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# **Smoking prevalence and consumption in Victoria: key findings from the 1998–2003 population surveys**

Sarah Durkin  
Daniella Germain  
Tessa Letcher  
John Lipscomb

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**Website:**  
[www.cancervic.org.au/cbrc](http://www.cancervic.org.au/cbrc)

## ABSTRACT

Smoking prevalence and cigarette consumption were calculated from a population survey conducted by telephone among Victorian adults in November 2003 and compared with data from similar surveys conducted annually between 1998 and 2002. In 2003, 16.6% of respondents indicated they smoked regularly, compared with 19.2% in 2002, 20.8% in 2001, 19.7% in 2000, and 21.7% in both 1999 and 1998. This is a significant overall decline in regular smoking prevalence across the years 1998 to 2003. In addition, there was also a trend toward a significant decline in smoking prevalence between 2002 and 2003.

In contrast to the previous year, in 2003, smoking prevalence was not significantly different between males (17.4%) and females (15.8%). Those younger than 50 years had significantly higher smoking rates than older people. Smoking prevalence was significantly lower among those with tertiary education compared with those who had reached Year 12 or completed a trade qualification and those who had completed Year 11 or less.

In 2003, heavy smokers (>25 cigarettes/day) comprised almost one-quarter of daily smokers, medium smokers (15–24 cigarettes/day) around one-third, and light smokers (<15 cigarettes/day) made up 40.7% of daily smokers. There was no significant change in the proportions of heavy, medium and light smokers across the years 1998 to 2003. In 2003, daily smokers reported smoking a mean number of 17.2 cigarettes per day, while daily and weekly smokers combined reported smoking 16.2 cigarettes per day. Mean cigarette consumption did not change significantly over the period 1998–2003.

Overall, the data indicate there has been a reduction in smoking prevalence for Victorian adults across the years 1998 to 2003.

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## INTRODUCTION

The current report presents the most recent Victorian data on smoking prevalence and consumption from a population survey conducted among Victorian adults in November and December 2003. Data on prevalence and consumption from similar surveys conducted annually from 1998 to 2002 are also reported.

## METHOD

The data presented in this report are from telephone surveys of randomly sampled Victorians conducted in November 1998 ( $n=1662$ ), 1999 ( $n=1986$ ), 2000 ( $n=1991$ ), 2001 ( $n=1977$ ), 2002 ( $n=1995$ ) and November and December 2003 ( $n=3001$ ). These population surveys are commissioned by the Centre for Behavioural Research in Cancer (CBRC) from a large market research company which interviews a representative sample of Victorians by telephone each year. The questions, designed by CBRC, are asked in an eight to thirteen-minute interview conducted during weekends and weeknights.

The standard tobacco use question<sup>1</sup> has been used to determine smoking status. In this report, smoking status is presented in two ways. The first way categorises respondents as *regular smokers* (smoke daily or at least weekly), *irregular smokers* (smoke less than weekly), *former smokers* (do not smoke currently but have smoked at least 100 cigarettes in their lifetime, regardless of whether they have ever smoked daily), and *never smokers* (do not smoke at all and have not smoked 100 or more cigarettes in their lifetime).

The second way of categorising smoking status is taken directly from the survey question, and categorises respondents as *Daily smokers* (smoke daily), *weekly smokers* (smoke at least weekly), *less than weekly smokers* (smoke less than weekly), and *not at all smokers (current)* (do not smoke at all currently, but may have smoked in the past).

### Statistical analysis

A comparison of the sample socio-demographic characteristics with the Australian Bureau of Statistics Census Data for the Victorian population<sup>2,3,4,5</sup> revealed that women and older people were over-represented in the telephone survey samples. To adjust for this, the data from all years were weighted by age and sex according to ABS 2001 census figures.

Analyses of variance and logistic regression analyses were used to examine the changes in smoking prevalence and consumption from 1998 to 2003, and the relationships between demographic variables and prevalence across these years. Details of statistical tests of significance are not included in the report text. Where relationships between variables are reported, the probability level of significance was less than 0.01, indicating a less than 1 in 100 probability that the effect was caused by chance. When a trend toward a significant relationship is reported, the probability level of significance was between 0.01 and 0.05. For smoking prevalence and consumption levels, 95% confidence intervals are reported.

