

Key findings:

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- Colorectal is the leading type of cancer for both sexes combined. For men only, prostate is the leading type. For women only, breast is the leading cancer.
- Lung cancer is the leading cause of cancer-related death for both sexes combined and for men only. For women, breast cancer is the leading cause of cancer-related death.
- Lung, oesophageal and stomach cancer incidence and mortality rates for men are more than twice those for women. For most other major cancers, with the exception of breast and melanoma of the skin, the incidence and mortality rates for men are significantly higher than those for women.
- Breast, colorectal, lung, lymphoma, oesophageal cancer and melanoma of the skin incidence rates for women in Ireland are significantly higher than the rates for women in the EU. Oesophageal cancer rates are also higher among women here than in the US.
- Breast, colorectal, lung, lymphoma and oesophageal cancer mortality rates for women in Ireland are significantly higher than those in the EU. Breast, colorectal and oesophageal cancer mortality rates in women here are also higher than in the US, as are the rates of melanoma of the skin and stomach cancer.
- Colorectal and oesophageal cancer incidence rates for men in Ireland are significantly higher than the rates in either the EU or the US. The incidence rate for prostate cancer in Ireland is also significantly higher than in the EU, and the incidence rate for stomach cancer is higher for men in Ireland than in the US.
- Colorectal, oesophageal, and prostate cancer mortality rates for men in Ireland are significantly higher than for men in either the EU or the US. The mortality rate for lymphoma in men in Ireland is higher than the rate in the EU, and the mortality rate for stomach cancer is higher than in the US.
- The incidence rate for lymphoma, breast and lung cancers in women is increasing. For lymphoma, the mortality rate for women is also increasing.
- The incidence rate for men is increasing for lymphoma and prostate cancer.
- Prostate cancer incidence rates in the Republic of Ireland are significantly higher than in Northern Ireland, and are becoming increasingly so over time.
- Regions in the east of Ireland have significantly more breast, colorectal, lung, prostate and stomach cancer cases than expected.
- Regions in the east of Ireland have significantly more lung, melanoma of the skin, oesophageal and stomach cancers deaths than expected.
- For nearly the entire Republic of Ireland the number of prostate cancer deaths is significantly higher than expected.
- For children, cancer incidence and mortality in Ireland is rare, and is not significantly different from either the EU or the US.
- No county, district council or region has significantly more or fewer childhood cancers than expected.

1. Introduction and overview

This is the second collaborative report of the Northern Ireland Cancer Registry and the National Cancer Registry (Ireland). As with the first report, *All-Ireland Cancer Statistics 1994-96*, data from both registries have been merged and integrated to profile and assess the cancer incidence and mortality on the island of Ireland as a whole. As an update, the focus of analysis in this report is on data for 1998-2000, although trends are computed from 1994 forward.

Scope and purpose

The reader should note that there have been considerable changes in the design and focus of this report compared to the first. The most substantive of these is the scope. Unlike its predecessor, this report focuses on those major cancer sites that are life-threatening and:

- Represent a substantial burden to the general population and can be prevented or cured, or
- Are of particular interest to the public, researchers and policy makers.

Among the former are colorectal, breast, lung, prostate, stomach, and oesophageal cancers, as well as melanoma of the skin. Among the latter are childhood cancer and lymphoma. Together, these constitute an average of about 12400 cancers per year or approximately 65% of the 19350 average annual total of life-threatening cancer cases.

figure 1.1
1998-2000 percent by site, all Ireland
male cancer incidence
with average annual cases in ()'s

