

### Recent trends in lung cancer

Cancer of the bronchus and lung is the third most common cancer (excluding non-melanoma skin cancer) in Ireland overall, and the second most common in both men and women. It is the commonest cause of death from cancer (1623 deaths in 2006). While the number of cases is increasing for both sexes, by 5% annually for women and by 1% for men, the age-standardised incidence rates for men have been falling, while those for women are rising (Figure 1).

#### Incidence trends by cell type

The decrease in incidence for men has been largely due to a fall in the numbers and incidence rate for squamous carcinoma (SC) (Figure 2) which, in turn is presumably due to a decrease in smoking prevalence. The age-standardised incidence rate for SC has been decreasing annually by 2.8% (95% confidence interval (CI) 1.7%-3.9%) since 1994. Almost all of this decrease was between 1994 and 2001, but since then the rate has changed very little. The incidence rate of adenocarcinoma of the lung has been increasing in men by 3.5% per annum (95% CI 2.2%-4.7%) while there has been little change in the incidence of small cell carcinoma. For women, there have been increases in the incidence of squamous carcinoma (by 1.3% annually, 95% CI 0.1%-2.5%) and of adenocarcinoma (6.5% annually, 95% CI 5.2%-7.8%), but no significant change in small cell carcinoma incidence.

#### Adenocarcinoma trends

For both sexes there has been an increase in the proportion of adenocarcinoma. In 1994, adenocarcinoma made up 12% of male lung cancers and 16% of female; these percentages are now 21% and 27% respectively. The ratio of male to female incidence of adenocarcinoma has fallen from 1.9 in 1994 to 1.3 in 2007, and for squamous carcinoma from 3.6 to 2.2.

An increase in the proportion of adenocarcinoma of lung has been widely reported (1) and attributed to changes from unfiltered to filtered cigarettes (1) or to air pollution from motor vehicles (2).

In Ireland, the upward trend in adenocarcinoma has been seen in both sparsely populated and densely populated areas (Figure 3) suggesting that motor vehicle pollution is not a major factor in the increase.

Figure 1. Time trends in lung cancer (EASR=age-standardised incidence rate, European standard population)

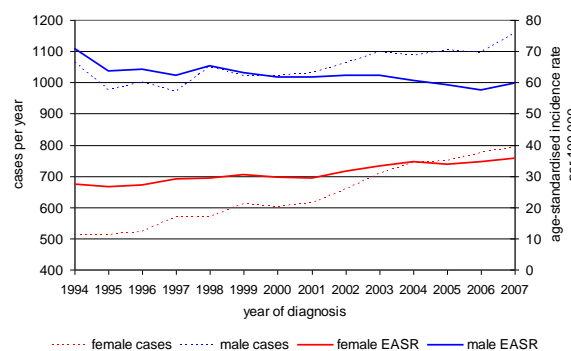
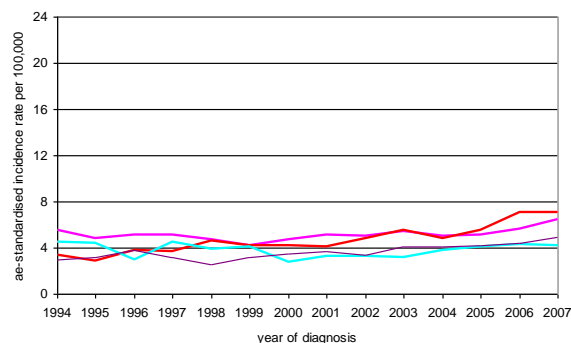


