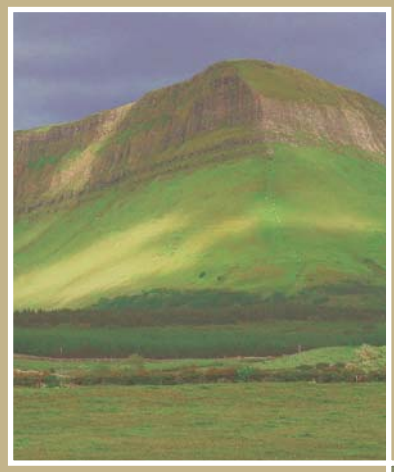
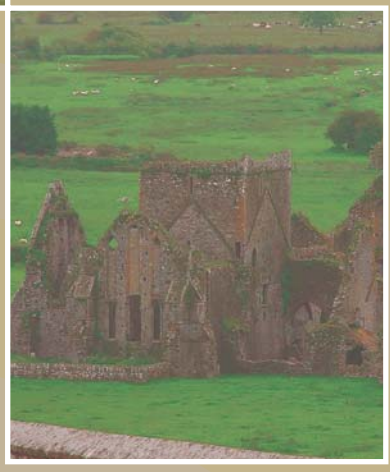
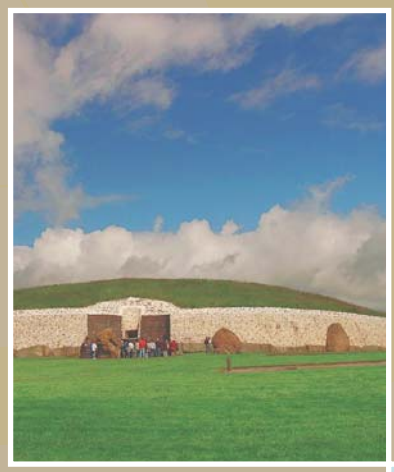




Trends in Irish cancer incidence 1994-2002 with predictions to 2020



National Cancer Registry Ireland

Trends in Irish cancer incidence 1994-2002

with projections to 2020

National Cancer Registry

June 2006

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All errors and omissions are entirely my responsibility.

Harry Comber, June 2006.

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Trends in Irish cancer incidence 1994-2002, with projections to 2020

Chapter 1. Summary

Introduction

Since the establishment of the National Cancer Registry in 1994, the number of cancers diagnosed in Ireland has been increasing steadily, by almost 3% annually (Table 1.1). This increase in cancer numbers is due to two factors:

- population ageing, with an increasing number of people over 65 years (demographic factors);
- an increase in underlying cancer rates, independent of demographic factors.

This report attempts to project this increase into the future in order to determine the likely cancer burden in the next 15-20 years.

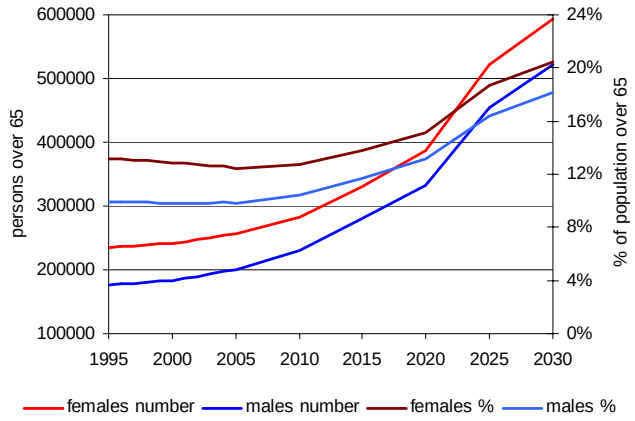
Table 1.1. Number of cancers registered, 1994-2003 (all cancers, invasive and non-invasive)

year of incidence	*females*	*males*	*both sexes*
1994	10002	9547	19549
1995	9853	9494	19347
1996	10549	9770	20319
1997	10861	9974	20835
1998	10801	9935	20736
1999	11027	10138	21165
2000	11398	10726	22124
2001	11738	10972	22710
2002	12240	11497	23737
2003	13059	11818	24877
average annual increase 1994-2003	2.8%	2.5%	2.7%