## RESULTS

### Smoking status 1998–2003

As reported in Table 1a, in 2003, 16.6% of respondents indicated they smoked regularly, compared with 19.2% in 2002, 20.8% in 2001, 19.7% in 2000, and 21.7% in both 1999 and 1998. Logistic regression analyses showed that this general decrease over time represents a significant drop in prevalence across the years 1998 to 2003. In addition, there was a trend toward a significant decline in regular smokers from 2002 to 2003 (from 19.2% to 16.6%, respectively).

The number of irregular (less than weekly) smokers and former smokers did not change significantly over this period. However, the proportion of never smokers significantly increased across the years 1998 to 2003. The proportion of never smokers remained consistent over the two most recent years, 2002 and 2003.

Table 1a:  
Smoking prevalence among Victorian adults, 1998–2003

Smoking status	1998 (N=1662) % ( $\pm$ 95% CI)	1999 (N=1986) % ( $\pm$ 95% CI)	2000 (N=1991) % ( $\pm$ 95% CI)	2001 (N=1977) % ( $\pm$ 95% CI)	2002 (N=1995) % ( $\pm$ 95% CI)	2003 (N=3001) % ( $\pm$ 95% CI)
Regular smokers	21.7 ( $\pm$ 2.0)	21.7 ( $\pm$ 1.8)	19.7 ( $\pm$ 1.8)	20.8 ( $\pm$ 1.8)	19.2 ( $\pm$ 1.7)	16.6 ( $\pm$ 1.3)
Irregular smokers	0.7 ( $\pm$ 0.4)	1.8 ( $\pm$ 0.6)	1.4 ( $\pm$ 0.5)	1.5 ( $\pm$ 0.5)	1.4 ( $\pm$ 0.5)	1.0 ( $\pm$ 0.4)
Former smokers	28.2 ( $\pm$ 2.2)	30.7 ( $\pm$ 2.0)	30.8 ( $\pm$ 2.0)	31.9 ( $\pm$ 2.1)	26.5 ( $\pm$ 1.9)	29.2 ( $\pm$ 1.6)
Never smokers	49.3 ( $\pm$ 2.4)	45.7 ( $\pm$ 2.2)	48.1 ( $\pm$ 2.2)	45.8 ( $\pm$ 2.2)	52.9 ( $\pm$ 2.2)	53.2 ( $\pm$ 1.8)

Data are weighted by age and sex to Victorian ABS 2001 figures.  
Due to rounding, not all columns sum to 100.

Table 1b presents smoking status in slightly different categories: ‘daily’, ‘weekly’ and ‘less than weekly’ smokers, and ‘not at all’ smokers (including former and never smokers). Across the years 1998 to 2003, there was a significant decline in the prevalence of daily smokers. The prevalence of weekly and less than weekly smokers did not significantly vary between these years. The proportion of respondents who indicated they did not currently smoke at all significantly increased across this period, ranging from 77.5% in 1998 up to 82.4% in 2003.

Between 2002 and 2003 there was a trend toward a significant decline in the prevalence of daily smoking (decreasing from 17.7% in 2002 to 15.1% in 2003), as well as a significant increase in those who indicated they did not currently smoke at all (increasing from 79.4% in 2002 to 82.4% in 2003). The proportion of weekly and occasional smokers remained similar over these two years.

