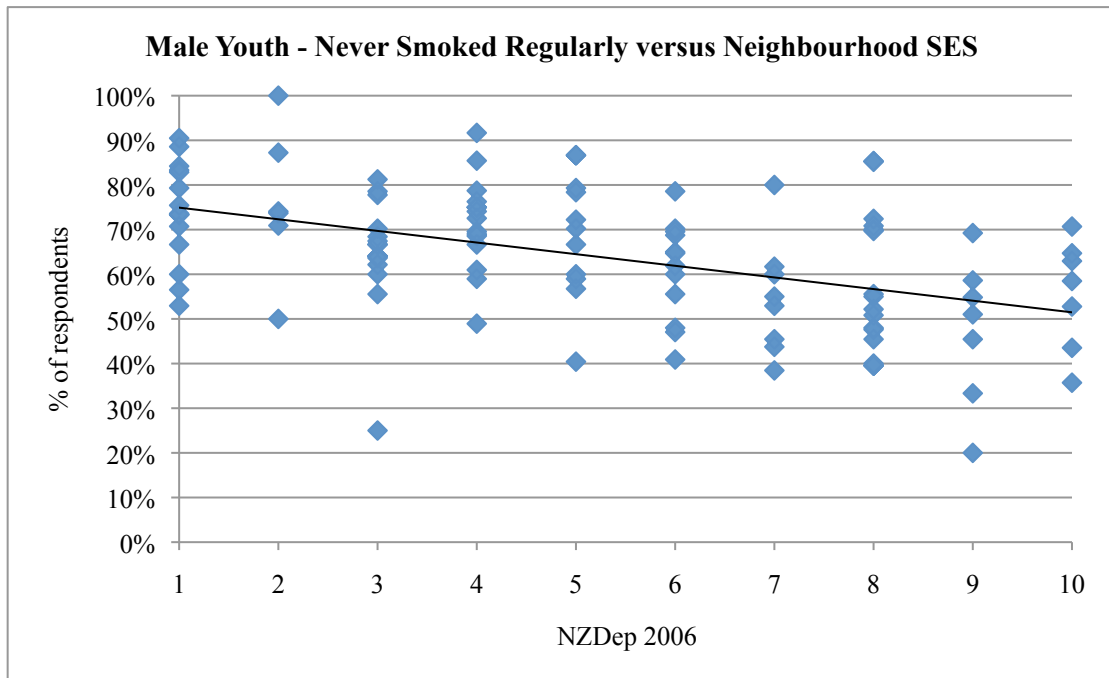


Figure 13: Adolescent males who have never smoked regularly in Christchurch

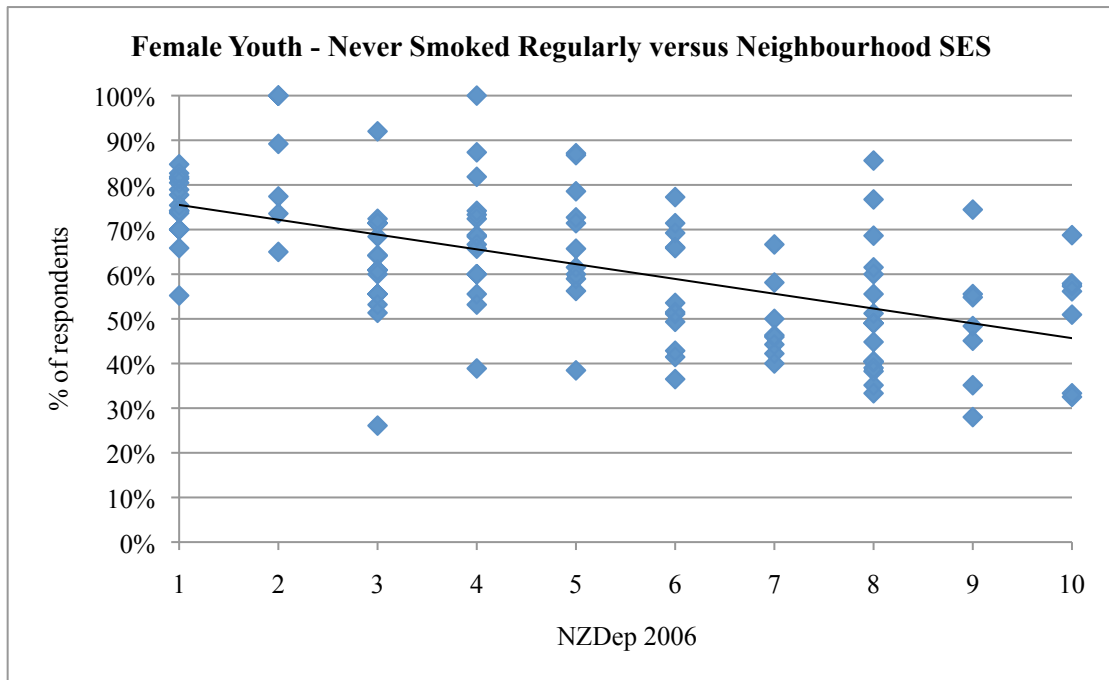


Figure 14: Adolescent females who have never smoked regularly in Christchurch

The social gradient of adolescent smokers is very similar to that of adults in that young people living in low SES neighbourhoods are more likely to be regular smokers and the opposite is true of individuals living in high SES areas. These results have provided evidence that there is a difference in the effect of neighbourhood SES on smoking behaviour across age groups. Neighbourhood deprivation has the greatest effect on the youngest smokers for both males and females. A considerably lower effect is present for the age group 20-24, possibly because these individuals have already established their smoking persona during their teenage years. An as yet unexplained strengthening in the effect of neighbourhood deprivation on smoking behaviour is evident for the older age group examined, the 25-29 year olds. This effect was mirrored across genders and is present, in varying strengths, for each of the three examined smoking behaviours.

6.2.2 Year 10 In-Depth Survey data

In addition to examining the relationship between neighbourhood SES and adolescent smoking behaviour this thesis also seeks to identify links between school deprivation and the attitudes and beliefs young people have towards tobacco smoking. As discussed in Chapter 5, the 2008 YIS asked a number of questions relating to these topics and these data are supported by interviews carried out at two Christchurch high schools specifically for this thesis. Because of the low numbers of respondents in some deciles and the lack of any Decile 1 high schools in Christchurch the decile rankings have been reorganized into 5 quintiles based on SES.

Experimentation

The HSC 2008 YIS asked students if they had ever experimented with smoking tobacco, even just a puff (Table 7). There is evidence of a strong relationship between never having smoked and school SES. The most deprived individuals are much more likely to have experimented with tobacco products than the least deprived (61.6% versus 36.0%). Among students attending schools in Quintiles 4 and 5 almost two thirds (63.6% and 64.0% respectively) have never experimented with tobacco products while only 38.4% of students in Quintile 1 schools have never tried smoking. Another key statistic presented in Table 7 is that 55% of students across all schools who have smoked a cigarette at least once belong to the lowest two quintiles, representing students in Deciles 1-4. This compares with a combined 35.5% of students who have ever smoked attending Quintile 4 and 5 high schools. The strong association between school SES and smoking experimentation suggests that pro-smoking messages and pressures are more prevalent at low-income schools and or in the families and home environment of these children.

While discussing experimentation with tobacco products during the focus groups the majority of students at both high and low decile schools stated that their first smoking experience was with friends. One male from a high SES

school said that he was first asked by friends if he had tried smoking and when he told them he hadn't he was then offered a cigarette and encouraged to try it. He is now a regular smoker one year later. Only one male at the low SES school had initiated smoking by himself and cited personal and family reasons for doing so. A major factor in his decision to start was his mother's self-medication with tobacco products for stress and pain due to illness. He saw that she craved cigarettes to calm her down and so he began to smoke himself in an effort to reduce his own stress during a difficult family time. When asked why they had first made the decision to accept the offer of a cigarette one participant responded, – *"I never got pressured into it, it was a choice, everyone was doing it and I didn't kind of do it because I thought it was cool. I didn't do it for, like, that reason. It was there and I thought I may as well."* (Male 14). This is indicative of the fact that while an adolescent may not feel pressured to begin smoking there is still a strong social influence that has given them the belief that 'everyone is doing it' and this perception of smoking being a normal behaviour encourages them to do so as well and fit in with their perception of what it is to be a 'normal' New Zealand teenager.

Table 7: YIS Q27 'Have you ever smoked a cigarette, even just a few puffs?'

$\chi^2 = 112.001$ d.f. = 4 sig = 0.000		Ever Smoked	
		Yes	No
Quintile 1 (Low SES)	% within School Quintile	61.6	38.4
	% between School Quintiles	26.5	14.0
Quintile 2	% within School Quintile	47.8	52.2
	% between School Quintiles	28.5	26.2
Quintile 3	% within School Quintile	52.5	47.5
	% between School Quintiles	9.5	7.3
Quintile 4	% within School Quintile	36.4	63.6
	% between School Quintiles	18.6	27.3
Quintile 5 (High SES)	% within School Quintile	36.0	64.0
	% between School Quintiles	16.9	25.2

Age of smoking initiation

Not only are the most deprived students more likely to have experimented with tobacco products than their peers of higher SES, but they can be expected to do so at a younger age. As shown in Table 8 there is a significant

relationship between high school deprivation and students' reported ages of smoking initiation. Within each quintile the highest rates of smoking initiation are reported to be at age 13, however, the proportion of adolescents doing so varies in each group. Students at the lowest decile schools report much higher rates of smoking initiation than their least deprived peers for most age groups, especially at ages 11 and below (33.6% and 11.9% respectively), which is most concerning. Of all students who initiated smoking at the ages 11 or younger, 61.6% were from Decile 1-4 schools. This is well before the average age of smoking initiation in New Zealand of 14.7 years and raises concerns about the influences pushing children towards experimenting with smoking as well as where primary school-aged young people are getting access to tobacco products (Daley 2009). Reported ages of smoking initiation at age 13 and above are quite comparable between groups, but the increased numbers of students who have never smoked in high SES schools has kept smoking initiation rates below 9% across all age groups for Quintiles 4 and 5.

Students participating in the focus groups all started smoking at an early age, the youngest being 10 years old and the oldest aged 13. Students who had started smoking all pointed to friends and family members who smoked as having an impact on their own smoking behaviour. All of the current smokers in the focus group talked of peer pressure and the social aspect of smoking among their friends. This also crossed over to smoking cessation where one male from a high SES school spoke of himself and his friends quitting as a group because when they had tried to do so individually they found that their friends were not helpful or supportive. Students' reasons and experience with smoking experimentation and initiation varied throughout the focus groups. Listed below are a selection of comments raised during the interviews.

"The smokers start to hang out together and become friends but not the sort of friends you necessarily want to hang out with." (Female, 15).

"Mates who smoked asked if I had tried it and I was like, 'Nah', and they were like, 'Oh, do you wanna try it?' And I was like 'May as well.'" (Male, 13 years).

“My dad ran away from me when I was ten, that’s the main reason I started and my mum passed away last year so it’s [smoking] gotten worse since last year.” (Male, 15 years).

“My mum smokes, it calms her down so I wanted to try it too.” (Female, 14 years).

“I had a friend who smoked, but every time she would go to have one we wouldn’t hang out with her and then she stopped and she hates smoking now.” (Female, 15).

Table 8: YIS Q28 'How old were you when you first tried a cigarette?'

		'Age of Smoking Initiation'										
		≤7 yrs	8 yrs	9 yrs	10 yrs	11 yrs	12 yrs	13 yrs	14 yrs	15 yrs	≥16 yrs	Never
Quintile 1 (Low SES)	% within School Quintile	10.9	4.5	5.5	4.0	8.7	8.1	11.8	6.6	0.7	0.2	39.1
	% between School Quintiles	41.2	28.9	40.0	20.4	32.7	23.9	23.4	17.9	12.1	100	14.1
Quintile 2	% within School Quintile	5.1	3.5	2.7	4.5	5.2	7.5	9.6	7.7	1.4	0.0	52.7
	% between School Quintiles	26.8	31.1	27.5	31.9	27.5	30.5	26.6	29.2	33.3	0.0	26.4
Quintile 3	% within School Quintile	4.6	3.3	3.3	4.6	5.0	6.3	14.2	9.2	1.7	0.0	47.7
	% between School Quintiles	7.2	8.9	10.0	9.7	7.8	7.6	11.7	10.4	12.1	0.0	7.1
Quintile 4	% within School Quintile	3.2	2.4	1.6	4.1	3.7	5.1	8.8	6.5	0.9	0.0	63.7
	% between School Quintiles	14.4	17.8	13.8	24.8	16.3	17.8	20.7	20.8	18.2	0.0	27.1
Quintile 5 (High SES)	% within School Quintile	2.6	1.9	1.1	2.4	3.9	6.4	8.2	7.4	1.3	0.0	64.8
	% between School Quintiles	10.5	13.3	8.8	13.3	15.7	20.3	17.6	21.7	24.2	0.0	25.3

Smoking frequency

Individuals of low SES status are often found to smoke more frequently than people living in less deprived circumstances. Table 9 shows this to be true of New Zealand adolescents. There is a negative relationship between school decile and smoking frequency with individuals attending lower SES schools are the most likely to report higher smoking rates for all of the frequencies included in the survey. Of interest is the trend shown by decile where the two most common smoking frequencies are '1 or 2 days' and 'all 30 days'. Students attending schools in the lowest two quintiles account for 57.9% of all students who smoke every day in the month prior to the survey. Low decile students are much more likely than students at higher SES schools to smoke heavily (more than 10 days per month). Over ten percent (10.6) of students in the lowest quintile smoke daily while only 4.0% of students with the highest SES do so.

Smoking frequency among students in the focus groups varied between 2-3 times a week to 2-3 cigarettes per day, right up to estimates of 7-15 cigarettes daily by three students at the high SES school. The students who reported the highest smoking rate also indicated that they often smoked by themselves and this was something that they saw as a negative aspect of their smoking behaviour. It was evident that the social aspect that had drawn them into smoking was the side of smoking that appealed most to the current smokers. One male, who had previously smoked daily and often by himself, had recently resumed smoking after two months of abstinence. He stated, – *“...sometimes I’ll smoke by myself, but I tend to like to smoke with my mates...”* (male, 14). Another participant when asked if they smoked alone, *“Yeah, every now and again. It’s kind of depressing when you’re alone...”* (female, 13).

Table 9: YIS Q31 'During the past 30 days (one month), on how many days did you smoke cigarettes?'

$\chi^2 = 72.383$ d.f. = 24 sig = 0.000		'Number of days smoked in the previous 30 days (one month)'						
		None	1 or 2	3 to 5	6 to 9	10 to 19	20 to 29	All
Quintile 1 (Low SES)	% within School Quintile	74.4	4.9	3.0	1.9	2.1	3.0	10.6
	% between School Quintiles	18.0	20.6	32.1	33.3	23.1	26.6	30.5
Quintile 2	% within School Quintile	79.2	5.4	1.7	1.2	2.8	2.8	6.9
	% between School Quintiles	26.3	30.9	24.5	27.3	42.3	34.4	27.4
Quintile 3	% within School Quintile	75.3	5.1	3.4	1.3	1.7	3.4	9.8
	% between School Quintiles	7.5	8.8	15.1	9.1	7.7	12.5	11.7
Quintile 4	% within School Quintile	86.8	3.4	1.2	0.6	1.2	1.6	5.2
	% between School Quintiles	25.0	16.9	15.1	12.1	15.4	17.2	17.8
Quintile 5 (High SES)	% within School Quintile	87.1	5.0	1.1	1.0	1.0	1.0	4.0
	% between School Quintiles	23.2	22.8	13.2	18.2	11.5	9.4	12.7

Cigarette consumption

Interestingly, while low SES students smoke more regularly, students attending high SES schools also reported high rates of cigarette consumption on the days that they did smoke. Youth smokers who reported smoking more than 20 cigarettes on the days they smoked, mainly came from the most and the least deprived groups. 31.3% of these one pack per day smokers came from Quintile 5 schools while the second largest group for this measure was Quintile 1 (28.1%). As seen in Table 10 there is a significant relationship between consumption and school SES. Reasons for such heavy smoking occurring in the lowest and highest SES schools are unclear.

It is possible that students attending the most affluent schools have a higher disposable income and therefore they can afford to purchase tobacco in larger quantities when they smoke. Another suggestion made during the focus group interviews was that smoking cigarettes was viewed as a more negative behaviour than drinking alcohol and smoking marijuana. One 13 year old

female student made the following comments, — “...it depends who you are really, like lots of my mates do drugs but hate smoking... I don’t get why they have all the anti-smoking ads when weed is so much more common in school now...”

In this school it was acknowledged that students who smoked were in the minority, but those that did were often heavy smokers. All three current smokers attending the high SES school stated they smoked up to 15 cigarettes per day, most often with their friends, all of whom smoked.

