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# **Application of the modified PGW method for determining the smoking attributable fraction of deaths in New Zealand Maori, Pacific and non-Maori non-Pacific populations**

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## Abstract

**Background:** Preston, Gleis and Wilmoth recently proposed a new method for estimating smoking-attributable mortality in high income countries and an improvement to the method was proposed by Rostron. The method greatly simplifies estimation of smoking attributable fractions but additional testing has been recommended to validate the approach.

**Objective:** We apply the Rostron (PGW-R) method to ethnic groups in New Zealand and compare the results with published estimates from other sources with the purpose of determining their consistency and exploring possible reasons for any divergence.

**Methods:** Four different sources were identified with ethnic-specific estimates of smoking attributable mortality fractions (SAMF) for Maori, Pacific Island and European/Other ethnic groups in New Zealand for periods between 1995 and 1999. These employed a variety of direct and indirect estimation techniques. The results were compared with PGW-R method estimates for the same period and ethnic groups.

**Results:** Although the PGW-R method produced SAMF estimates that were within 5% of those derived using the Peto-Lopez method for the European/other and total populations (in males and females), there were significant discrepancies between them in the Maori and Pacific SAMF estimates. Results using direct methods from a census linkage study were inconsistent with both the Peto-Lopez and the PGW-R method. Seven possible explanations for these discrepancies were considered and discussed but none could fully account for the differences.

**Conclusions:** The results of this work raise questions not only about the validity of the PGW-R method, but also about the accuracy of the estimates derived from the Peto-Lopez and direct methods, at least in these populations. Further research should examine the applicability of the key assumptions of the PGW method. Other work to determine the effects of possible misclassification bias in the direct method estimates would also aid interpretation of these findings. Until then it would be prudent to use the PGW-R method cautiously when examining ethnic differences in SAMF.

**Comments:** Accurate methods for determining the population health impact of smoking are vital for policy-makers to ensure that tobacco control is awarded the appropriate emphasis and resourcing.

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