Table 1b:  
Smoking prevalence and smoking status by frequency of smoking among Victorian adults, 1998–2003

Smoking status	1998 (N=1662) % ( $\pm$ 95% CI)	1999 (N=1984) % ( $\pm$ 95% CI)	2000 (N=1991) % ( $\pm$ 95% CI)	2001 (N=1971) % ( $\pm$ 95% CI)	2002 (N=1993) % ( $\pm$ 95% CI)	2003 (N=2996) % ( $\pm$ 95% CI)
Daily smokers	20.1 ( $\pm$ 1.9)	18.7 ( $\pm$ 1.7)	18.2 ( $\pm$ 1.7)	18.8 ( $\pm$ 1.7)	17.7 ( $\pm$ 1.7)	15.1 ( $\pm$ 1.3)
Weekly smokers	1.6 ( $\pm$ 0.6)	3.0 ( $\pm$ 0.8)	1.6 ( $\pm$ 0.6)	2.1 ( $\pm$ 0.6)	1.5 ( $\pm$ 0.5)	1.6 ( $\pm$ 0.4)
Less than weekly smokers	0.7 ( $\pm$ 0.4)	1.8 ( $\pm$ 0.6)	1.4 ( $\pm$ 0.5)	1.5 ( $\pm$ 0.5)	1.4 ( $\pm$ 0.5)	1.0 ( $\pm$ 0.4)
Do not currently smoke	77.5 ( $\pm$ 2.0)	76.4 ( $\pm$ 1.9)	78.9 ( $\pm$ 1.8)	77.6 ( $\pm$ 1.8)	79.4 ( $\pm$ 1.8)	82.4 ( $\pm$ 1.4)

Data are weighted by age and sex to Victorian ABS 2001 figures.  
Due to rounding, not all columns sum to 100.

## Smoking prevalence and demographic variables, 2003

Smoking prevalence and demographic information for the 2003 population survey is presented in Table 2. Logistic regression analyses were carried out to investigate the differences in smoking prevalence by demographic groupings. Smoking prevalence was not found to be significantly different between males (17.4%) and females (15.8%). The eldest age group (50+ years) was found to have a significantly lower prevalence of regular smokers (9%) than the two younger age groups (23.4% for 18–29 year-olds; 19.8% for 30–49 year-olds), with no significant differences between these two younger groups.

Table 2:

**Smoking status by gender, age, education level, occupational status and region, 2003**

Demographic characteristic		Regular smokers	Irregular smokers	Former smokers	Never smokers
<b>Gender</b>					
Men	(n=1471)	17.4	0.9	32.3	49.4
Women	(n=1530)	15.8	1.1	26.2	56.9
<b>Age</b>					
18–29	(n=700)	23.4	2.1	13.5	61.0
30–49	(n=1176)	19.8	1.0	29.0	50.3
50+	(n=1126)	9.0	0.4	39.2	51.4
<b>Education</b>					
Yr 11 or less	(n=794)	21.0	0.4	34.5	44.1
Yr 12/Trade	(n=1016)	18.7	0.9	27.9	52.4
Tertiary	(n=1176)	11.8	1.4	26.8	59.9
<b>Region</b>					
Melbourne	(n=2120)	17.4	1.3	27.5	53.8
Rural Vic	(n=881)	14.6	0.3	33.3	51.8

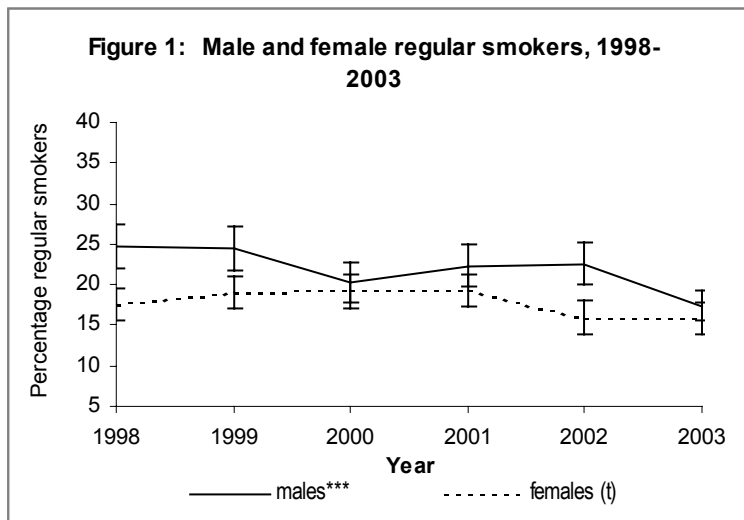
Smoking prevalence was significantly lower among those with a tertiary education (11.8%), compared with those who had reached Year 12 or completed a trade qualification (18.7%) and compared with those who had completed Year 11 or less (21.0%). There was no significant difference between the latter groups.