In contrast, students attending the low SES school felt that smoking was extremely widespread amongst their peers and that there was little control from teachers or parents. It was stated that students attending the least affluent schools have very easy access to tobacco products in the school environment. During the focus groups at a low SES high school, students talked openly about the trade of cigarettes on school grounds. When asked how easy it is to get cigarettes at school, one student replied, “...so easy, they can just buy them at school for fifty cents and a dollar.” (Female, 15).

Table 10: YIS Q32 'During the past 30 days (one month), on the days you smoked, how many cigarettes did you usually smoke?'

		'Smoking frequency over the previous month'						
		<1	1	2-5	6-10	11-20	>20	None
X ² = 75.216 d.f. = 24 sig = 0.000								
Quintile 1 (Low SES)	% within School Quintile	5.5	2.5	9.4	4.6	2.1	1.6	74.2
	% between School Quintiles	27.7	18.9	27.6	30.2	30.8	28.1	17.9
Quintile 2	% within School Quintile	3.9	3.0	8.8	2.7	1.5	0.9	79.3
	% between School Quintiles	26.8	31.1	35.4	24.4	30.8	21.9	26.3
Quintile 3	% within School Quintile	5.1	2.6	10.3	4.7	1.7	0.9	74.8
	% between School Quintiles	10.7	8.1	12.5	12.8	10.3	6.3	7.5
Quintile 4	% within School Quintile	2.4	2.7	4.0	2.4	1.0	0.6	86.9
	% between School Quintiles	14.3	24.3	14.1	18.6	17.9	12.5	25.0
Quintile 5 (High SES)	% within School Quintile	3.7	2.1	3.2	1.9	0.6	1.6	86.9
	% between School Quintiles	20.5	17.6	10.4	14.0	10.3	31.3	23.3

6.3 New Zealand adolescent attitudes and beliefs towards smoking

After analysing the links between deprivation and adolescent smoking behaviour it is evident, as expected, that adolescents living in less affluent areas and attending low decile high schools in New Zealand are more likely to experiment with, and initiate, regular smoking behaviour at a young age. This increase in the risk of tobacco use suggests that there is an influence of deprivation on individual attitudes and beliefs surrounding tobacco use.

Perceived harm to health from smoking

Adolescent smoking initiation remains a key tobacco control issue despite this group becoming increasingly aware of the negative health effects of tobacco use through the education system and public health campaigns. As discussed in Chapter 2 teenagers have different priorities to adults when making life decisions and it is believed that there are factors other than good health that influence youths to engage in risky behaviours (Presti & Ary 1992). Table 11 examines the relationship between level of deprivation and individual beliefs regarding the health effects of tobacco use. The majority of each group state that they believe cigarette smoking is 'definitely' harmful to their health. However, there is still a positive relationship suggesting that more students in lower school quintiles were more likely to answer 'definitely not' or 'probably not' to the question 'do you think cigarette smoking is harmful to your health?' Of concern is the lowest decile where over ten percent (11.5%) of students believe that smoking is 'definitely' or 'probably' not harmful to their health, compared to just 4.9% and 3.9% of students in Quintiles 4 and 5 respectively.

When conducting the focus groups it was most often the students who had never smoked that talked of the health effects of smoking when making their decision whether or not to initiate smoking. Often these were linked to real life experience with the inevitable consequences of smoking addiction. One participant from the low SES school spoke of the cosmetic effects of smoking, — *“My Dad smokes and when you smoke your appearance changes, I don't wanna look like that.”* (Female, 14) Another spoke of the impact on health, —

“My Uncle, he’s in a wheelchair and he smokes and it’s not helping. He’s got a short life being in a wheelchair but he’s got an even shorter life because he smokes and I don’t want to end up like that.” (Female, 15) Alternatively, one student who had lost family members to tobacco-related cancer was a current smoker and his smoking had increased since the death of his mother from lung cancer, – *“... my Mum and Nana passed away so I was smoking because of all the stress ... but now seven months later I smoke about half a pack a day.”* (Male, 15)

Table 11: YIS Q45 'Do you think cigarette smoking is harmful to your health?'

		'Is smoking harmful?'			
		Definitely Not	Probably Not	Probably Yes	Definitely Yes
X ² = 38.744 d.f. = 12 sig = 0.000					
Quintile 1 (Low SES)	% within School Quintile	9.8	1.7	6.9	81.5
	% between School Quintiles	34.5	26.3	18.8	19.1
Quintile 2	% within School Quintile	5.9	1.9	7.4	84.9
	% between School Quintiles	28.0	39.5	27.1	26.9
Quintile 3	% within School Quintile	5.4	1.7	9.2	83.7
	% between School Quintiles	7.7	10.5	10.1	7.9
Quintile 4	% within School Quintile	4.5	0.4	7.3	87.8
	% between School Quintiles	18.5	7.9	22.9	23.9
Quintile 5 (High SES)	% within School Quintile	3.0	0.9	7.3	88.8
	% between School Quintiles	11.3	15.8	21.1	22.2

Perceived difficulty of smoking cessation

Not only are students of low SES more likely to underestimate the health effects of tobacco consumption, but they also have increased odds of believing that smoking is not a difficult habit to break. This trend is seen in Table 12 where there is a relationship between school deprivation and individuals' reporting that smoking is a difficult habit to quit. Again the most deprived students had a much higher response rate (12.6%) to the option 'definitely not' when compared to the least deprived (5.9%). This is interesting as adult smoking rates are higher in low SE groups. Students attending low decile schools are likely to have been in contact with adult smokers and seen first-hand the effect tobacco has on health. It is hard to accept that high school students could be completely unaware of the harm smoking causes so

it may be that this opinion, while not completely believed by the student, is in fact an act of rebellion against authority. Students are likely to try to justify their tobacco use if they are continually told not to smoke. Telling people that they do not think it will affect their health is one way of doing so and showing that they are not interested in being told what to do by others.

Addiction is also a topic discussed during the interviews by both current and non-smokers. For non-smokers it was seen as a reason not to start smoking while some of the current smokers appeared surprised at just how easily they became addicted. In the focus group interviews a 13 year old female stated, — *“the first time I did it I was, like, I just want to try it and it just got addictive.”* This was a view shared by a male aged 15, — *“at first, I didn’t even think it would affect me so much, but over the years I think I have spent thousands of dollars on cigarettes.”* The same individual also spoke of his experience trying to break the habit, — *“Yeah, I stopped smoking for a while, but started again when my mum passed away. But I have just bought one of the electronic cigarettes off the internet because my brothers’ girlfriend said they are good ... when I first tried to quit I went cold turkey ... I lasted about four months.”*

Table 12: YIS Q46 'Once someone has started smoking, do you think it would be difficult to quit?'

X ² = 38.009 d.f. = 12 sig = 0.000		'Is smoking hard to quit?'			
		Definitely Not	Probably Not	Probably Yes	Definitely Yes
Quintile 1 (Low SES)	% within School Quintile	12.6	9.0	39.6	38.8
	% between School Quintiles	30.8	23.7	18.3	19.0
Quintile 2	% within School Quintile	9.3	8.3	42.6	39.8
	% between School Quintiles	30.8	29.5	26.6	26.3
Quintile 3	% within School Quintile	8.4	7.5	41.8	42.3
	% between School Quintiles	8.3	8.0	7.9	8.4
Quintile 4	% within School Quintile	5.1	6.6	44.1	44.1
	% between School Quintiles	14.6	20.1	23.7	25.1
Quintile 5 (High SES)	% within School Quintile	5.9	6.7	47.2	40.3
	% between School Quintiles	15.4	18.8	23.5	21.2

Beliefs surrounding peer smoking prevalence

Not only are adolescents likely to underestimate the health effects and addictive nature of tobacco products, but they have also been found to overestimate the rate of smoking in the wider community. This belief further serves to normalise tobacco use and reinforce individual smoking behaviour (HSC 2009; Wium et al. 2006). Table 13 displays the reported perception of peer smoking rates by school deprivation quintile in the HSC 2008 YIS. There is evidence of a strong relationship. The majority of Quintile 1 SES students (69.3%) believe that 50% or more of their fellow students smoke daily compared to just 28.5% of Quintile 5 students. This is far above the overall New Zealand Year 10 smoking rate of 12% and is still much higher than regular smoking rates in low SES schools for both girls and boys (23.2% and 14.2% respectively) (Paynter 2009). Students at the highest SES schools were much more likely to believe that about a quarter of their peers smoke daily compared to low SES schools (66.7% versus 26.2%). This estimate is still above the actual New Zealand youth smoking rates, but this was the lowest option above 'none' and as such is likely to include individuals who believe the youth smoking rate is much lower than this.

When asked about peer smoking rates during the focus groups, both current and non-smokers believed that most people their age had experimented with tobacco and that a large number were current smokers. The school environment was seen as a hotbed for both the sale and consumption of tobacco products, — “... *they can just buy them at school for fifty cents and a dollar*” (female, 15) and, —“*lots of people smoke at school and the teachers know they are doing [it] but they can't really do anything about it.*” (Female, 14). One non-smoker believed that the split was about 50/50 between smokers and non-smokers at their low SES school, while at the high SES school one student stated, — “*a lot of people my age do smoke but lots don't too, and I think most people don't like it [smoking].*” (Male, 17).

Table 13: YIS Q56 'Out of 100 people your own age, how many do you think smoke cigarettes at least once a day?'

		'Estimated peer smoking rates'				
		None	About ¼	About ½	About ¾	Everyone
X ² = 327.490 d.f. = 16 sig = 0.000						
Quintile 1 (Low SES)	% within School Quintile	4.4	26.2	32.4	29.6	7.3
	% between School Quintiles	20.8	10.5	24.7	38.0	39.8
Quintile 2	% within School Quintile	2.9	47.9	27.8	16.9	4.5
	% between School Quintiles	18.4	26.0	28.7	29.3	33.3
Quintile 3	% within School Quintile	2.1	40.8	36.3	17.5	3.3
	% between School Quintiles	4.0	6.7	11.3	9.2	7.4
Quintile 4	% within School Quintile	6.0	61.1	21.7	10.0	1.2
	% between School Quintiles	32.8	28.3	19.1	14.8	7.4
Quintile 5 (High SES)	% within School Quintile	4.8	66.7	20.0	6.4	2.1
	% between School Quintiles	24.0	28.5	16.2	8.7	12.0

Beliefs surrounding adult smoking prevalence

The HSC 2008 YIS also asked New Zealand high school students how prevalent they believed tobacco use was among the adult population. Because adults play an important role in the development of children and teenagers, how young people view adults' behaviour is important for the way in which they shape their own lifestyle and attitudes. As seen in Table 14 there is again a strong relationship between deprivation and estimated adult smoking rates. The most deprived students are much more likely to believe that three-quarters to 100% of adults smoke daily while less deprived students are more conservative, predicting that a quarter to one half of adults smoke daily.

Table 14: YIS Q59 'Out of 100 adults in New Zealand, how many do you think smoke cigarettes at least once a day?'

		'Estimated adult smoking rates'				
		None	About ¼	About ½	About ¾	Everyone
X ² = 264.400 d.f. = 16 sig = 0.000						
Quintile 1 (Low SES)	% within School Quintile	4.2	7.3	31.9	43.2	13.4
	% between School Quintiles	39.1	7.7	15.3	28.9	38.3
Quintile 2	% within School Quintile	2.4	17.0	42.8	29.1	8.8
	% between School Quintiles	29.7	24.1	27.7	26.2	34.0
Quintile 3	% within School Quintile	0.8	11.5	43.6	34.6	9.5
	% between School Quintiles	3.1	5.0	8.6	9.5	11.2
Quintile 4	% within School Quintile	1.6	25.8	44.3	25.7	2.6
	% between School Quintiles	17.2	31.4	24.6	19.9	8.7
Quintile 5 (High SES)	% within School Quintile	1.1	28.4	46.3	21.7	2.6
	% between School Quintiles	10.9	31.8	23.7	15.4	7.8

Similar to the perception of peer smoking rates, this perception of adult smoking prevalence is far above the actual New Zealand adult smoking rate. Such a view is likely to increase the chance of a young individual experimenting with smoking if they believe that it is socially normal and acceptable. Students of lower SES are more likely to overestimate peer and adult smoking rates to a greater degree, and there is still a perception among every SE group that smoking is more prevalent than it actually is. This is in line with previous research and warrants further research into the processes behind the formation of this belief (Wium et al. 2006). There are indications that young people who smoke, view themselves as being among the majority and those who don't also feel that being a smoker is more common than not.

6.4 Summary

Chapter 6 has examined the effect of SES on adolescent smoking rates in Christchurch neighbourhoods and across New Zealand high schools. Using data from the 2006 New Zealand Census regression analysis found evidence of a strong relationship between regular smoking rates and neighbourhood deprivation measured by NZDep2006. These results are in line with previous national and international research that identified the effect of social class on tobacco use.

The relationship between neighbourhood SES and smoking behaviour was stronger among adolescents than for older age groups. For both males and females, the 15-19 year old age group had the strongest relationship, followed by 25-29 year olds and finally the 20-24 age group. These results suggest that the effect of neighbourhood deprivation on smoking initiation and maintenance is strongest among our youngest smokers. This effect then decreases as individuals move out of their teenage years into young adulthood. At ages 20-24, individuals have been able to legally purchase tobacco from commercial sources for a number of years and the decision to smoke may be a more personal one than during adolescence. At this age social pressures may be less intense than during adolescence, and authority figures such as teachers and parents now have limited control over smoking behaviour. This, combined with better decision making processes, may mean that neighbourhood SES has less of an effect on smoking behaviour than choices at the individual level for these age groups. On the other hand, the effect of neighbourhood SES on smoking behaviour grows stronger in the 25-29 year old age group. This unexpected result is not documented within the literature and is not explained by the results presented in this chapter.

As expected, a negative relationship between never experimenting with smoking products and neighbourhood deprivation was found for both males and females across all of the three age groups studied. There was not a universal link between smoking cessation and neighbourhood deprivation.

When analysing ex-smokers as part of the population of ever-smokers, only adult females (20-24 and 25-29 years old) were significantly related to neighbourhood deprivation. These data further show the issues faced in implementing effective smoking cessation strategies. There is evidence of a need for interventions to be targeted at specific groups rather than a 'one size fits all' approach to encouraging and helping people to quit smoking.

Using data from the HSC 2008 YIS, New Zealand adolescent smoking behaviour and beliefs were analysed. This categorical dataset allowed for analysis across school deciles at a national level but not for individual schools. Because of this, neighbourhood smoking rates could not be compared with school data, but a good overview of the differences between students at more and less affluent schools was made. Three measures of youth smoking behaviour were examined. They were smoking experimentation, age of initiation and consumption. A significant relationship was found between all three variables and SES as measured by high school decile ranking, which was broken down into 5 quintiles of SES for this research. Adolescent attitudes and beliefs towards smoking were examined using four variables. They were perceived harm of tobacco on health, perceived ease of smoking cessation, estimated peer smoking rates and estimated adult smoking rates. Again each variable was found to have a significant relationship with high school SES. To support the data from the HSC 2008 YIS, focus groups run at two local high schools asked students about their own behaviour, attitudes and beliefs in line with the variables being analysed. This micro-level information provided insights at a local level and in each case provided some explanations of the processes influencing the results found in this chapter.

7 Youth access to tobacco outlets in Christchurch

7.1 Introduction

Chapter 7 focuses on the third objective of this thesis, which is to understand how access to tobacco products varies according to high school and neighbourhood deprivation. To achieve this, information from the 2006 New Zealand Census and the HSC 2008 YIS was used. As in the previous chapter, qualitative information from focus group interviews carried out at two Christchurch high schools is provided to present local adolescent views on the commercial sale of tobacco products. These interviews were especially important, as information from the HSC 2008 YIS was available only at a national level broken down by school deciles. Results from the HSC 2008 YIS are therefore generalised to Christchurch schools based on their decile and have been examined using chi-square analysis. Pearson correlation has been used to analyse the extent and direction of any relationship between CAU smoking rates based on neighbourhood SES and tobacco outlet prevalence in Christchurch City.

The chapter is structured as follows. The first section examines inequalities in access to tobacco outlets are examined from three perspectives:

- an analysis of school neighbourhoods, those being CAUs within 1,000 metres of a high school
- an analysis of schools with buffer zones of 400 metres and 800 metres an examination of neighbourhood access, using CAU data, using buffer zones 800 metres and 3,000 metres around the population-weighted centroid to count tobacco product outlets.

A second section presents the effect of neighbourhood access to tobacco outlets on reported smoking behaviour while controlling for neighbourhood deprivation. Finally, an examination is made of adolescent tobacco purchasing behaviour along with beliefs about and attitudes towards the retail tobacco environment.

7.2 Commercial tobacco sources and youth smoking in Christchurch City

7.2.1 Neighbourhood access to tobacco outlets

Table 15 outlines the relationship between neighbourhood access to tobacco outlets within 800 metres and 3000 metres of the population-weighted centroid and neighbourhood SES. There is evidence of a significant, yet moderate, correlation between these two variables. The relationship is strongest for convenience stores; this is because of the low number of supermarkets in Christchurch, 32 in total spread across 27 suburbs. Individuals living in low SES neighbourhoods have greater access to commercial sources of tobacco products than those living in high SES areas.

