Smoking and BMI

There have been significant changes in the prevalence of smoking over the last 30 years (Ministry of Health 2003c). Smoking is associated with slightly lower BMI (Rasky et al 1996) and smoking cessation is associated with a small weight gain in some people (Williamson et al 1991; Flegal et al 1995, Froom et al 1998), so it is of interest to estimate the effect that the changing prevalence of smoking has had on the observed BMI distributional shifts over the past several decades.

Unfortunately, the necessary longitudinal data to assess this effect are not available for New Zealand. Instead, we analysed the strength of the association between smoking and mean BMI in the New Zealand survey data sets (especially the New Zealand Health Survey (NZHS) 2003). If the effect size is small, then changes in the prevalence of smoking over time could not have had a substantive effect on the population's BMI distribution.

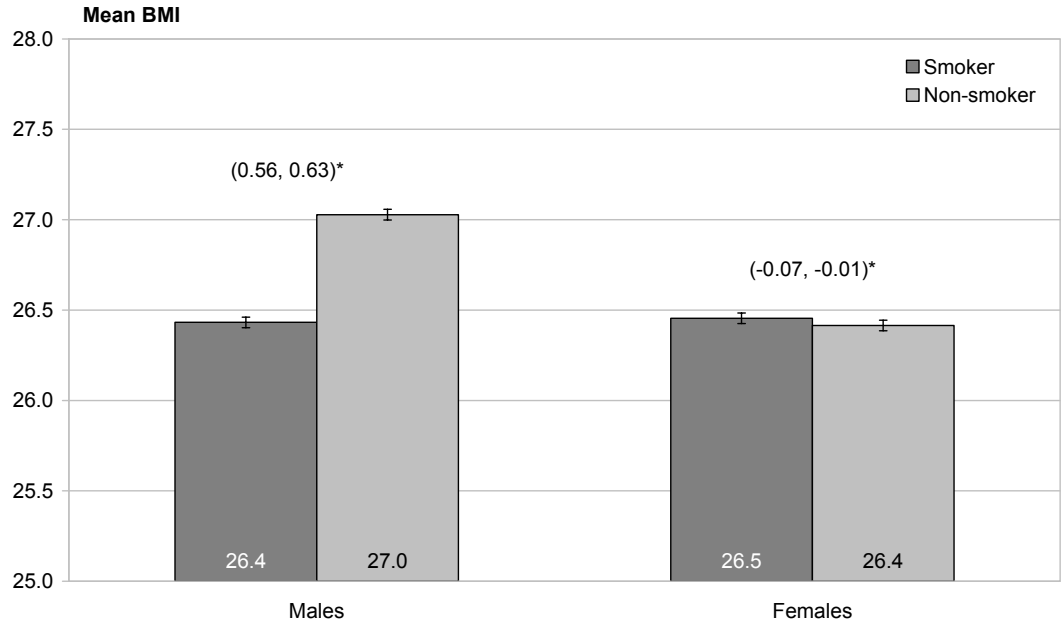
To this end, we present here the average difference in mean BMI, and in the prevalence of overweight and obesity, between current smokers and never smokers in the 2003 NZHS data set.

Mean BMI and smoking

Figure 39 summarises mean BMI for current smokers versus never smokers by ethnicity and gender (we do not show the data for ex-smokers). The estimates are adjusted for age, ethnicity and deprivation quintile. The 95 percent confidence interval for mean difference is superimposed above the bars. If zero is contained within this interval then the mean difference is not significant. Significance is denoted with an asterisk.

There is a significant difference of half a BMI unit between current smokers (mean BMI 26.4) and never smokers (mean BMI 27.0) for males. However, for females there is only a very small (albeit statistically significant) difference of 0.1 units and in the opposite direction to that expected (mean BMI of current smokers 26.5 and of never smokers 26.4).

Figure 39: Mean BMI, by smoking status, 2003



** $p < 0.05$

Obesity and smoking

Figure 40 summarises the prevalence of overweight and obesity, stratified by gender and adjusted for age, ethnicity and deprivation. Again, the 95 percent confidence interval for the difference is provided above the bars. Significance is denoted with an asterisk.

Only the difference in the prevalence of overweight between male smokers and non-smokers is statistically significant. However, the overall pattern is suggestive of a (slightly) lower prevalence of overweight and obesity among current smokers compared to never smokers for both genders.

Our findings are in accord with a previous New Zealand study which found that the change in smoking status in the Auckland population accounted for only 7–10 percent of the observed increase in BMI over the period from 1986–88 to 1993–94 in men and women, respectively (Simmons et al 1996). In fact, our results would suggest an even smaller contribution from smoking trend for males, and little if any contribution at all for females. Accordingly, we conclude that it is not necessary to adjust for trends in smoking status when describing the shifts in the population's BMI distribution over the past 26 years.

Figure 40: Prevalence of overweight and obesity, by smoking status, 2003