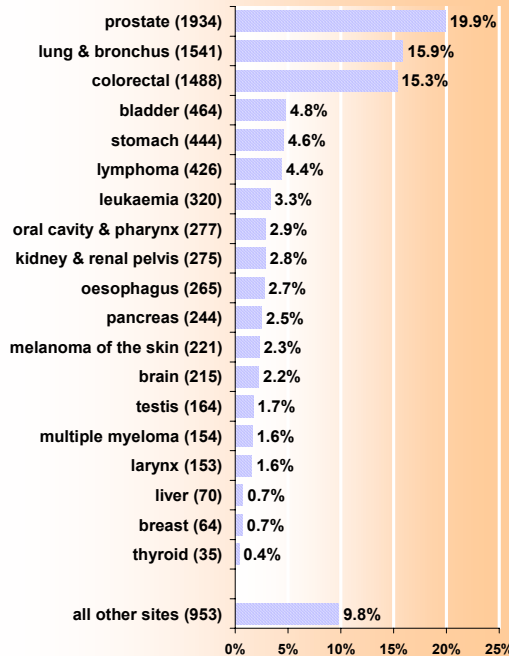
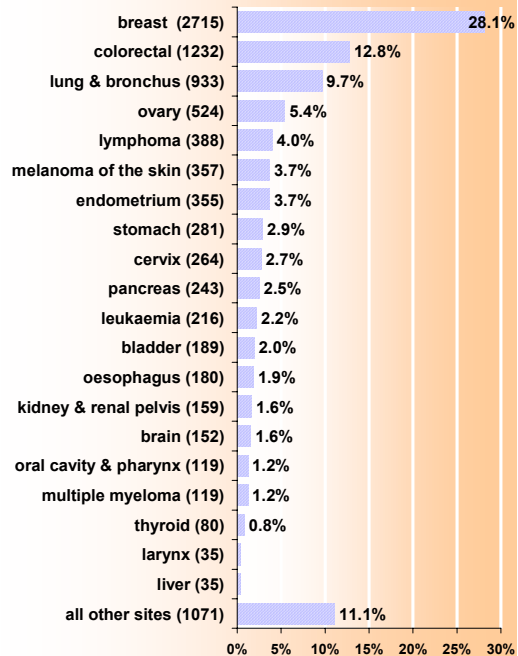
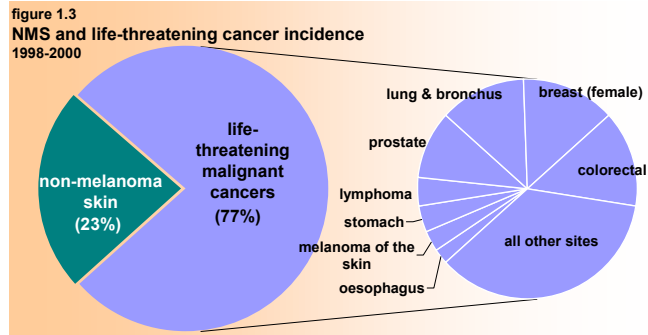


figure 1.2
1998-2000 percent by site, all Ireland
female cancer incidence
with average annual cases in ()'s



