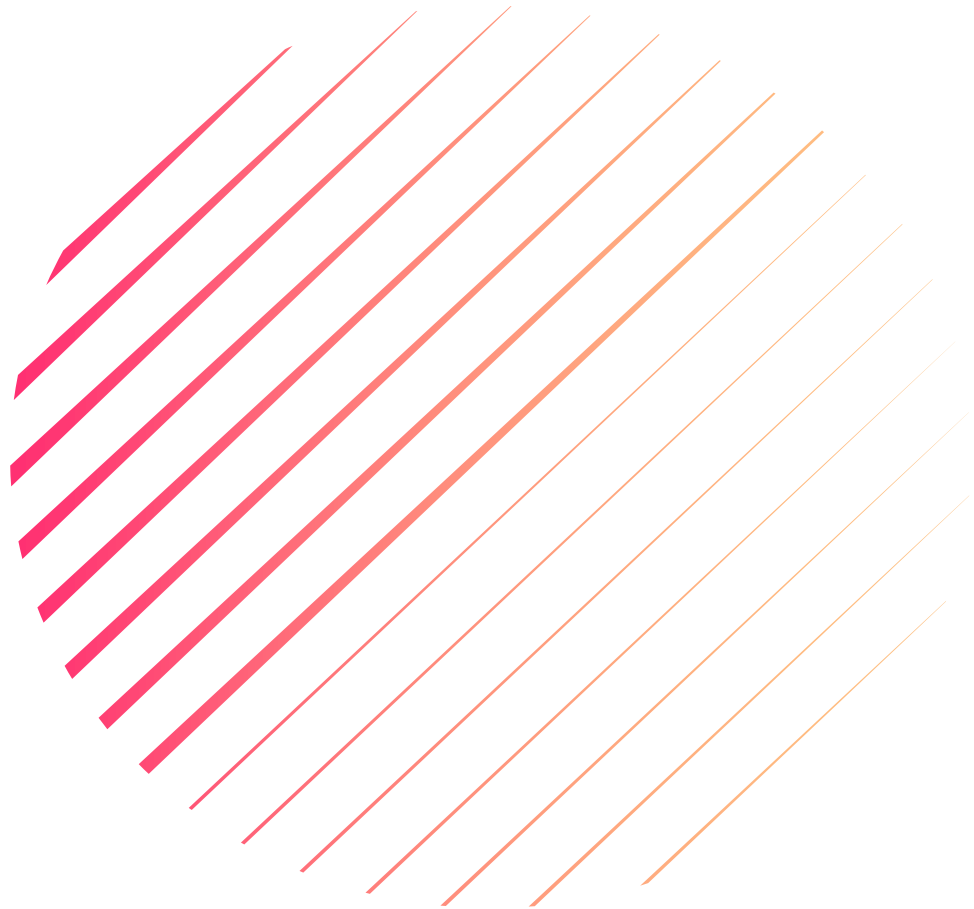


Smoking among young people in Tasmania

Analysis of existing datasets



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Executive summary

This report provides an in-depth analysis of existing datasets containing information on smoking in young people and the characteristics of the population of Tasmania in the target age group of those under 24 years. The objectives were to: (1) examine trends in the prevalence of smoking across different surveys over time in target age groups, (2) examine factors associated with smoking status in young Tasmanians, (3) examine attitudes and beliefs related to smoking among younger people in Tasmania and (4) examine the characteristics of people attending compared to not attending school in Tasmania.

Trends in smoking prevalence

The prevalence of recent smoking among young people who attend secondary school has decreased to some extent over the past 5 to 10 years (past 7 days 16-17 year olds from 17% in 2008 to 8% in 2017) but there is some evidence of a plateau (past 12 months 16-17 year olds 31% in 2014 to 32% in 2017). The prevalence of current smoking (daily and non-daily) among 18 to 24-year olds has decreased slightly in women (23% in 2011-12 and 21% in 2017-18) but not men (24% in 2011-12 and 24% in 2017-18) between recent population-based surveys but remains higher than the national average.

Factors associated with smoking in young Tasmanians

The factors associated with being a current smoker among people attending secondary school are similar to those reported in the literature and include being older (200% higher prevalence of smoking), less academically engaged (highest academic rating 74% lower prevalence of smoking) and identifying as Indigenous (48% higher prevalence of smoking). Among this sample of children at secondary school, area-level socioeconomic status was not associated with smoking status but having more disposal income was positively associated with being a smoker (higher weekly money to spend 240% higher prevalence of smoking). Among the general population aged 15 to 24 years, similar factors were also associated with being a smoker. In this group, the association between smoking and lower socioeconomic status was more evident, with having higher available income also associated with current smoking in this sample. The association between greater socioeconomic disadvantage (e.g. area-level measures and income) and current smoking was stronger in the older groups (25 to 54 years and 55 to 84 years). There was evidence that the higher smoking prevalence in Tasmania compared to other states was driven by socioeconomic factors because adjusting for these factors reduced the disparity in smoking prevalence between Tasmania and other states by 17%.

Attitudes and beliefs related to smoking

Most young people attending school are aware of the major health risks associated with smoking. There is, however, considerable uncertainty around the risk associated with less promoted risks such as infertility or ageing. These present potential avenues for improved health education around smoking. Most young people, and the population in general, support policies to reduce supply to young people including through age-based legislation.

Characteristics of young Tasmanians that do not attend school

Young Tasmanians that do not attend school are more likely to reside in lower socioeconomic status area (58% versus 44%), live in more rural areas of Tasmania (37% versus 30%) and identify as Indigenous (12% versus 8%), which are characteristics known to be associated with a higher prevalence of smoking in young people. It is therefore possible that the prevalence of smoking among the general population of young people in Tasmania is higher than reported in the school-based ASSAD survey.

Limitations

The sample sizes of the surveys used for these analyses were limited and this precluded us from undertaking several planned analyses. We were required to pool survey years to obtain reliable estimates, which has disadvantages, although we controlled for survey year and other characteristics that may vary between surveys to address this issue. The different survey designs including sampling strategies and specific questions about smoking limit the ability to directly compare prevalence between different age groups using different surveys.

Conclusions

We have provided a detailed analysis of smoking among young people in Tasmania including changes in prevalence over time, factors associated with smoking status, and attitudes and beliefs about smoking. The findings were generally concordant with those in the published literature in terms of factors associated with smoking. Although the prevalence of smoking has decreased over time, there may have been a plateau in recent years and the level in Tasmania remains higher than the national average. There is therefore a need to continue to implement tobacco control strategies to address the uptake of smoking in Tasmania. Support for initiatives to reduce smoking uptake, including those focused on age like T21, have high levels of support among young people. These data can serve as a baseline against which future programs and policies, including T21, can be evaluated in terms of their effect on smoking behaviour, disparities in smoking and knowledge of smoking and its risks.

Background

Tobacco control programs typically incorporate a range of strategies including those to address smoking cessation and smoking uptake to reduce the prevalence of smoking at the population level.¹⁻⁴ Among potential strategies to reduce smoking uptake, legislation around the minimum legal age of purchase or sale of tobacco products have been proposed.⁵ At present, most countries have a minimum legal age of purchase or sale of tobacco products set at 18 years of age. This aligns with the age of majority when people can typically enrol to vote, serve in the military and purchase alcohol. There are, however, exceptions to this where some activities have different ages of access, e.g. the Federal government has set the minimum legal drinking age in the United States of America at 21 years. There has been recent interest in raising the minimum legal age of sale or purchase of tobacco to 21 years in Australia and internationally.^{5,6} These policies, often called 'Tobacco 21' or T21, aim to reduce smoking uptake among young people. In Tasmania, there is a proposal to raise the minimum legal age for the sale of cigarettes from 18 to 21 through an amendment to the Tasmanian 1997 Public Health Act. This proposed version of T21 would penalise a retailer who sells to people under the age of 21, rather than penalising the person purchasing the cigarettes or making a minimum legal smoking age. Versions of T21 appear to be effective in reducing the prevalence of smoking in target age groups internationally, with evidence predominantly from the United States of America (USA).⁷ Of note is that in December 2019, the President of the United States of America raised the federal minimum age for sale of tobacco products from 18 to 21 via the United States Federal Food, Drug and Cosmetics Act, with this change effective immediately.⁸ There are several mechanisms by which T21 is proposed to reduce the uptake of smoking. These include disrupting young people's access to tobacco products by creating a greater age gap between peer networks that can legally access cigarettes, increasing the age at which people may experiment or transition to regular smoking and de-normalising smoking.⁹

This report presents analyses that were undertaken on existing datasets to provide a deeper understanding of smoking among young Tasmanians that may be affected by the T21 legislation if it were implemented. These analyses can also serve as baseline data against which to evaluate the effectiveness of T21 if it is implemented in Tasmania. These analyses are part of a larger program of research (see Figure 1) to provide context around smoking by young people in Tasmania, which include capturing the perspectives of young people who will be affected by the legislation, as well as those of other stakeholders who may be tasked with implementing the T21. As a whole, this research will remove the assumptions about young people's views, providing a clear account of their attitudes and beliefs about smoking policies and programs that aim to prevent the uptake of smoking, including T21, in Tasmania.

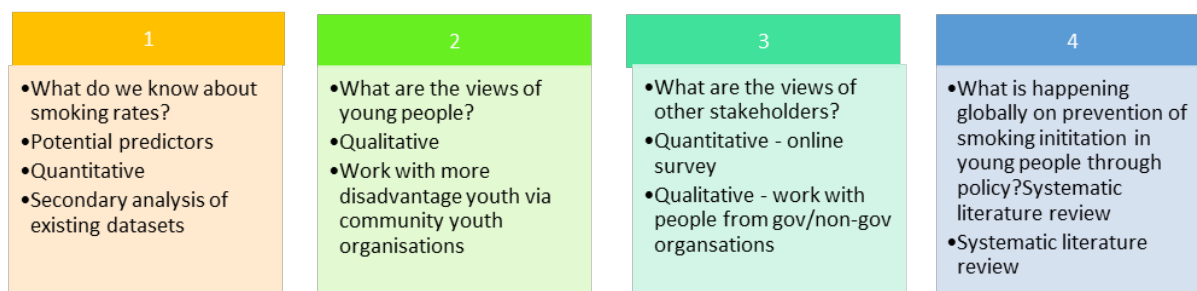


Figure 1. Research and evaluation program - Tobacco 21

This report describes the first component of the research program (see box 1, **Figure 1**), the secondary analysis of existing data.

Introduction

Cigarettes are the only legal consumer product that are known to harm every organ in the body, leading to premature death in up to two-thirds of long-term users.¹⁰⁻¹² Tobacco use is one of the largest preventable causes of ill health and death in Australia.¹³ Nearly all adult smokers (90%) try their first cigarette (e.g. experimentation) before they turn 21 years old¹⁴, with the transition to regular daily smoking occurring for most between 18 and 21 years of age.¹⁵⁻¹⁷ Almost all (99%) of lifetime smokers start using tobacco before they turn 26 years old.^{10,14} Tobacco use is a global epidemic among young people, with considerable public health and economic implications.¹⁰

To address youth uptake of smoking, one of the potential policy interventions is to raise the legal age for the sale of tobacco products from 18 to 21, e.g. 'Tobacco 21' or 'T21'. Raising the minimum legal age of sale or purchase for cigarettes is gaining traction globally as a part of local, state or federal government's comprehensive tobacco control strategies.¹⁸ In Tasmania, there are high levels of public support for Tobacco 21. A survey of 750 Tasmanians by YouGov Galaxy on behalf of the Eliminating Cancer Initiative demonstrated that 79% of all people and 57% of smokers supported the proposed legislation.¹⁹ Raising the minimum age for the sale of cigarettes may influence smoking prevalence through several different pathways, making it an appealing policy lever. For example, there are epidemiological data suggest that delaying experimentation of cigarettes to later ages will substantially reduce addiction and regular smoking.^{18,20} T21 could also continue to de-normalise smoking in the target age groups of adolescents and young adults. It may also impact on secondary supply to younger people by creating a greater age gap in peer networks between people who can and cannot legally access tobacco.

There are several jurisdictions around the world that have enacted policy that either raises the minimum legal smoking age or the minimum legal purchase age for cigarettes or tobacco products. Examples include Singapore and many jurisdictions in the USA. Unfortunately, despite increasing adoption of the legislation, this has not always been accompanied by robust evaluation of its implementation or effectiveness. At present, estimates of the effects have largely been based on simulation studies,¹⁸ which estimated a relative reduction in the prevalence of smoking in the order of 20% to 30% in people aged under 18 years with smaller reduction in population smoking prevalence evident over 20 years of between 2% to 8%. Researchers in the USA have examined the impact of T21 on smoking in young people directly using a longitudinal, population-based design. The researchers examined changes in smoking over time in an adolescent health survey comparing prevalence in one town in Massachusetts that raised the minimum legal age of tobacco sales to 21 in 2005 to those in surrounding areas that did not.¹⁶ The researchers reported that there was a decrease in 30-day smoking prevalence from 13% to 7% in the town that implemented T21 compared to 15% to 12% in those areas that did not implement the policy. This is the first reported evidence of effectiveness of the legislation. A systematic review of all available research into the effectiveness of T21 will be undertaken in component 4 of the research program (Figure 1).