There was no significant difference in smoking prevalence in 2003 for respondents who lived in rural Victoria compared with those in metropolitan Melbourne (14.6% compared with 17.4%, respectively).

## Smoking prevalence and demographic variables, 1998–2003

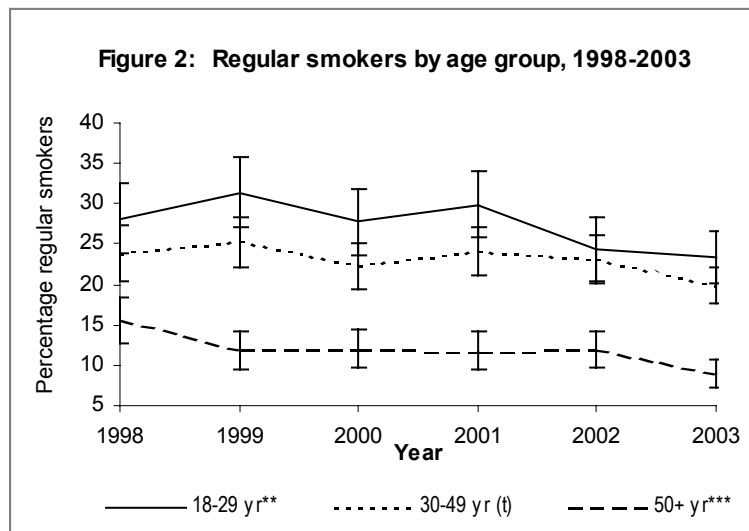
The following graphs indicate the change in prevalence of regular smokers across 1998 to 2003, for demographic variables including sex, age, education and occupational status. Actual percentages and 95% confidence intervals are provided in the appendix. Where appropriate, significant linear reductions in prevalence from 1998 to 2003 are indicated at the bottom of the graphs.

Figure 1 illustrates a significant decrease in the prevalence of regular smoking across the years 1998 to 2003, for males and a trend for females. As shown in the above graph, the decline in the proportion of regular smokers across this period was more pronounced for males than females.



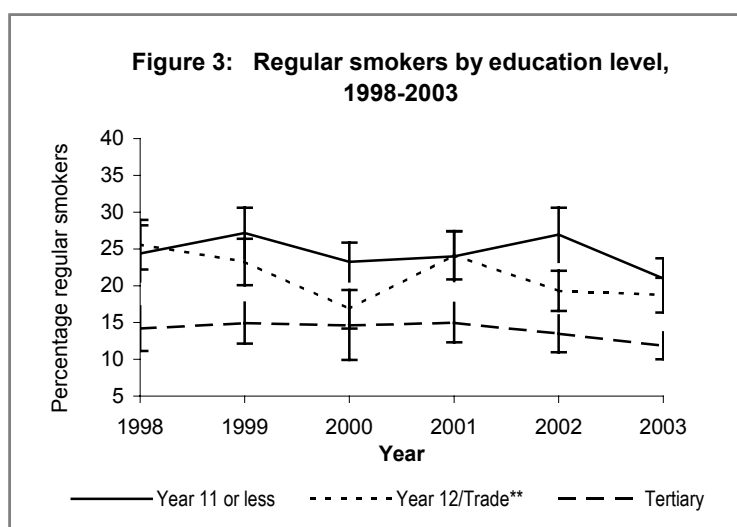
\*\*\*p<.001 for linear decline across the years 1998 to 2003; (t) = trend toward significance.

Figure 2 shows that smoking prevalence for the older age group (50 years and over) has been consistently lower each year when compared with the two younger age groups. This graph also illustrates the significant decline in regular smoking for all age groups, across the years 1998 to 2003.



\*\*p<.01; \*\*\*p<.001 for linear trends across the years 1998 to 2003; (t) = trend toward significance.

