

Monitoring Tobacco Use in New Zealand

A technical report on defining smoking status and estimates of smoking prevalence

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Introduction

Smoking is a leading cause of preventable morbidity and mortality in New Zealand and is a major contributor to health inequalities. The need for collecting accurate and consistent information on the prevalence of smoking is important in order to describe and monitor the burden of tobacco use in the New Zealand population along with responses to a changing tobacco control environment.

The prevalence of smoking is measured and reported as the number of smokers in a specified group divided by the total population of that group at a given time; it is also often referred to as a smoking rate. The prevalence of smoking can be measured using a variety of means that include cross-sectional surveys, longitudinal surveys and censuses. The key difference between surveys and censuses are that surveys measure a small part of the population to provide nationally representative estimates while censuses measure the whole population and give an actual representation of the population.

The purpose of this document is to:

- a. describe definitions of smoking status as used by three major national surveys in New Zealand and to illustrate how these definitions compare nationally
- b. describe definitions of smoking status used by national surveys in Australia, Canada, USA, the UK and to compare these against New Zealand definitions
- c. briefly describe national and international surveys, highlighting differences in age structures
- d. provide explanation around international comparisons of smoking prevalence with New Zealand.

Smoking Status

Smoking status is commonly broken down into three categories: current smoker, ex smoker and never smoker. The way smoking status is defined determines the final prevalence figure and in part, the comparability of the final figure with other surveys.¹

In New Zealand, three datasets provide accurate and representative information about smoking prevalence. These are the:

1. New Zealand Health Survey (NZHS)
2. New Zealand Tobacco Use Survey (NZTUS)
3. Census.

Note that both the NZHS and the NZTUS are surveys that are part of a National Health Monitor, managed and disseminated by the Ministry of Health. Other surveys that measure the prevalence of smoking in New Zealand are not covered in this report.

As both the NZTUS and NZHS are part of the NZ Health Monitor, the surveys have been designed to be able to produce comparable estimates for smoking prevalence by utilizing the same definitions for smoking status. The key point of difference between the NZHM surveys and the Census is the definition of *current smoker*. A regular smoker as measured by the Census essentially measures daily smoking only, whilst both the NZHS and NZTUS combine daily and non-daily smokers into a 'current smoker' classification.

The advantage of the NZHS and the NZTUS is that both are able to produce separate estimates for daily and non-daily smokers, whereas the Census cannot.

Similarly, a never smoker as defined by the Census essentially measures people who have never smoked daily and potentially includes people who have previously been non-daily smokers. The NZHS and the NZTUS measure never smokers as people who have never been a daily or non-daily smoker and currently don't smoke.

The definition used for ex-smokers in the NZHS and NZTUS reports ex-daily smokers; this is comparable to the definition used by the Census. The NZHS and NZTUS are not limited to providing estimates for ex-daily smokers however, and can produce estimates for non-daily ex smokers also.

Table 1 outlines smoking status definitions utilised by each of the New Zealand data sources outlined above.

Table 2 presents definitions for smoking status used by countries that are similar and comparable to New Zealand: Australia, Canada and the USA. The kind of tobacco incorporated into the definition is described where information is available.

¹ Note that comparability with other surveys is not solely determined by definition alone. Other variables such as survey design and methodology must be taken into consideration too.

As can be seen, the definitions used for smoking status internationally are very similar to the New Zealand definitions. The key point of difference is whether the definition of current smoker includes both daily and non-daily smokers, or daily smokers only.

Generally all the international surveys outlined above, except for the GHS use 'current smoker' as a definition covering both daily and non-daily smokers. All of these surveys are able to provide separate estimates for daily and non-daily smokers however and are specified clearly in the reporting. From definitions alone, both the NZTUS and NZHS are comparable to each survey outlined above; the Census is only comparable where surveys account for daily smokers separately.

Across all the surveys, the definition of an ex-smoker includes people who have previously been daily and non-daily smokers. These definitions can be compared to both the NZHS and NZTUS because both allow the capability of breaking down estimates by daily and non-daily; survey data on ex-smokers can only be compared to the Census where ex-daily smokers are specified.

The definitions used internationally for 'never smoker' can be compared to the NZHS and NZTUS; the census can only be compared to international surveys where never smokers are defined as never smoked daily, in this case, the GHS.