There is an appetite in Tasmania to enact T21. Tasmania has a history of leading the world in tobacco control including in terms of developing smoke free areas and banning smoking in cars with children. This progressive stance in tobacco control sits on a background of higher levels of smoking than in other parts of Australia, which is proposed, in part, to be due to the higher burden of socioeconomic disadvantage and lower educational attainment. During initial discussions with stakeholders regarding T21 it was evident that a deeper understanding of the context of smoking among young people within Tasmania was warranted. Such information would inform the debate around the proposed legislation but also about smoking in Tasmania more broadly. Gathering this information would also allow for the evaluation of its effectiveness in terms of lowering smoking prevalence or reducing disparities in smoking prevalence if it were implemented.

Research aims

The aims of this research were to use existing datasets to examine:

1. Trends in the prevalence of smoking across different surveys over time in target age groups
2. Factors associated with smoking status in young Tasmanians
3. Attitudes and beliefs related to smoking among younger people in Tasmania
4. Characteristics of people attending compared to not attending school in Tasmania

Methods

Data access

We accessed data from the National Health Survey (NHS), Australian Secondary School Alcohol and Drug (ASSAD) Survey and the Tasmanian Smoking and Health Survey (TSHS). Individual applications were made to the Australian Bureau of Statistics (ABS) to analyse their resources via the DataLab and for the Cancer Council Tasmania (CCT) to use two different surveys (ASSAD and TSHS).

ABS DataLab

To access the surveys managed by the ABS, Dr Waddingham and Dr Bui successfully completed the ABS requirements for accessing data. Requirements included training, successful completion of a quiz, submission of signed Undertaking forms and approval of a research proposal. All ABS microdata analysis was conducted in the ABS DataLab, a secure facility hosted by the ABS. Initial application included the following datasets, although not all were used in the final analyses: Census of Population and Housing, 2016; Education and Work, May 2018 + 2019; National Health Survey, 2014-15 + 2017-18; Education and Work, 2016, 2017; Australian Health Survey, National Health Survey, 2011-12; Australian Health Survey, Core Content - Risk Factors and Selected Health Conditions, 2011-12

Cancer Council Tasmania

We obtained approval to access de-identified datasets for the 2014 and 2017 ASSAD survey and the 2013 to 2016 TSHS from the CCT. These contain information on smoking behaviour but also attitudes and beliefs relating to smoking including prevention and policy. CCT require ethical approval prior to accepting data access applications.

Summary of datasets

The NHS has been conducted by the Australian Bureau of Statistics (ABS) since 1989 to capture a range of health information from Australian households. It has been conducted every three years from 2001. The ASSAD survey has been conducted collaboratively by Cancer Councils across Australia and the Western Australian Health Department every three years since 1984. In these ASSAD surveys, information about the use of tobacco, alcohol, over-the-counter drugs, and other substance is collected from a sample of 12-17-year-old children attending secondary school. In Tasmania only, the Cancer Council Tasmania (CCT) also conducted the TSHS annually for 3 years (2013-2016) to gather information including smoking rates and other smoking related factors.

Sampling and study participants

National Health Survey (NHS)

Recruitment for NHS 2011-2012, 2014-15 and 2017-18 was using a stratified multistage area sample of private dwellings^{21,22}. In brief, in 2011-12, a total sample of 18,355 households was selected. Due to some households not meeting the criteria for being a 'fully or adequately responding households', a proportion of the sample was lost (e.g. some selected households/dwellings had no residents in the scope of the survey, vacant or derelict buildings, or buildings under construction). Only 15,565 (response rate 84.8%) were fully or adequately responding households (1,469 Tasmanian households).

This corresponded to 20,426 people and included 1,903 Tasmanians. In 2014-15, 17,958 households were recruited. Of those, 14,723 (82.0%) were fully or adequately responding households including 1,497 Tasmanian households. This corresponded to 19,257 people and included 1,917 Tasmanians. A total sample of 21,544 households was selected in 2017-18. Only 16,384 (76.1%) were fully or adequately responding households (1,606 Tasmanian households). This corresponded to 21,315 people and included 2,016 Tasmanians.

Australian Secondary School Alcohol and Drug Survey (ASSAD)

For ASSAD 2014 and 2017, the recruitment was using a stratified two-stage probability sampling method, with schools selected at the first stage and students within schools selected at the second stage of sampling. Schools were stratified by three types of education (government, non-government and Catholic) before random sampling within each group. The number of schools approached to participate from each type of education was based on the number of students enrolled in each group (government, non-government and Catholic). Then selected schools were stratified by grade before random sampling for students.

Initially 1,314 schools in 2014 and 1,756 schools in 2017 were approached to participate in the survey across Australia. In 2014, 352 schools participated, representing a national response rate of 27%. At a state level, 63 schools in Tasmania were approached to participate in the survey and 26 schools participated 47% (26/63). In 2017, 305 schools participated, representing a national response rate of 17%. Details about the number of Tasmanian schools approached in 2017 was not available.

In ASSAD 2014, the final sample was 23,007 persons aged 12-17 years old (female=12,013 & male=10,994) including, 1888 Tasmanians (female=1009 and male=879). In 2017, the sample was 9,115 (female=10,224 and male=8,891) nationally and 2,059; (female=1,075 and male=984) in Tasmania. The details have been presented elsewhere ^{23,24}.

Tasmanian Smoking and Health Survey (TSHS)

For the TSHS 2013-2016, the recruitment was stratified by the regions including North, North-West and South. These surveys were managed and conducted by Cancer Council Tasmania using Computer Assisted Telephone Interviewing (CATI) via landlines only or mobile phone and landlines. The final sample were 600 persons in each year from 2013 to 2015 and 1001 in 2016. An overall response rate of 57.7% was recorded. More details of these survey methods are present in the 2016 TSHS ²⁵.

Census of Population and Housing 2016

The 2016 Census was held on 9 August 2016 and including almost 10 million households and 23.4 million people across Australia. The Census is conducted by the ABS and in 2016 they used a combination of online and hardcopy data collection for the first time. In each household, one household member completes key information about each household member including demographics, social factors, education and employment. For this report we have accessed data on the Tasmanian census participants through ABS DataLab and the ABS TableBuilder Pro. Tasmanians aged 12 to 17 years were the focus of our analyses.

Survey Measurements

Smoking status

NHS 2011-12, 2014-15, 2017-18: Trained ABS interviewers conducted personal interviews with selected residents in sampled dwellings. One adult (aged 18 years and over) in each dwelling was selected and interviewed about their own health status, health risk factors as well as information on demographic and socioeconomic of the household. An adult, nominated by the household, was interviewed about one child in the household. Some children aged 15-17 years may have been personally interviewed with parental consents. The NHS standard questionnaire ^{22,26} was used to collect data on smoking behaviour and others. It sought information on the frequency of smoking of

tobacco, including manufactured (packet) cigarettes, roll-your-own cigarettes, cigars and pipes, but excluding chewing tobacco, electronic cigarettes (and similar) and smoking of non-tobacco products. For this analysis, participants are categorised as current smokers, ex-smokers and never smokers. Current smokers included smoked daily, weekly (at least once a week, but not daily) and less than weekly. Ex-smokers smoked at least 100 cigarettes in their lifetime but do not currently smoke daily, weekly, or less than weekly. Never smokers include those who have never smoked or smoked less than 100 cigarettes in their lifetime.

ASSAD 2014 and 2017: Students were asked if they had ever smoked in their lifetime, in the past year, and in the past four weeks²⁷. Students entered the number of cigarettes they had smoked on each of the seven days before the survey date. The survey in Tasmanian also included questions on attitudes to tobacco use and perceived dangers of substance use. In addition, questions that assessed students' knowledge of health consequences of tobacco use, and their awareness and recall of health warnings on cigarette packs were included. For this analysis, current smokers are those who smoked in the last week (daily or not) and/or four weeks (weekly or less than weekly), ex-smokers are those who smoked in the last year and/or smoked even part of a cigarette, and never smokers are those who have not smoked in their lifetime.

TSHS 2013-2016: Smokers are categorised as current smokers, ex-smokers and never smokers. Currently smokers are those who smoke daily, weekly, and less than weekly. Ex-smokers are those who have smoked at least 100 cigarettes in their lifetime. Never smokers are those who have never smoked or smoked less than 100 cigarettes in their lifetime²⁵.

Demographic and socioeconomic characteristics

Structured questions were used to capture information on demographic and socioeconomic factors including gender, age, occupational status, postcode, income, tenure types, education levels, languages spoken at home, and indigenous status across different surveys. These factors are coded consistently across analyses. For example, self-reported highest education levels were categorised as "secondary and below" (for those who are on year 11 or less) and "senior secondary" (year 11 and 12) for all NHS and ASSAD, and defined as "year 11 or less", "year 12 or some tertiary" and "finished tertiary" for TSHS.

Socio-Economic Indexes for Areas (SEIFA) was developed by the ABS, has been used to rank areas depending on relative socio-economic advantage and disadvantage. SEIFA is based on information about the area in which people live, from the most current Census data at the time of calculation (in this case, 2011 Census data)²⁸. SEIFA can be presented as one of the following four indexes: Index of Relative Socio-Economic Disadvantage (IRSD); Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD); Index of Education and Occupation (IEO); The Index of Economic Resources (IER). We selected IRSAD as the marker of area-level socioeconomic status at the level of residential postcode of respondents within surveys. The IRSAD is a continuous measure taking into consideration area level characteristics such as education, employment, and income. It is separated into deciles and postcodes can then be ranked from 1 (most disadvantaged) to 10 (least disadvantaged). We collapsed these into 5 groups for analyses (deciles 1-2, 3-4, 5-6, 7-8 and 9-10).

Pre-existing categorisations of variables from the Census²⁹ were used: Indigenous status (not Indigenous and Indigenous – Aboriginal/Torres Strait Island/people of several Indigenous backgrounds); social marital status (not married or in de facto relationship, married or in de facto relationship, not stated/not applicable – for children under 15 years); language spoken based on proficiency (English or other languages any proficiency level); SEIFA IRSAD (see above); labour force status (employed full time, employed part time, unemployed – both looking and not looking for work, not stated/not applicable – children under 15 years); engagement in unpaid child care (none, any – cared for own or other people's children, not stated/not applicable – children under 15 years); remoteness (inner regional, outer regional, remote/very remote, not stated).

Of note is that minimum cell sizes were stipulated by the ABS and CCT for datasets. It was therefore required, in some instances, to aggregate data or not report proportions. These steps are taken to protect the privacy of participants.

Statistical analysis

A standardised approach for analysis was used for all three data sets: NHS, ASSAD and TSHS. Coding and statistical analysis were performed using complex survey methods in Stata version 16.0 to account for survey sampling techniques. On obtaining the datasets and undertaking preliminary analyses it was evident that due to small sample sizes within each survey, some analyses would need to be conducted using datasets pooled across survey years. Descriptive statistics (e.g. weighted percentages and means \pm SD) were used to characterise the study participants. Log binomial³⁰ and multinomial regression³¹ were used to estimate prevalence ratios (PRs) for categories of smoking at levels of study factors, and adjusted for age, gender, socioeconomic factors, and, where appropriate, survey year.

Data were weighted to align the sample with population distributions in Tasmania and Australia. Weighting adjusts for any possible bias in prevalence estimates due to disproportionate sampling of any geographic location, education sector, telephone status, age, or sex. Details on weight calculation for NHS 2011-12, 2014-15, and 2017-18 were presented elsewhere^{26,32,33}. Students enrolment details on sex, age group, and education sector collected by ABS in 2014 and 2017 were used to calculate weights used in ASSAD^{23,24}. Please note that survey weights for ASSAD are provisional and we have been advised that there will be an update to these weights. This is unlikely to greatly affect the results with only small changes to confidence intervals (i.e. margins of error) likely. Data on location, gender, age and education from ABS and telephone status from the Australian Communication and Media Authority reports were used to calculate weights for the 2016 TSHS²⁵.

Smoking prevalence

We undertook descriptive analysis to estimate the prevalence of smoking for all youth (15 years and above, as available within each dataset where available in each data source). We examined changes in smoking over time within each data source: ASSAD 2014 to 2017; TSHS 2013 to 2016; NHS 2014-15 to 2017-18 using descriptive statistics.

Factors associated with smoking

We examined the distribution of smoking by relevant population groups include sex, age, socioeconomic status (IRSAD), employment and school status. We used log binomial regression and multinomial regression to estimate the prevalence ratio (\pm 95% confidence interval) of smoking by characteristics with control for other confounding variables as appropriate.

Attitudes and behaviours related to smoking

We examined the distribution of responses to questions regarding support for tobacco policies, where cigarettes are obtained from (among smokers), smoking among parents, and knowledge of health and other effects of smoking. The distribution of responses to these questions were examined by study factors using chi square tests and log binomial/multinomial regression to estimate prevalence ratio (\pm 95% confidence interval) with adjustment for other covariates, as necessary.