Table 15: Correlations between neighbourhood tobacco outlet access and neighbourhood SES

	Convenience Stores	Supermarkets	All Outlets
800 metres buffer	0.358**	0.065	0.349**
3,000 metres buffer	0.406**	0.265**	0.400**

(* = significant at 0.05 level, ** = significant at 0.01 level)

7.2.2 High school access to tobacco outlets

This section of GIS analysis looks at the prevalence of tobacco outlets (convenience stores and supermarkets) within walking distance around Christchurch high schools and aims to identify any trends relating to school SES. Chapter 5 noted that the use of buffer zones of 400 metres and 800 metres to simulate a five and 10 minute walking distance. Figure 15 shows that high schools are present in many of the same areas that have high numbers of tobacco outlets located in them.

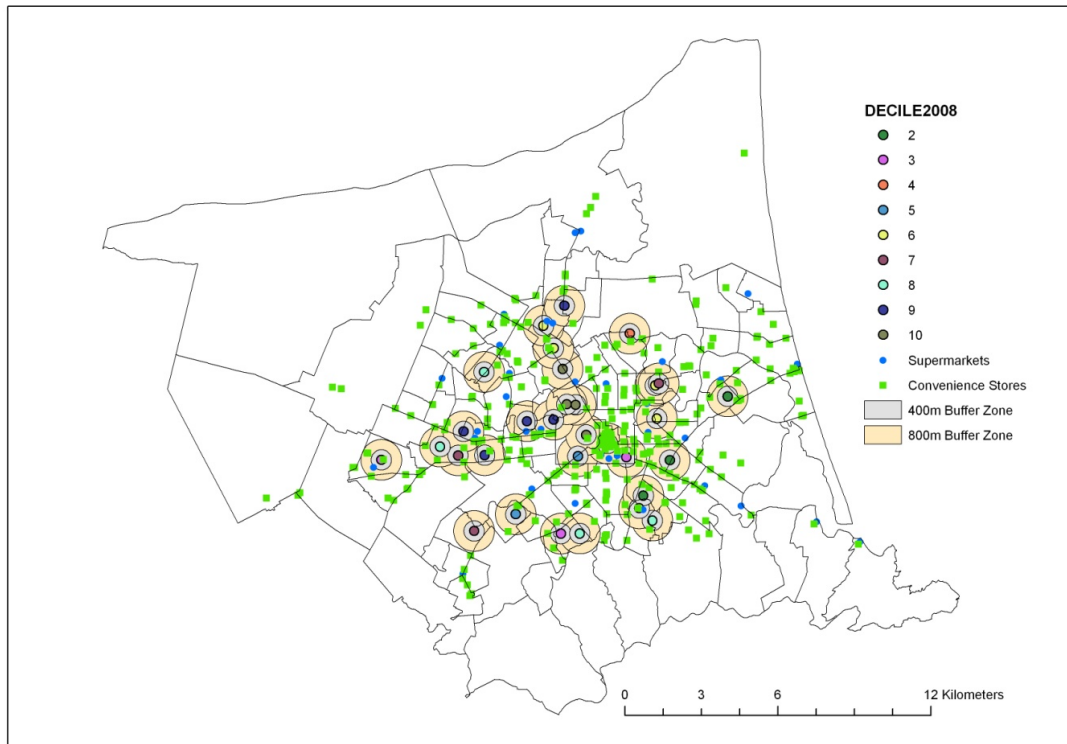


Figure 15: Convenience stores and supermarkets around high schools in Christchurch

International literature suggests that school neighbourhoods, regardless of the SES of the school, contain more tobacco outlets than areas where a school is not present (Leatherdale & Strath 2007; Pokorny et al. 2005). Table 16 shows the mean number of tobacco outlets located in suburbs that are within 800 metres of Christchurch high schools and those that are not close to local high schools. An independent test of significance found that there is no evidence of a significant difference between the mean number of outlets located in school neighbourhoods and non-school neighbourhoods in the city.

Table 16: Independent samples test for variance in tobacco outlet density between school and non-school neighbourhoods in Christchurch

	School Neighbourhoods			Non-school neighbourhoods		
	Convenience Stores	Supermarkets	Total Outlets	Convenience Stores	Supermarkets	Total Outlets
Mean	3.38	0.30	3.68	2.12	0.35	2.47
Std. Deviation	4.57	0.64	4.95	2.04	0.56	2.23
Mean difference	1.26	-0.05	1.21	1.26	-0.05	1.21
t statistic	1.79	-0.39	1.59	1.79	-0.39	1.59

School neighbourhoods are CAUs located within 800 metres of a high school
 (* = t statistic significant at 0.05 level, ** = t statistic significant at 0.01 level)

Table 17 shows the relationship between high school deprivation and convenience stores/supermarkets using a buffer zone of 400 metres. This analysis did not find any variation in the prevalence of outlets this close to local high schools, even when excluding four central city schools (Catholic Cathedral College, Hagley Community College, Unlimited Paenga Tawhiti, and Christ’s College). Of the 31 high schools in Christchurch, 17 of them had no convenience stores within 400 metres of them and only one, Unlimited Paenga Tawhiti, located in the CBD had more than two (24). Even fewer had supermarkets in their immediate vicinity; three schools were close to one supermarket and only Papanui High School had two supermarkets within 4400 metres.

Expanding the buffer to 800 metres increased the number of outlets close to high schools in Christchurch but these buffer zones spanning 1.6 kilometres created large areas around high schools that overlapped with each other and crossed over multiple suburbs. Despite the increased range of the analysis, there was only one significant negative relationship found when excluding the inner city high schools as seen in Table 16 ($r = -0.515$, $p = 0.006$).

Table 17: Correlations between school SES and surrounding tobacco outlet density

	All High Schools		Outliers Removed	
	Convenience Stores	Supermarkets	Convenience Stores	Supermarkets
400 metres Buffer	-0.085	-0.078	-0.215	0.016
800 metres Buffer	-0.194	-0.076	-0.515**	0.046

(* = significant at 0.05 level, ** = significant at 0.01 level)

Figures 16 and 17 show the relevant counts of tobacco outlets within 400 metres and 800 metres of Christchurch high schools based upon school decile. These figures show a small association between deprivation and convenience store density with no significant relationship found for supermarkets. This analysis may be better suited to a city of a larger size where areas of deprivation are more pronounced, the location of high decile schools in low-income areas in Christchurch has the potential to influence results, as is the case for Christ's College. The small number of high schools and their close proximity to each other meant that often the buffer zones from two or more schools overlapped and that both more and less deprived schools were being influenced by the same retailers in the urban environment.

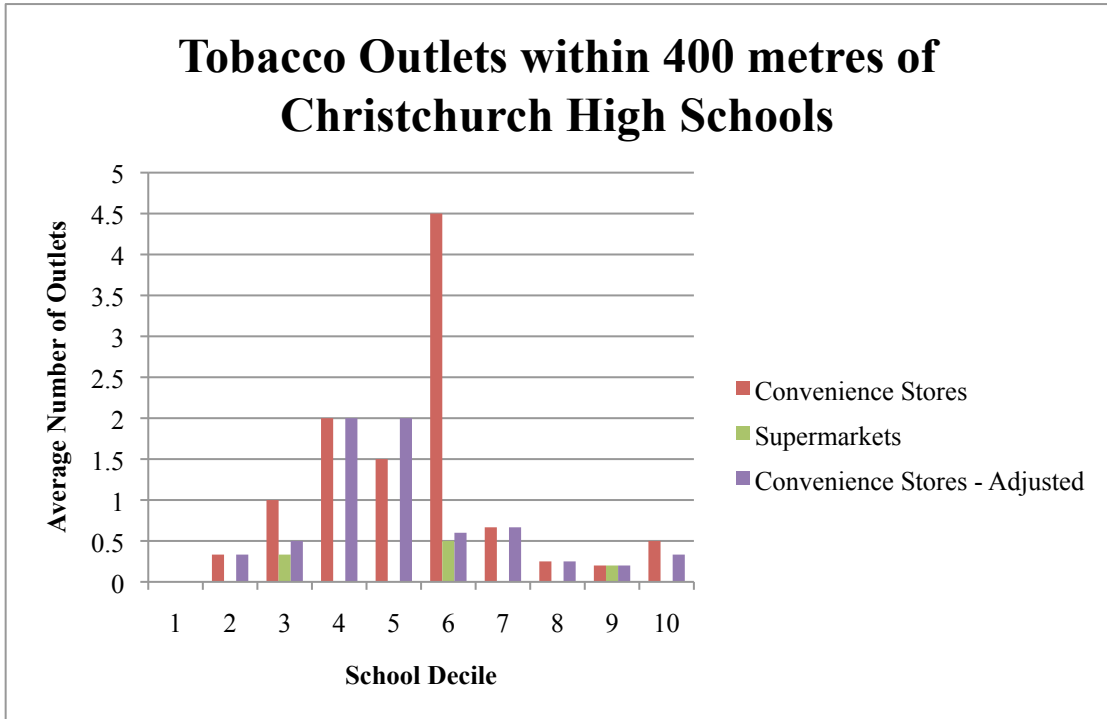


Figure 16: Prevalence of tobacco outlets within 400m of Christchurch high schools
 (Convenience stores adjusted - has four inner city schools removed)

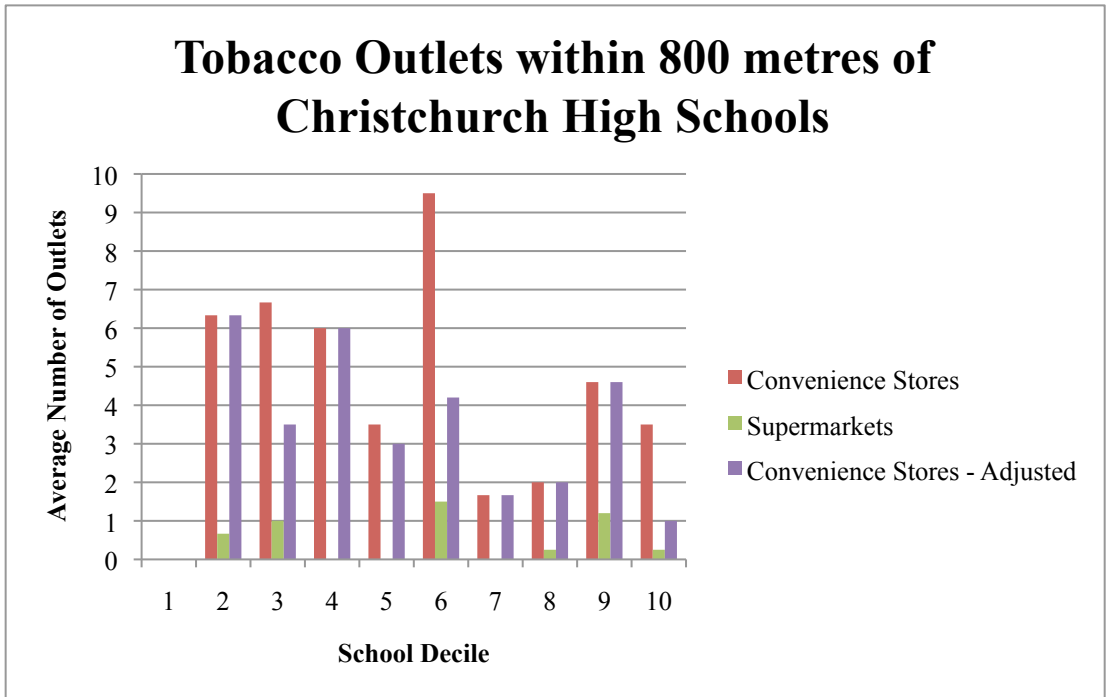


Figure 17: Prevalence of tobacco outlets within 800m of Christchurch high schools
 (Convenience stores adjusted - has four inner city schools removed)

7.3 Neighbourhood access to tobacco outlets and adolescent smoking behaviour

Having established that inequalities exist in access to tobacco outlets based on neighbourhood SES in Christchurch City, the following analyses examine the effect of such inequalities on reported smoking behaviour.

Tables 18 and 19 analyse the relationship between the proportion of individuals who stated on the 2006 Census that they were a regular smoker and the prevalence of tobacco outlets in their neighbourhood. There is evidence of a significant effect of convenience stores on adolescent (15-19) smoking behaviour but not for older age groups. When controlling for neighbourhood deprivation, this effect does not exist under the 800 metres buffer and only for adolescent females in the 3,000 metres buffer zone. Females in the 25-29 age group show some evidence of an effect on their smoking behaviour from access to convenience stores in the 3,000 metres buffer zone. This relationship disappears when controlling for neighbourhood SES. Of interest is the emergence of a significant effect of supermarket access on smoking behaviour in the 20-24 year old age group when controlling for neighbourhood deprivation.

Table 18: Correlation between proportion of regular smokers and neighbourhood tobacco outlet access (800m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	0.298**	0.043	0.103
	0.133	-0.088	-0.033
Supermarkets	-0.030	-0.161	0.003
	-0.087	-0.218*	-0.016
All outlets	0.279**	0.019	0.099
	0.113	-0.115	-0.034
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	0.297**	0.074	0.078
	0.125	-0.064	-0.088
Supermarkets	0.016	-0.148	-0.028
	-0.033	-0.183	-0.073
All outlets	0.285*	0.050	-0.070
	0.114	-0.087	-0.094

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

Table 19: Correlation between proportion of regular smokers and neighbourhood tobacco outlet access (3,000m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	0.366**	0.119	0.167
	0.184	-0.031	0.028
Supermarkets	0.109	-0.091	0.001
	-0.061	-0.237*	-0.097
All outlets	0.349**	0.102	0.155
	0.164	-0.051	0.017
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	0.401**	0.127	0.200*
	0.223*	-0.023	0.026
Supermarkets	0.139	-0.101	0.033
	-0.030	-0.216*	-0.115
All outlets	0.384*	0.108	0.189*
	0.203*	-0.042	0.013

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

Tables 20 and 21 provide evidence of the effect of neighbourhood access to tobacco outlets and the proportion of individuals in a neighbourhood who report they have never smoked regularly. As discussed, 'never smoked regularly' is an ambiguous term and is likely to include individuals who have on occasion smoked. It would be expected though, that people who fall into this category are, and never have been, an addicted smoker in need of interventions. There is evidence of a significant effect of neighbourhood deprivation on individual smoking behaviour predominantly among adolescents (15-19).

Under both buffer zones of 800 metres and 3000 metres there is a significant relationship between access to convenience stores and adolescents who have never smoked regularly. The strength of this relationship decreases when controlling for neighbourhood deprivation. Within the 800 metres buffer there is no evidence of a relationship with outlet access for males when measures of SES are controlled for, while a weak relationship remains for access to convenience stores in the 3,000 metres buffer. Under both buffers, females who have never smoked regularly continue to have a significant, yet weak, relationship with access to convenience stores after controlling for neighbourhood deprivation.

There is little evidence of a relationship between outlet access and having never smoked regularly among older age groups. Females aged 25-29 have a significant relationship with access to supermarkets in the 800 metres buffer, which remains after controlling for neighbourhood deprivation. Males of the same age have a significant relationship with convenience stores in the 3,000 metres buffer, but this effect is not present when measures of neighbourhood SES are controlled for.

Table 20: Correlation between proportion of never smoked regularly and neighbourhood tobacco outlet access (800m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	-0.304**	-0.081	-0.155
	-0.176	0.013	-0.083
Supermarkets	-0.048	0.071	-0.048
	-0.022	0.121	-0.055
CS & Supermarkets	-0.295**	-0.067	-0.154
	-0.170	0.030	-0.086
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	-0.328**	-0.078	-0.049
	-0.191*	0.026	0.065
Supermarkets	-0.098	0.137	0.206*
	-0.078	0.161	0.234*
CS & Supermarkets	-0.325**	-0.055	-0.018
	-0.192*	0.048	0.096

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

Table 21: Correlation between proportion of never smoked regularly and neighbourhood tobacco outlet access (3,000m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	-0.338**	-0.167	-0.197*
	-0.197*	-0.063	-0.138
Supermarkets	-0.109	-0.024	-0.046
	0.032	0.155	-0.016
All outlets	-0.323**	-0.152	-0.186
	-0.179	-0.044	-0.129
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	-0.359**	-0.142	-0.114
	-0.204*	-0.032	0.004
Supermarkets	-0.142*	0.111	0.061
	0.006	0.200	0.144
All outlets	-0.346**	-0.121	-0.100
	-0.188*	-0.010	0.017

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

This research also attempted to link the proportion of ex-smokers in a neighbourhood with the density of tobacco outlets. Research has suggested that increased exposure to tobacco imagery in their daily life makes it harder for an individual to quit smoking. It would therefore be expected that with an increase in the number of tobacco outlets in an area there would be fewer individuals who had successfully quit smoking. As shown in Tables 22 and 23 no such negative relationship was found. In fact, all of the trends shown were positive.