Table 1: How definitions of smoking status compare nationally

Survey	Smoking status and individual definitions	Definition includes	Definition excludes
<p>New Zealand Tobacco Use Survey (NZTUS) and New Zealand Health Survey (NZHS)</p> <p>Both surveys are part of the NZ Health Monitor.</p> <p>These are run by the Ministry of Health, Public Health Intelligence.</p>	Smoking: smoking of tobacco via cigarettes or loose tobacco	<ul style="list-style-type: none"> • Manufactured cigarettes • Loose tobacco 	<ul style="list-style-type: none"> • Smoked non-tobacco products • Cigars and pipes • Marijuana • Non-smoked tobacco products
	'Current smoker' is someone who has smoked greater than 100 cigarettes in their lifetime and currently smokes at least monthly	<ul style="list-style-type: none"> • Daily smokers • Weekly smokers • Monthly smokers 	<ul style="list-style-type: none"> • People who currently smoke less often than once a month
	'Daily smoker' is someone who currently smokes at least once per day	<ul style="list-style-type: none"> • Daily smokers 	<ul style="list-style-type: none"> • Weekly smokers • Monthly smokers
	'Non-daily smoker' is someone who currently smokes at least monthly, but not daily	<ul style="list-style-type: none"> • Weekly smokers • Monthly smokers 	<ul style="list-style-type: none"> • Daily smokers
	'Ex-smoker' is someone who has smoked greater than 100 cigarettes in their lifetime, does not currently smoke, but used to smoke daily	<ul style="list-style-type: none"> • Ex-daily smokers 	<ul style="list-style-type: none"> • Ex-weekly smokers • Ex-monthly smokers
	'Never smoker' is someone who has not smoked greater than 100 cigarettes in their lifetime and does not currently smoke	<ul style="list-style-type: none"> • People who have never tried smoking • People who may have experimented with smoking (up to 100 cigarettes) 	<ul style="list-style-type: none"> • All ever smokers
<p>The 2006 Census; Statistics NZ</p>	Smoking is the active smoking of tobacco via cigarettes or loose tobacco	<ul style="list-style-type: none"> • Manufactured cigarettes and • Loose tobacco 	<ul style="list-style-type: none"> • Smoked non-tobacco products • Cigars and pipes • Marijuana • Non-smoked tobacco products
	'Regular smokers' are people who at the time of the census were regular smokers of one or more cigarettes per day	<ul style="list-style-type: none"> • Daily smokers 	<ul style="list-style-type: none"> • Non-daily smokers
	'Ex-regular smokers' are people who at the time of the census did not smoke but have been regular smokers	<ul style="list-style-type: none"> • Ex-daily smokers 	<ul style="list-style-type: none"> • Ex non-daily smokers
	'Never smoked regularly' are people who have never been regularly smokers	<ul style="list-style-type: none"> • Never smoked daily • May include ex non-daily smokers 	

Table 2: How definitions of smoking status in New Zealand compare internationally

Survey and country	Smoking status and individual definitions	Definition includes	Definition excludes
Australia National Health Survey (NHS) 2004–2005 Australian Bureau of Statistics	Smoking is the regular smoking of tobacco including manufactured, roll your own, cigars and pipes	<ul style="list-style-type: none"> • Manufactured cigarettes and • Loose tobacco • Cigars • Pipes 	<ul style="list-style-type: none"> • Smoked non-tobacco products • Marijuana • Non-smoked tobacco products
	'Current daily smoker' is someone who regularly smokes one or more cigarettes per day	<ul style="list-style-type: none"> • Daily smokers 	<ul style="list-style-type: none"> • Non-daily smokers
	'Current smoker (other)' is someone who currently smokes at least once a week but not daily	<ul style="list-style-type: none"> • Weekly smokers 	<ul style="list-style-type: none"> • Monthly smokers • Less than monthly smokers
	'Ex-smoker' is someone who does not currently smoke, but has regularly smoked daily OR smoked at least 100 cigarettes in their life time OR smoked pipes and cigars at least 20 times in their lifetime	<ul style="list-style-type: none"> • Ex daily smokers • Ex non-daily smokers 	
	'Never smoker' is someone who does not currently smoke, has never regularly smoked daily and has smoked less than 100 cigarettes in their lifetime and has smoked less than 20 cigars and pipes in their lifetime	<ul style="list-style-type: none"> • Never smoked daily • People who have never tried smoking • People who may have experimented with smoking (up to 100 cigarettes) 	
Canada Canadian Community Health Survey (CCHS) 2005 Statistics, Canada	'Current smoker' is someone who currently smokes on either a daily or occasional basis	<ul style="list-style-type: none"> • Daily smokers • Non-daily smokers 	
	'Daily smoker' is someone who reported smoking every day	<ul style="list-style-type: none"> • Current daily smokers 	<ul style="list-style-type: none"> • Non-daily smokers
	'Occasional smoker' is someone who smokes cigarettes occasionally, including former daily smokers who are now occasional	<ul style="list-style-type: none"> • Current non daily smokers 	<ul style="list-style-type: none"> • Current daily smokers
	'Former smoker' is someone who currently does not smoke but has previously smoked either daily or occasionally	<ul style="list-style-type: none"> • Ex daily smokers • Ex non-daily smokers 	