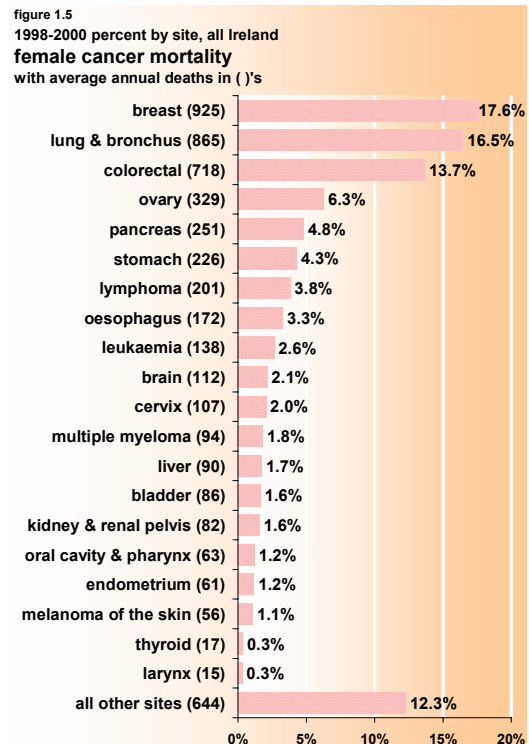
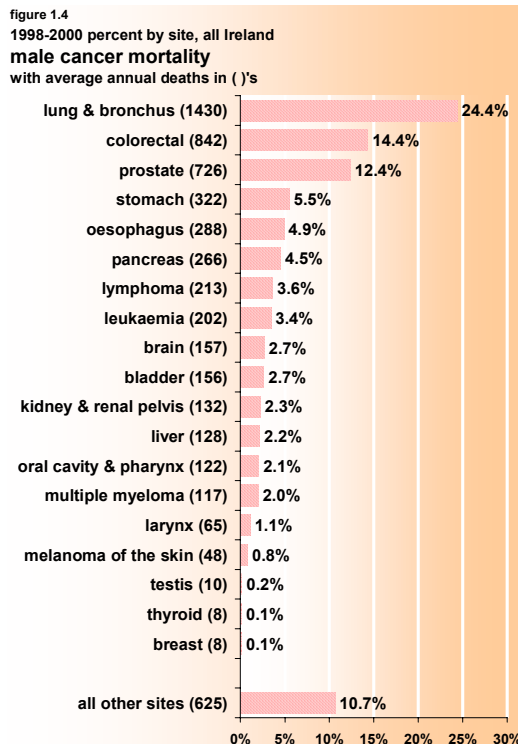
More than half of all cancer cases come from just three of these sites—two of which are the same for both sexes. For men they are prostate, lung and colorectal cancers. For women, they are breast, colorectal and lung cancers.

Absent from this report are the non-melanoma skin cancers (NMS). Between 1998 and 2000, these averaged 5832 cases per year, or 23% of all malignant cancers. They are excluded because they are rarely life-threatening, difficult to collect uniform data on, and, outside of Ireland, rarely monitored. Risk factors, interventions, and incidence patterns for NMS generally mirror those for melanoma of the skin, which is included in this report.



As with incidence, the major cancer sites focused on in this report also constitute more than 60% of the cancer-related deaths. That is, out of an average of approximately 11100 cancer-related deaths per year, slightly more than 7000 are from lung, colorectal, breast, prostate, stomach and oesophageal cancers plus lymphoma and melanoma of the skin.

Similarly, too, with incidence, the three leading cancer mortality sites for men and women constitute approximately 50% of the cancer-related deaths for each of the sexes. Moreover, they are the same three sites as with incidence: lung, colorectal and prostate for men, and breast, lung and colorectal for women.



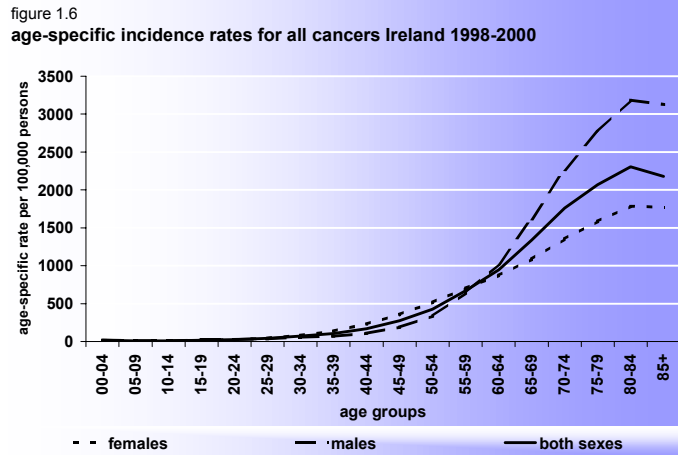
By focusing on these cancers, our intent is to address the concerns of the public—as well as add clarity to the issues which face policy-makers and researchers. By doing so through a collaborative process, our hope is to further existing joint efforts in the Republic of Ireland and Northern Ireland in reducing the burden of cancer throughout Ireland.

The cancer problem

Most people are well aware that cancer is a disease involving the uncontrolled growth and spread of abnormal cells. Less well known is that cancer comprises a highly diverse group of diseases—some preventable, some curable, some medically manageable, and some fatal.