These results suggest that neighbourhood access to tobacco outlets has an effect on smoking cessation primarily for adolescent females. Under the 800 metres buffer females aged 15-19 show evidence of a relationship with access to both convenience stores and supermarkets. This effect remains after controlling for neighbourhood deprivation but does not exist in the 3,000 metres buffers. Adolescent males (15-19) who have quit smoking have a significant relationship with access to supermarkets in the 800 metres buffer and the same is true for females aged 25-29.

Table 22: Correlation between proportion of ex-smokers and neighbourhood tobacco outlet access (800m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	0.118	0.077	0.082
	0.115	0.116	0.162
Supermarkets	0.228*	0.152	0.064
	0.222*	0.152	0.098
CS & Supermarkets	0.143	0.094	0.086
	0.141	0.132	0.168
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	0.236*	0.013	-0.027
	0.198*	0.049	0.021
Supermarkets	0.258**	-0.027	-0.247*
	0.247**	-0.021	-0.242*
CS & Supermarkets	0.259**	0.009	-0.060
	0.223*	0.044	-0.015

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

Table 23: Correlation between proportion of ex-smokers and neighbourhood tobacco outlet access (3,000m)

	Males 15-19	Males 20-24	Males 25-29
Convenience Stores	0.060	0.105	0.047
	0.047	0.143	0.150
Supermarkets	0.061	0.118	0.064
	0.044	0.124	0.155
CS & Supermarkets	0.061	0.108	0.049
	0.048	0.144	0.154
	Female 15-19	Female 20-24	Female 25-29
Convenience Stores	0.120	0.044	-0.094
	0.060	0.089	-0.032
Supermarkets	0.121	-0.069	-0.122
	0.074	-0.047	-0.058
CS & Supermarkets	0.122	0.034	-0.098
	0.062	0.078	-0.035

(Simple correlations in white, partial correlations controlling for NZDep 2006 are shaded)
 (* = significant at 0.05 level, ** = significant at 0.01 level)

7.4 Youth tobacco purchasing behaviour

Does greater access to tobacco products in the local environment of low SES adolescents translate to increased use of these commercial sources to purchase cigarettes?

The HSC 2008 YIS asked students to state from what sources they had obtained cigarettes in the previous month. Figure 18 shows the total responses for all participants. As can be seen, social sources are the most common, with ‘friends’ and ‘someone else bought’ rating highest. Commercial sources of tobacco products were the third most used source of tobacco products among the survey participants.

During the focus group sessions students were asked about their own and their friends’ tobacco purchasing behaviour. At the low SES school one female student stated, — “*Everybody knows somebody or can get someone who is over 18 to buy them anything like smokes and alcohol*”. This was supported by a male student at the high SES school who said that, — “*I work in a butchery and when I’m working the guys will go down with my money and bring them back to me.*” This same student also talked of purchasing his own cigarettes and taking them from his parents when they weren’t around.

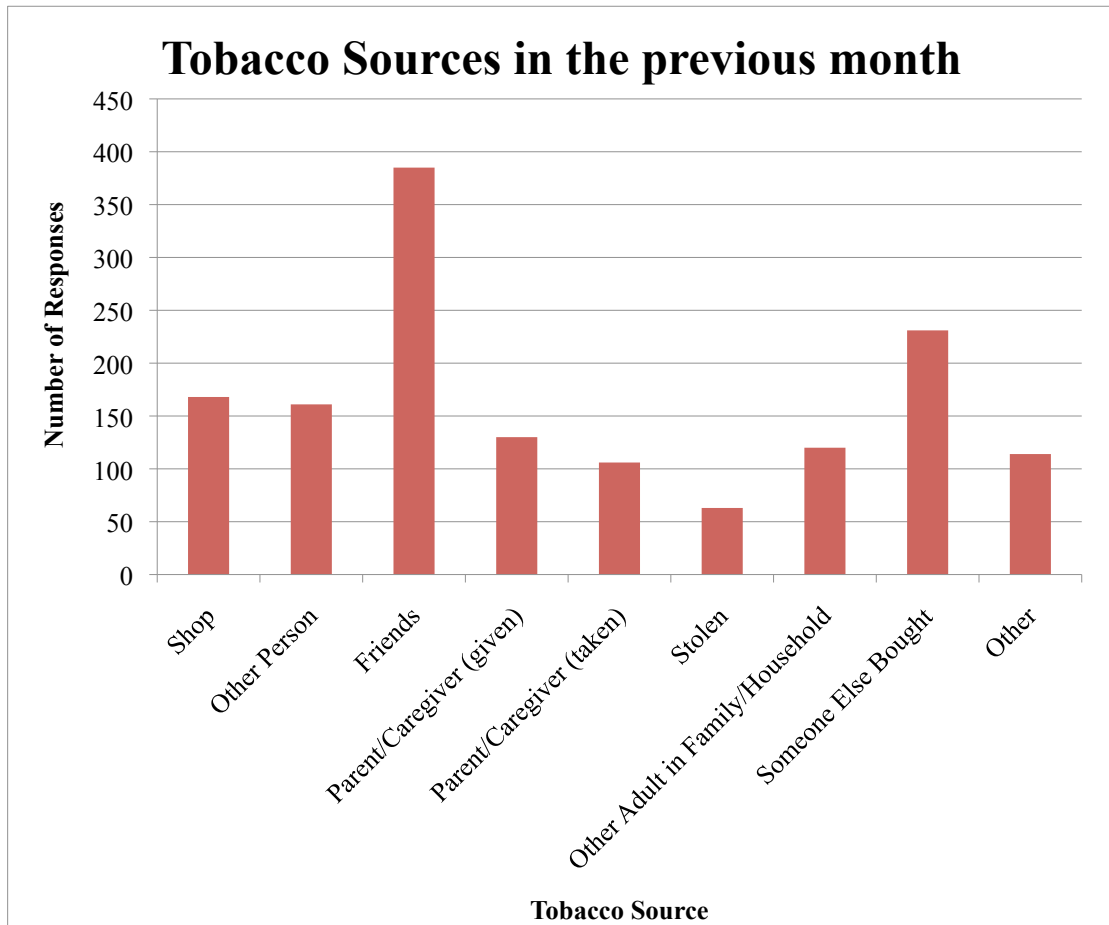


Figure 18: YIS Q33 ‘During the past 30 days (one month), from which of these places did you get your cigarettes?’

Using data from the HSC 2008 YIS, responses to question 33 have been analysed solely on the ‘shop’ variable. Table 24 shows the variation between and within schools’ quintiles of the proportion of students who stated that they purchased their own cigarettes from a store. Over one half of all students (54.2%) who bought tobacco products from shops in the previous month attend schools in the lowest two quintiles. Interestingly, when looking at the ‘within’ group trends a lower proportion of students who smoke, measured by positive responses to ‘No’ and ‘Yes’, at low SES schools bought cigarettes themselves (Quintile 5 – $7.7/29.7 = 25.9\%$) compared to students at high SES schools (Quintile 1 – $5.0/15.4 = 32.5\%$).

Table 24: YIS Q33, breakdown of responses to the answer 'Shop'

$\chi^2 = 61.164$ d.f. = 8 sig = 0.000		Cigarette source: Shop		
		No	Yes	Didn't buy cigarettes
Quintile 1 (Low SES)	% within School Quintile	22.0	7.7	70.3
	% between School Quintiles	28.5	26.5	17.6
Quintile 2	% within School Quintile	16.3	5.8	77.9
	% between School Quintiles	29.2	27.7	26.9
Quintile 3	% within School Quintile	20.6	7.1	72.3
	% between School Quintiles	11.1	10.2	7.5
Quintile 4	% within School Quintile	10.8	4.1	85.0
	% between School Quintiles	16.5	16.9	25.0
Quintile 5 (High SES)	% within School Quintile	10.4	5.0	84.6
	% between School Quintiles	14.7	18.7	23.0

When discussing commercial sources of tobacco products with students in the focus group sessions the conversation always focused on dairies (convenience stores) as the most common and easy place to buy cigarettes. This perception that there is no effort by some retailers to prevent underage sales was identified by one student at the low SES school who stated, — *“At the dairies they just sell them to anyone...”*; this individual had never smoked a cigarette in her life and yet still held this opinion. At the high SES school a young female who is a regular smoker frequently purchases cigarettes for herself, — *“Sometimes I get asked for ID, but they normally still sell me them and I know what dairies I can go to”*. The notion that there are outlets well-known for selling to minors was supported by a male student at the low SES school who also buys cigarettes from dairies, — *“...but only at places where people don't know who I am”*. Figure 19 supports these discussions finding that students in the YIS were much more likely to purchase their cigarettes from a dairy compared to all other commercial sources.

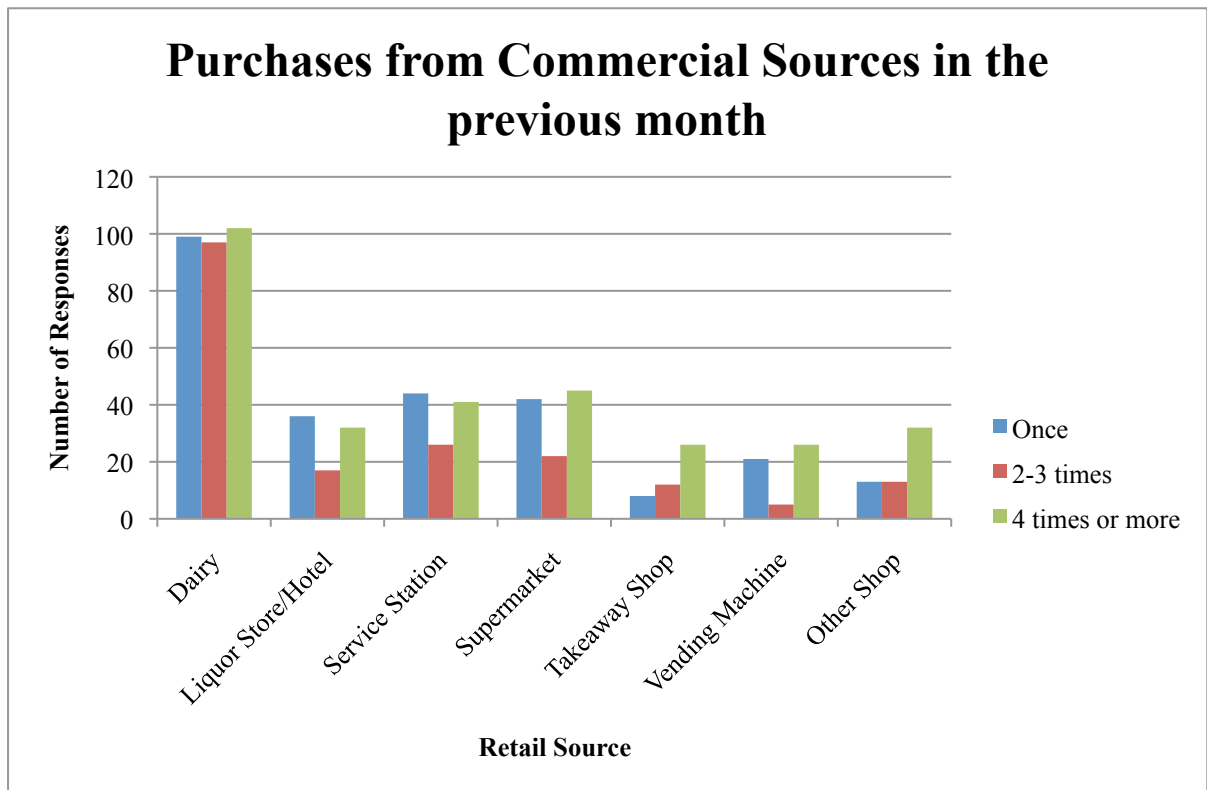


Figure 19: YIS Q34 'Which places did you buy cigarettes from in the past 30 days (one month)?'

7.5 Adolescent attitudes and beliefs towards the commercial tobacco environment

Retail tobacco displays

How do students in New Zealand perceive the effect of tobacco imagery, such as retail displays in stores, on them and their peers' smoking attitudes and behaviours? Table 25 shows the proportion of students within each school quintile who agree or disagree with the statement that banning cigarette displays would make children less likely to initiate smoking behaviour. The analysis found a significant negative relationship that, while small, does indicate there is an effect of high school deprivation on individual attitudes towards tobacco displays. Students in the lowest SES schools are less likely to 'agree' or strongly agree' that banning tobacco displays will make children less likely to smoke than those in the highest SES schools (46.2% versus 55.4% respectively). Between 23.0% and 29.3% of students at all high schools did not have an opinion on this matter. Recent media attention to this

issue has indicated that many members of the public do not consider retail tobacco displays to encourage adolescent smoking. Many individuals regard the banning of such displays to be overbearing government response, and many small retailers are drawing attention to their cause citing the potential cost of implementing measures to obscure tobacco products from sight.

When talking with students in the focus groups it was apparent that for the majority the effect of retail tobacco displays was not something that had provoked much thought. Literature that discussed this topic largely focused on the subconscious effect of such advertising, while it is not openly promoting tobacco products through conventional 'in your face' methods the presence of such imagery on a daily basis is believed to have an effect on individual behaviour. One male at the high SES school commented, — *"I don't really notice the advertising to be honest, I just kind of look at it and think cool... yeah, sweet smokes. I don't really think of it as advertising. I don't really take notice because it's not really big advertising"*. This comment effectively sums up the effect that displays may have on a young person, while stating that he does not believe that he notices it or is affected by them the comment *'...yeah, sweet smokes...'* is an insight into the normalisation of tobacco products that such displays can have.

Following this discussion, a female student in the interview talked of seeing cigarettes when she was young and linking it to her mother's smoking. She said that it, — *"becomes normal and it doesn't bother you when you see it"* (female, 13 years). Another student was well versed on the effect tobacco displays can have on adolescent smoking but acknowledged that it was not something she had considered until it was explained to her.

"I do [notice cigarette displays inside retail stores] because I was involved in a campaign with the Cancer Society. To tell you the truth I never really thought about them before, but after the campaign I can see why there is a problem with them. We got signatures for a petition in town and spoke to kids at school about it and got them to make submissions. When people became aware of

it they thought that it was bad. People didn't think it was a bad thing that would make you smoke, but thought that they make it hard for people to quit and it becomes quite normal to see cigarettes all the time" (female, 15 years).

The same process took place in the focus groups, where once participants became aware of the potential influence of tobacco displays on smoking behaviour they believed banning them might be a good thing. *"It might help [banning tobacco displays] for little kids because they won't see cigarettes all the time when they are getting lollies"* (female, 13 years). This highlights the fact that young people can be easily influenced on such matters. The opinions they put forward in this particular section of questioning are likely to have been influenced by the moderator and the overall direction the interviews took was in positioning smoking as a negative behaviour.

Table 25: YIS Q72.1 'A ban on cigarette displays would make children less likely to smoke'

$X^2 = 30.895$ d.f. = 16 sig = 0.014		Retail displays should be banned				
		Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Quintile 1 (Low SES)	% within School Quintile	19.8	26.4	26.7	17.5	9.6
	% between School Quintiles	20.7	15.6	21.1	22.2	27.4
Quintile 2	% within School Quintile	20.1	33.5	24.2	15.9	6.3
	% between School Quintiles	28.7	27.0	26.1	27.5	24.4
Quintile 3	% within School Quintile	16.7	30.0	29.2	16.7	7.3
	% between School Quintiles	7.1	7.2	9.4	8.6	8.5
Quintile 4	% within School Quintile	18.2	37.1	25.1	13.5	6.2
	% between School Quintiles	22.7	26.2	23.6	20.4	20.9
Quintile 5 (High SES)	% within School Quintile	18.3	37.1	23.0	15.4	6.1
	% between School Quintiles	20.8	23.9	19.8	21.3	18.9

Youth attitudes towards commercial tobacco sales

In the second focus group, at the high SES school, a female student who is part of a youth health council talked about a Cancer Society campaign in which she had been involved. Prior to her involvement with this she had not given any thought to the effect of tobacco displays but now saw where they can cause issues. When collecting signatures for a petition to ban such displays she said that, — *“people didn’t think it was a bad thing that would make you smoke, but thought that they make it hard for people to quit and it becomes quite normal to see cigarettes all the time”*. The fact that tobacco products are generally kept behind the counter means that no one can avoid being exposed to tobacco advertising when shopping at convenience stores.

Table 26 shows that students attending high decile schools are more likely to have an opinion on the method of cigarettes sales in dairies, and that those who do have an opinion are more likely to agree that tobacco companies should not be allowed to sell as they currently do. A male at a Decile 8 school did not think that banning displays and over the counter sales would be effective, stating, — *“I don’t think so, people who smoke already know that it’s bad and they are going to want to buy cigarettes whether they can see them in the shop or not”*. Alternatively, a female student in the same focus group felt that there could be benefits to children from banning displays and over the counter sales, — *“it might help for little kids because they won’t see cigarettes all the time when they are getting lollies”*.