Characteristics associated with not attending school

Data from the microdata sources, Census was used to characterise the distribution of the Tasmanian youth population aged 12-17 years to compare with the ASSAD sample in terms of geographic location, social factors (e.g. marital status and child care), Indigenous status, language spoken and socioeconomic disadvantage and engagement in the schooling. Descriptive statistics (e.g. percentage and means \pm SD) will be used to characterise the youth population.

Ethical Approval

Ethical approval was required prior to applying for data access. A project team was formed to guide the planning and interpretation of the research. The team comprised of people from the non-government and government sector, including those working with youth directly, The Australian Prevention Partnership Centre, tobacco experts and Department of Public Health. The University of Tasmania Social Science Human Research Ethics Committee (HREC) approved the ethics application on November 19, 2019 (Ethics number: H0018511).

Results

National Health Survey (NHS)

The prevalence of 'total' current smoking (daily and less than daily current smokers) in people aged 18 to 24 years from publicly available consecutive NHS reports demonstrates a small decrease in the prevalence in women but little change in men from the 2014-15 to 2017-18 surveys (*Figure 1*).^{26,32,33} The figure also shows the prevalence of total current smoking nationally in 2017-18 demonstrating the large disparity, particularly for women, in total current smoking between Tasmania and the country as a whole.

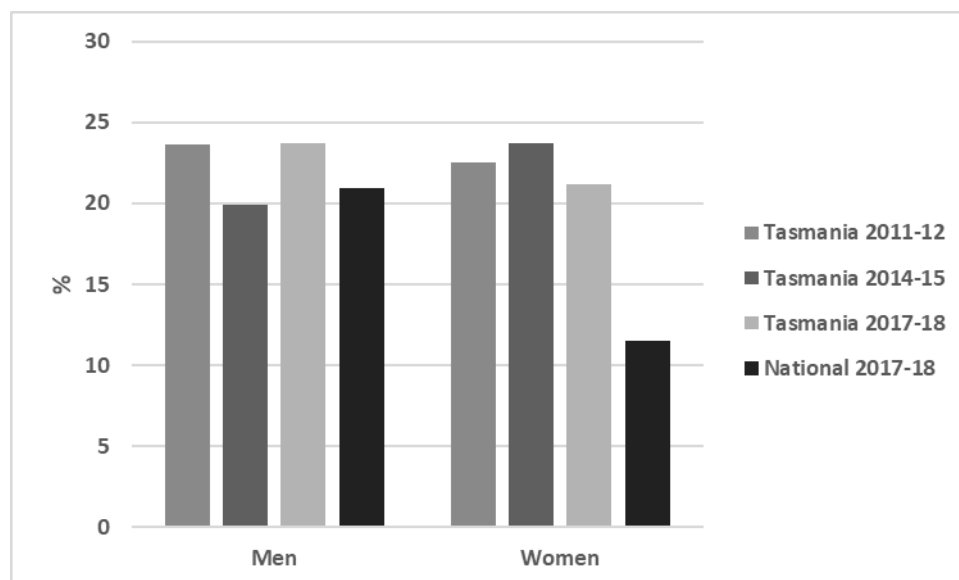


Figure 2. Prevalence of total current smoking in 18 to 24 year olds from consecutive National Health Surveys

The characteristics of participants in the NHS across the three years were broadly similar, particularly for 2011-12 and 2014-15 (see appendix Table 12). There were some differences in socioeconomic characteristics of those aged 15-25 years over time, but these were not in consistent directions. For example, the proportion unemployed decreased from 2011-12 to 2014-15, then slightly increased again in 2017-18. Similarly, the proportion classified as living in a higher SES area based on the median SEIFA value decreased from 2011-12 to 2014-15, then increased to 2017-18.

We examined the association between a range of demographic and socioeconomic variables and smoking status in Tasmanian's aged 15-24 years using a pooled dataset with account for survey year owing to small samples within each individual survey (Table 1). Due to low cell sizes we are unable to report raw numbers of participants in each category. We used a log multinomial model to estimate the prevalence ratio for being an ex-smoker or current smoker compared to the reference category of being a never smoker.

The prevalence of never smoking increased over time, while current smoking decreased over time, although these differences were not statistically significant across the survey years. Women were less likely than men to be ex-smokers compared to never smokers, but there were no sex differences in the likelihood of being a current smoker. People aged 20-24 years, compared to those aged 15-19 years, were more likely to be ex-smokers or current smokers. People with higher socioeconomic status, as indicated by a higher level of education complete and owning a property, were less likely to be current smokers compared to never smokers. People with higher personal weekly income were more likely to be an ex-smoker than those with lower personal income. There was a trend towards those living in higher socioeconomic status (SES) areas (SEIFA IRSAD variable) being less likely to be current smokers, compared to never smokers, but this was not statistically significant.

Table 1. Factors associated with smoking status among Tasmanian subjects aged 15-24 years old from a pooled dataset of three NHS surveys 2011-17

| | Never* | | Ex-smoker* | | Current smoker* | | | | | |
|---------------------------------------|--------|------|------------|-------------|------------------------|---------|-------|-------------|------------------------|---------|
| | (n/N) | % | (n/N) | % | PR ^a | (95%CI) | (n/N) | % | PR ^a | (95%CI) |
| Survey years | | | | | | | | | | |
| 2011-12 | | 70.2 | | 10.2 | 1 | | | 19.6 | 1 | |
| 2014-15 | | 70.0 | | 12.0 | 1.12(0.60-2.08) | | | 18.0 | 0.87(0.56-1.35) | |
| 2017-18 | | 72.5 | | 9.3 | 0.88(0.45-1.74) | | | 18.1 | 0.87(0.55-1.37) | |
| Gender | | | | | | | | | | |
| Male | | 67.9 | | 13.6 | 1 | | | 18.6 | 1 | |
| Female | | 74.1 | | 7.3 | 0.52(0.30-0.90) | | | 18.6 | 0.95(0.66-1.38) | |
| Age groups | | | | | | | | | | |
| 15-19 years | | 83.5 | | 6.7 | 1 | | | 9.7 | 1 | |
| 20-24 years | | 57.4 | | 14.6 | 2.25(1.29-3.93) | | | 28.0 | 2.91(1.88-4.50) | |
| Highest school completed ^b | | | | | | | | | | |
| Secondary and below | | 66.7 | | 10.8 | 1 | | | 22.5 | 1 | |
| Senior secondary | | 73.7 | | 10.3 | 0.72(0.39-1.33) | | | 16.0 | 0.44(0.30-0.64) | |
| Employment status ^c | | | | | | | | | | |
| Unemployed | | 74.7 | | 7.5 | 1 | | | 17.7 | 1 | |
| Employed | | 68.3 | | 12.6 | 1.49(0.80-2.77) | | | 19.2 | 0.94(0.64-1.39) | |
| Personal weekly income ^d | | | | | | | | | | |
| Low | | 81.3 | | 5.6 | 1 | | | 13.1 | 1 | |
| High | | 61.0 | | 15.2 | 2.22(1.08-4.54) | | | 23.8 | 1.24(0.78-1.98) | |
| Property (tenure types) ^e | | | | | | | | | | |
| Not owner | | 59.2 | | 11.0 | 1 | | | 29.8 | 1 | |
| Owner | | 78.3 | | 10.0 | 1.06(0.62-1.82) | | | 11.6 | 0.46(0.31-0.69) | |
| SEIFA ^f | | | | | | | | | | |
| Low | | 70.2 | | 9.9 | 1 | | | 19.8 | 1 | |
| High | | 73.2 | | 12.6 | 1.16(0.61-2.22) | | | 14.2 | 0.63(0.37-1.08) | |

* Never smokers include those who have never smoked or smoked less than 100 cigarettes in their lifetime. Ex-smokers smoked at least 100 cigarettes in their lifetime but do not currently smoke daily, weekly, or less than weekly. Current smokers included smoked daily, weekly (at least once a week, but not daily) and less than weekly. % weighted percentage; ^aPR prevalence ratio – models adjusted for sex, age and survey years; ^bSenior secondary school: year 11 and 12; ^cUnemployed: unemployed and not in the labour force; ^dHigh: defined as above the median cut-point; ^eOwner: with and without mortgage; ^fSEIFA (Socio-Economic Indexes for Areas) - high: defined as above the median cut-point

We also examined the association between sociodemographic variables and smoking status in Tasmanian's aged 25-54 years using a pooled dataset with account for survey year (Table 2). There was a reduction in the prevalence of current smoking by survey year, referenced to never smoking. Older ages were associated with a greater likelihood of being an ex-smoker compared to being a never smoker. A range of variables indicating higher socioeconomic status (e.g. having completed more years of education, having a higher personal weekly income or living in a higher SES area) were

associated with a lower likelihood of being a current smoker compared to never smokers. People who lived in higher SES areas were also more likely to be ex-smokers, compared to never smokers.

Table 2. Factors associated with smoking status among Tasmanian subjects aged 25-54 years old from a pooled dataset of three NHS surveys 2011-17

| | Never* | | Ex-smoker* | | Current smoker* | |
|---------------------------------------|--------|------|------------|------|------------------------|---------|
| | (n/N) | % | (n/N) | % | PR ^a | (95%CI) |
| Survey years | | | | | | |
| 2011-12 | | 42.9 | | 29.6 | 1 | |
| 2014-15 | | 46.7 | | 28.2 | 0.98(0.82-1.17) | |
| 2017-18 | | 49.2 | | 29.6 | 1.03(0.86-1.23) | |
| Gender | | | | | | |
| Male | | 41.6 | | 29.1 | 1 | |
| Female | | 50.8 | | 29.1 | 1.01(0.87-1.16) | |
| Age groups | | | | | | |
| 25-34 years | | 52.4 | | 21.5 | 1 | |
| 35-44 years | | 43.9 | | 29.5 | 1.37(1.13-1.67) | |
| 45-54 years | | 43.2 | | 35.0 | 1.63(1.35-1.97) | |
| Highest school completed ^b | | | | | | |
| Secondary and below | | 33.6 | | 30.0 | 1 | |
| Senior secondary | | 55.0 | | 28.5 | 1.03(0.89-1.20) | |
| Employment status ^c | | | | | | |
| Unemployed | | 40.7 | | 25.6 | 1 | |
| Employed | | 47.7 | | 30.0 | 1.15(0.96-1.39) | |
| Personal weekly income ^d | | | | | | |
| Low | | 43.5 | | 27.4 | 1 | |
| High | | 50.9 | | 32.0 | 1.14(0.98-1.33) | |
| Property (tenure types) ^e | | | | | | |
| Not owner | | 37.5 | | 24.7 | 1 | |
| Owner | | 49.9 | | 31.1 | 1.14(0.96-1.35) | |
| SEIFA ^f | | | | | | |
| Low | | 44.5 | | 27.8 | 1 | |
| High | | 53.1 | | 34.2 | 1.23(1.04-1.45) | |

* Never smokers include those who have never smoked or smoked less than 100 cigarettes in their lifetime. Ex-smokers smoked at least 100 cigarettes in their lifetime but do not currently smoke daily, weekly, or less than weekly. Current smokers included smoked daily, weekly (at least once a week, but not daily) and less than weekly. % weighted percentage; ^aPR prevalence ratio: models adjusted for sex, age and survey years; ^bSenior secondary school: year 11 and 12; ^cUnemployed: unemployed and not in the labour force; ^dHigh: defined as above the median cut-point; ^eOwner: with and without mortgage; ^fSEIFA (Socio-Economic Indexes for Areas) - high: defined as above the median cut-point

For completeness, we also examined the association between socioeconomic variable and smoking status in Tasmanian's aged 55-84 years using a pooled dataset with account for survey year (**Table 3**). There were no differences in the prevalence of ex-smoking or current smoking over survey years in this older age group. Women were less likely than men to be ex-smokers compared to never smokers. Older age groups were associated with a higher likelihood of being an ex-smoker but a lower likelihood of being a current smoker, compared to being a never smoker. Similar to the middle-aged group indicators of higher SES (e.g. greater years of schooling, employment, having a higher personal income and area-level SES) were associated with a lower likelihood of being a current smoker, referenced to never smoking, but were not associated with being an ex-smoker.