The role of demographic factors

Most cancers (65% in men and 54% in women) occur in the population over 65, so any change in the size of this population is an important determinant of cancer incidence. Figure 1.1 shows current (1995-2003) and expected (2005-2030) trends in population. The number of females over 65 in the population is predicted to increase from 235,000 in 1995 to 521,000 in 2030, and the number of males from 176,000 to 454,000. In the same period, the percentage of the female population who are over 65 is predicted to increase from 13% to 19% and the percentage of the male population who are over 65 from 11% to 16%.

Figure 2.1. Current and predicted population over 65



Changes in underlying cancer rates

Trends in age-standardised incidence rates for the commoner cancers between 1994 and 2003 are shown in Table 1.2. There have been statistically significant increases in rate for all cancers combined and for all invasive cancers, both including and excluding non-melanoma skin cancers (NMSC)[¶]. Statistically significant increases for both sexes have occurred for cancers of the liver and kidney and for melanoma. For women, there were also significant increases in cancers of the lung, breast, and thyroid and in gynaecological cancers[*], while for men there were increases in cancers of the prostate and testis and in lymphoma. Significant decreases occurred in cancer of the stomach for both sexes, and for cancers of the colon and bladder in men.

Table 1.2. Estimated annual percentage change in age-standardised incidence rate 1994-2003 (95% confidence intervals)

(statistically significant increases are shown in blue; decreases in red)	*females*	*males*
all cancers (invasive and non-invasive)	1.1% (0.7%; 1.6%)	1.2% (0.8%; 1.6%)
all invasive cancers	0.9% (0.4%; 1.4%)	0.9% (0.5%; 1.3%)
all invasive cancers excluding NMSC[¶]	1.3% (0.8%; 1.9%)	1.7% (1.3%; 2.1%)
head and neck	0.9% (-2.2%; 4.1%)	-4.9% (-6.3%;-3.6%)
oesophagus	-0.9% (-3.0%; 1.2%)	0.5% (-1.5%; 2.5%)
stomach	-1.5% (-2.4%;-0.7%)	-2.6% (-3.3%;-2.0%)
colon	-0.5% (-1.4%; 0.5%)	-0.7% (-1.4%;-0.1%)
rectum	0.3% (-1.4%; 1.9%)	1.1% (0.0%; 2.2%)
liver	10.7% (4.2%; 17.2%)	7.4% (4.2%; 10.6%)
gallbladder	2.7% (-1.8%; 7.2%)	-1.6% (-7.7%; 4.4%)
pancreas	0.5% (-1.1%; 2.0%)	1.3% (0.0%; 2.6%)
lung	2.3% (1.5%; 3.1%)	-0.9% (-1.7%; 0.0%)
melanoma	2.0% (0.6%; 3.5%)	3.9% (2.3%; 5.5%)
breast	2.8% (2.2%; 3.4%)	4.0% (-0.9%; 9.0%)
gynaecological*	1.0% (0.1%; 1.8%)	—
prostate	—	8.6% (7.5%; 9.7%)
testis	—	5.5% (3.2%; 7.9%)
kidney	3.5% (1.7%; 5.4%)	4.3% (2.8%; 5.8%)
bladder	-1.3% (-4.4%; 1.7%)	-2.1% (-3.3%;-0.8%)
thyroid	2.9% (0.1%; 5.7%)	0.8% (-5.6%; 7.1%)
brain and central nervous system (CNS)	1.6% (-0.4%; 3.6%)	0.4% (-0.7%; 1.6%)
lymphoma	1.4% (-0.1%; 3.0%)	1.9% (0.7%; 3.0%)
leukaemia	-1.2% (-4.7%; 2.3%)	1.3% (-0.5%; 3.2%)

Projected cancer numbers 2005-2020

Taking into consideration both demographic change and the change in cancer rates, the estimated numbers of new cancers in the next 15 years are shown in Table 1.3. (The years 1998-2002 are used as a baseline, as a five-year average gives the most stable estimate of current numbers.)