Store visits were made to the convenience stores and supermarkets that were within the 800 metres buffer zones of the two high schools used during the focus groups. The high SES school had only one convenience store close to it while the low SES school had six convenience stores and one supermarket nearby. Observations in store included how readily you could see the tobacco display upon entering the store, the size and number of facings in the displays and how close they were to items that would interest children. There was no evident difference between the display and sale of tobacco products among

the convenience stores. Each had a large display positioned behind the counter that included multiple facings of the same brands and packets of tobacco. Each display was shallow ensuring that the maximum number of legally allowed packets was kept in the cabinet with the greatest amount of outward facing imagery. The only major difference noticed during these store visits was between the convenience stores and the supermarkets. The supermarket close to the low SES school had its tobacco products obscured from view. An individual wanting to buy tobacco had to request a specific product and staff would then go and get it for them. Supervisors also had to approve purchases to ensure that no underage sales were being made. This supports findings that New Zealand youth are much more likely to buy from convenience stores than supermarkets as the atmosphere is more relaxed, open, and at times lax in upholding the law. Because there was only one convenience store near the Decile 2 school, more stores were visited around similar schools. These stores repeatedly followed the same format and there was no evidence of a major difference in retail display of tobacco products according to deprivation in Christchurch City.

Table 26: YIS Q75.4 'Tobacco companies should not be allowed to sell their products in the dairy at the checkout'

$\chi^2 = 25.050$ d.f. = 8 sig = 0.002		Tobacco companies should not be allowed to sell at dairy/checkout		
		Agree	Disagree	Don't Know
Quintile 1 (Low SES)	% within School Quintile	48.3	21.1	30.6
	% between School Quintiles	18.4	19.9	23.1
Quintile 2	% within School Quintile	50.0	23.9	26.1
	% between School Quintiles	25.5	30.2	26.3
Quintile 3	% within School Quintile	45.9	23.4	30.7
	% between School Quintiles	7.1	9.0	9.4
Quintile 4	% within School Quintile	58.7	18.4	23.0
	% between School Quintiles	26.5	20.6	20.6
Quintile 5 (High SES)	% within School Quintile	54.6	20.1	25.3
	% between School Quintiles	22.5	20.4	20.6

7.6 Summary

Chapter 7 has presented an analysis of the relationships between tobacco outlet density and neighbourhood deprivation, high school deciles and reported smoking behaviour in Christchurch CAUs. There is evidence of a significant relationship between neighbourhood SES and tobacco outlet density using buffer zones. This relationship is positive, indicating that outlets are more prevalent in low SES neighbourhoods, and stronger for convenience stores than supermarkets. Regression analysis of convenience store and supermarket densities around Christchurch high schools found little evidence of a relationship when measured against school decile ranking. Only one significant statistic was found when analysing convenience stores within a buffer zone of 800 metres after the exclusion of four inner city schools in the CBD, which were close to a large number of outlets. Based on this information, no conclusions could be drawn to support the expectation that tobacco outlets would be concentrated around high schools in Christchurch City.

There was a significant relationship between neighbourhood access to tobacco outlets and adolescent smoking behaviour. When neighbourhood deprivation was controlled for, the strength of this relationship was largely diminished. After controlling for NZDep2006 there remains evidence of an effect between access and smoking behaviour primarily for adolescents (15-19) and particularly for females.

Using data from the HSC 2008 YIS, chi-square analysis was used to link school deprivation, as measured by decile, with specific questions. Of interest were the commercial sources from which underage adolescents purchase tobacco products and the attitudes/ beliefs they have towards the manner in which tobacco is displayed and sold in the retail environment. The three variables used to perform the analysis were yes/no to purchasing tobacco from a shop in the previous month, attitudes towards the effect a ban on in-store cigarette displays would have on adolescent smoking behaviour, and their opinion on cigarettes being sold at the checkout in convenience stores.

Responses to all three variables were significantly related to school decile. Students attending schools of low SES (Quintiles 1 and 2) were more likely to have purchased cigarettes for themselves from a shop in the previous month than those at high SES schools (Quintiles 4 and 5).

Students attending low SES schools were also less likely to support a ban on retail tobacco displays or dispute the right of tobacco companies to sell their products over the counter in dairies than students in higher SES schools. The relationship in each case was not strong and suggested that while there is evidence of such a trend the impact of school decile was not as strong as it was for youth smoking behaviour and beliefs presented in Chapter 5. While the information gathered from focus groups supported this, it also suggested that the way in which tobacco is sold in stores is an issue many young people have not given much thought to. In each group it was not until the point was raised and explained by the researcher that students saw how tobacco displays might influence youth smoking behaviour. Anti-smoking groups in New Zealand have targeted the retail tobacco environment during the course of this study and the introduction of legislation to remove cigarettes from view and to remove branding of packaging is under way, a move that will affect how students of both low and high SES interact with tobacco imagery in their day to day lives.

8 Discussion

8.1 Introduction

This chapter will discuss the key findings from Objectives 1, 2 and 3 based on the results presented in Chapters 6 and 7. For Objective 1, social and geographical effects on adolescent smoking behaviour are discussed with neighbourhood SES and the effect of high school deprivation. Building on the evidence of differences in adolescent smoking behaviour between school deciles in New Zealand objective 2 discusses how high school SES affects the attitudes and beliefs young people have towards tobacco products and smoking behaviour. These findings are supported by the qualitative data gathered during focus group interviews at two Christchurch high schools. Objective 3 then uses GIS analysis to examine the effect of neighbourhood and high school access to commercial provision of tobacco products on youth smoking behaviour in Christchurch City. Following these discussions of key research findings there is an outline of the theoretical and policy implications of this research. Finally, the chapter presents recommendations for future research.

8.2 Discussion

8.2.1 Geographical variations in socio-economic status and youth smoking behaviour

Key findings from Objective 1

The first half of Chapter 6 presented the results for Objective 1. The analysis focused on neighbourhood and high school deprivation and their links to adolescent smoking prevalence and associated smoking behaviours. There were significant relationships of varying strength between neighbourhood and high school SES and all measures of smoking behaviour and attitudes were examined. A discussion of the findings for specific measures follows below.

Neighbourhood socio-economic status and youth smoking

In Chapter Three measures of neighbourhood SES were seen as key factors in the urban environment influencing youth smoking initiation and behaviour. Evidence suggests that neighbourhood SES, measured by NZDep2006, is linked to variations in smoking prevalence and current reported smoking status for individuals in Christchurch City.

Across all the three age groups analysed 'regular smokers' were more likely to live in low SES neighbourhoods while individuals who have 'never smoked regularly' most often lived in high SES areas. The strength of this relationship varied by age group and gender. Females of any age studied had stronger correlations between neighbourhood SES and their current smoking status than males. Neighbourhood SES had the strongest effect on the smoking behaviour of adolescents, 15-19 years, for both males and females when compared with older age groups.

In contrast there was little evidence of a relationship between 'ex-smokers' and neighbourhood SES. The only statistically significant relationships existed for females aged 20 years and above, and the strength of the correlations was relatively low. No significant relationship was found between adolescent

smoking cessation and neighbourhood SES. This result is not surprising as youth smokers are notoriously hard to recruit and retain in cessation programmes. The majority of young smokers who do attempt to quit do so on their own or with friends, approaches that are commonly unsuccessful. While addiction to tobacco products can emerge quickly and be evident during one's teenage years, motivations to quit, such as negative health effects or social cues, may not emerge until young adulthood.

These findings were consistent with a number of international youth smoking studies. Early studies (Diez Roux et al. 2003; Frohlich et al. 2002; Lee & Cubbin 2002) moved from parental SES as predictors of youth smoking behaviour to examine the effect of neighbourhood SES. Findings from research in this period suggested that there was a relationship between measures of neighbourhood SES and youth smoking, but the nature of this effect was unclear. More recent analysis, such as a recent Canadian study (Matheson et al. 2011), supports the findings of this research indicating that there is a clear effect of neighbourhood SES contributing to inequalities in adolescent smoking behaviour. In New Zealand, the effect of neighbourhood SES on youth smoking rates has not been widely examined. The results of this thesis are supported by MoH publications that have made some links between neighbourhood SES and adolescent smoking prevalence. Many of these reports focus on adults but highlight the fact that SE inequalities in smoking are more pronounced for young people than for adults (Hill et al. 2003; MoH 2009).

High school socio-economic status and youth smoking behaviours

Adolescence is a time of personal development and learning so it stands to reason that the school environment has an effect on the smoking behaviour of young people. A discussion follows on the effect of high school SES on adolescent smoking experimentation, initiation, frequency and consumption.

Experimentation

There was strong evidence of a relationship between an individual having experimented with tobacco products and high school SES, both within and

between school deciles. Almost two thirds of students attending Quintile 1 schools reported smoking experimentation compared to around one third in the highest quintile. When looking at trends between schools, over one half of students who have experimented with tobacco attended schools in the lowest two quintiles. When discussing their first experience with tobacco use in the focus group interviews, students from both the high and low decile schools had similar stories to tell. First time smoking was often related to social cues; students were commonly offered tobacco by friends and accepted for reasons of both personal choice and peer pressure.

Some adolescents obviously smoke as part of a coping strategy for other problems they face in their lives. For these individuals, smoking cessation is likely to be low on their priorities (Finkelstein et al. 2006; Scales et al. 2008). Among other students smoking is a purely social behaviour, a way of fitting in and establishing themselves within a group (Brown et al. 2006; Scales et al. 2008). The effect of this process was also highlighted during the focus groups, where students spoke of a 'division' between smokers and non-smokers. It was not common for smokers to closely associate with non-smokers and vice versa.

Smoking experimentation and continuation are not only the result of social processes in New Zealand high schools but serve to create this social polarisation. Students are forced into making a choice whether they want to fit into a smoking or non-smoking group, and in some communities and schools there are unfortunately enough young smokers to make the former an attractive option for some.

Age of smoking initiation

High school SES was significantly associated with the age of smoking initiation among New Zealand youth. Individuals attending low SES schools were more likely to begin smoking at a younger age than students at high SES schools. Almost a quarter of respondents attending Quintile 1 schools stated they had initiated smoking when they were 10 or younger. In contrast, only 8% of students at Quintile 5, schools reported doing so. These figures

show that a large number of students initiate smoking at much younger ages than the reported average of 14.5 years in New Zealand (MoH 2007). When looking at trends between school quintiles over half of students who initiate smoking before 14 years belong to the lowest two quintiles.

For ages 13 and above, rates of smoking initiation among youth are much more comparable across quintiles. Large variations in students who have never started smoking (39.1% in Quintile 1 compared to 63.7% in Quintile 2) mean that there are different reasons for this. In low SES schools, the relatively small number of students initiating smoking at 13 years and above is largely due to the fact that the majority of students who are going to start smoking have already done so by this stage. By contrast, students attending high SES schools are more likely to start smoking at age 13 or 14 while rates of initiation before this are low.

Students participating in the focus group sessions reported initiating smoking before turning 14. At the high SES school, students had begun smoking in a range of ages from 11-13, while at the low SES school smoking as early as ages 10 and 11 were discussed. There was no evidence of a notable difference in ages of smoking initiation between the two schools but this is to be expected in such a small sample group.

Smoking frequency

Students attending low SES schools in New Zealand smoke tobacco more frequently than those at high SES schools. The most commonly reported frequency of smoking in the month prior to the survey was '1 or 2' days and 'all' (everyday). This trend was consistent across all quintiles. However, approximately 10% of students at Quintile 1 schools reported daily smoking compared to just 4% in Quintile 5. Both groups had a similar proportion of students who reported smoking on one or two days in the previous month. This result suggests that the processes influencing students to smoke infrequently may be similar across groups, but that there are factors influencing students at low SES schools to progress from this behaviour to more regular smoking.

Cigarette consumption

There was evidence of an effect of school SES on students' cigarette consumption. Quintiles 1-4 reported the most common rate of consumption to be 2-5 cigarettes on the days a student had smoked in the previous month. For Quintile 5 students this was the second most reported option behind 'less than one'. When examining cigarette consumption across school quintiles, the majority of smokers who stated they smoked over 20 cigarettes per day attended the highest SES schools. Students attending Quintile 1 and 2 schools followed close behind. For all other consumption levels, Quintile 5 students were well behind lower SES students.

Possible explanations for such high reported consumption among smokers at high SES schools are parental income and the perceptions of smoking in their school. These students may have access to more disposable income than their low SES counterparts have and therefore be able to invest more money in their smoking habit. Alternatively, smoking at high SES schools is seen as less desirable both through the attitudes students have towards tobacco and the lower numbers of students who do smoke. This may mean that individuals who smoke are smoking on their own more often than students at low SES schools where smoking is a much more social behaviour. Instead of engaging in a social behaviour regular smokers at high SES schools may be using their smoking to create a self-identity and may also be more addicted.

The focus group interviews hinted at this process; students at the low SES school felt that proportions of smokers and non-smokers were relatively equal and that both smoking and the trade in cigarettes was widespread at their school. In contrast, students at the high SES school believed smokers were in the minority and that smoking was an undesirable behaviour. Current smokers in these interviews reported high rates of consumption.

These results build on previous New Zealand research (HSC 2009; Paynter 2009) that has investigated the relationship between schools and youth smoking behaviour. Because school deciles are calculated based on the SES

of the neighbourhood where the school draws its pupils from it would be difficult to reason that these results are independent of neighbourhood effects on youth smoking behaviour. What they do provide is a more detailed insight into the inequalities that exist for specific youth smoking behaviours in New Zealand.

8.2.2 Effects of high school deprivation on adolescent smoking beliefs and attitudes

Key findings from Objective 2

Results relating to Objective Two were presented in the latter part of Chapter 6. This section considered how high school SES affects both the attitudes and beliefs of adolescents towards smoking and tobacco products in New Zealand. Findings from individual analyses will now be discussed.

Negative health effects from smoking

There is evidence of a relationship between school SES and the students' belief that smoking is harmful to their health. This relationship was not considered to be overly strong, and is a good sign that the majority of students across all schools are aware of the dangers presented by smoking. There were, however, some concerning statistics to be found in this analysis. Over 11% of students attending Quintile 1 schools stated that smoking was 'definitely not' or 'probably not' harmful to their health. Students with these beliefs made up 60.8% of respondents respectively across all schools. In contrast, only 3% of students at Quintile 5 schools thought that smoking was 'definitely not' harmful and less than 1% thought it was 'probably not' harmful. Over 80% of respondents at all schools in New Zealand stated that smoking was definitely harmful to their health.

Students participating in the focus group interviews were all aware of the impact of smoking on health. This knowledge was most often linked to first-hand experience of poor health attributable to smoking among family or friends. Students who had never smoked generally used these experiences as a reason not to start. Current or ex-smokers spoke of the impact that they

had already begun to see on their personal health from smoking in a relatively short space of time. Of concern were the students who were aware of the devastating impact smoking could have on people's lives, but who felt unable to change their own smoking behaviour. As discussed in Chapter 3, adolescents who are unmotivated in their attempt to quit smoking are unlikely to be helped by cessation programmes, no matter how robust they are.

Difficulty of cessation

Much like students' beliefs surrounding the negative health effects of smoking there was a significant, but small, relationship between school SES and the perceived difficulty of quitting smoking. Again, students in low SES schools were more likely to state that smoking is 'definitely not' or 'probably not' hard to quit than students at high SES schools. Through education, mass media campaigns and first hand observations there should be no reason why young people should still believe that smoking cessation is easy. It is more likely that students who responded in this fashion are telling themselves this as a means of justifying their behaviour. If they are currently smoking now but believe that they can quit whenever they wish and that smoking will not be a long-term behaviour then any potential health effects of their smoking can be ignored. It is difficult to persuade these adolescents that smoking cessation should be a priority for them and this is quite likely a factor in the current issues faced in recruiting and retaining youths in cessation programmes.

Current and ex-smokers participating in the focus groups were asked about their own attempts to quit. This author was most interested in the methods they had used and their beliefs as to why they were or were not successful. A number of students had made attempts to quit smoking in the past but were still currently smoking. Most often, these students had tried to go 'cold turkey' on their own and, after stopping for a short period, started smoking again. Relapse was associated with social cues, as still associating with other smokers made it very difficult to maintain non-smoking behaviour. It was also an outcome of life events, where increased stress levels led to smoking as a coping strategy.

There was a concession among smokers in the focus groups that quitting on your own or trying to go 'cold turkey' were the most commonly used approaches, but these were often unsuccessful. The one student who had successfully quit and remained smokefree at the time of the focus group had the support of friends who were all in the same situation. These findings further support the social aspect of youth smoking. Just as experimentation and initiation of smoking has links to peer pressure this can also play a positive role in among young people in their attempts to quit smoking.

Peer smoking prevalence

There is evidence of a strong relationship between school SES and youth perceptions of smoking prevalence among their peers. As discussed in Chapter 3, the rate of regular smoking in New Zealand was 9.8% for boys and 14.1% for girls. Prevalence of daily smoking was lower still, at 5.8% and 7.9% respectively.