Survey and country	Smoking status and individual definitions	Definition includes	Definition excludes
Canada Canadian Tobacco Use Monitoring Survey (CTUMS) 2001 Statistics, Canada	'Daily smoker' is someone who currently smokes cigarettes every day	<ul style="list-style-type: none"> Daily smokers 	<ul style="list-style-type: none"> Non-daily smokers
	'Occasional smoker' is someone who smokes cigarettes occasionally	<ul style="list-style-type: none"> Current non daily smokers 	<ul style="list-style-type: none"> Current daily smokers
	'Former smoker' is someone who currently does not smoke cigarettes and has smoked greater than 100 cigarettes in lifetime	<ul style="list-style-type: none"> Ex-daily smokers Ex-non-daily smokers 	<ul style="list-style-type: none"> Daily smokers Non-daily smokers Never smokers
	'Never smoker' is someone who currently does not smoke any cigarettes and has not smoked greater than 100 cigarettes in lifetime	<ul style="list-style-type: none"> People who have never tried smoking People who may have experimented with smoking (up to 100 cigarettes) 	<ul style="list-style-type: none"> Current smokers Ex-smokers
United Kingdom General Household Survey (GHS) 2006 National Statistics	'Current smoker' is someone who currently smokes cigarettes regularly	<ul style="list-style-type: none"> Daily smokers 	<ul style="list-style-type: none"> Non daily smokers
	'Ex-regular' smoker is someone who used to smoke cigarettes regularly	<ul style="list-style-type: none"> Ex-daily smokers 	<ul style="list-style-type: none"> Ex-non-daily smokers
	'Never smoked' regularly is someone who has never smoked cigarettes regularly	<ul style="list-style-type: none"> Never smoked cigarettes daily Non-daily smokers People who have never tried smoking 	<ul style="list-style-type: none"> Current smokers Ex-daily smokers
USA National Health Interview Survey (NHIS) 2007 Centers for Disease Control	'Current smoker' is someone who has smoked greater than 100 cigarettes in lifetime and now smokes every day or some days	<ul style="list-style-type: none"> Daily smokers Non-daily smokers 	<ul style="list-style-type: none"> Monthly smokers
	'Former smoker' is someone who has smoked greater than 100 cigarettes in their lifetime and does not currently smoke	<ul style="list-style-type: none"> Ex-daily smoker Ex-non-daily smoker 	<ul style="list-style-type: none"> Current smokers Never smokers
	'Never smoker' is someone who has not smoked greater than 100 cigarettes in their lifetime	<ul style="list-style-type: none"> People who have never tried smoking People who may have experimented with smoking (up to 100 cigarettes) 	<ul style="list-style-type: none"> Ever smokers

Summary of smoking status issues

While the Census provides an advantage in 'numbers' in terms of measuring the whole population, the way that smoking status is measured is very different compared to international measurement of smoking status. This means that the Census can only loosely be used comparative purposes, where the definition for daily smokers is clear. The NZHS and NZTUS have been designed to provide outputs that are consistent with international standard, using similar questions and standards to measure smoking status and therefore are much better tools to use for comparative purposes.

When comparing surveys for the prevalence of smoking look for:

1. whether the prevalence of current smokers is reported for daily smokers only, or daily and non-daily smokers
2. what kinds of tobacco are incorporated into the analysis.

Comparing Estimates of Smoking Prevalence

Definitions are not the only caveat of making international comparisons as considerations such as sampling, methodology, population structure and age structure must be taken into account when attempting to compare data. A brief outline of the NZTUS, NZHS and the Census are presented in Table 3; comparisons have been made with data collected at similar times.