Figure 2. Time trends in lung cancer, by cell type females



#### males

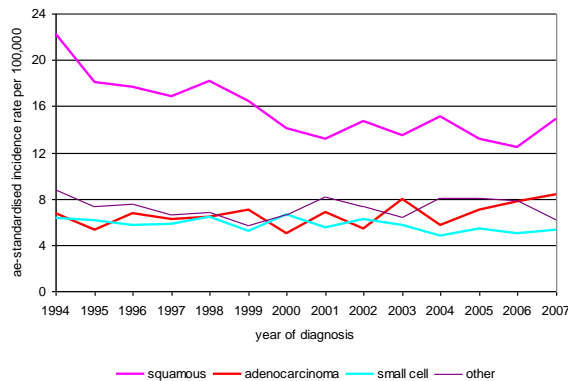
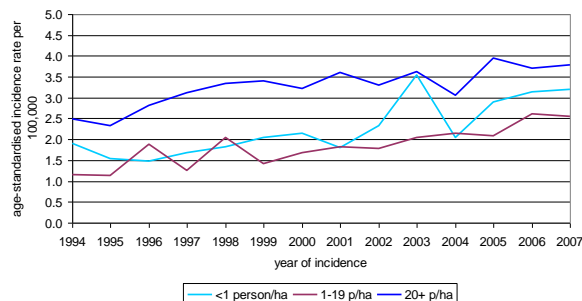


Figure 3. Time trends in adenocarcinoma of lung, by population density (persons/hectare)



#### Lung cancer facts at a glance

Number of lung cancer cases 2007  
 Number of lung cancer deaths 2006  
 Age-standardised incidence rate 2007  
 Age-standardised mortality rate 2006  
 Risk of developing lung cancer before age 75  
 Risk of dying of lung cancer before age 75

#### females

716  
 659  
 32.3  
 28.4  
 2.8%  
 2.2%

#### males

1001  
 964  
 51.8  
 50.6  
 4.1%  
 3.8%

**Age-specific incidence trends** There has been a decrease in overall incidence rate for males in almost all age groups (Figure 4), while there has been an increase for almost all age groups of females. While the largest increase is seen in the 45-49 year age group for both sexes, this represents very few cases (2%-3% of the total). The incidence rate for males 60 and over is falling by 1.4% annually, and this seems to be accelerating. For men under 60, the incidence rate is much lower, and also falling by 1.4%. The incidence rate for women under 60 is rising by 3.9% a year, and for those 60 and over by 1.5% annually, although there is some evidence that the latter has levelled off since 2003.

Mortality trends resemble those for incidence (Figure 5). The risk of dying of lung cancer before age 75 has fallen from 5.7% to 3.8% for men since 1980, while for women it has risen slightly, from 2.0% to 2.2%.

### Person-years of life lost

A useful measure of the overall impact of cancer mortality is the number of person-years of life lost (PYLL). Each person dying before their normal life expectancy has suffered a loss of potential years of life and this loss can be aggregated for the whole population. Cancers causing death at an earlier age have a greater impact on PYLL.

Figure 6 shows that the number of years of life lost to men due to lung cancer has been constant, at around 10,000 PYLL per year, since the 1970s. This total is now rising, due to improved life expectancy and the increase in population size. The number of years of life lost to women has increased steadily since the 1950s, and has gone from 58% of the male total in 1991 to 80% in 2006. As with males, the number of years of life lost has risen more rapidly in the last decade, and for the same reasons.

### Smoking prevalence

Smoking prevalence in men and women in Ireland is similar and has not changed substantially in the past five years (Figure 7). Data from the UK show a striking similarity in reported trends between the two countries and the convergence of male and female smoking prevalence in the early 1990s, despite the different methods of measurement. This equalisation of smoking behaviour is almost certain to result in a similar convergence of cancer incidence and mortality in the near future.

### References

1. *International lung cancer trends by histologic type: male:female differences diminishing and adenocarcinoma rates rising.*

Susan S. Devesa, Freddie Bray, A. Paloma Vizcaino and D. Max Parkin. *Int. J. Cancer*: 117:294-9 (2005)

2. *Lung adenocarcinoma incidence rates and their relation to motor vehicle density.*

Chen F, Jackson H, Bina WF. *Cancer Epidemiol Biomarkers Prev.* 18 :760-4 (2009)