As shown by Figure 3, regular smoking has been consistently lower among those with a tertiary education than those with a lower level of education. The graph illustrates that regular smoking prevalence among those with Year 12 or trade level education has fluctuated across 1998 to 2003, while smoking prevalence among those with a tertiary education had remained relatively constant. Among those educated at the Year 12 or trade level, the proportion of regular smokers significantly declined across this period, while there was no significant change in prevalence of regular smokers with Year 11 or lower education or those with a tertiary education from 1998 to 2003.



\*\* $p < .01$  for linear trends across the years 1998 to 2003.

## Cigarette consumption

Cigarette consumption for daily smokers, and for daily and weekly smokers combined, is reported in Table 3 for the years 1998 to 2003. In 2003, daily smokers reported smoking a mean number of 17.2 cigarettes per day, while the combined group of daily and weekly smokers reported smoking 16.2 cigarettes per day. Analysis of variance indicated that there was no significant change in the mean number of cigarettes smoked per day over the last six years for daily smokers, nor for daily and weekly smokers combined.

Table 3:

**Mean number of cigarettes smoked per day for daily and daily/weekly smokers, 1998–2003**

	1998 Mean (SD)	1999 Mean (SD)	2000 Mean (SD)	2001 Mean (SD)	2002 Mean (SD)	2003 Mean (SD)
Daily smokers	17.2 (11.0)	17.9 (15.9)	16.4 (12.9)	17.0 (9.8)	17.2 (11.8)	17.2 (10.8)
Daily and weekly smokers	16.2 (11.3)	17.7 (16.0)	15.3 (13.0)	15.5 (10.3)	16.4 (12.0)	16.2 (11.0)

Daily smokers were categorised into heavy, medium or light smokers based on their reported daily consumption levels. The proportion of respondents in each category from each survey is presented in Table 4. Heavy smokers (25+ cigarettes a day) comprised around one-quarter of daily smokers in 2003 (23.9%); medium smokers (15–24 cigarettes a day) comprised over one-third (35.4%) of smokers, and light smokers (fewer than 15 cigarettes a day) comprised 40.7% of daily smokers.

Table 4:

**Proportion of heavy, medium and light daily smokers, 1998 to 2003**

Level of smoking	1998 % ( $\pm$ 95% CI)	1999 % ( $\pm$ 95% CI)	2000 % ( $\pm$ 95% CI)	2001 % ( $\pm$ 95% CI)	2002 % ( $\pm$ 95% CI)	2003 % ( $\pm$ 95% CI)
Heavy smokers (25+)	28.0 ( $\pm$ 4.6)	23.7 ( $\pm$ 4.5)	19.3 ( $\pm$ 3.8)	22.0 ( $\pm$ 3.9)	23.8 ( $\pm$ 4.3)	23.9 ( $\pm$ 3.7)
Medium smokers (15–24)	28.7 ( $\pm$ 4.7)	38.1 ( $\pm$ 5.1)	33.7 ( $\pm$ 4.6)	35.7 ( $\pm$ 4.6)	34.2 ( $\pm$ 4.8)	35.4 ( $\pm$ 4.2)
Light smokers (<15)	43.2 ( $\pm$ 5.3)	38.2 ( $\pm$ 5.1)	46.9 ( $\pm$ 5.0)	42.3 ( $\pm$ 4.9)	42.0 ( $\pm$ 5.1)	40.7 ( $\pm$ 4.5)

Logistic regression analysis was carried out to examine the changes in heavy, medium, and light cigarette consumption among daily smokers from 1998 to 2003. No significant differences in the proportions of respondents in any of the three categories were found across the years 1998 to 2003. There is wide overlap between the estimated proportions in each category over time, for example, among heavy smokers (2001: 95% CI 18.1–25.9; 2002: 95% CI 19.5–28.1.; 2003: 95% CI 20.2–27.6).