¶ Non-melanoma skin cancers (NMSC) are often omitted from estimates of trends for a number of reasons—they are by far the most common cancer (almost 30% of all cancers); they rarely cause serious illness or death; and they are more likely to be missed by cancer registration than most other cancers.

[*] Gynaecological cancers are those defined by ICD-10 codes C51-C57—vulva, vagina, cervix, corpus uteri, uterus (not otherwise specified), ovary and other female genital.

Table 1.3. Average number of cancer cases 1998-2002, with projected case numbers 2005-2020 (±95% prediction intervals)

site	*sex*	*1998-2002*[¶]	*2005*	*2010*	*2015*	*2020*	*overall % change**
all cancers (invasive and non-invasive)	female	11394	13156 ± 161	15285 ± 240	17860 ± 350	20819 ± 492	83%
	male	10625	12309 ± 156	14537 ± 240	17461 ± 363	20924 ± 528	97%
all invasive cancers	female	9087	10632 ± 132	12408 ± 189	14587 ± 271	17169 ± 380	89%
	male	9905	11475 ± 137	13466 ± 201	16075 ± 299	19153 ± 432	93%
all invasive cancers excluding NMSC	female	6636	7905 ± 113	9391 ± 162	11192 ± 232	13328 ± 324	101%
	male	7122	8497 ± 118	10291 ± 172	12636 ± 254	15457 ± 366	117%
head and neck	female	72	88 ± 12	103 ± 17	120 ± 24	138 ± 34	92%
	male	182	160 ± 16	144 ± 19	131 ± 23	122 ± 29	-33%
oesophagus	female	119	128 ± 15	138 ± 21	151 ± 30	165 ± 43	39%
	male	189	219 ± 19	252 ± 28	296 ± 42	347 ± 60	84%
stomach	female	182	186 ± 17	192 ± 23	203 ± 32	218 ± 43	20%
	male	287	278 ± 21	277 ± 27	283 ± 35	290 ± 45	1%
colon	female	557	613 ± 32	676 ± 46	761 ± 66	873 ± 95	57%
	male	613	663 ± 33	742 ± 48	862 ± 72	1015 ± 109	66%
rectum	female	245	270 ± 21	303 ± 31	347 ± 44	400 ± 63	63%
	male	446	517 ± 29	616 ± 43	747 ± 64	905 ± 92	103%
liver	female	33	52 ± 9	74 ± 12	101 ± 17	135 ± 23	309%
	male	59	90 ± 12	125 ± 17	169 ± 24	224 ± 34	280%
gallbladder[#]	female	33	40 ± 9	49 ± 13	61 ± 19	76 ± 27	130%
pancreas	female	183	207 ± 18	235 ± 26	275 ± 38	324 ± 54	77%
	male	188	216 ± 19	259 ± 28	317 ± 42	388 ± 60	106%
lung	female	609	752 ± 35	923 ± 49	1153 ± 71	1437 ± 101	136%
	male	1031	1113 ± 43	1236 ± 62	1410 ± 92	1638 ± 137	59%
melanoma	female	280	346 ± 23	426 ± 33	523 ± 47	633 ± 64	126%
	male	172	227 ± 19	293 ± 27	374 ± 39	468 ± 54	172%
breast	female	1927	2472 ± 63	3117 ± 90	3856 ± 127	4734 ± 175	146%
gynaecological (see note on page 2)	female	855	1019 ± 41	1202 ± 58	1420 ± 83	1676 ± 115	96%
prostate	male	1689	2422 ± 60	3409 ± 88	4720 ± 128	6330 ± 183	275%
testis	male	117	164 ± 16	213 ± 22	266 ± 30	317 ± 40	171%
kidney	female	106	143 ± 15	179 ± 21	226 ± 30	282 ± 42	166%
	male	202	273 ± 21	360 ± 30	472 ± 44	612 ± 62	203%
bladder	female	128	139 ± 15	148 ± 21	162 ± 30	180 ± 42	41%
	male	321	332 ± 23	344 ± 31	367 ± 42	396 ± 57	23%
brain and CNS	female	131	159 ± 16	192 ± 22	234 ± 32	285 ± 44	118%
	male	173	194 ± 18	222 ± 26	259 ± 37	303 ± 52	75%
thyroid	female	53	65 ± 10	79 ± 14	94 ± 20	109 ± 27	106%
	male	19	27 ± 7	33 ± 10	39 ± 14	45 ± 19	137%
unknown primary site	female	355	350 ± 24	356 ± 32	375 ± 44	405 ± 62	14%
	male	340	320 ± 23	314 ± 29	324 ± 40	346 ± 58	2%
lymphoma	female	254	297 ± 22	353 ± 31	423 ± 45	504 ± 62	98%
	male	302	356 ± 24	434 ± 35	531 ± 50	650 ± 70	115%
leukaemia	female	161	156 ± 16	165 ± 23	174 ± 34	182 ± 47	13%
	male	234	262 ± 21	308 ± 30	367 ± 44	437 ± 63	87%