Table 3. Factors associated with smoking status among Tasmanian subjects aged 55-84 years old from a pooled dataset of three NHS surveys 2011-17

| | Never* | | Ex-smoker* | | Current smoker* | | | | | |
|---------------------------------------|--------|------|------------|------|------------------------|---------|-------|------------|------------------------|---------|
| | (n/N) | % | (n/N) | % | PR ^a | (95%CI) | (n/N) | % | PR ^a | (95%CI) |
| Survey years | | | | | | | | | | |
| 2011-12 | | 43.6 | | 43.7 | 1 | | | 12.7 | 1 | |
| 2014-15 | | 43.0 | | 45.9 | 1.05(0.92-1.20) | | | 11.1 | 0.90(0.65-1.25) | |
| 2017-18 | | 43.0 | | 44.9 | 1.02(0.90-1.16) | | | 12.1 | 0.99(0.72-1.34) | |
| Gender | | | | | | | | | | |
| Male | | 33.5 | | 53.7 | 1 | | | 12.8 | 1 | |
| Female | | 52.4 | | 36.4 | 0.67(0.60-0.74) | | | 11.1 | 0.93(0.72-1.20) | |
| Age groups | | | | | | | | | | |
| 55-64 years | | 42.7 | | 39.0 | 1 | | | 18.3 | 1 | |
| 65-74 years | | 43.6 | | 48.7 | 1.27(1.12-1.43) | | | 7.7 | 0.43(0.31-0.58) | |
| 75-84 years | | 43.7 | | 52.7 | 1.40(1.22-1.59) | | | 3.6 | 0.20(0.11-0.34) | |
| Highest school completed ^b | | | | | | | | | | |
| Secondary and below | | 42.0 | | 44.8 | 1 | | | 13.3 | 1 | |
| Senior secondary | | 46.0 | | 45.0 | 1.04(0.92-1.16) | | | 9.0 | 0.54(0.40-0.75) | |
| Employment status ^c | | | | | | | | | | |
| Unemployed | | 42.8 | | 45.8 | 1 | | | 11.4 | 1 | |
| Employed | | 44.0 | | 43.1 | 1.02(0.90-1.16) | | | 12.9 | 0.66(0.50-0.87) | |
| Personal weekly income ^d | | | | | | | | | | |
| Low | | 42.4 | | 44.3 | 1 | | | 13.3 | 1 | |
| High | | 44.1 | | 45.5 | 1.05(0.94-1.16) | | | 10.4 | 0.57(0.44-0.74) | |
| Property (tenure types) ^e | | | | | | | | | | |
| Not owner | | 31.1 | | 44.6 | 1 | | | 24.3 | 1 | |
| Owner | | 45.1 | | 45.1 | 1.03(0.90-1.19) | | | 9.8 | 0.42(0.33-0.54) | |
| SEIFA ^f | | | | | | | | | | |
| Low | | 41.8 | | 44.3 | 1 | | | 14.0 | 1 | |
| High | | 47.4 | | 46.5 | 1.06(0.94-1.19) | | | 6.0 | 0.42(0.29-0.63) | |

* Never smokers include those who have never smoked or smoked less than 100 cigarettes in their lifetime. Ex-smokers smoked at least 100 cigarettes in their lifetime but do not currently smoke daily, weekly, or less than weekly. Current smokers included smoked daily, weekly (at least once a week, but not daily) and less than weekly. % weighted percentage; ^aPR prevalence ratio – models adjusted for sex, age and survey years; ^bSenior secondary school: year 11 and 12; ^cUnemployed: unemployed and not in the labour force; ^dHigh: defined as above the median cut-point; ^eOwner: with and without mortgage; ^fSEIFA (Socio-Economic Indexes for Areas) - high: defined as above the median cut-point

We examined whether the prevalence of being an ex-smoker or a current smoker varied by state with account for demographic or socioeconomic factors (Table 4). There were no significant differences in the prevalence of current or ex smoking compared to never smoking between states using New South Wales as the reference category. Tasmania had around a 30% higher prevalence of current smoking than the reference state of New South Wales, with this difference remaining constant over time. There was some evidence that this difference was more influenced by socioeconomic variables in the most recent survey where adjustment reduced the prevalence ratio by 17%.

Table 4. Differences in smoking status between states among people aged 15-24 years old by survey years

| | Never | | Ex-smoker | | | | Current smoker | | | | | | | |
|--------------------|-------|-------------|-------------|---|------------------------|---------|------------------------|---------|-------------|---|------------------------|---------|------------------------|---------|
| | (n/N) | % | (n/N) | % | PR ^a | (95%CI) | PR ^b | (95%CI) | (n/N) | % | PR ^a | (95%CI) | PR ^b | (95%CI) |
| NHS 2011-12 | | | | | | | | | | | | | | |
| NSW | | 74.3 | 10.8 | | 1.00 | | 1.00 | | 14.9 | | 1.00 | | 1.00 | |
| VIC | | 73.0 | 9.6 | | 0.93(0.56-1.54) | | 0.94(0.57-1.56) | | 17.3 | | 1.20(0.81-1.78) | | 1.37(0.93-2.01) | |
| QLD | | 69.8 | 12.6 | | 1.21(0.76-1.92) | | 1.20(0.75-1.90) | | 17.6 | | 1.21(0.82-1.79) | | 1.27(0.87-1.86) | |
| SA | | 71.4 | 14.6 | | 1.43(0.89-2.29) | | 1.43(0.89-2.30) | | 14.0 | | 0.97(0.62-1.54) | | 0.98(0.63-1.53) | |
| WA | | 74.0 | 11.8 | | 1.11(0.68-1.81) | | 1.09(0.66-1.78) | | 14.2 | | 0.96(0.63-1.47) | | 1.01(0.66-1.53) | |
| TAS | | 70.2 | 10.2 | | 1.05(0.59-1.86) | | 1.05(0.59-1.87) | | 19.6 | | 1.41(0.92-2.17) | | 1.36(0.89-2.06) | |
| NT | | 68.3 | 10.0 | | 0.87(0.45-1.65) | | 0.86(0.45-1.64) | | 21.7 | | 1.38(0.87-2.20) | | 1.37(0.88-2.13) | |
| ACT | | 75.2 | 11.2 | | 1.05(0.59-1.87) | | 1.05(0.59-1.88) | | 13.6 | | 0.92(0.53-1.58) | | 1.13(0.67-1.90) | |
| NHS 2014-15 | | | | | | | | | | | | | | |
| NSW | | 74.2 | 12.8 | | 1.00 | | 1.00 | | 13.0 | | 1.00 | | 1.00 | |
| VIC | | 82.7 | 6.0 | | 0.47(0.27-0.84) | | 0.54(0.31-0.95) | | 11.3 | | 0.87(0.55-1.39) | | 0.92(0.58-1.47) | |
| QLD | | 71.7 | 11.1 | | 0.86(0.53-1.37) | | 0.88(0.55-1.40) | | 17.2 | | 1.33(0.87-2.03) | | 1.39(0.92-2.10) | |
| SA | | 78.5 | 12.6 | | 0.95(0.56-1.61) | | 1.00(0.59-1.67) | | 8.9 | | 0.68(0.40-1.17) | | 0.72(0.42-1.24) | |
| WA | | 79.1 | 9.0 | | 0.67(0.38-1.19) | | 0.76(0.44-1.31) | | 11.9 | | 0.87(0.53-1.45) | | 0.90(0.54-1.49) | |
| TAS | | 70.0 | 12.0 | | 0.94(0.55-1.61) | | 0.89(0.52-1.52) | | 18.0 | | 1.39(0.89-2.17) | | 1.28(0.82-1.97) | |
| NT | | 80.4 | | | 0.55(0.21-1.41) | | 0.48(0.18-1.27) | | | | 1.09(0.55-2.18) | | 1.11(0.57-2.17) | |
| ACT | | 78.9 | 9.1 | | 0.73(0.41-1.30) | | 0.88(0.49-1.56) | | 11.9 | | 0.93(0.53-1.63) | | 1.04(0.58-1.87) | |
| NHS 2017-18 | | | | | | | | | | | | | | |
| NSW | | 77.1 | 9.4 | | 1.00 | | 1.00 | | 13.5 | | 1.00 | | 1.00 | |
| VIC | | 80.5 | 6.0 | | 0.62(0.34-1.12) | | 0.66(0.36-1.19) | | 13.5 | | 0.99(0.64-1.54) | | 1.24(0.80-1.91) | |
| QLD | | 81.1 | 7.0 | | 0.71(0.41-1.25) | | 0.74(0.43-1.28) | | 11.9 | | 0.86(0.56-1.32) | | 1.03(0.68-1.57) | |
| SA | | 84.5 | 4.8 | | 0.50(0.24-1.01) | | 0.50(0.25-1.02) | | 10.7 | | 0.77(0.44-1.36) | | 0.79(0.47-1.33) | |
| WA | | 77.7 | 9.8 | | 0.97(0.53-1.78) | | 1.02(0.56-1.87) | | 12.5 | | 0.87(0.52-1.46) | | 1.02(0.63-1.67) | |
| TAS | | 72.5 | 9.3 | | 0.98(0.52-1.82) | | 0.97(0.51-1.82) | | 18.1 | | 1.34(0.85-2.10) | | 1.11(0.79-1.55) | |
| NT | | 72.3 | 12.5 | | 1.54(0.79-3.02) | | 1.33(0.67-2.63) | | 15.1 | | 1.26(0.74-2.15) | | 0.86(0.55-1.34) | |
| ACT | | 79.7 | 8.7 | | 0.94(0.45-1.97) | | 0.98(0.44-2.18) | | 11.6 | | 0.86(0.46-1.64) | | 1.22(0.61-2.42) | |

% weighted percentage;

^aPR prevalence ratio—models adjusted for age and sex;

^bPR— models adjusted for age, sex, income, education and SEIFA

Australian Secondary Students Alcohol and Drug Survey (ASSAD)

As reported in the most recent Tasmanian ASSAD report,³⁴ the prevalence of smoking in the past 12 months among 12-15 year olds and 16-17 year olds has remained relatively stable since 2014 but has decreased since the first ASSAD survey in 2008 (Figure 3).

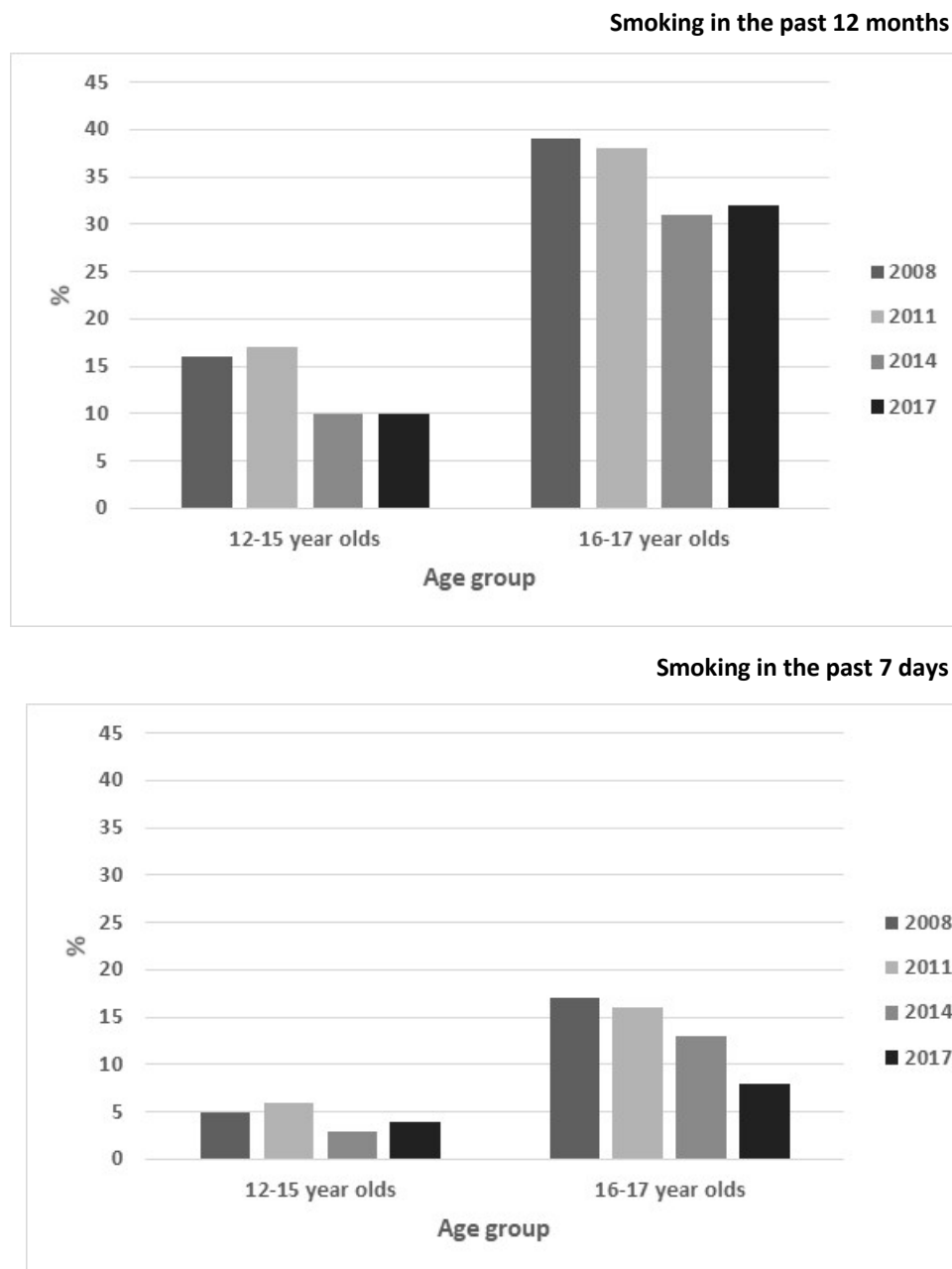


Figure 3. Prevalence of smoking in the past 12 months and in the past 7 days from ASSAD surveys from 2008 to 2017

The characteristics of the participants across the survey years 2014 and 2017 were broadly similar (see appendix Table 13). The proportion of current smokers (smoked within the last week or month) was around 8.5% across both surveys.