## DISCUSSION

The data indicate a reduction in smoking prevalence for Victorian adults between 1998 and 2003. This continues a downward trend in smoking observed in the early 1990s in Victoria<sup>6</sup>. Cigarette consumption did not change significantly between 1998 and 2003 for those who reported smoking daily, or for daily and weekly smokers combined. In addition, among those respondents who reported smoking daily, there was no change in the proportions of heavy, medium or light smokers over this time period.

In 2003, age and education level were found to be related to smoking prevalence, with smoking rates highest among those aged less than 50 years and among people who had reached a lower education level. Additionally, there were no differences in the smoking prevalence of males and females, in contrast to the previous year, which indicated higher male than female smoking prevalence.

## REFERENCES

1. Australian Institute of Health and Welfare (AIHW). *National Health Data Dictionary*. Version 8.0. AIHW Catalogue No. HWI 18. Canberra: AIHW, 1999.
2. Australian Bureau of Statistics (ABS). *Population by Age and Sex, Australian States and Territories*, Catalogue No. 3201.0. Canberra: ABS, 2001.
3. Australian Bureau of Statistics (ABS). *Estimated Resident Population by Age and Sex for September Quarter 2002, Victoria*. Customised table. Canberra: ABS, 2002.
4. Australian Bureau of Statistics (ABS). *Population by Age and Sex, Australian States and Territories*, Catalogue No. 3201.0. Canberra: ABS, 2002.
5. Australian Bureau of Statistics (ABS). *Population by Age and Sex, Australian States and Territories*, Catalogue No. 3201.0. Canberra: ABS, 2003.
6. Trotter L, Inglis G. Key findings of the 2000 and 2001 population surveys. In Letcher T, Trotter L (eds), *Quit Victoria Research and Evaluation Studies No. 11: 2000–2001*. Melbourne: Victorian Smoking and Health Program, 2003.



## APPENDIX A

Table A1:

Percentage of regular smokers<sup>1</sup> in Victoria: 1998 to 2003<sup>2</sup> by separate demographic groups

	1998	1999	2000	2001	2002	2003	Linear trend Odds Ratio <sup>3</sup>	95% CI for Odds Ratio
N=	1662	1986	1991	1977	1995	3001		
Total	21.7	21.7	19.7	20.8	19.2	16.6	1.07***	1.04–1.09
Sex								
Males (n=972 to 1471)	24.7	24.6	20.3	22.4	22.6	17.4	1.08***	1.04–1.11
Females (n=691 to 1530)	17.7	19.0	19.2	19.4	15.9	15.8	1.04 <sup>t</sup>	1.01–1.09
Age group (years)								
18–29 y/o (n=427 to 700)	28.1	31.5	27.7	29.9	24.3	23.3	1.07**	1.02–1.12
30–49 y/o (n=579 to 1175)	24.0	25.3	22.3	24.1	23.2	19.8	1.05 <sup>t</sup>	1.01–1.09
50+ y/o (n=658 to 1126)	15.5	11.8	12.0	11.7	11.9	9.0	1.10***	1.04–1.15
Education								
Yr 11 or less (n=491 to 997)	24.4	27.2	23.3	24.0	27.0	21.0	1.04	0.99–1.08
Yr 12/Trade (n=648 to 1016)	25.6	23.3	16.8	24.2	19.3	18.7	1.07**	1.02–1.11
Tertiary (n=217 to 1175)	14.2	14.9	14.7	14.9	13.4	11.8	1.05	1.00–1.10
Region								
Melbourne (n=1389 to 2119)	n/a	n/a	19.1	20.2	18.7	17.4	1.05	0.99–1.11
Rural Vic (n=583 to 881)	n/a	n/a	21.2	22.3	20.4	14.6	1.16***	1.07–1.26

<sup>1</sup> Regular smokers include daily and weekly smokers only.

<sup>2</sup> Data are weighted by sex and age according to ABS 2001 Census data.

<sup>3</sup> Odds ratios greater than 1.00 indicate a reduction in likelihood of being a regular smoker across the years 1998 to 2003.

<sup>t</sup> p<.05.

\*\* p<.01.

\*\*\* p<.001 for linear trends across the years 1998 to 2003.