*¶ annual average * between 1998-2002 and 2020 # estimates could not be made for male gallbladder cancer due to small numbers*

The total number of new cancers is predicted to increase by 90% (from 22019 to 41743) between 1998-2002 and 2020, with a larger increase occurring in men (97%) than in women (83%). If invasive cancers (excluding NMSC) only are considered, the projected increase is 109%, again larger for men (117%) than for women (101%).

For individual cancer sites, the largest projected increases for women are in cancers of liver, kidney, breast, lung, melanoma and gallbladder, and for men in cancers of liver, prostate, kidney, melanoma and testis. Only cancer of the head and neck in men is predicted to fall in numbers.

As noted above, these increases are due to a combination of changes in the underlying rate and demographic factors. The majority of the increase in cancer numbers is attributable to demographic change (Table 1.4). Of the approximately 19,700 extra cases expected by 2020, 13,700 (70%) are estimated to be due to demographic change—7,700 of those in men and 6,000 of those in women.

Table 1.4. Contribution of demographic change to projected cancer numbers (all cancers)

	projected cases		*% attributable to demographic change*	
	males	*females*	*males*	*females*
1998-2002	10625	11394		
2005	12309	13156	72%	66%
2010	14537	15285	75%	66%
2015	17461	17860	75%	65%
2020	20924	20819	75%	64%

Conclusions

The number of cancers diagnosed in Ireland is expected to almost double between the period 1998-2002 and 2020. An increase will occur in almost all cancer types, mostly as a result of population ageing, but also as a result of an increase in underlying incidence rates for most cancers. However, the assumption that incidence rates will continue to rise at their current rate may not hold true for all cancers. For instance, the recent rapid increase in prostate cancer incidence is likely to be a product of increased PSA testing and, as in other countries, should eventually level off. New risk factors and unanticipated new trends may also emerge. For many cancers, however, there seems to be a trend of slowly increasing risk, which is likely to continue. If the future cancer burden is to be reduced, action needs to be taken now, both to deal with known risk factors and to identify others, as cancer risk in 2020 will be largely determined by current exposures.

Action to reduce risk will have only a limited effect, however, as most of the anticipated increase in cancer numbers will be caused by the growing number of older people in the population. The increase in cancer numbers will place a major additional burden on cancer diagnostic and treatment services and must be considered in current planning for staffing and capital investment. The improvements in cancer survival that are currently being seen, taken with the increasing number of elderly patients, will also generate a much greater need for cancer aftercare services and will require a more active approach to the management of cancer in the elderly.

Chapter 2. Methods

Introduction and disclaimer

This report presents extrapolations of National Cancer Registry incidence data for 1994-2002 to the years 2005-2020. These extrapolations are statistical procedures, based on two assumptions:

1. that the data collected are adequate for the production of accurate estimates of time trends in incidence;
2. that the trends observed to date will continue unchanged for the next 15-20 years.