The characteristics associated with ex-smoking and current smoking, compared to never smoking, estimated using log multinomial regression are shown in Table 5. Please refer to methods and footnote for Table 12 for description of never, ex and current smoking. Data were pooled across the two most recent ASSAD surveys to allow analysis. There was a decrease in the prevalence of ex-smoking between the survey years compared to never smoking but the decrease in current smoking between survey years was not statistically significant. Older adolescents were more likely to be ex-smokers or current smokers compared to being never smokers. Adolescents with self-reported better performance at school were less likely to be ex-smokers or current smokers, compared to never smokers with a significant trend across categories. People who identified as Aboriginal had a higher prevalence of being a current smoker, as did those that reported higher spending per week. There was a trend ($p=0.056$) toward living in a higher SES area based on SEIFA IRSAD and being less likely to be an ex-smoker, compared to being a never smoker. There was no apparent trend with SEIFA and current smoking status, compared to never smoking status.

We examined adolescent's attitudes and beliefs about smoking (Table 6) across survey years. We had intended to examine if these attitudes varied by smoking status and other characteristics, but the numbers of responses did not allow this level of analysis. Most young people had adequate knowledge about the health risks of smoking with upwards of 80% agreeing correctly with statements about addiction, cardiovascular diseases, cancer and effects on babies. There were small proportions of young people that disagreed with statements about the negative effects of smoking. For example, around 2-3% disagreed with the effect of smoking on cardiovascular diseases, 8% disagreed about effects on male sexual function and 13% disagreed with statements about the effect of smoking on ageing. There was, however, considerable uncertainty for many items. For example, up to 20% reported they didn't know if smoking causes several cardiovascular diseases (e.g. clogged arteries, stroke or peripheral vascular disease), with even larger proportions not agreeing with statements about the effect of smoking on ageing (30%) or blindness (45-50%). The majority (around 90%) agreed that it was important or very important to stop smoking. Consistently across the surveys around 69% of young people supported a proposal to use policy to stop the sale of tobacco to youth. In general, there were few differences across years in terms of agreement with statements about the health and other effects of smoking on people. In general, respondents that disagreed or were unsure about a particular health or other risk of smoking were less likely to be ever smokers (see appendix **Table 14**)

Table 5. Factors associated with smoking status among Tasmanian subjects from a pooled dataset of two ASSAD surveys 2014-17

| | Never | | Ever not current ^b | | | Current smoker ^b | | |
|--|-------------|------|-------------------------------|------|--------------------------|-----------------------------|------|--------------------------|
| | (n/N) | % | (n/N) | % | PR ^a (95%CI) | (n/N) | % | PR ^a (95%CI) |
| Survey years | | | | | | | | |
| 2013-14 | (1360/1877) | 76.9 | (318/1877) | 14.6 | 1.00 | (199/1877) | 8.5 | 1.00 |
| 2016-17 | (1588/2043) | 77.9 | (260/2043) | 13.5 | 0.74(0.64,0.86) | (195/2043) | 8.6 | 0.91(0.77,1.08) |
| Gender | | | | | | | | |
| Male | (1395/1843) | 77.3 | (264/1843) | 14.2 | 1.00 | (184/1843) | 8.6 | 1.00 |
| Female | (1553/2077) | 77.6 | (314/2077) | 13.9 | 1.08(0.93,1.25) | (210/2077) | 8.5 | 1.05(0.88,1.25) |
| Age groups | | | | | | | | |
| 12-15 years | (2159/2578) | 85.4 | (268/2578) | 9.6 | 1.00 | (151/2578) | 5.0 | 1.00 |
| 16-17 years | (789/1342) | 59.7 | (310/1342) | 23.9 | 1.73(1.47,2.03) | (243/1342) | 16.4 | 2.34(1.91,2.87) |
| School status ^c | | | | | | | | |
| Secondary | (2537/3161) | 82.2 | (384/3161) | 11.3 | 1.00 | (240/3161) | 6.5 | 1.00 |
| Senior secondary | (410/758) | 56.5 | (194/758) | 26.0 | 1.19(0.98,1.45) | (154/758) | 17.6 | 1.27(1.01,1.59) |
| Performance at school | | | | | | | | |
| Below average | (203/347) | 62.6 | (71/347) | 19.5 | 1.00 | (73/347) | 18.0 | 1.00 |
| Average | (1559/2174) | 74.4 | (376/2174) | 16.0 | 0.76(0.61,0.94) | (239/2174) | 9.6 | 0.45(0.36,0.56) |
| Above average | (1165/1374) | 85.0 | (128/1374) | 10.0 | 0.44(0.34,0.57) | (81/1374) | 5.0 | 0.26(0.19,0.34) |
| <i>p trend</i> | | | | | <i>p<0.001</i> | | | <i>p<0.001</i> |
| Indigenous status | | | | | | | | |
| No | (2665/3507) | 78.3 | (510/3507) | 13.8 | 1.00 | (332/3507) | 7.9 | 1.00 |
| Aboriginal and/or Torres Strait Islander | (260/385) | 68.6 | (63/385) | 16.2 | 1.00(0.80,1.26) | (62/385) | 15.2 | 1.48(1.18,1.84) |
| Money spent weekly | | | | | | | | |
| Low | (1133/1307) | 88.3 | (111/1307) | 7.2 | 1.00 | (63/1307) | 4.5 | 1.00 |
| Middle | (999/1287) | 78.5 | (175/1287) | 14.0 | 1.50(1.19,1.88) | (113/1287) | 7.5 | 1.57(1.17,2.11) |
| High | (816/1326) | 63.9 | (292/1326) | 21.8 | 2.06(1.66,2.57) | (218/1326) | 14.3 | 2.40(1.82,3.18) |
| <i>p trend</i> | | | | | <i>p<0.001</i> | | | <i>p<0.001</i> |
| SEIFA ^d | | | | | | | | |
| Lowest | (1196/1648) | 73.6 | (270/1648) | 16.5 | 1.00 | (182/1648) | 9.8 | 1.00 |
| Second | (711/946) | 77.8 | (147/946) | 14.6 | 1.12(0.94,1.34) | (88/946) | 7.6 | 1.07(0.85,1.34) |
| Third | (286/377) | 78.6 | (57/377) | 13.8 | 1.05(0.82,1.36) | (34/377) | 7.6 | 0.97(0.69,1.36) |
| Fourth | (405/511) | 83.3 | (56/511) | 8.9 | 0.82(0.63,1.07) | (50/511) | 7.8 | 1.17(0.88,1.55) |
| Highest | (307/383) | 82.4 | (38/383) | 9.3 | 0.76(0.56,1.04) | (38/383) | 8.3 | 1.24(0.91,1.68) |
| <i>p trend</i> | | | | | <i>p</i> =0.056 | | | <i>p</i> =0.132 |

% weighted percentage, ^aPR prevalence ratio – models adjusted for sex, age, survey year, school performance, spend/week and SEIFA; ^bCurrent smokers smoked in last week and/or 4 weeks; ever not current - smoked at least part of a cigarette but not currently smoking; ^cSenior secondary: year 11 and 12; ^dSEIFA IRSAD

Table 6. Factors and attitudes related to smoking among Tasmanian youth in the ASSAD by survey years

| | 2014 | | 2017 | | 2014-2017 | |
|---|----------------|-------------|----------------|-------------|----------------|-------------|
| | % ^a | (n/N) | % ^a | (n/N) | % ^a | (n/N) |
| Smoking increases the risk of having a heart attack | | | | | | |
| Disagree ^b | 2.9 | (53/1789) | 3.9 | (68/1891) | 3.4 | (121/3680) |
| Agree ^c | 88.7 | (1581/1789) | 84.9 | (1601/1891) | 86.8 | (3182/3680) |
| Don't know | 8.4 | (155/1789) | 11.1 | (222/1891) | 9.8 | (377/3680) |
| Smoking causes mouth cancer | | | | | | |
| Disagree ^b | 3.2 | (52/1788) | 3.3 | (61/1894) | 3.3 | (113/3682) |
| Agree ^c | 87.2 | (1569/1788) | 85.6 | (1608/1894) | 86.4 | (3177/3682) |
| Don't know | 9.6 | (167/1788) | 11.1 | (225/1894) | 10.3 | (392/3682) |
| Smoking causes sexual dysfunction in men | | | | | | |
| Disagree ^b | 7.6 | (146/1778) | 7.5 | (147/1884) | 7.5 | (293/3662) |
| Agree ^c | 50.7 | (905/1778) | 45.8 | (859/1884) | 48.2 | (1764/3662) |
| Don't know | 41.7 | (727/1778) | 46.7 | (878/1884) | 44.3 | (1605/3662) |
| Smoking is addictive | | | | | | |
| Disagree ^b | 4.1 | (78/1781) | 4.5 | (90/1879) | 4.3 | (168/3660) |
| Agree ^c | 88.2 | (1575/1781) | 88.3 | (1661/1879) | 88.2 | (3236/3660) |
| Don't know | 7.7 | (128/1781) | 7.2 | (128/1879) | 7.4 | (256/3660) |
| Smoking causes wrinkles and makes your hair grey | | | | | | |
| Disagree ^b | 12.8 | (224/1774) | 12.3 | (242/1886) | 12.6 | (466/3660) |
| Agree ^c | 57.4 | (1008/1774) | 52.9 | (968/1886) | 55.1 | (1976/3660) |
| Don't know | 29.8 | (542/1774) | 34.8 | (676/1886) | 32.3 | (1218/3660) |
| Smoking causes infertility in men and women | | | | | | |
| Disagree ^b | 6.7 | (123/1771) | 6.5 | (125/1877) | 6.6 | (248/3648) |
| Agree ^c | 49.6 | (884/1771) | 44.3 | (824/1877) | 46.9 | (1708/3648) |
| Don't know | 43.7 | (764/1771) | 49.2 | (928/1877) | 46.5 | (1692/3648) |
| Smoking is toxic | | | | | | |
| Disagree ^b | 5.3 | (90/1782) | 6.4 | (118/1879) | 5.8 | (208/3661) |
| Agree ^c | 74.0 | (1323/1782) | 66.4 | (1268/1879) | 70.2 | (2591/3661) |
| Don't know | 20.7 | (369/1782) | 27.2 | (493/1879) | 24.0 | (862/3661) |
| Is a leading cause of death | | | | | | |
| Disagree ^b | 7.8 | (152/1774) | 10.0 | (176/1882) | 8.9 | (328/3656) |
| Agree ^c | 74.1 | (1330/1774) | 69.9 | (1367/1882) | 72.0 | (2697/3656) |
| Don't know | 18.1 | (292/1774) | 20.0 | (339/1882) | 19.1 | (631/3656) |

| | | | | | | |
|--|------|-------------|------|-------------|------|-------------|
| Smoking can harm unborn babies | | | | | | |
| Disagree ^b | 2.0 | (41/1779) | 2.2 | (40/1881) | 2.1 | (81/3660) |
| Agree ^c | 92.9 | (1649/1779) | 91.2 | (1719/1881) | 92.1 | (3368/3660) |
| Don't know | 5.0 | (89/1779) | 6.6 | (122/1881) | 5.8 | (211/3660) |
| Smoking clogs arteries | | | | | | |
| Disagree ^b | 3.4 | (59/1772) | 3.3 | (57/1883) | 3.3 | (116/3655) |
| Agree ^c | 77.9 | (1384/1772) | 68.9 | (1296/1883) | 73.3 | (2680/3655) |
| Don't know | 18.8 | (329/1772) | 27.8 | (530/1883) | 23.4 | (859/3655) |
| Smoking doubles risk of stroke | | | | | | |
| Disagree ^b | 2.9 | (51/1773) | 3.4 | (61/1884) | 3.2 | (112/3657) |
| Agree ^c | 79.3 | (1413/1773) | 69.9 | (1346/1884) | 74.5 | (2759/3657) |
| Don't know | 17.8 | (309/1773) | 26.7 | (477/1884) | 22.3 | (786/3657) |
| Smoking causes diseases in toes and fingers | | | | | | |
| Disagree ^b | 4.5 | (76/1772) | 5.4 | (104/1878) | 4.9 | (180/3650) |
| Agree ^c | 76.2 | (1360/1772) | 63.4 | (1201/1878) | 69.7 | (2561/3650) |
| Don't know | 19.3 | (336/1772) | 31.2 | (573/1878) | 25.4 | (909/3650) |
| Smoking causes blindness | | | | | | |
| Disagree ^b | 10.7 | (207/1769) | 11.6 | (227/1878) | 11.2 | (434/3647) |
| Agree ^c | 44.6 | (805/1769) | 36.0 | (694/1878) | 40.3 | (1499/3647) |
| Don't know | 44.6 | (757/1769) | 52.3 | (957/1878) | 48.6 | (1714/3647) |
| Smoking by, or around, pregnant women harms unborn babies | | | | | | |
| Disagree ^b | 3.6 | (67/1771) | 4.1 | (75/1877) | 3.8 | (142/3648) |
| Agree ^c | 80.1 | (1422/1771) | 73.8 | (1404/1877) | 76.9 | (2826/3648) |
| Don't know | 16.3 | (282/1771) | 22.2 | (398/1877) | 19.3 | (680/3648) |
| Important to stop smoking | | | | | | |
| Not important | 2.6 | (44/1741) | 3.3 | (60/1814) | 2.9 | (104/3555) |
| Important | 15.3 | (277/1741) | 16.0 | (316/1814) | 15.7 | (593/3555) |
| Very important | 74.4 | (1285/1741) | 72.3 | (1290/1814) | 73.4 | (2575/3555) |
| Don't know | 7.6 | (135/1741) | 8.4 | (148/1814) | 8.0 | (283/3555) |
| Support proposal to stop tobacco sale to people born after the year 2000 | | | | | | |
| No | 10.1 | (182/1737) | 11.4 | (186/1808) | 10.8 | (368/3545) |
| Yes | 67.8 | (1165/1737) | 69.1 | (1231/1808) | 68.4 | (2396/3545) |
| Don't know | 22.1 | (390/1737) | 19.6 | (391/1808) | 20.8 | (781/3545) |

% ^a weighted percentages; ^bIncludes strongly disagree and disagree; ^cIncludes strongly agree and agree

The previously published report on the 2017 Tasmanian ASSAD survey ³⁴ also reported relevant information on where young people obtain their cigarettes. The vast majority of young people do not report buying cigarettes but rather they are obtained most commonly from ‘friends’ (60%), followed by ‘someone bought it’ (15%) and parents (7%).