Figure 4. Time trends in lung cancer, by age

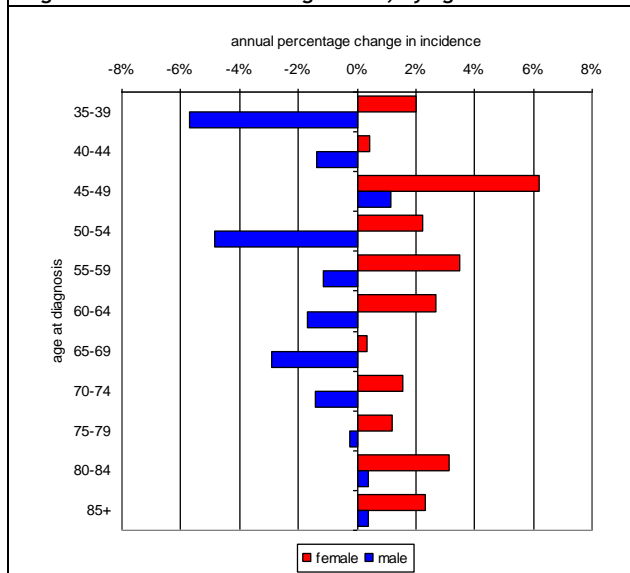


Figure 5. Time trends in lung cancer mortality 1980-2006

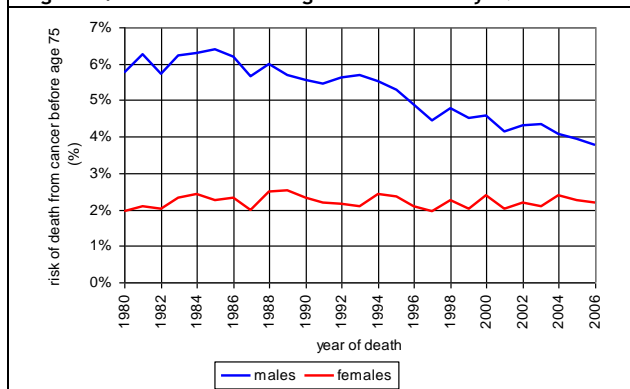


Figure 6. Person-years of life lost due to lung cancer 1954-2006

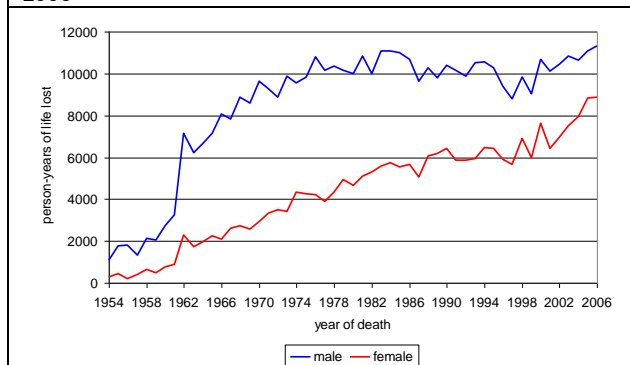
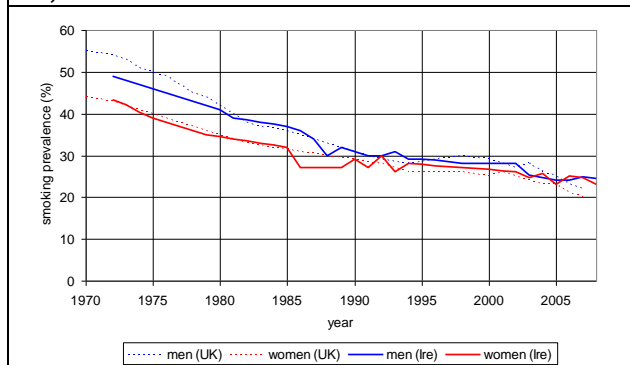


Figure 7. Prevalence of cigarette smoking in Ireland and the UK, 1970-2008



Sources: Ireland 1972-2002: OECD Health Data 2005  
Ireland 2003-2008: Office of Tobacco Control  
UK: Cancer Research UK