Deaths attributable to smoking

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# Introduction

Smoking remains a leading cause of preventable disease and premature death. While it is not possible to class any hospital admission as wholly attributable to smoking, it is possible to estimate what fraction of admissions can be attributed to smoking using estimated prevalence rates of smoking and associated risk of disease.

# Methodology

The method used for calculating smoking attributable deaths is consistent with the method used by Public Health England. In the absence of direct information on individual smoking histories, a proxy measure is used to calculate the proportion of deaths which are due to smoking. Only deaths for Scottish residents aged 35 years and older are included, as the likelihood of younger individuals dying from smoking is low.

Four categories of mortality related to smoking were defined using the Tenth revision of the International Classification of Diseases (ICD-10). For each of these categories, a smoking-attributable fraction (SAF) was calculated. The following ICD-10 codes were used:

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| Category | ICD-10 Code |
| Cancers | C00-C14, C15, C16, C25, C32, C33-34, C53, C64-C66, C67, C68, C80, C92 |
| Cardiovascular diseases | I00-I09, I20-I25, I26-I51, I60-I69, I70, I71, I72-I78 |
| Respiratory diseases | J10-J18, J40-J42, J43, J44 |
| Digestive diseases | K25-K27 |

Each disease has its own associated gender and age-specific risk. These can be found in the [Statistics on Smoking in England 2020 publication](https://digital.nhs.uk/data-and-information/publications/statistical/statistics-on-smoking/statistics-on-smoking-england-2020/statistics-on-smoking-2020-data-tables).

Age and sex specific smoker and ex-smoker prevalence data were used in the calculations. These data are taken from the [Scottish Health Survey](https://www.gov.scot/collections/scottish-health-survey/), which is used to track the [Scottish Government’s National Indicator to reduce the percentage of adults who smoke](https://www2.gov.scot/About/Performance/scotPerforms/indicator/smoking),

The disease risk and the prevalence information were used to calculate the smoking-attributable fraction (SAF), the fraction of a death which could be attributed to smoking. The SAF was calculated for Scotland using the following equation:

$$SAF=\frac{(prev\_{current}×\left(risk\_{current}-1\right)+prev\_{ex}×\left(risk\_{ex}-1\right))}{(1+prev\_{current}×\left(risk\_{current}-1\right)+prev\_{ex}×\left(risk\_{ex}-1\right))}$$

The SAFs were added together to obtain the estimated number of deaths attributed to smoking, which gave the numerator value for Scotland.

The denominator used mid-year population estimates from the [National Records of Scotland](http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates). This information was then used to calculate age-sex standardised rate per 100,000 population, using the 2013 European Standard Population.

It is difficult to determine the exact extent to which deaths from certain causes are associated with smoking. These causes of death include: external causes (including fires, suicides, and accidents), neonatal deaths (including stillbirths), all other deaths under 35 years, and deaths from cirrhosis of the liver. Therefore, none of these deaths were attributed to tobacco, even though some of them would have been due to smoking.

# Further information

Our statistical practice is regulated by the Office for Statistics Regulation (OSR).

Visit our website for [further information about our statistics and PHS as an Official Statistics producer.](https://publichealthscotland.scot/our-organisation/about-our-statistics/official-statistics/)

The next release of this publication will be March 2025.

# Contact

Scott Kilgariff | Principal Information Analyst | phs.smokingcessation@phs.scot

Mike Smith | Senior Information Analyst | phs.smokingcessation@phs.scot

Greg Powell | Graduate Apprentice | phs.smokingcessation@phs.scot