Around 25% of fathers and mothers and 18% of siblings were reported to be smokers, which was consistent across years (**Table 7**).

Table 7. Home smoking environment

| | 2014 | | 2017 | | 2014-2017 | |
|------------------------|----------------|-------------|----------------|-------------|----------------|-------------|
| | % ^a | (n/N) | % ^a | (n/N) | % ^a | (n/N) |
| Father smoked | | | | | | |
| No | 69.3 | (1251/1838) | 71.7 | (1367/1956) | 70.5 | (2618/3794) |
| Yes | 26.6 | (507/1838) | 24.5 | (503/1956) | 25.5 | (1010/3794) |
| Can’t comment | 4.1 | (80/1838) | 3.8 | (86/1956) | 4.0 | (166/3794) |
| Mother smoked | | | | | | |
| No | 73.0 | (1325/1840) | 76.1 | (1477/1958) | 74.6 | (2802/3798) |
| Yes | 24.8 | (473/1840) | 21.8 | (432/1958) | 23.3 | (905/3798) |
| Can’t comment | 2.2 | (42/1840) | 2.2 | (49/1958) | 2.2 | (91/3798) |
| Smoking among siblings | | | | | | |
| No | 81.1 | (1477/1834) | 82.6 | (1606/1949) | 81.9 | (3083/3783) |
| Yes | 18.9 | (357/1834) | 17.4 | (343/1949) | 18.1 | (700/3783) |

Participants were asked if they had received education related to smoking during the school year. Around two-thirds reported that they had received at least of part of a session on smoking (**Table 8**). While in unadjusted analyses receiving education related to smoking appeared to be associated with a slightly higher prevalence of current smoking in unadjusted analyses, this was no longer significant once the confounding factors of age, sex and socioeconomic status were taken into account. There was a slightly higher prevalence of being an ex-smoker associated with having received more than one lesson on smoking even after adjustment for potential confounding factors.

Table 8. Receipt of education about smoking and smoking status pooled across ASSAD surveys

| | Never | | Ex-smoker ^b | | | Current smoker ^c | | |
|-------------------------------|------------|------|------------------------|------|-------------------------|-----------------------------|------|-------------------------|
| | (n/N) | % | (n/N) | % | PR ^a (95%CI) | (n/N) | % | PR ^a (95%CI) |
| Unadjusted models | | | | | | | | |
| No, not even part of a lesson | (963/1217) | 83.1 | (152/1217) | 10.2 | 1.00 | (102/1217) | 6.8 | 1.00 |
| Part of or one lesson | (938/1239) | 77.4 | (176/1239) | 14.2 | 1.14(0.93,1.39) | (125/1239) | 8.4 | 1.20(0.94,1.54) |
| More than one lesson | (998/1392) | 71.7 | (238/1392) | 18.0 | 1.37(1.13,1.65) | (156/1392) | 10.3 | 1.34(1.05,1.70) |
| <i>p trend</i> | | | | | <i>p=0.001</i> | | | <i>p=0.017</i> |
| Adjusted models ^a | | | | | | | | |
| No, not even part of a lesson | | | | | 1.00 | | | 1.00 |
| Part of or one lesson | | | | | 1.04(0.85,1.27) | | | 1.06(0.84,1.36) |
| More than one lesson | | | | | 1.23(1.02,1.48) | | | 1.18(0.93,1.48) |
| <i>p trend</i> | | | | | <i>p=0.021</i> | | | <i>p=0.146</i> |

% weighted percentage; ^aPR prevalence ratio; ^bCurrent smokers are those who smoked in the last week and/or last four weeks; ^cEx-smokers are those who smoked in the past year and/or ever smoked even part of a cigarette; Models adjusted for sex, age, survey years, school performance, cash spent each week and SEIFA

Having a parent or other family member that was a smoker was associated with a statistically significant two-fold increase in the prevalence of being a current smoker independent of age, sex and socioeconomic factors (Table 9).

Table 9. Association between parental or family smoking and participant smoking status in pooled analyses across 2014-2017

| | Never | | Ex-smoker ^b | | | Current smoker ^c | | |
|-----------------------------|-------------|------|------------------------|------|-------------------------|-----------------------------|------|-------------------------|
| | (n/N) | % | (n/N) | % | PR ^a (95%CI) | (n/N) | % | PR ^a (95%CI) |
| <i>Any parent smoking</i> | | | | | | | | |
| Unadjusted model | | | | | | | | |
| No | (1867/2279) | 84.0 | (267/2279) | 10.6 | 1.00 | (145/2279) | 5.3 | 1.00 |
| Yes | (836/1291) | 66.5 | (250/1291) | 19.8 | 1.65(1.41,1.94) | (205/1291) | 13.7 | 2.50(2.04,3.05) |
| Adjusted model ^a | | | | | | | | |
| No | | | | | 1.00 | | | 1.00 |
| Yes | | | | | 1.35(1.15,1.59) | | | 2.06(1.68,2.53) |
| <i>Any family smoking</i> | | | | | | | | |
| Unadjusted model | | | | | | | | |
| No | (1722/2037) | 86.2 | (212/2037) | 9.5 | 1.00 | (103/2037) | 4.3 | 1.00 |
| Yes | (981/1533) | 66.4 | (305/1533) | 19.9 | 1.91(1.63,2.25) | (247/1533) | 13.7 | 3.19(2.56,3.97) |
| Adjusted model ^a | | | | | | | | |
| No | | | | | 1.00 | | | 1.00 |
| Yes | | | | | 1.52(1.29,1.80) | | | 2.64(2.11,3.31) |

% weighted percentage

^aPR prevalence ratio

^bCurrent smokers are those who smoked in the last week and/or last four weeks;

^cEx-smokers are those who smoked in the past year and/or ever smoked even part of a cigarette

Models adjusted for sex, age, survey years, school performance and SEIFA

Tasmanian Smoking and Health Survey (TSHS)

The participants in the TSHS were broadly similar across the four years of data collection (see appendix Table 15). Around 40% had completed tertiary education, around 17% resided in low SES areas, and 17 to 18% were current smokers.

The sample size was too small to allow detailed analysis of only younger people in the TSHS. We therefore undertook analysis of the characteristics associated with smoking status in the whole sample pooled across all survey years (Table 10). Although the prevalence of current smoking decreased overtime, this was not statistically significant. Women had a lower prevalence of current smoking compared to never smoking. Older people (55+) compared to younger people (18-34 years), were more likely to be ex-smokers and less likely to be current smokers than never smokers. Higher SES indicated by completing tertiary education and living in a higher SES area was associated with a lesser likelihood of being a current smoking compared to a never smoking, but there was no association of these variables with ex-smoking status.

Table 10. Factors associated with smoking status among Tasmanian subjects aged 18+ years in a pooled dataset of four TSHS surveys 2013-16

| | Never ^b | | Ex-smoker ^b | | | Current smoker ^b | | |
|--------------------------------|--------------------|------|------------------------|-------------|--------------------------|-----------------------------|------|--------------------------|
| | (n/N) | % | (n/N) | % | PR ^a (95%CI) | (n/N) | % | PR ^a (95%CI) |
| Survey years | | | | | | | | |
| 2013 | (286/599) | 50.4 | (230/599) | 32.3 | 1.00 | (83/599) | 17.3 | 1.00 |
| 2014 | (311/600) | 52.1 | (225/600) | 29.5 | 0.96(0.84,1.11) | (64/600) | 18.4 | 0.79(0.58,1.07) |
| 2015 | (294/600) | 51.0 | (225/600) | 32.9 | 0.99(0.86,1.14) | (81/600) | 16.1 | 0.94(0.71,1.25) |
| 2016 | (515/1001) | 51.0 | (361/1001) | 32.3 | 0.94(0.83,1.06) | (125/1001) | 16.7 | 0.89(0.69,1.15) |
| Gender | | | | | | | | |
| Male | (556/1283) | 47.0 | (549/1283) | 35.0 | 1.00 | (178/1283) | 18.0 | 1.00 |
| Female | (850/1517) | 55.1 | (492/1517) | 28.7 | 0.74(0.67,0.81) | (175/1517) | 16.2 | 0.87(0.72,1.06) |
| Age groups | | | | | | | | |
| 18-34 years | (151/244) | 60.3 | (48/244) | 17.5 | 1.00 | (45/244) | 22.2 | 1.00 |
| 35-54 years | (418/821) | 48.4 | (251/821) | 29.9 | 1.60(1.22,2.10) | (152/821) | 21.7 | 1.02(0.75,1.38) |
| 55+ years | (837/1735) | 47.5 | (742/1735) | 42.7 | 2.26(1.74,2.92) | (156/1735) | 9.8 | 0.50(0.37,0.67) |
| <i>p trend</i> | | | | | <i>p</i><0.001 | | | <i>p</i><0.001 |
| School status | | | | | | | | |
| Year 11 or less | (363/792) | 44.8 | (303/792) | 34.7 | 1.00 | (126/792) | 20.4 | 1.00 |
| Year 12 or some tertiary | (568/1181) | 51.5 | (445/1181) | 30.3 | 1.03(0.92,1.15) | (168/1181) | 18.2 | 0.76(0.62,0.94) |
| Finished tertiary | (468/816) | 62.2 | (289/816) | 31.1 | 0.98(0.86,1.11) | (59/816) | 6.7 | 0.37(0.28,0.50) |
| <i>p trend</i> | | | | | <i>p</i> =0.780 | | | <i>p</i><0.001 |
| Employment status ^c | | | | | | | | |
| Employed | (657/1272) | 51.4 | (438/1272) | 29.8 | 1.00 | (177/1272) | 18.8 | 1.00 |
| Unemployed | (744/1520) | 50.8 | (601/1520) | 34.1 | 0.99(0.90,1.10) | (175/1520) | 15.0 | 1.06(0.86,1.30) |
| SEIFA ^d | | | | | | | | |
| Lowest | (200/446) | 44.2 | (166/446) | 32.9 | 1.00 | (80/446) | 22.9 | 1.00 |
| Second | (284/594) | 52.3 | (234/594) | 33.3 | 1.04(0.89,1.21) | (76/594) | 14.4 | 0.71(0.53,0.94) |
| Third | (217/452) | 46.9 | (162/452) | 29.9 | 0.96(0.82,1.14) | (73/452) | 23.2 | 0.91(0.69,1.21) |
| Fourth | (403/762) | 53.0 | (280/762) | 31.8 | 0.99(0.85,1.14) | (79/762) | 15.3 | 0.58(0.43,0.77) |
| Highest | (294/532) | 56.6 | (194/532) | 30.7 | 0.97(0.82,1.13) | (44/532) | 12.6 | 0.46(0.32,0.64) |
| <i>p trend</i> | | | | | <i>p</i> =0.449 | | | <i>p</i><0.001 |

% weighted percentage; ^aPR prevalence ratio – models adjusted for sex, age and survey years; ^bNever: never smoked or smoked less than 100 cigarettes in their lifetime. Ex-smoker: have smoked at least 100 cigarettes in their lifetime. Current smoker: smoked daily, weekly and less than weekly; ^cUnemployed and not in workforce; ^dSEIFA (Socio-Economic Indexes for Areas).

Census of Population and Housing 2016

We analysed data from the 2016 Census to enable better characterisation of young Tasmanians aged 12 to 17 years, to compare to the ASSAD sample of people attending school in the same age range (Table 11). The census data records 3% of 12 to 17 year olds not attending school. The proportion not attending high school in the older age group (16-17 years) was 15%.