The most frequently reported perception of peer smoking rates for quintiles 2 – 5 was 'about ¼'. Quintile 1 is an area of concern as these students were more likely to believe the smoking rate is 'about ½', followed by those who believe it is 'about ¾'. These perceptions are entirely out of touch with actual youth smoking rates in New Zealand and without a doubt contribute to individual beliefs surrounding the social normality and acceptability of smoking behaviour.

There was evidence of a difference between schools in the perceptions of students involved in the focus groups. Smokers and non-smokers at the high SES school were more likely to have a lower perception of how many of their peers smoked. There also appeared to be a strong initiative among school staff to stamp out smoking at school and this may have had an effect of lowering perceptions of peer smoking through less frequent exposure.

At the low decile school students spoke of smoking as something they see everyday at school and some of the non-smokers felt that teachers did little to stop the smoking. It would be difficult to attribute this to school staff turning a

blind eye; teachers spoken to at this school regarded smoking prevention and cessation as a high priority. They did acknowledge that, in many instances, smoking is just one of the problems their students are dealing with. Teachers felt that if they are overly controlling of smoking behaviour it will affect upon the level of pupils' respect for them and so it was better to provide the students with education and guidance inside the classroom. This illustrates the wider societal problems faced in low SE neighbourhoods and high schools. Smoking cannot be targeted on its own at the expense of other problems and, in fact, positive changes in youth smoking culture are unlikely to happen without other issues being addressed, such as alcohol, education, unemployment and nutrition to name but a few.

Adult smoking prevalence

There is also evidence of a strong relationship between school SES and youth perceptions of adult smoking prevalence in New Zealand. Trends were similar to that of peer smoking prevalence in that students of low SES were more likely to estimate adult smoking to be much higher than it actually is. Where these results differ from peer smoking estimates is that students in every quintile are more likely to believe that adult smoking rates are higher than among their peers. In this case 'about 1/2' was the most frequently reported prevalence for quintiles 2 – 5, while in Quintile 1 'about 3/4' had the largest proportion of responses in the 2008 YIS. Adults are role models for young people and such distorted perceptions of adult smoking in the community may serve to undermine youth smoking interventions. The notion that smoking is a common adult behaviour may lead some youths to aspire to the same behaviour despite repeated messages encouraging them not to do so. It also has an air of hypocrisy about it as these messages are most often delivered by adults whom many adolescents believe are actually smokers.

The focus groups touched on adult smoking, mainly the role that parents play in influencing their own smoking behaviour. During one group, all of the students who identified themselves as current smokers had parents who smoked, while the students who had never smoked said that their parents did not smoke. Most of the smokers interviewed had parents who smoked, these

students stated that their parents had actively discouraged them from smoking just as non-smoking students' parents had done for their children. It is one thing to tell your child that smoking is harmful and not to start, but it is another to lead by example. If adolescents are shown any positive outcomes from adult smoking behaviour then their desire to start is likely to increase.

Research into these issues is limited internationally and non-existent in New Zealand. Adolescent perceptions of risk regarding smoking behaviour (Frankenberger 2004; Lundborg & Andersson 2008) and the attitude portrayed by many young people that they are invincible and will not become addicted to tobacco (Song et al. 2009) are well documented. This research did not explore SES variations in adolescent perceptions of risk, but linked deprivation to attitudes and perceptions young people hold towards smoking. Overestimations of peer and adult smoking rates and misguided perceptions of the negative health effects associated with smoking may suggest an increase in individual risk of smoking initiation and continuation.

In the context of this research, this relationship was not investigated to determine a causal link. How these perceptions may vary by school SES is an approach that has not been studied until now and the analysis has provided some interesting findings. Unfortunately, it is to be expected that young people will continue to initiate smoking even when they know the associated risks. These results suggest that, instead of all young people being aware of such risks as negative health effects and the difficulty of ceasing to smoke, there is an effect of SES contributing to the most deprived students being the least concerned. In the absence of any prior research for comparison, the results of this study make an important original contribution to the New Zealand smoking literature. The cause and effect of the differences in attitudes held towards smoking is difficult to determine. It is troubling, however, that the students already most at risk of becoming smokers due to external factors place themselves further at risk because of their personal beliefs.

8.2.3 Inequalities in access to tobacco products among youth

Key findings from Objective 3

Chapter 7 presented the results for Objective 3. This section of the research focused on the retail tobacco environment and its links to young people. Analysis focused on the relationships between SES and tobacco outlet densities in neighbourhoods and around high schools. Adolescent beliefs and attitudes towards the retail environment were also introduced. A discussion of the findings from these analyses follows.

Inequalities in access to retail tobacco outlets

This research has provided evidence that there is a significant relationship between neighbourhood SES and the prevalence of tobacco outlets in the local environment (measured using buffer zones of 800 metres and 3,000 metres). That is, individuals living in low SES neighbourhoods have access to a greater number of outlets in their area than those living in high SES neighbourhoods. This finding is in line with international research (Asumda & Jordan 2009; Henriksen et al. 2008; Hyland et al. 2003; Yu et al. 2010) as retailers attempt to target groups with high rates of smoking. In New Zealand, Pearce et al. (2007) found that individuals living in more deprived neighbourhoods had a shorter travel time to convenience stores and supermarkets than those in less deprived areas.

This research also examined differences in access to tobacco outlets around local high schools. There was a significant relationship between school SES and convenience store density within 3,000 metres of schools. This effect was present only after the removal from the analysis of the four schools considered outliers because of their proximity to commercial shopping areas. There was no relationship between supermarket prevalence and school SES or for convenience stores within 800 metres of schools. A number of international papers have found tobacco outlets to be clustered around schools (Henriksen et al. 2008; Leatherdale & Strath 2007; Lovato et al. 2007) and these authors also found that outlets were more likely to be located around low SES schools.

Access to retail tobacco outlets and adolescent smoking behaviour

There is prior research in New Zealand that examines the relationship between neighbourhood access to tobacco outlets and youth smoking behaviour. A number of international studies have found evidence of some effects from outlet access on specific smoking behaviours (Chuang et al. 2005; Leatherdale & Strath 2007; McCarthy et al. 2009; Novak et al. 2006; Pokorny et al. 2005). The most consistent finding in relation to youth from these studies was that tobacco outlet density increases youth smoking experimentation and initiation but has no effect on established smokers.

Regular smokers

There was little evidence of a significant relationship between increased neighbourhood access to tobacco outlets and reported rates of regular smoking in Christchurch. After controlling for neighbourhood deprivation there remained only a small, but significant, effect of neighbourhood outlet access on adolescent (15-19) female smokers. This significant relationship applied only to convenience stores within 3,000 metres of the population-weighted CAU centroid. This is in line with the previously mentioned international studies where continued smoking is not believed to be affected by access to retail tobacco outlets.

Never smoked regularly

Findings of this study suggest that neighbourhood convenience store density is related to the reported rates of individuals who have never smoked regularly in Christchurch. Outlets within the buffer zone of 3,000 metres were negatively associated with adolescent (15-19) male and female smoking behaviour after controlling for neighbourhood SES. The strength of this relationship was stronger for young females than for young males.

There was also evidence of an effect between convenience store density and never smoking regularly for female adolescents only. These results suggest that as neighbourhood store density increases the number of young people living in the area who have never smoked regularly decreases. Smoking

initiation is the progression from experimentation to regular smoking and as the term 'never smoked regularly' is likely to include both never smokers and experimenters this result is expected based on the aforementioned international research.

Ex-smokers

Analysis of the relationship between neighbourhood tobacco outlet density and the reported prevalence of individuals who are ex-smokers produced a number of significant relationships primarily among adolescents. Neighbourhood supermarket density, after controlling for neighbourhood deprivation, within the 800 metres buffer zone shows evidence of a significant relationship with the number of male and female adolescents who have quit smoking. There was also a significant effect of neighbourhood convenience store density on adolescent female smoking cessation rates as well as on adult females (25-29). To date, no previous research has attempted to link the number of tobacco outlets in a neighbourhood with smoking cessation rates so comparisons of these findings are not possible. These results suggest that tobacco outlet density does have a limited effect beyond smoking initiation. Why the effect is most pronounced among adolescents is hard to understand as patterns of youth smoking cessation are traditionally hard to predict.

These findings are important in the context of adolescent smoking initiation in Christchurch City. Individuals in the two older age groups (20-24 and 25-29) who report smoking on a regular basis are likely to have begun their habit during their teenage years. The relationship between youth smoking initiation and tobacco outlet density is therefore likely to have an indirect impact on smoking rates among young adults.

As discussed in Chapter 3, the retail environment is an important area for pro-tobacco marketing that targets young people. The presence of tobacco displays alongside child-friendly products, such as lollies, helps to normalise the use of tobacco products from a young age. Current restrictions on in-store tobacco marketing in New Zealand are strict, and about to become stricter.

This might help to explain why the effect of neighbourhood tobacco outlet density on youth smoking behaviour is not larger.

Youth tobacco purchasing from commercial sources

This research sought to examine how important commercial sources of tobacco were for youth smokers. Purchasing behaviour varied by school SES and there were some interesting trends to emerge from these results. Over half of all students who purchased tobacco products from a 'shop' in the previous month attended Quintile 1 and 2 schools. Because these schools have a higher proportion of smokers attending them it was the within decile trends that were the most important. This analysis revealed that approximately one third of smokers attending the highest SES schools had purchased tobacco from a shop in the previous month compared to only 25% at the lowest SES schools.

Findings from the focus groups provide some insight into why commercial sources of tobacco may be more important for students at high compared to low SES schools. When asked about social sources of tobacco products at the low SES school students talked of a tobacco trade occurring at their school. This easy access to cigarettes at school would make it less necessary for students to try and purchase tobacco from a retailer where they should face the prospect of being refused service. Alternatively, participants from the high SES school did not mention buying cigarettes at school but spoke of buying from dairies. This high SES school was also much stricter about students not smoking at school. Teachers actively targeted known smoking areas in the school grounds and advised parents about their child's smoking behaviour.

These findings suggest that social sources of tobacco are just as, and may be even more, important for young people than commercial suppliers. When faced with age restrictions for purchasing cigarettes adolescents have an abundant source of friends and family who are able to supply them instead.

Youth attitudes towards the retail tobacco environment

There is evidence of a significant, but weak, relationship between school SES and students' attitudes towards commercial tobacco outlets. This research examined adolescents' attitudes towards banning cigarette displays and over-the-counter sales of tobacco. In both cases, students attending high SES schools were more likely to first, have an opinion on the matter, and second, to state that they felt banning in-store displays would make children less likely to smoke and that over-the-counter sales of tobacco products should be banned. As stated, the relationship was weak and there is not sufficient evidence from this analysis to firmly state that school SES significantly affects the way young people view the retail tobacco environment.

It was clear from the focus groups that young people do not think about the effect of commercial tobacco outlets on their smoking behaviour. Over the course of the groups only one student had a firm opinion on the matter. She had been involved with a previous campaign to raise awareness about the effect of retail tobacco displays on youth and adult smoking behaviour. This student raised a very valid point, because people interact with the retail environment on a regular basis they become desensitised to seeing tobacco displays. In fact, it would be highly out of the ordinary in New Zealand not to be staring at a wall of tobacco products behind the counter when making purchases at convenience stores.

Because of this, it is uncommon for individuals, especially young people, to consider the effect that such exposure is having on their own behaviour and attitudes towards smoking. As the researcher, it was difficult not to feel that some students were being influenced by the line of questioning. The suggestion that retail displays may encourage children and adolescents to smoke may immediately have led participants to think about retail displays in a negative way. The main goal of removing tobacco displays from sight is to reduce children's exposure and help to further "denormalize" cigarettes. Two students spoke about ways in which cigarette displays can help to promote smoking as a normal behaviour.

8.3 Theoretical implications

As the first study of its kind, this research has made a substantial contribution to the New Zealand youth smoking debate. In particular, the impact of inequalities of access to retail tobacco outlets and the effect of neighbourhood outlet access on adolescent smoking behaviour. Another contribution arises from the identified effects of both neighbourhood and school SES on a wide range of adolescent smoking attitudes and beliefs. Combining qualitative and quantitative data from a several sources, this thesis has found a number of significant variations in youth smoking in the context of neighbourhood and high school environments in Christchurch City. Prior to this research no health geographers, to the author's knowledge, have sought to identify the relationship between SES and youth smoking using GIS analysis at a micro-level in New Zealand. That is not to say that links were not known, as Paynter (2009) and the HSC (2009) have both provided evidence of SE differences in youth smoking behaviour. Hill et al. (2003), Barnett et al. (Barnett et al. 2005,2009) and the MoH (2007) have all provided evidence of inequalities in individual smoking behaviour and neighbourhood SES but these studies mainly focused on adult smokers.

Regarding spatial analysis of neighbourhood effects on youth smoking behavior, this study has added a New Zealand context to previous international research on the topic. Early studies from Lee and Cubin (2002) and Frohlich et al. (2002) were the first to examine if effects of neighbourhood SES that were evident in adult smoking behaviour were also present for youth smokers. Their findings that area effects helped to explain variations in adolescent smoking behaviour beyond individual-level effects led to further research in this field. Diez, Roux et al. (2003) and Matheson et al. (2011) stated that youth living in the most deprived neighbourhoods were at much greater risk of smoking initiation than those living in the least deprived areas. Similarly, the spatial distribution of adolescent smoking prevalence in Christchurch was strongly related to neighbourhood SES. Young people living

in low SES neighbourhoods were significantly more likely to have initiated and continued smoking than those living in high SES neighbourhoods.

This research is in line with recent international studies that have linked neighbourhood access to tobacco outlets with youth smoking initiation and purchasing behaviour (Leatherdale & Strath 2007; McCarthy et al. 2009; Novak et al. 2006; Pokorny et al. 2005). In New Zealand, such studies of spatial analysis have been limited to one study that examined the relationship between adult smoking rates and access to retail tobacco outlets in New Zealand (Pearce et al. 2009). While these authors did not find evidence of a significant relationship from their analysis, the results do align with those expressed in this thesis. They also found little evidence of a relationship between neighbourhood access to outlets and adult smoking behaviour. The most significant relationships were found between outlet access and adolescent smokers, an effect not previously examined.

8.4 Policy implications

The following section outlines two policy implications of the research:

- the future role of government in providing financial support to both schools and community groups to provide youth tobacco interventions.
- the future use of the retail environment by tobacco companies and the concept of a tobacco retailer licensing process.

Redirection of government revenue from youth smoking

As discussed in Chapter 3, it has been estimated that the New Zealand Government received over \$24 million in tax revenue from underage tobacco sales in 2005, although currently this figure will be smaller because of a 20-25% drop in youth smoking rates since then. A significant portion of total tobacco taxation could be redirected back into community and school smoking interventions. Increased funding would allow for programmes to be tailored on a school-by-school basis. This would enable the reflection of the ethnic, social and cultural make-up of the students and community in which they live. Such

a move would also be a positive sign that central government is not interested in profiting from youth tobacco sales.

Licensing of tobacco retailers

New Zealand business owners do not need to obtain a license to sell tobacco products even though they have restrictions placed on their sale just as alcohol does. This has led to a situation where many retailers are clustered together all selling tobacco and, far too frequently, selling to minors.

Licensing would allow for greater enforcement of tobacco control laws and provide for rapid and increased punishment of retailers who flout the law. On the spot fines can currently be issued if a retailer is caught selling to underage smokers. However, these provide owners with little incentive to change their behavior if their revenue from underage sources outweighs the penalties. Under a licensing scheme fines could still be available as a punishment, but repeated violations could lead to a retailer's license being revoked. This would provide a strong incentive for tobacco sellers to sell their products only to individuals aged over 18. Retailers caught selling without a license would face prosecution.

To ensure that these laws are upheld greater enforcement will also be necessary. Alcohol licenses are governed by the Liquor Licensing Authority, District Licensing Agencies, health authorities and the police. All of these groups are in a position to expand their role to enforce the regulation of the sale of tobacco products. Increased funding to make this possible should be provided directly from tobacco and alcohol taxation. As stated above, adolescents in New Zealand provide the government with a large revenue stream from their habits and very little of this is put back into preventing youth smoking in the first place.

Requiring retailers to have a license to sell tobacco should be implemented and the community should be involved in the issuing of such licenses. It should not be the right of every convenience store and supermarket to sell tobacco products. An existing high density of outlets should prevent the

granting of a license and any license should be granted only after community input as to the location and number of tobacco retailers for their area. Involving communities in this way has the positive effect of making adults think about their own smoking behaviour and the environment in which they would like their children to grow up. It gives community members a sense of empowerment as they gain some control over their environment. They are no longer recipients of tobacco control strategies implemented at a government level from outside their area but are in fact helping to shape their own policies.

8.5 Limitations of the analysis

There are some limitations that are important to consider when analysing the results of this research. Both the HSC 2008 YIS and 2006 New Zealand Census datasets were suppressed for confidentiality reasons. This impacted on the quality and application of analyses conducted in Chapters 6 and 7. The use of buffer zones is also discussed, as there is potential for bias in the spatial analysis. Finally, there are potential limitations arising from the use of convenience stores and supermarkets as the only outlets as studied in Chapter 7.