Table 3: A comparison of New Zealand data sources and overall national comparability

Year	2006	2006	2006/07
Survey	NZTUS National survey, 15 to 64 years, n = 5700, computer assisted personal interview	Census National Census, 15+ years, n = 3,160,371, self-complete and/or online survey	NZHS National survey, 15+ years, n =12488, computer assisted personal interview
Comparability	Definitions for current smokers are internationally comparable Total population estimates are only available for 15 to 64 years Breakdowns by daily and non-daily are possible for current and ex smokers	Only definitions for daily smokers are internationally comparable Definitions for current smokers are not internationally comparable. Total population figures are available for 15 to 64 years and 15+ years Only figures for current daily and ex-daily smokers are possible	Definitions for current smokers are internationally comparable Total population estimates are available for 15 to 64 years and 15+ years Breakdowns by daily and non-daily are possible for current and ex smokers
DAILY (%)			
15+ Crude		20.7 (20.6 – 20.7)	18.1 (17.2 - 19.0)
15+ Age standardised		21.9 (21.7 – 21.9)	18.7 (17.7 - 19.7)
15–64 crude	21.6 (20.1 - 23.0)	23.0 (22.9 – 23.1)	20.0 (19.0 - 21.1)
15–64 age standardised	21.9 (20.4 - 23.4)	23.5 (23.4 – 23.6)	20.0 (18.9 - 21.1)
CURRENT (%)			
15+ Crude			19.9 (18.9 - 20.8)
15+ Age standardised			20.6 (19.5 - 21.7)
15–64 crude	23.8 (22.3 - 25.3)		22.0 (20.9 - 23.1)
15–64 age standardised	24.3 (22.8 - 25.8)		22.1 (20.9 - 23.3)

It is fortunate that we have three national data sources all in field at a similar time period, available to compare and contrast smoking status. As the NZTUS and NZHS are weighted to the Census, the crude rates are comparable across all three data sources. The NZTUS and the Census were in field at the same time, however each reported different figures for the prevalence of smoking in New Zealand. The NZTUS

reported a prevalence of 21.6% for the New Zealand population aged 15 to 64 years and the Census reported a prevalence of 20.7% for the New Zealand population aged 15+ years.

Essentially, the prevalence of smoking is very low among those aged 65+ years, and incorporating older age groups into the analysis reduces the overall rate of smoking in the population. Re-analysing the Census, excluding the population aged 65+ years, produces a figure of 23.0%; this figure is within the confidence limits of the NZTUS estimate and is comparable to the NZTUS figure of 21.6%. See Appendix 1 for a full comparison of prevalence estimates across the three surveys.

The NZHS was in field during 2007 and produces slightly lower estimates than the NZTUS and the Census, which may indicate a decrease in national prevalence, although this will only be confirmed when results from the NZTUS 2008 are available (see Appendix 1).

Importantly, this comparison tells us two things: the first, that our national surveys produce reliable and representative estimates of smoking prevalence in the New Zealand population. The second highlights that age structures should be considered when interpreting and comparing estimates of smoking prevalence.

A brief note on international comparability of prevalence estimates

Countries such as Australia, Canada, USA and the UK are often compared to New Zealand because we have similar tobacco control environments. Surveys were conducted in these countries at similar times to New Zealand surveys, these are compared below.

Year	Survey	Brief description	Total prevalence reported – current smokers	Total prevalence reported – current daily smokers
2004/05	National Health Survey Australia	National survey, n = 25,900, CAPI, 18+ years	23.3% (crude)	21.0% (crude)
2005	Canadian Community Health Survey	National survey, n = 130,000, CATI/CAPI, 12+ years	21.3% (crude) 95% CI: 20.8–21.8	16.2% (crude) 95% CI: 15.7–16.6
2006	General Household Survey (UK)	Survey of Great Britain, n = 13,250, CAPI, 16+ years		22.0% (crude)
2006	National Health Interview Survey (USA)	National survey, n = 75,716, CATI, 18+ years	20.8% (age standardised) ² 95% CI: 20.1–21.5	16.5% (age standardised) 95% CI: 16.2–16.8

It is clear that figures for daily smoking are lower than figures for current smokers (including daily and non-daily smokers). This highlights the need to take definition into consideration when interpreting and comparing figures between different data sources.

² Note that age adjusted and crude estimates did not differ for the prevalence of current smokers.