Characteristics more common in those not attending school, compared to attending full or part time school, were being male, identifying as Indigenous, being in a de facto relationship, caring for child, being employed or unemployed, living in an area in the lowest 2 deciles of IRSAD, and living in an outer regional, remote or very remote area.

Table 11. Characteristics associated with not attending or attending school among Tasmanian's aged 12 to 17 years in the 2016 Census

| | Not attending school N=1,095 | Attending school N=33,671 |
|---------------------------------|---------------------------------|------------------------------|
| Sex | | |
| Male | 54.8% | 51.2% |
| Female | 45.2% | 48.8% |
| Indigenous status | | |
| Not indigenous | 86.3% | 90.4% |
| Indigenous | 11.5% | 8.3% |
| Not stated | 2.2% | 1.3% |
| Marital status | | |
| Not married/de facto | 88.9% | 56.9% |
| Married/de facto | 3.4% | 0.1% |
| Not stated/not applicable | 7.7% | 43.0% |
| Childcare | | |
| Not caring for child | 86% | 43% |
| Caring for own/other's child | 10% | 3% |
| Not stated | 4% | 54% |
| Employment status | | |
| Employed full time or part time | 51% | 15% |
| Unemployed | 15% | 4% |
| Not in the labour force | 33% | 32% |
| Not stated or not applicable | 2% | 50% |
| SEIFA IRSAD | | |
| Deciles 1/2 | 58% | 44% |
| Deciles 3/4 | 24% | 21% |
| Deciles 5/6 | 11% | 18% |
| Deciles 7/8 | 5% | 14% |
| Deciles 9/10 | 1% | 4% |
| Language spoken | | |
| Only English | 97.6% | 94.7% |
| Other language | 1.6% | 4.7% |
| Not stated | 0.8% | 0.6% |
| Remoteness | | |
| Inner regional | 60.8% | 68.3% |
| Outer regional | 36.6% | 30.4% |
| Remote/very remote | 2.6% | 1.3% |
| No usual address | 0.0% | 0.1% |

Discussion

The aim of this analysis was to provide a profile of younger smokers in Tasmania that may be impacted by the introduction of the Tobacco 21 legislation. We aimed to examine the prevalence of smoking and the association between sociodemographic factors and smoking status across a number of different surveys that have been conducted in last 10 years.

There has been a continual reduction in current smoking among young people in Tasmania over time with some evidence of a plateau between most recent surveys. This is seen across the adolescent-focused survey (ASSAD) and the adult surveys (TSHS and NHS) although the different ways to define smoking across the studies and the different source populations means that the prevalence is not directly comparable across studies. The reduction in the prevalence of current smoking over time appears to be driven by an increase in never smoking, rather than an increase in smoking cessation. It has been proposed that the higher prevalence of smoking in Tasmania compared to other states is due to different socioeconomic characteristics, e.g. higher levels of unemployment or lower levels of education, compared to other States and Territories. We therefore did an analysis considering the prevalence of smoking in Tasmania in those aged 15 to 24 compared to other states. The prevalence of current smoking in Tasmania was around 30% higher than in the reference state (New South Wales) and this was similar over the 10-year period. Of note was that, except for the most recent survey in 2017-18, underlying socioeconomic factors did not seem to account for the differences in the prevalence of current smoking between Tasmania and New South Wales. This suggests that other factors may be driving these differences.

The large difference in the prevalence of smoking between the older adolescent years in ASSAD and the proceeding later adolescent or early adult years in the NHS are worth noting. These surveys are not directly comparable given that they capture different underlying populations and the measure of current smoking is different. However, taking into account these differences, we would argue that the prevalence of smoking in adolescents in Tasmania is likely to be higher than evident from ASSAD given the considerable difference between the surveys. The lower prevalence in ASSAD may be due to the restriction to children in school, with those outside of school that are included within the NHS population-based sample, being more likely to be smokers, as discussed below.

We found mostly expected associations between social and demographic factors with smoking status across the surveys. Women (or girls) were generally less likely to be ever smokers, which was indicated by a lower prevalence of ex-smoking status compared to never smoking across surveys. Older people were also more likely to be ex-smokers or current smokers, again indicating a higher likelihood of ever smoking status. The associations with socioeconomic factors were more mixed. There were clear associations between higher SES, particularly among older people, and a lower likelihood of being a current smoker and a greater likelihood of being an ex-smoker in the NHS and the TSHS. These results concur with results from the recent National Drug Strategy Survey, which show clear associations between lower SES and a higher likelihood of being a smoker.³⁵ The associations in the ASSAD survey were less clear, with there being non-significant associations between area-level SES and smoking status in adolescents. There were, however, clearer and expected links with smoking self-reported academic performance, which is a predictor of later school completion and occupation, with smoking status, which has also been reported by others.³⁶ The reasons for the less apparent associations between SES and smoking in the ASSAD survey compared to the NHS may be attributed to the smaller sample size, which reduces power to detect significant differences. There may also be less heterogeneity in socioeconomic status in the ASSAD survey, which is based on children attending school in only a small number of schools. In comparison, the NHS is population-based and likely more representative. These analyses demonstrate that there is socioeconomic patterning in smoking in Tasmania that is also present in younger people but that the association is stronger in older people.

Young Tasmanians are generally aware of the health risks associated with smoking as indicated by high agreement with it as a cause of cardiovascular disease or cancer. We noted that there was substantial uncertainty of smoking as a cause of some other effects including ageing (e.g. greying hair or wrinkling skin) or blindness, which is somewhat surprising given this is a graphic warning included on Australian plain packaging. Most also reported receiving at least some health-related education about smoking during the school year. Although education alone is not known to prevent smoking uptake,³⁷ ensuring that young Tasmanians are aware of the depth and breadth of the negative effects of smoking should be a priority for health promotion to improve the health literacy during school years. High levels of health literacy are known to positively influence health choices in adulthood.³⁸ Around 20% of young people surveyed in ASSAD reported that a parent or sibling was a smoker, with this associated with a higher prevalence of being a current smoker. Smoking by family members, particularly parents,^{36,39} is known to increase the risk of smoking uptake by young people. Parental smoking during childhood has also been shown to account for socioeconomic differences in smoking prevalence among adults.⁴⁰ Unfortunately, the main Australian ASSAD report does not provide family smoking prevalence, so we are unable to compare Tasmanian figures to those for the rest of Australia. However, the higher prevalence of current smoking in the Tasmanian population of childbearing age is suggestive of higher parental smoking and this may be a driver of smoking uptake in younger Tasmanians.

As we have reported previously, young Tasmanians are supportive of measures to reduce youth access to cigarettes with around 68% supporting bans on sales to young people in the most recent ASSAD survey.⁴¹ This is also supported by recently published data from the 2019 National Drug Strategy Household Survey that showed that 60% of adults in Tasmania supported policy to increase the age of sale or supply of tobacco products to 21 with the national level of support at 63%.⁴² Most (90%) people surveyed in ASSAD also agree that it is important or very important for people to stop smoking. These results indicate an underlying acceptance of the risks of smoking and willingness to support change to reduce smoking in the community.

ASSAD is currently the best data source to capture information about tobacco use in young people in Australia. However, as it is based in schools there may be issues about its ability to represent all children in the relevant age group. To address the issue of representativeness of the ASSAD survey based on people who attend school, we did an analysis of the characteristics associated with not attending school compared to attending school in Tasmania among children aged 12 to 17 years using data from the Census. We found that the overall proportion of children in this age group not attending school was low (3%) but increased to 15% among 17-year olds. Characteristics that were more common in children not attending school were being male, identifying as Indigenous, living in a more rural area, living in area with greater socioeconomic disadvantage and reporting care of children. This is supported by national research on characteristics associated with regular versus non-regular attendance at school with those who are most at risk of disengagement with school including students transitioning to high school, those who live remotely, those living in socioeconomically disadvantaged areas and Indigenous children.⁴³ Several of the characteristics associated with not attending school are also associated with the prevalence of experimentation or established smoking in children.³⁶ It is therefore possible that the prevalence of smoking among those children not attending school and not captured by the ASSAD survey is higher than seen in the survey. Indeed, as noted earlier, the increase in the prevalence of smoking in adjacent age categories in the NHS, acknowledging the different study designs, suggests that the prevalence of smoking among children in the 16 to 17 year old age group as a whole (e.g. attending and not attending school) is somewhat higher than captured by ASSAD.

There are several limitations of these analyses that should be acknowledged. The sample size of many of the data sources in the relevant age group were small and this limited our ability to undertake all planned analyses. The data release agreements also prohibited the reporting of low cell sizes, which has affected reporting of study factors in some tables. We do, however, believe that the total sample sizes for smoking prevalence in ASSAD in Tasmania when compared to rest of Australia or between

surveys provides enough statistical power to be used for evaluation of the effect of the T21 policy on smoking prevalence in the future. We increased our ability to undertake analyses by pooling data across surveys and adjusting for survey year to account for between survey variability. The inclusion of other covariates in models that may have varied by year, e.g. age, sex and socioeconomic factors, was also used to account for between survey variability. Nonetheless, it would be more desirable to have surveys with larger sample sizes to allow interrogation of specific population groups with regard to health behaviours. Also, we acknowledge the release of the most recent National Drug Strategy Household survey, which was not included in our analysis. Apart from the timeframes for approval being outside the scope of our research, the sample sizes for young people would have prohibited analysis with a Tasmanian context. Finally, the different survey designs including sampling strategies and specific questions about smoking limit the ability to directly compare prevalence between different age groups using different surveys.

In conclusion, this report provides a deeper understanding of smoking among young people in Tasmania. Our aims were to provide a greater understanding of smoking prevalence, factors associated with smoking, attitudes and beliefs about smoking and the characteristics associated with not attending school. These findings provide greater context that may assist with the implementation of smoking policies and programs, including T21. The information provides a baseline against which T21 and other programs designed to address smoking in young people can be evaluated.

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Appendix

Table 12. Characteristics of Tasmanian participants aged 15-24 years by NHS survey years

| | 2011-12 (n/N) % ^a | 2014-15 (n/N) % ^a | 2017-18 (n/N) % ^a |
|---------------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Gender | | | |
| Male | 49.88 | 51.37 | 52.22 |
| Female | 50.12 | 48.63 | 47.78 |
| Age groups | | | |
| 15-19 years | 55.57 | 50.82 | 48.40 |
| 20-24 years | 44.43 | 49.18 | 51.60 |
| Highest school completed ^b | | | |
| Secondary and below | 39.86 | 41.58 | 36.94 |
| Senior secondary | 60.14 | 58.42 | 63.06 |
| Employment status ^c | | | |
| Unemployed | 45.32 | 37.14 | 39.01 |
| Employed | 54.68 | 62.86 | 60.99 |
| Personal weekly income ^d | | | |
| Median(IQR) | 2(1,5) | 3(2,5) | 2(1,5) |
| Low | 45.28 | 46.33 | 54.99 |
| High | 54.72 | 53.67 | 45.01 |
| Property (tenure types) ^e | | | |
| Not owner | 41.70 | 38.85 | 36.38 |
| Owner | 58.30 | 61.15 | 63.62 |
| SEIFA ^f | | | |
| Median(IQR) | 3(2,6) | 4(2,6) | 3(1,6) |
| Low | 73.10 | 83.15 | 77.99 |
| High | 26.90 | 16.85 | 22.01 |

%^a weighted percentages; ^bSenior secondary school: year 11 and 12; ^cUnemployed: unemployed and not in the labour force; ^dHigh: defined as above the median cut-point; ^eOwner: with and without mortgage; ^fSEIFA (Socio-Economic Indexes for Areas) - high: defined as above median cut-point

Table 13. Characteristics of Tasmanian ASSAD survey participants by survey years

| | 2013-14 | | 2016-17 | |
|--|----------------|-------------|----------------|-------------|
| | % ^a | (n/N) | % ^a | (n/N) |
| Gender | | | | |
| Male | 50.7 | (879/1888) | 50.5 | (984/2059) |
| Female | 49.3 | (1009/1888) | 49.5 | (1075/2059) |
| Age groups | | | | |
| 12-15 years | 70.2 | (1216/1888) | 68.5 | (1387/2059) |
| 16-17 years | 29.8 | (672/1888) | 31.5 | (672/2059) |
| School status ^b | | | | |
| Secondary | 81.7 | (1471/1887) | 81.3 | (1717/2059) |
| Senior secondary | 18.3 | (416/1887) | 18.7 | (342/2059) |
| Performance at school | | | | |
| Below average | 8.4 | (161/1872) | 9.3 | (191/2047) |
| Average | 55.4 | (1070/1872) | 53.0 | (1116/2047) |
| Above average | 36.2 | (641/1872) | 37.7 | (740/2047) |
| Indigenous status | | | | |
| No | 92.3 | (1713/1873) | 89.3 | (1813/2041) |
| Aboriginal and/or Torres Strait Islander | 7.7 | (160/1873) | 10.7 | (228/2041) |
| Weekly spent ^c | | | | |
| Median(IQR) | 3 | (2,5) | 3 | (2,6) |
| Low | 37.9 | (659/1888) | 32.8 | (654/2059) |
| Middle | 34.1 | (622/1888) | 33.1 | (678/2059) |
| High | 28.0 | (607/1888) | 34.2 | (727/2059) |
| SEIFA ^d | | | | |
| Median(IQR) | 4 | (2,6) | 3 | (2,6) |
| Lowest | 38.6 | (767/1854) | 44.2 | (892/2038) |
| Second | 25.9 | (424/1854) | 22.8 | (528/2038) |
| Third | 11.1 | (207/1854) | 8.3 | (173/2038) |
| Fourth | 12.8 | (245/1854) | 16.4 | (269/2038) |
| Highest | 11.7 | (211/1854) | 8.4 | (176/2038) |
| Smoking status ^e | | | | |
| Never | 76.9 | (1360/1877) | 77.9 | (1588/2043) |
| Ex-smoker | 14.6 | (318/1877) | 13.5 | (260/2043) |
| Current smoker | 8.5 | (199/1877) | 8.6 | (195/2043) |

%^a weighted percentages

^bSenior secondary school: year 11 and 12

^cMoney spent each week

^dSEIFA (Socio-Economic Indexes for Areas – IRSAD)

^e Never: have not smoked in their lifetime, Ex-smoker: smoked in the last year and/or smoked even part of a cigarette, and Current smoker: smoked in the last week (daily or not) and/or four weeks (weekly or less than weekly).