The unavailability of information from the HSC 2008 YIS at a school level meant that data could not be applied to specific schools and did not allow for spatial analysis. Instead, this research had to use national information based on school deciles from which to draw conclusions. It would have been useful to use this dataset to examine differences in smoking behaviour between individual schools so that environmental factors could more accurately be examined.

Data from the 2006 New Zealand Census was also incomplete. Suppression of information was an issue for a number of areas where there was a value of either 1 or 2 present. This meant that ethnic trends in smoking prevalence between neighbourhoods could not be examined as only the European group showed a large quantity of data, but even then it was not enough to provide

for robust analysis. Analysis of this data at a more local level would provide district health boards with better information on which to base their decisions and thus target groups in need with tailored interventions and support.

The suppression of the census dataset also meant that ethnicity could not be controlled for during the regression analyses presented in Chapter 7. This section examined the relationship between neighbourhood access to tobacco outlets and smoking prevalence. Neighbourhood SES was controlled for but previous research has also identified strong ethnic variations in smoking behaviour. Being able to include ethnicity as a control variable would have allowed for better assumptions to be made about the impact of neighbourhood access to tobacco outlets on youth smoking behaviour.

Access to tobacco outlets from a neighbourhood perspective was determined using buffer zones around the population-weighted centroid of each CAU. In the case of several large CAUs this meant that the buffer zone itself did not cover the whole land area of the neighbourhood. This potentially meant that stores located within a CAU, which are also highly accessible to residents, could be left out of the analysis. While this was not the case in this research the decision to use population-weighted centroids may not be valid when attempting to replicate this research in other settings.

There is potential bias also in the creation of buffer zones around school grounds using point location of the school address as the centre of the buffer. Using a geocoded point location meant that the buffer zone extended out generally from the front gate of the school implying that this is the sole point of exit students will use to enter the surrounding community. In reality, schools have many entrance and exit points used by students. With such relatively small buffer zones (400 metres and 800 metres) much of the buffer zone may cover school grounds and not accurately measure the number of outlets located close to exits that are far away from the main school gate. Modifying the school buffer zones may be worthwhile to make this analysis more robust. Creating buffers around the school boundary could do this as opposed to the point location used.

Not all possible tobacco outlets were included in the analysis due to practical issues. Using supermarkets and convenience stores (dairies and service stations that sell consumer goods) should account for most retail outlets frequented by young people. Sale of tobacco from licensed premises such as hotels, bars, restaurants and taverns were ignored. Adolescents are not permitted on these premises so they are not exposed to tobacco displays and face higher than normal barriers to purchasing tobacco from these places. In turn, no attempt was made to ensure that all of the outlets included in the analysis did in fact sell tobacco products. Again this was due to the practicality of doing so and it would be highly unusual for a supermarket or convenience store in New Zealand not to be a tobacco retailer.

8.6 Recommendations for future research

During the course of this research the New Zealand Government introduced a law that will ban the display of tobacco products in retail stores. This thesis has provided evidence of a relationship between youth smoking behaviour and neighbourhood tobacco outlet density irrespective of neighbourhood SES. There is potential for a future project to focus on the progression of this relationship over time comparing pre- and post-ban effects of the retail environment on adolescent smoking behaviour.

This research has suggested that there is some inequality in access to convenience stores around high schools in Christchurch City. If it were possible to obtain smoking rates for local high schools from YIS data it would be interesting to:

- further examine the links between school SES and adolescent smoking behaviour
- determine if there is a relationship between school access to tobacco outlets and school smoking rates after controlling for school SES.

This thesis has presented some evidence of a relationship between neighbourhood access to tobacco outlets and smoking behaviour primarily among adolescent (15-19) females. It would be worthwhile examining the nature of this relationship further as the positive correlations suggest that as neighbourhood access to tobacco outlets increase so too does the proportion of ex-smokers living in the area. It could be assumed that these individuals live in areas with high smoking prevalence and in turn have managed to stop smoking in what is largely a pro-smoking environment. What access have these individuals had to cessation resources that have helped or encouraged them to modify their own smoking behaviour and quit?

What effect does neighbourhood SES have on smoking experimentation? Not all adolescents who experiment with tobacco go on to initiate smoking. The findings of this research suggest that there is a significant difference in rates of experimentation between the highest and lowest SES schools in New Zealand. Future research should investigate if there is also an effect of SES influencing the progression from experimentation to initiation and subsequently continuation among adolescent smokers.

This research did not find a clear link between school SES and differences in the prevalence of tobacco outlets around them. It would be interesting however to examine if increased prevalence of tobacco outlets affected the smoking prevalence of individual schools irrespective of SES. At a neighbourhood level tobacco outlet density was related to youth smoking behaviour after controlling for neighbourhood SES. Is the same happening in our schools?

8.7 Summary

“It really just comes down to your decisions, all kids have to choose and you just have to make the right choice”

(Female 13 years, low SES Christchurch school)

This thesis has shown that neighbourhood and high school SES and access to tobacco outlets all have a significant effect on adolescent smoking behaviour, attitudes and beliefs. In line with international research, adolescents living in the most deprived neighbourhoods are most at risk of smoking initiation. These same individuals are faced with increased access and exposure to tobacco products in commercial settings compared to their less deprived peers.

The introductory comment to this section came from a student participating in the focus group interviews that were a part of this research. It serves as a stark reminder that no matter how many interventions policy makers direct at young people in an attempt to stop them from taking up smoking it still comes down to personal choice. In low SES neighbourhoods smoking is seen as somewhat of a normal behaviour and so it is unsurprising that young people living in these areas make smoking part of their own self-identity. Increasing restrictions on the retail tobacco environment is a current approach in national tobacco control policy. There is only so far that these efforts can go in reducing youth smoking prevalence, as adolescents can readily buy tobacco from social sources. As long as tobacco products are available as a consumer product in New Zealand young people will continue to smoke them.

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Appendices

Appendix 1 – focus group interview moderating guide

YOUTH SMOKING FOCUS GROUPS

Prior to the start of the focus group students will be required to fill out a brief form outlining personal details (name, age, sex). Included in this will be current smoking status (smoker, past smoker, experimented, non-smoker) and age of first tobacco use.

Section One: Current smoking behaviour

This initial period of the interview will build on each smokers past and present experiences and behaviour with tobacco. Key topics in this section include:

- Age of first tobacco use.
 - Setting (where did it happen, group or alone?)
 - Influences to making the decision (peer pressure, need to fit in?)
- Frequency of tobacco use.
 - Did you continue using tobacco immediately after your first time?
 - Has/did your use increased over time? If so describe this increase.
 - Do you consider yourself to be a social smoker (only smoke with friends, do not purchase tobacco for personal use) or a regular smoker (smoke tobacco when alone, often purchase tobacco for themselves)?
 - Have you made attempts to quit or reduce your tobacco use? If so were you successful?

Section Two: Access to tobacco products

This section deals with where the interviewees obtain cigarettes from and their opinions on retail supply of tobacco. Key topics in this section include:

- Sources of cigarettes
 - Most common source is the most important but finding out secondary sources will also be helpful especially for the role that family and friends play in this process.
- Non-commercial sources of cigarettes
 - Have you ever bought tobacco off/through friends/family?
 - NZ research of year10 students found that buying from friends or someone else purchasing them for them was the most common way youth were gaining access to tobacco. Where do you get your cigarettes?
- Commercial Sources of cigarettes
 - When was the last time you tried to purchase tobacco from a store? Were you successful? Are you usually successful/unsuccessful?
 - Research has shown that over one third of students purchase cigarettes themselves from retail outlets. Get students to build on this and tell of their own experiences (if they have any)

around buying tobacco from a shop. Following this establish from the entire group what their opinion is on ease of access from commercial sources for underage buyers.

- Continuing with this conversation about retail supply of tobacco products introduce the theme of indirect advertising of cigarettes. Namely retail displays in stores. What are the participant's opinions of them? Do they feel that they encourage them to smoke or are they indifferent to their message? This will be interesting to compare to statistical data on these same questions as well as comparing them to studies that have shown the impact such retail displays of tobacco products have on encouraging youth smoking uptake and continuation. Also will there be differences between the two schools based on the type of retail environments they encounter locally?

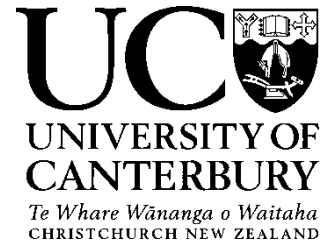
Section Three: Smoking cessation

In this section I intend to draw out participants thoughts and experiences surrounding smoking cessation. Some of the group may have successfully quit, be in the process of doing so, be contemplating it or not have given it much thought at all. The variation in these viewpoints will be interesting as well as the subsequent talk between individuals who agree or debate with other focus group members. Key topics in this section include:

- Establishing each participant's own experience with smoking cessation (no thought given, thinking about it, in the process, have tried successfully/unsuccessfully). Get them to build on their response with reasons behind their decision to/not to quit and encourage discussion between participants about this (be careful of criticisms developing between individuals). Of particular interest here will be what factors teenagers place the most emphasis on when deciding to quit, have they been pressured by family to stop, health reasons etc.
- Access to cessation services, do participants feel that if they wanted to quite they know how and where to access quit smoking services? If any have had experience with cessation providers what was their experience like. Do participants feel that current anti smoking messages are successful in encouraging them to quit smoking or not try smoking?

Appendix 2 – focus group information and parental consent forms

Christopher Bowie
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Parental Consent Form

I am a Masters student studying at the University of Canterbury as part of the GeoHealth Lab in the Geography Department. My research looks at youth smoking in New Zealand using Christchurch as a case study. I am interested in talking to students from [your school] about their attitudes; beliefs and opinions surrounding tobacco products and youth smoking in New Zealand. A mixture of current smokers, ex-smokers and non-smokers will be used so not all participants are expected to have experience using tobacco products. The information gathered will be used as part of a wider research project intended to increase our knowledge of youth smoking issues. Of particular interest to this study are the following topics:

- Youth purchasing behaviour of tobacco products
- Desire to quit smoking and subsequent use of cessation services
- Youth attitudes towards retail tobacco displays
- Opinions and beliefs about personal and social tobacco issues concerning New Zealand youth

This research will require students to participate in a focus group alongside other students from [your school]. The interview will be held on school grounds during the lunch hour and is expected to take approximately 45 minutes; food and drink will be provided for all participants.

All your child's answers to the survey questions will be completely confidential. The responses provided by your child will be combined with data from other children and reported in group form only. There will be no way to identify your child and his or her individual responses in the reports, a copy of the interview transcript will be made available to your child if requested, this will also not contain the names of any participants. Participation in this research is completely voluntary and you or your child are welcome to withdraw their participation or request that information they have supplied be destroyed at any time during the study.

The published thesis is a public document available from the University of Canterbury's Library Database, future publishing of this research may also take place in selected academic journals and presentations. This project has been reviewed and approved by the University of Canterbury Human Ethics Committee and is being supervised by Professor Ross Barnett (ross.barnett@uclive.ac.nz).

If you have any questions or concerns do not hesitate to contact me.

Regards,
Christopher Bowie

I have read the information above and consent to my child participating in the interview process.

Student's Name: _____
Date: _____

Parent's Name: _____
Signature: _____

Appendix 3 – focus group transcripts

High SES High School 30/08/2010 (12:30-1:05pm)

- Group Details
 - M1 - 14 Years, current smoker
 - M2 - 14 Years, ex-smoker
 - M3 - 17 Years, never smoked
 - F1 - 13 Years, never smoked
 - F2 - 13 Years, current smoker
 - F3 - 13 Years, never smoked
- For those of you who have tried smoking how old were you when you first experimented with smoking
 - M1 13 with friends, offered “mates who smoked asked if I had tried it and I was like nah and they were like oh do you wanna try it and I was like may as well”, carried on smoking from then.
 - F2 11 with friends, carried on smoking from that moment.
 - M2 12 with friends
- Regularity
 - M1 been cutting down, went two months without having a smoke but just started again recently. 2-3 a week. “Sometimes I’ll smoke by myself but I tend to like to smoke with my mates”.
 - F2 2-3 a day. Smoke alone “yeah every now and again, its kind of depressing when your alone”.
- Those of you who don’t smoke what do you think is different about your reasons for choosing not to try it compared to those who tried it and went on to smoke
 - F1 “never really thought about it”
 - F3 “none of my mates are into it” “except for F”
 - M3 “had a few mates who di it but they never really pressured me into it or anything”
 - M1 “I never got peer pressured into it, it was a choice, everyone was doing it and I didn’t kind of do it because I thought it was cool. I didn’t do it for like that reason. It was there and I thought I may as well”
 - F2 “the first time I did it I was like I just want to try it and it just got addictive”
- How commonly are you around smokers in your home or school in your day-to-day life?
 - F3 “my mum doesn’t smoke and my dad doesn’t smoke”
- How easy it for you to get hold of cigarettes?
 - F2 “my mates buy me them”
 - M1 “I work in a butchery and when I’m working the guys will go down with my money and bring them back to me” “sometimes dairies I have gone in and they let me buy them” “sometimes if my parents aren’t looking I’ll nick one out of theirs”
 - F2 “iv got a mate who works in a dairy so I can get them there”
 - M1 “you get the occasional dairy owner who asks for your ID and you’ll be like I don’t have any and they’ll be like oh just don’t tell anyone. And you get the ones who just don’t really care

they'll just be like yeah alright" (F2) agrees "haha yeah they'll just ask what brand and stuff"

- What impression do you think there is among your age group?
 - F3 "I think its disgusting"
 - F1 "yeah I think its gross"
 - F2 "I don't think its cool its just like something you end up doing"
 - F2 "it depends who you are really like lots of my mates do drugs but hate smoking"
 - M3 "a lot of people my age do smoke but lots don't too and I think most people don't like it"
- Do your families know that you guys smoke?
 - F2 "No! My mum would kill me"
 - M1 "No, my parents are pretty heavy smokers and nearly every day my mum tells me don't smoke its not worth it" "kind of mixed feelings about it but I don't tell them or anything"
 - M2 "yeah that's why I stopped they went through my bag"
- Those who don't smoke how would your parents react if they found out you were doing so?
 - F3 "have a psyche"
 - F2 "if my mum found out she would like literally, literally kill me like serious"
 - M3 (stepdad who smokes) "I don't think he would be happy if he found out I was smoking but I couldn't see him doing anything serious about it"
 - M1 "iv got mates who tell me I should tell my parents because they cant do anything about it since they smoke and it would be hypocritical but I still choose not to tell them"
- Do any of you have younger brothers or sisters and how would you feel about them smoking?
 - M1 (six year old sister) "if I found out my younger sister would start smoking at around my age I would probably be disappointed but I cant really say you cant do that and stuff like that because its her life its her choice it might not be the right choice and stuff, like iv tried to quit like three of four times but it hasn't really worked"
 - F2 (youngest with older brother and sister) "my brother smokes but my sister doesn't she's totally against it" neither of them know she smokes
- Do you notice retail cigarette displays inside the stores?
 - M1 "not really" "you see all of the warnings, smoking does this smoking does that but when your smoking you don't really think about that it's the last thing on your mind about what its actually doing to you"
 - M1 "I don't really notice the advertising to be honest I just kind of look at it and think cool like..." F2 "yeah sweet smokes" M1 "I don't really think of it as advertising I don't really take notice because its not really big advertising"
- At the moment they want to remove retail displays in store do you think this would have an impact?