All of these data sources include older age groups in their reporting of current smoking prevalence. Assuming that the prevalence of smoking is low among those aged 65+ years in other countries as it is in New Zealand, this would mean that the true measure of smoking prevalence is in fact higher in these countries and that the prevalence of smoking in New Zealand is generally lower in comparison.

References

- Australian Bureau of Statistics. 2005. *Tobacco Smoking in Australia: A snapshot, 2004–05*. www.abs.govt.au/ausstats/abs@.nsf/mf/4831.0.55.001. Accessed 31 March 2008.
- Australian Bureau of Statistics. 2005. *National Health Survey: Summary of results 2004–05*. www.abs.govt.au. Accessed 1 April 2008.
- Beland Y, Dale V, Dufour J, et al. 2005. *The Canadian Community Health Survey: Building on the success from the past*. Ottawa: Statistics Canada.
- Centers for Disease Control. 2007. *National Health Interview Survey: Early release of selected estimates based on data from January to September 2007*. www.cdc.gov. Accessed 1 April 2008,
- Centers for Disease Control. 2007. Cigarette smoking among adults – US 2006. *Mortality and Morbidity Weekly Report* 56(44): 1157–61. www.cdc.gov/mmwr/preview/mmwrhtml/mm5644a2.htm. Accessed 1 April 2008.
- Copley T. 2007. *Monitoring Tobacco Use: A review an update of core indicators 2005*. Workshop final report, 3 January 2007. Prepared for the Tobacco Control Programme, Health Canada.
- Ferrance R, Stephens T. 2000. Monitoring tobacco use in Canada: the need for a surveillance strategy. *Chronic Disease in Canada* 21(2): 50–3.
- Gilmore J. 2002. *Report on Smoking in Canada, 1985 to 2001*. Statistics Canada, Catalogue 82F0077XIE. www.statcan.ca. Accessed 1 April 2008.
- Global Tobacco Surveillance System Collaborating Group. 2005. Global tobacco surveillance system (GTSS): purpose, production and potential. *Journal of School Health* 75(1): 15–24.
- Goddard E. 2006. *General Household Survey 2006: Smoking and drinking among adults*. United Kingdom: National statistics. www.statistics.gov.uk. Accessed 1 April 2008.
- Ministry of Health. 2007. *New Zealand Tobacco Use Survey Report 2006*. Wellington: Ministry of Health. www.moh.govt.nz.
- Ministry of Health. 2008. *Portrait of Health*. Wellington: Ministry of Health. www.moh.govt.nz.
- National Statistics. *National Statistics Online: Cigarette smoking*. www.statistics.gov.uk. Accessed 1 April 2008.
- Statistics NZ. 2006. *Census of Population and Dwellings 2006*. Wellington: Statistics NZ. www.stats.govt.nz.
- Statistics NZ. 2006. *Definitions and questionnaires, October 2006*. Wellington: Statistics NZ. www.stats.govt.nz

Appendix 1: A Comparison of the Prevalence of Smoking between the Census 2006, NZTUS 2006 and the NZHS 2007 (Crude Rates), by Gender and Age Group

	Male			Female		
	Census 2006	TUS 2006	NZHS 2006/07	Census 2006	TUS 2006	NZHS 2006/07
15–19	17.8	23.6	18.3	19.7	25.4	20.5
20–24	31.6	28.5	27.9	28.1	25.1	26.0
25–29	30.9	28.9	28.2	26.6	24.9	27.9
30–34	28.1	22.2	32.9	24.3	25.3	23.0
35–39	26.8	24.1	25	23.5	23.8	20.5
40–44	25.1	22.2	22.3	22.8	18.8	20.2
45–49	23.5	25.5	23.7	21.8	17.8	19.1
50–54	20.8	14.7	22.1	19.0	18.2	19.9
55–59	18.3	17.7	15.6	16.5	15.3	16.8
60–64	16.3	12.2	12.6	14.2	16.8	14.0
65–69	12.7	N/A	12.8	10.6	N/A	11.6
70–74	9.3	N/A	9.1	7.9	N/A	9.1
75–79	7.1	N/A	3.6	6.2	N/A	4.2
80–84	5.2	N/A	4.1	4.6	N/A	3.1
85–89	3.8	N/A	12.1	3.2	N/A	0.9
90–94	2.7	N/A	N/A	2.1	N/A	1.8
95–99	4.6	N/A	N/A	1.9	N/A	N/A
100+	12.9	N/A	N/A	0.9	N/A	N/A