Table 14. Attitudes and beliefs associated with smoking status among Tasmanian subjects from a pooled dataset of two surveys 2014-17

| | Never | | Ever-smoker ^a | | PR ^b (95%CI) | PR ^c (95%CI) |
|---|-------------|------|--------------------------|------|-------------------------|-------------------------|
| | (n/N) | % | (n/N) | % | | |
| Smoking increases the risk of having a heart attack | | | | | | |
| Disagree ^d | (79/119) | 67.9 | (40/119) | 32.1 | 1.00 | 1.00 |
| Agree ^e | (2387/3155) | 77.6 | (768/3155) | 22.4 | 0.70(0.48,1.03) | 0.69(0.49,0.95) |
| Don't know | (290/374) | 79.9 | (84/374) | 20.1 | 0.63(0.46,0.85) | 0.61(0.46,0.82) |
| Smoking causes mouth cancer | | | | | | |
| Disagree ^d | (79/110) | 74.7 | (31/110) | 25.3 | 1.00 | 1.00 |
| Agree ^e | (2354/3153) | 76.6 | (799/3153) | 23.4 | 0.92(0.53,1.60) | 0.90(0.51,1.57) |
| Don't know | (326/387) | 85.9 | (61/387) | 14.1 | 0.56(0.38,0.82) | 0.60(0.38,0.95) |
| Smoking causes sexual dysfunction in men | | | | | | |
| Disagree ^d | (165/289) | 60.3 | (124/289) | 39.7 | 1.00 | 1.00 |
| Agree ^e | (1283/1749) | 73.9 | (466/1749) | 26.1 | 0.66(0.53,0.81) | 0.74(0.61,0.89) |
| Don't know | (1294/1592) | 84.3 | (298/1592) | 15.7 | 0.40(0.32,0.50) | 0.48(0.38,0.59) |
| Smoking is addictive | | | | | | |
| Disagree ^d | (96/165) | 62.9 | (69/165) | 37.1 | 1.00 | 1.00 |
| Agree ^e | (2434/3214) | 77.4 | (780/3214) | 22.6 | 0.61(0.47,0.78) | 0.67(0.55,0.81) |
| Don't know | (211/249) | 87.8 | (38/249) | 12.2 | 0.33(0.21,0.51) | 0.40(0.27,0.59) |
| Smoking causes wrinkles and makes your hair grey | | | | | | |
| Disagree ^d | (313/462) | 69.9 | (149/462) | 30.1 | 1.00 | 1.00 |
| Agree ^e | (1451/1961) | 75.9 | (510/1961) | 24.1 | 0.80(0.62,1.03) | 0.78(0.63,0.96) |
| Don't know | (978/1206) | 83.2 | (228/1206) | 16.8 | 0.56(0.44,0.70) | 0.59(0.46,0.74) |
| Smoking causes infertility in men and women | | | | | | |
| Disagree ^d | (145/246) | 61.1 | (101/246) | 38.9 | 1.00 | 1.00 |
| Agree ^e | (1243/1695) | 74.8 | (452/1695) | 25.2 | 0.65(0.51,0.82) | 0.68(0.54,0.85) |
| Don't know | (1344/1675) | 82.6 | (331/1675) | 17.4 | 0.45(0.34,0.58) | 0.51(0.40,0.65) |
| Smoking is toxic | | | | | | |
| Disagree ^d | (139/207) | 69.0 | (68/207) | 31.0 | 1.00 | 1.00 |
| Agree ^e | (1890/2569) | 75.4 | (679/2569) | 24.6 | 0.80(0.59,1.07) | 0.79(0.63,0.99) |
| Don't know | (713/853) | 85.9 | (140/853) | 14.1 | 0.45(0.32,0.64) | 0.53(0.39,0.72) |
| Is a leading cause of death | | | | | | |
| Disagree ^d | (216/325) | 64.3 | (109/325) | 35.7 | 1.00 | 1.00 |
| Agree ^e | (2058/2676) | 78.5 | (618/2676) | 21.5 | 0.60(0.43,0.84) | 0.67(0.49,0.91) |
| Don't know | (468/623) | 80.5 | (155/623) | 19.5 | 0.54(0.39,0.76) | 0.60(0.45,0.79) |
| Smoking can harm unborn babies | | | | | | |

| | | | | | | |
|---|-------------|------|------------|------|-----------------|-----------------|
| Disagree ^d | (51/79) | 69.3 | (28/79) | 30.7 | 1.00 | 1.00 |
| Agree ^e | (2536/3343) | 77.6 | (807/3343) | 22.4 | 0.73(0.37,1.42) | 0.80(0.47,1.35) |
| Don't know | (155/206) | 78.8 | (51/206) | 21.2 | 0.69(0.42,1.14) | 0.75(0.46,1.22) |
| Smoking clogs arteries | | | | | | |
| Disagree ^d | (70/114) | 64.6 | (44/114) | 35.4 | 1.00 | 1.00 |
| Agree ^e | (1980/2659) | 76.3 | (679/2659) | 23.7 | 0.67(0.45,0.98) | 0.67(0.46,0.97) |
| Don't know | (689/850) | 83.3 | (161/850) | 16.7 | 0.47(0.30,0.74) | 0.49(0.32,0.76) |
| Smoking doubles risk of stroke | | | | | | |
| Disagree ^d | (71/111) | 67.4 | (40/111) | 32.6 | 1.00 | 1.00 |
| Agree ^e | (2060/2738) | 76.7 | (678/2738) | 23.3 | 0.72(0.49,1.04) | 0.70(0.50,1.00) |
| Don't know | (609/776) | 82.0 | (167/776) | 18.0 | 0.55(0.38,0.80) | 0.57(0.41,0.79) |
| Smoking causes diseases in toes and fingers | | | | | | |
| Disagree ^d | (124/178) | 72.5 | (54/178) | 27.5 | 1.00 | 1.00 |
| Agree ^e | (1883/2543) | 75.8 | (660/2543) | 24.2 | 0.88(0.60,1.29) | 0.84(0.58,1.20) |
| Don't know | (730/898) | 83.7 | (168/898) | 16.3 | 0.59(0.43,0.82) | 0.61(0.43,0.87) |
| Smoking causes blindness | | | | | | |
| Disagree ^d | (294/431) | 67.7 | (137/431) | 32.3 | 1.00 | 1.00 |
| Agree ^e | (1098/1487) | 75.2 | (389/1487) | 24.8 | 0.77(0.64,0.92) | 0.80(0.69,0.93) |
| Don't know | (1341/1697) | 81.9 | (356/1697) | 18.1 | 0.56(0.45,0.71) | 0.61(0.51,0.74) |
| Smoking by, or around, pregnant women harms unborn babies | | | | | | |
| Disagree ^d | (85/140) | 64.0 | (55/140) | 36.0 | 1.00 | 1.00 |
| Agree ^e | (2101/2806) | 76.5 | (705/2806) | 23.5 | 0.65(0.45,0.94) | 0.66(0.47,0.92) |
| Don't know | (545/670) | 84.0 | (125/670) | 16.0 | 0.44(0.31,0.64) | 0.50(0.36,0.71) |
| Important to stop smoking | | | | | | |
| Not important | (45/102) | 46.4 | (57/102) | 53.6 | 1.00 | 1.00 |
| Important | (391/586) | 69.3 | (195/586) | 30.7 | 0.57(0.42,0.78) | 0.58(0.45,0.75) |
| Very important | (2051/2557) | 82.2 | (506/2557) | 17.8 | 0.33(0.23,0.47) | 0.35(0.26,0.47) |
| Don't know | (171/277) | 60.2 | (106/277) | 39.8 | 0.74(0.50,1.10) | 0.70(0.52,0.94) |
| Support proposal to stop tobacco sale to youth | | | | | | |
| No | (169/363) | 48.0 | (194/363) | 52.0 | 1.00 | 1.00 |
| Yes | (1928/2382) | 82.9 | (454/2382) | 17.1 | 0.33(0.24,0.45) | 0.38(0.30,0.49) |
| Don't know | (551/767) | 74.1 | (216/767) | 25.9 | 0.50(0.36,0.69) | 0.56(0.43,0.73) |

% weighted percentage; ^aEver smoker; ^bPR prevalence ratio – unadjusted models ; ^cPR prevalence ratio – models adjusted for sex, age, survey years, school performance, and SEIFA; ^dIncludes strongly disagree and disagree; ^eIncludes strongly agree and agree

Table 15. Characteristics of Tasmanian participants by TSHS survey years

| | 2013 | | 2014 | | 2015 | | 2016 | |
|--------------------------------|----------------|-----------|----------------|-----------|----------------|-----------|----------------|------------|
| | % ^a | (n/N) | % ^a | (n/N) | % ^a | (n/N) | % ^a | (n/N) |
| Gender | | | | | | | | |
| Male | 49.3 | (260/600) | 49.3 | (276/600) | 49.3 | (274/600) | 49.3 | (474/1001) |
| Female | 50.7 | (340/600) | 50.7 | (324/600) | 50.7 | (326/600) | 50.7 | (527/1001) |
| Age groups | | | | | | | | |
| 18-34 years | 25.8 | (46/600) | 25.6 | (38/600) | 25.8 | (65/600) | 25.8 | (95/1001) |
| 35-54 years | 35.7 | (188/600) | 35.8 | (158/600) | 33.0 | (180/600) | 33.0 | (295/1001) |
| 55+ years | 38.6 | (366/600) | 38.6 | (404/600) | 41.2 | (355/600) | 41.1 | (611/1001) |
| School status | | | | | | | | |
| Year 11 or less | 34.0 | (179/598) | 41.2 | (184/597) | 33.3 | (177/597) | 23.0 | (253/998) |
| Year 12 or some tertiary | 51.0 | (223/598) | 43.8 | (177/597) | 50.8 | (270/597) | 61.0 | (511/998) |
| Finished tertiary | 15.0 | (196/598) | 15.0 | (236/597) | 16.0 | (150/597) | 16.0 | (234/998) |
| Employment status ^b | | | | | | | | |
| Employed | 54.3 | (287/598) | 55.1 | (258/597) | 46.4 | (270/597) | 54.2 | (457/999) |
| Unemployed | 45.7 | (311/598) | 44.9 | (341/597) | 53.6 | (327/597) | 45.8 | (542/999) |
| SEIFA ^c | | | | | | | | |
| Median(IQR) | 4 | (2,4) | 3 | (2,4) | 3 | (2,4) | 3 | (2,4) |
| Lowest | 9.6 | (67/600) | 16.5 | (101/600) | 16.5 | (104/599) | 19.1 | (174/988) |
| Second | 21.4 | (112/600) | 19.8 | (103/600) | 23.8 | (134/599) | 24.8 | (245/988) |
| Third | 17.6 | (106/600) | 17.7 | (107/600) | 19.6 | (113/599) | 13.4 | (127/988) |
| Fourth | 29.7 | (177/600) | 28.5 | (175/600) | 20.7 | (147/599) | 26.1 | (263/988) |
| Highest | 21.6 | (138/600) | 17.5 | (114/600) | 19.3 | (101/599) | 16.7 | (179/988) |
| Smoking status ^d | | | | | | | | |
| Never | 50.4 | (286/599) | 52.1 | (311/600) | 51.0 | (294/600) | 51.0 | (515/1001) |
| Ex-smoker | 32.3 | (230/599) | 29.5 | (225/600) | 32.9 | (225/600) | 32.3 | (361/1001) |
| Current smoker | 17.3 | (83/599) | 18.4 | (64/600) | 16.1 | (81/600) | 16.7 | (125/1001) |

%^a weighted percentages; ^bUnemployed: unemployed and not in the labour force; ^cSEIFA (Socio-Economic Indexes for Areas); ^dNever: never smoked or smoked less than 100 cigarettes in their lifetime. Ex-smoker: have smoked at least 100 cigarettes in their lifetime. Current smoker: smoked daily, weekly and less than weekly