The first assumption is true only for cancers with high annual case numbers; for others, models incorporating variables for sex and a number of age groups (which must be done for validity) often yield parameter estimates with impractically wide confidence intervals.

The second assumption is likely to hold true for only some cancers. Best practice in incidence projection dictates that the period of forward projection should not exceed the duration of historical data—in this case, nine years—and should rarely exceed 15 years.

These limitations are further discussed below, but their combined impact is that the National Cancer Registry presents the projections here only as approximate statistical extrapolations of the current situation, and can offer no guarantees as to their real predictive value. The attention of the reader is also drawn to the prediction intervals for each estimate. These, rather than the point estimates of rates or case numbers, are the data which should be used as a guide to future incidence.

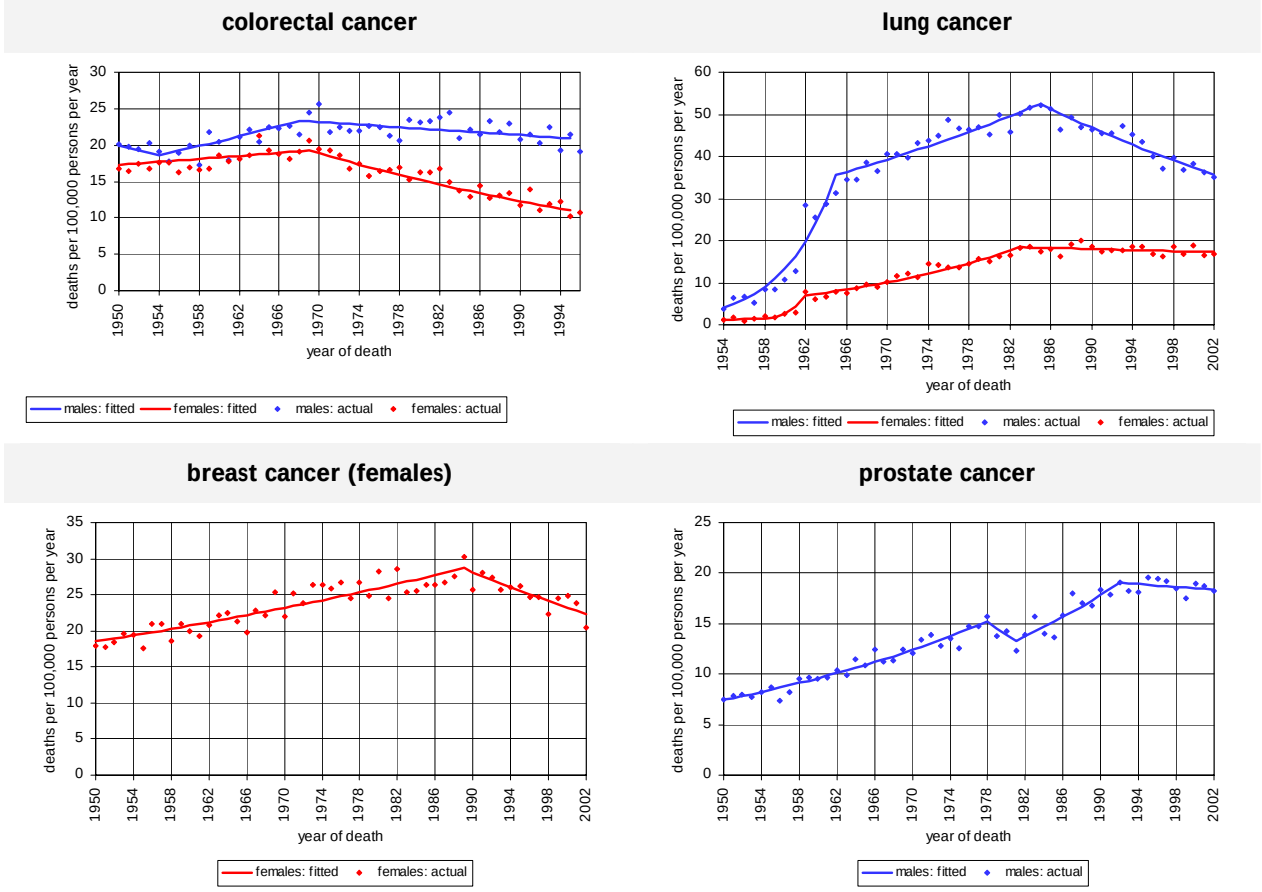
Poisson modelling and its limitations

There are many methods of projecting cancer numbers, varying in sophistication from simple linear regression of numbers or rates against time to age-period-cohort modelling. In general, more complex models will fit the historic data better, but usually at the expense of less forward validity and greater uncertainty in the projections. There is a general consensus that relatively simple Poisson linear or log-linear models of age-specific rates offer a good fit to the data while giving reasonably precise predictions.

The fundamental assumption of these models is that the various factors which affect the incidence of a particular cancer—its risk factors, case finding procedures and diagnostic methods—vary in an approximately linear way with time for each of the age groups under consideration, and that therefore the sum of their effects is also approximately linear. Consequently, the relative