- F2 “I remember when I was little and I would look at them and be like ha mum has them” “becomes normal and it doesn’t bother you when you see it”
- Experience quitting smoking
 - F2 “I gave up for like 2 months at the start of the year but when your stressed you just automatically think of cigarettes”
 - M1 “when your smoking you’ll lose friends but you’ll also gain heaps of new ones” “at my old intermediate no one there really smoked but then I came to ... and lots of people smoked and I was like oh cool”
- What kind of reasons prompt kids your age to quite smoking?
 - M2 “I started racing motocross competitively and I was puffing all the time”
 - M1 “I do quite a lot of drumming and every time we would finish a song I would be near death so I tried to quit and then I got a girlfriend who didn’t like me smoking so that was kind of a reinforcing thing for me to quit and then things kind of turned south an I was like iv got no reason to keep quitting and I just like started again because I still had the cravings and stuff but I wish I could quit because that would be cool”
 - F2 “when I gave up it was because I knew people I had told didn’t agree with it and I didn’t want my friends to be like ew you smoke”
- When you did try to quit smoking did you seek help?
 - F2 “I used gum”
 - M1 “I called the quit line a couple of times” “gone to the nurse a couple of times shes got the nicotine gum and patches” “the patches I got were too strong and made me sick so I kind of had to hold it in and stop it myself I didn’t like the nicotine gum and I tried one of the electronic cigarettes but they are crap. So I just kind of like took away the temptations and stuff like staying away from friends when they smoke” “but the one thing I couldn’t eliminate was my parents smoking and they would have the packets lying on the bench and I was like I could so take one right now and they would smoke around me and the temptations would get really really hard so it was kind of hard to quit” **If you were to tell them that you smoked and you were having trouble quitting because of their smoking would that have an impact on them?** “they have told me they want to quit but they just haven’t, so if I was to tell them I was quitting but it was their smoking that was getting in the way I think they would just tell me they had told me not to smoke and they wouldn’t stop themselves and I just don’t want to tell them. I have been cutting down on cigarettes”
 - M2 “I would have been addicted when I quit I was smoking everyday. A group of us decided to quit because we got caught by the principal smoking so we all decided to stop”
 - M1 “a group of us decided we wanted to quit so we saw the nurse and she helped us and gave us the options we had. We wrote on a bit of paper why we wanted to quit but two weeks

- later we had a review and we had all smoked over the two weeks. It definitely helps so much though when you've got someone to quit with"
- F2 "when I tried to quit smoking I had a friend who still smokes so I tried to entertain myself with other things but it led to weed and alcohol and then other things so I kind of thought okay smoking is probably better"
 - M1 & F2 both talk about the price rise having an impact on their smoking F "oh my god its probably cheaper to buy weed now".
 - Do you think there are a lot of options there for teenagers to get help to quit smoking?
 - F2 "I don't want to talk to some random about my smoking. I would never call quitline because I don't want to and It would be weird being like hey I need a smoke what do I do?"
 - M1 "yeah I was real cautious about it I was like do I call do I not call whats going on" "when I called them they were helpful but its through the telephone so its quite hard to eliminate the temptations and when your talking about it, it just makes you want to have one more but its kind of good to talk to someone about it who knew what your talking about and who knew what the temptations were"
 - F2 "my friend she was trying to quit she called quitline and was having a smoke when she was on the phone to them and theres nothing they can do about it because its over the phone"
 - M1 & F2 replace smoking with another item eg always have a drink bottle to drink from when they feel like a cigarette or a lollipop
 - M1 "the one thing that really stops you from smoking at school is the thing of being caught, the teachers will send you to the principal and the one thing that's really stopping me from smoking at school is they ring your parents and it's the whole thing if my parents find out I'm dead"
 - M1 "when you've got friends who smoke and you've got family and work mates who smoke there's always that kind of like temptation to try it and you say to yourself I wont get addicted but it just kind of goes from there"
 - F2 "I had about 5 or so cigarettes before I started wanting more and my friends would be like you've only smoked 7 before but I was just like I need one I need one"
 - Do you think smoking is still normal among your age group?
 - F3 "yeah"
 - F2 "I know shitloads of people who smoke"
 - M3 "I think its gone down its not so much accepted anymore. Lots of people still do it but most people don't like it"
 - Do you see your smoking behaviour changing from where it is now?
 - F1 "no"
 - F3 "no I don't think I'll ever try it"
 - M3 (soon to turn 18) "no it doesn't interest me"
 - F2 is this something you think you will continue with? "probably, I want to stop but its really hard"

- M1 “it’s the whole thing of wanting to stop and then you ask yourself can I stop? Is it something I’m going to be doing 20 years, 30 years on and wasting all that money while the prices are going up”
- F3 “my uncle started smoking when he was 12 and he’s now 35”
- M1 “my dad he’s been smoking since he was 11 and he’s 35 now”
- F2 “my mums 41 and she’s been smoking since she was 12”
“my friend used to smoke all the time and she stopped and started smoking pot because its so much cheaper she could buy 2 months worth of weed for the amount she would spend in a month on cigarettes”
- M1 “what I’ve been doing recently though is when I feel like smoking a cigarette I’ll go out to my room and play the drums for hours to take my mind off it”
- M1, M2 & F2 all spoke of alcohol being substituted for cigarettes when they try to quit
- M1 “ I drink with my dad quite a lot I’ll play pool with him in the garage having a couple of drinks and then he’ll start smoking and I’ll just hang in there, I don’t want to leave because it will give him the impression that I smoke and am having cravings so I just kind of hang in there and try to stay away from the smoke. But its definitely really hard when you’ve got parents that smoke because your around them all the time and they smell of cigarettes its much harder to quit and when your best mates smoke too its just really hard”
- F2 “my mum said it’s ruined her life even though it doesn’t stop her, it makes you look really old”
- M1 “the one ad that really scared me was the one of the guy with the thing in his throat that just made me sit down and go ohhhh. That’s one of the best examples” F agreed with this
What about the smoking not our future ads with the celebrities? F2 “I’m just like oh I know that some of them have smoked”
- Anything else?
 - F2 “I don’t get why they have all the anti smoking ads when weed is so much more common in school now”

Low SES High School 31/08/2010 (1:30-1:55pm)

- Group Details
 - M1 – 15 Years, never smoked
 - M2 – 15 Years, current smoker
 - F1 – 15 Years, never smoked
 - F2 – 14 Years, never smoked
 - F3 – 14 Years, never smoked
- How old were you when you first experimented with cigarettes?
 - M2 10 by himself, sometimes smokes with friends now.
- For those of you who haven't tried smoking what reasons do you think stopped you from doing so when your school has such a high smoking rate?
 - F2 "my dad smokes and when you smoke your appearance changes, I don't wanna look like that"
 - F1 "my Uncle, he's in a wheelchair and he smokes and it's not helping. He's got a short life being in a wheelchair but he's got an even shorter life because he smokes and I don't want to end up like that"
 - M1 "I have never been interested in trying it"
 - F2 "I'm afraid of trying, I'll get addicted"
- And M2 when you did decide to try smoking what influenced you?
 - M2 "at first I didn't even think that it would affect me so much but over the years I think I've spent thousands of dollars on cigarettes" "My dad ran away from me when I was ten that's the main reason I started and my mum passed away last year so it's [smoking] has gotten worse since last year"
- Do you think that kids your age find it hard to get hold of cigarettes?
 - F1 "no"
 - F2 "A lot of my friends parents know they smoke and they buy them for them"
- Do any of your parents and/or siblings smoke?
 - F1 no
 - F2 dad smokes, brother smokes he started when he was 12. Parents found out when he was 15 he would smoke in the toilet and they could smell it. **How did they react?** At first they didn't like it but they had no choice and couldn't stop him so he still smokes.
 - F3 dad
 - M1 no
 - M2 sister who he lives with smokes
- What would your parents reaction be if they found out you were smoking?
 - M1 "They'd be angry, I'd get a smack"
- Are they very hard on you at school to stop you from smoking?
 - F2 "No, they know they smoke and they don't do anything about it"
 - M2 "the only thing that they do is walk around the places they know people smoke and stop them"
 - F1 "the girls toilets stink [of smoke] and they do nothing about it"

- M1 “they just tell people not to do it but you don’t get in much trouble”
- When you are out in your local neighbourhood can kids buy cigarettes themselves from dairies?
 - M2 “I have but only at places where people don’t know who I am”
 - F3 “I have seen lots of kids in school uniforms be sold smokes at dairies around here, they know what ones to go to”
- Do you think smoking is seen in an acceptable or negative way in your community?
 - F2 “I think a lot of people smoke just to fit in because so many people do it”
 - F1 “A lot of people talk about smoking being bad but then so many of them actually smoke so its like they don’t actually care”
 - M2 “I see it as like heaps of people frown upon it but they do nothing about it, like that’s all they can do is look at you but no one tells you not to do it”
- M2 do you think about the health impact of your smoking?
 - M2 “Yeah, a lot because my mum passed away from smoking she had cancer in the lung and the brain. But when she passed away it just made me smoke more” “I don’t know why but it just like calms me down”
- So do you think the youth anti smoking campaigns like Smoking Not our Future have helped change kids attitudes to make them not want to smoke?
 - M2 “I don’t think that campaigns like that have as much effect as what other things could like more money to help doctors provide us with good help”
- Do you think the rise in prices of all tobacco has made an impact on smoking for people you know?
 - F2 “my dad smokes like a packet of cigarettes a day and my mum she organizes the money so she gets real angry when he goes to buy cigarettes. That’s all he buys no food or anything just smokes”
 - F3 “my dad stopped buying packets and changed to Port Royal because its cheaper and he can roll more out of the pack, my sister rolls them for him but she doesn’t smoke”
 - M2 “yeah its like a dollar more expensive already than last year and its just keep going up and up I wont be able to afford to keep smoking if it does”
- M2 have you tried to quit smoking before?
 - M2 “yeah I stopped smoking for a while but started again when my mum passed away but I have just bought one of the electronic cigarettes off the internet because my brothers girlfriend said they are good” “when I first tried to quit I went cold turkey, my doctor had offered me patches but when my mum had them her arm got all bruised and swollen so I didn’t want to use them. When I quit I had the shivers and I wanted to throw up for about three days... I lasted for about four months but just before the school holidays my Mum and my Nana passed away

and then just after my Aunty went and a couple of months later my best friend killed herself so I was smoking because of all the stress but I didn't think it would be as bad as last time but now seven months later I smoke about half a pack a day"

- Do you think youth have options for getting help to quit?
 - M1 "I would tell my parents they would stop me and give me a smack"
 - F1 "There's some kids who's parents smoke that don't let their kids smoke"
 - F3 "We can go to the counselor at school"
 - M1 "Yeah a lot of people go to the counselor to get help, sometimes they get told by the teacher they should go"
- Is peer pressure a big part of smoking at school?
 - F2 "My friend had never smoked but she tried it with some friends who all smoked and she got caught out the back of school by a teacher and her parents found out, she got a hiding"
 - M2 "not a lot of my friends smoke, probably around a fifth of them"
 - M2 "a lot of the kids who smoke are real into their partying, they drink and smoke and party"
 - F1 "they cant quit either because all their friends smoke and give them crap if they don't smoke too"
 - F1 "the smokers start to hang out together and become friends but not the sort of friends you necessarily want to hang out with"
- How regularly day-to-day would you be in contact with someone who is smoking?
 - Everyone – everyday
 - F3 "I had a friend who smoked but every time she would go to have one we wouldn't hang out with her and then she stopped and she hates smoking now"
- Do you non smokers consider yourselves to be in the majority or minority among your peers?
 - F1 "minority"
 - F2 "yeah most of the kids our age all smoke"
- M2 do you see yourself continuing smoking?
 - M2 "I do see myself but I don't want to"
 - F2 "when I was young I used to say I was gonna start smoking but not now"
 - F1 "they have these little lollies [spacemen] that look like smokes, I used to buy them and pretend I was smoking but I don't want to try it anymore"
- Would any of you ever date a smoker?
 - F1 "no, ew!" "my brother told me he'd been in town and seen this hot girl but then she got a smoke out and then he was like ew gross not so hot anymore"
- Any thoughts comments
 - M2 "I hate the taste of it and I hate the feeling of it. Everytime I finish a cigarette I run to the kitchen and have a big drink of water"

- F2 “I don’t know why they have all the ads on TV why don’t they just stop selling them?”
- M2 “asking for a smokefree country is like asking for world peace”
- F2 “my aunty smokes and she’s always puffing, she has told me she wishes she never started but it shows how addictive it is she doesn’t think she could ever quit so she doesn’t try”
- F2 “In Samoa theres no age to buy so little kids can buy them. My seven year old cousin buys cigarettes from the shop for my Uncle and you can buy single cigarettes from the store”
- M2 “you can buy them really easy at school too, 50c for a rollie and \$1 for a tailie”
- M3 “yeah there’s heaps of people selling at school”
- M3 “it really comes down to your decisions, all kids have to choose and you just have to make the right choice. My uncle when I was a little kid even offered me cigarettes but I have never wanted to”
- F2 “when my parents smoke around me its so gross but I can picture myself smoking and I get a smoke out and put it in my mouth, I always picture myself smoking but then I look at my dad and think no thanks”

High SES High School 02/09/2010 (12:30-12:45pm)

- Group Details
 - F1 – 14 years, current smoker
 - F2 – 14 years, current smoker
 - F3 – 14 years, current smoker
 - M1 – 16 years, never smoked
 - F4 – 15 years, never smoked
- For those of you who have tried smoking how old were you when you first experimented with smoking
 - F1 11 years, with friends
 - F2 12 years, with friends
 - F3 13 years, alone
- Regularity
 - All three regular smokers, smoke both alone and with friends everyday
- How many cigarettes do you smoke on average daily?
 - F1 “probably between seven and fifteen a day” **What about you other two how many would you smoke each day?** Both agreed with F1 response.
- What things influenced you to try/not to try cigarettes and then go on to become a smoker?
 - M1 “none of my friends smoke so I have never been faced with a real decision to make, there has never been any peer pressure to do it”
 - F4 “I know people who smoke but it’s just always been one of those things that you want to try but you don’t at the same time. I’m also involved with the Cancer society and the smokefree ambassadors programme.” “I’m for telling people about how bad smoking can be and giving them advice, I’m not against smoking I’m all for freedom of choice”
 - F3 “for me everyone around me was doing it like my parents”
 - F1 “my mum smokes it calms her down so I wanted to try it too”
- Do any of your family members smoke?
 - F3 both parents
 - F1 both parents
 - F2 dad smokes weed
 - M1 “my nana and granddad used to smoke”
- What would your parents think of you smoking if they knew?
 - F1 “my parents know because I got caught smoking at school and I told mum I had quit but she doesn’t know that I still smoke”
 - M1 “my parents would be surprised more than anything”
- Have your parents ever told you about the dangers of smoking and encouraged you not to do it?
 - F1 “yeah my mum tells me about it a lot”
 - F3 “my mum used to joke about it and say if I wanted to try smoking she would buy me a whole packet but I had to smoke the whole thing”
 - F2 “yeah that’s what my mum used to say as well”
- How commonly are you around smokers in your home or school in your day-to-day life?

- Everybody said they see someone smoking daily in their lives
- F1 “lots of people smoke at school and the teachers know they are doing it but they cant really do anything about it”
- F4 “yeah the teachers cant search peoples bags or anything like that so the smokers know what they can get away with”
- F3 “we are professionals at smoking and not getting caught”
- How easy it for you to get hold of cigarettes?
 - F2 “my sister buys them for me”
 - F3 “I buy my own and sometimes my aunty gets them for me” “sometimes I get asked for ID at the dairy but they normally still sell me them and I know what dairies I can go to”
 - F1 “I buy them myself and my cousin and aunties sometimes buy me them if I give them money”
- Do you notice cigarette displays inside retail stores?
 - F4 “I do because I was involved in a campaign with the Cancer Society. To tell you the truth I never really thought about them before but after the campaign I can see why there is a problem with them” “we got signatures for a petition in town and spoke to kids at school about it and got them to make submissions. When people became aware of it they thought that it was bad” “people didn’t think it was a bad thing that would make you smoke but thought that they make it hard for people to quit and it becomes quite normal to see cigarettes all the time”
- Do you think that a ban on cigarette displays would be effective in stopping people from smoking?
 - M1 “not really”
 - F2 “I don’t think so, people who smoke already know that its bad and they are going to want to buy cigarettes whether they can see them in the shop or not”
 - F1 “it might help for little kids because they wont see cigarettes all the time when they are getting lollies”
- Have any of you tried to quit smoking?
 - F2 “I have tried a few times, once I went to the school nurse but other times I tried to go cold turkey”
- What reasons did you have for wanting to quit smoking?
 - F2 “because I was trying to play sport and was getting really exhausted easily”
 - F1 “because its so ugly”
 - F3 “for money”
- Do you think that there is good support out there for teenagers who want to quit smoking?
 - M1 “yeah I think there’s more than there’s ever been”
- Do the public campaigns such as Smoking Not Our Future have an impact on your attitudes towards smoking and even your own smoking behaviour?
 - F1 “not really”
 - F3 “I don’t care what other people say and I don’t like them to be trying to tell me what to do I want to make my own decisions”

Low SES High School 03/09/2010 (1:30-1:55pm)

- Group Details
 - F1 – 15 years, never smoked
 - F2 – 15 years, never smoked
 - F3 – 14 years, never smoked
 - F4 – 14 years, experimented
 - F5 – 14 years, never smoked
 - F6 – 15 years, never smoked
 - F7 – 15 years, never smoked
- How old were you when you first experimented with cigarettes?
 - F4 11 years, with friends
- Is smoking seen as being quite normal among kids your age at your school?
 - F3 “I think its about half and half”
 - F5 “all of the smokers hang out together and the rest of us hang out with people who don’t smoke”
- What do you think has encouraged you to not smoke when such a high number of your peers do?
 - F3 “health and stuff I don’t want to get sick”
 - F4 “the smell”
- If any of you were to start smoking what would your parents reaction be?
 - F5 “they’d be disappointed and angry”
 - F3 “dad has always told me I’d better not start smoking. He would get so angry”
- How often are you in contact with someone who is smoking at school?
 - Everyone “all the time”
- How easy is it for underage teenagers to get hold of cigarettes?
 - F6 “so easy they can just buy them at school for 50c and a dollar”
 - F3 “at the dairies they just sell them to anyone”
 - F1 “Everybody knows somebody or can get someone who is over 18 to buy them anything like smokes and alcohol”