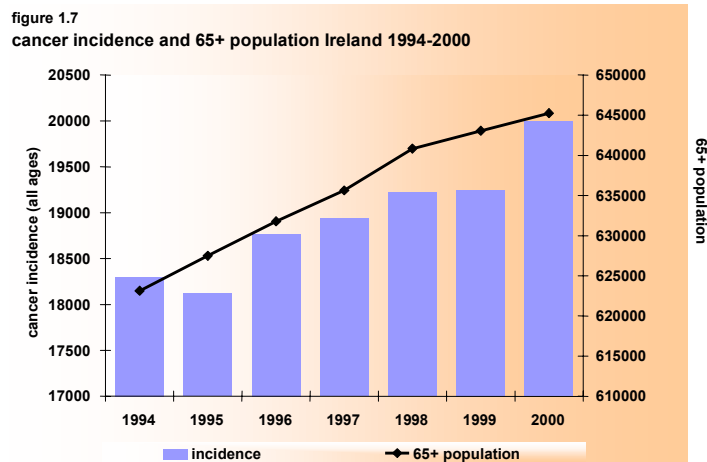
Also seemingly less well known is that the causes of many cancers are equally diverse. Risk factors for breast, prostate and lung cancers, for instance, all differ from each other, with one exception—age.

The risk of cancer increases markedly with age. Age-specific cancer incidence rates for men and women aged 80 to 84 are, for instance, two to three times higher than the rates for those aged 60 to 64. Rates for men and women aged 60 to 64 are roughly four to ten times higher than those aged 40 to 44.



Given that more and more people are living well past age 65, the number of cancer cases will assuredly increase. This is readily evident in a simple comparison of the 1994 to 2000 annual population estimates for those aged 65 and older, and total cancer incidence.

Age alone, of course, is not the only cancer risk factor; genetics, for instance, contribute as well. Neither of these, unfortunately, are modifiable.



However, among those risk factors that are modifiable, it is estimated that approximately one-third of all cancers are caused by tobacco; one-third by diet (high fat/low fruit and vegetables); and, most of the remaining third by other life-style choices such as excessive drinking, lack of regular exercise, sexual and reproductive patterns, and frequent sunburns. Occupational exposures account for most of the remaining cancer risk, with the final—and very small—outstanding proportion attributable to toxins in the environment.

This is good news, for it suggests many cancers can be prevented simply through healthy life-style choices. Lung, oesophageal and stomach cancers, for instance, are all directly linked to tobacco use; melanoma of the skin, to sun exposure; and, colorectal cancer, to diet and exercise. Moreover, cancers like breast, colorectal and melanoma of the skin, can often be cured if detected early. For these cancers many screening and patient education options exist.

Glossary of terms

Age-adjusted rate: Since age is a major risk factor for cancer, rates are commonly age-adjusted to account for differences in the age composition of district councils, counties, countries or regions being compared. All incidence and mortality rates in this report are age-adjusted to the standard European population, except for childhood cancers which are adjusted to the standard world population.

Confidence intervals, 95% ci: Since two communities rarely have the same incidence or mortality rates, confidence intervals provide a simple means for determining if the differences are more than would be expected by chance alone. As a rule of thumb, if the confidence intervals overlap, then chance alone probably accounts for the difference. If the confidence intervals do not overlap, then the rates are considered to be statistically significantly different—although chance alone could still account for the difference.

Different, significantly different, significant: These terms are only used when the 95% confidence intervals do not overlap or if by some other statistical test the probability that an event happened by chance is less than or equal to 5%.

Eurocare: EUROCARE 3 is a collaborative study among 56 cancer registries in 20 European countries which provides population-based survival data for patients diagnosed between 1990 and 1994.

Incidence, cancer incidence: Terms used to describe the number of new cancer cases diagnosed.

Quintile, upper quintile, lower quintile: The upper and lower quintiles are simply the upper fifth and lower fifth of a rank ordered list of the counties' and district councils' rates. **No statistical significance is implied.**

Relative survival, 5-year survival rates: The percentage of patients who survive for 5 years or longer after being diagnosed. Differences in the expected life-span of those in older or younger age groups are taken into account.

SEER, SEER regions: The SEER program provides nationwide cancer statistics from 11 regions in the US. Incidence and mortality rates for the US are based upon the data from these regions.

Spatial scan statistic: This statistical test looks at all the possible combinations of adjacent counties and district councils and identifies any grouping of areas that have significantly more or fewer cases or deaths than expected. The methodology and software (SaTScan) was developed under contract for the US National Cancer Institute. (<http://www.satscan.org/>)

Stage at diagnosis, early stage, late stage: How far a cancer has advanced or developed is often described as its stage at diagnosis. Early stage cancer (stage I or II) can often be more effectively treated than late stage cancer (stage III and IV).

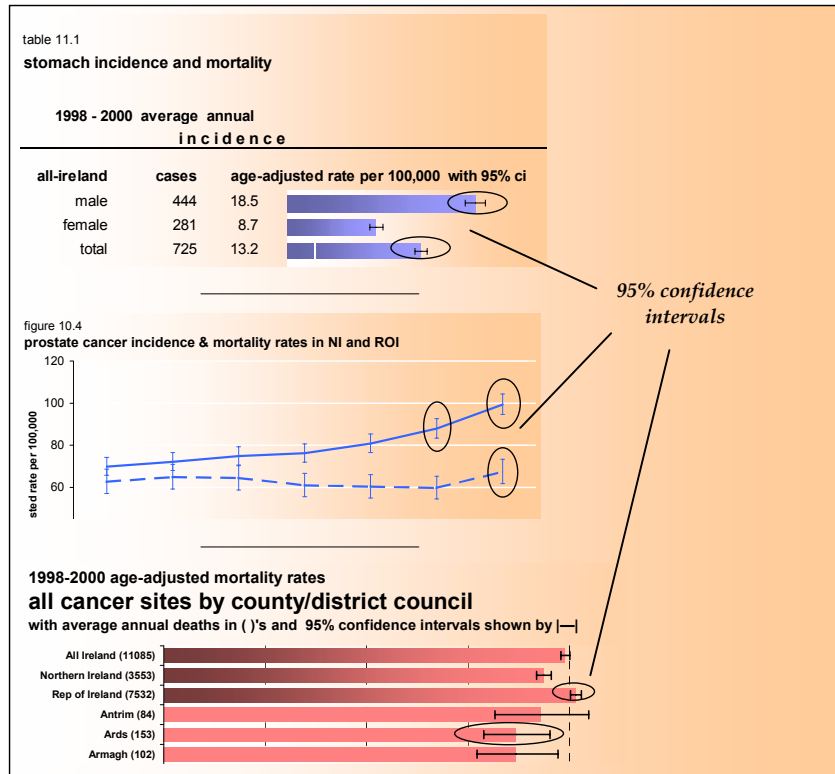
Years of life lost: The rank order of the “years of life lost” for each major cancer site is reported. It is based upon an estimate of the number of years people would have lived had they not died from cancer. The estimate uses the age- and sex-specific life-expectancy table for Ireland.

Guide to the figures and tables

Error bars

Tables and graphs throughout the report will often include error bars around each rate. These represent the 95% confidence intervals for the rate. As previously noted, if the confidence intervals overlap, the differences between the two rates are not statistically significant. Conversely, if they do not overlap, the differences are significant.

For counties and district councils, rates have not been displayed if there were fewer than 5 cases or deaths in 1998-2000.



Spatial scan statistic

Groups of counties and/or district councils identified through the spatial scan statistic as being significantly different than expected are highlighted on the maps of Ireland. Areas shaded with white diagonals have fewer cases or deaths than expected; areas with black diagonals have more cases or deaths than expected.