contribution of these factors to cancer incidence does not need to be known, and their aggregate future contribution to incidence can be modelled as a linear combination of their individual contributions. This holds true as long as there are no qualitative or major quantitative changes in any of the underlying factors, but is invalid if an entirely new factor—such as cigarette smoking, PSA testing, or breast screening—enters the situation.

The assumption of constant linear change can be examined in Ireland using mortality data, which has been recorded in much the same way for the past 50 years (Figure 2.1).

Figure 2.1. Long-term trends in cancer mortality, with fitted Joinpoint lines, 1950-2002



These data have been analysed for linear/log linear trend using the Joinpoint program which tests for the smallest number of straight lines which fits the data. None of the four common cancers has had an unbroken upward or downward trend in mortality since 1950, and all but colorectal cancer have had at least one change in direction of trend in the past 20 years. It can be seen that, although the presumption of linear change is reasonably valid for short periods, over periods of 20 or 30 years it is much less likely to be so. The data for lung cancer in the 1960s clearly show logarithmic (exponential) growth, although this is unusual.

The models used in this report were either linear or log-linear (Table 2.1). The linear model assumes that the incidence rate for each age-group changes by a fixed quantity each year (linear change), while the log-linear models assumes that it changes by a fixed percentage (exponential change).

Table 2.1 Details of the models used in the trend analysis

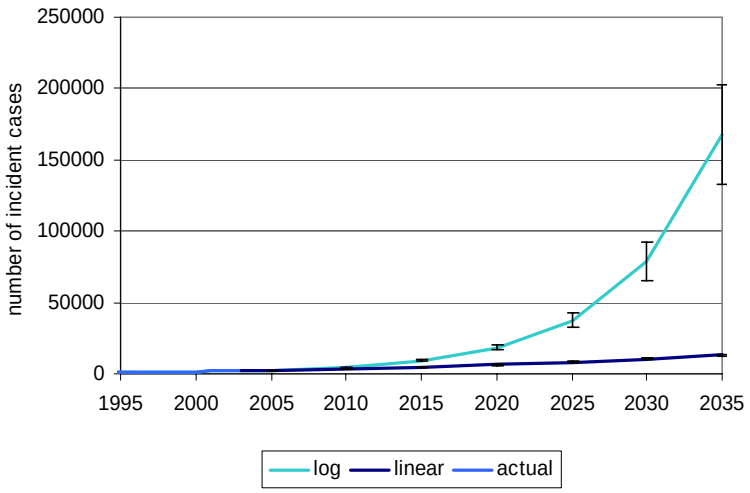
Log-linear model	$\ln R_{it} = a_i + b_i t$
Linear model	$R_{it} = a_i + b_{it}$

where

R=	age-specific mortality rate
i =	age group
t =	period (year of death)
a_i =	underlying base rate
b =	increment rate for all age groups
b_i =	increment rate for individual age groups

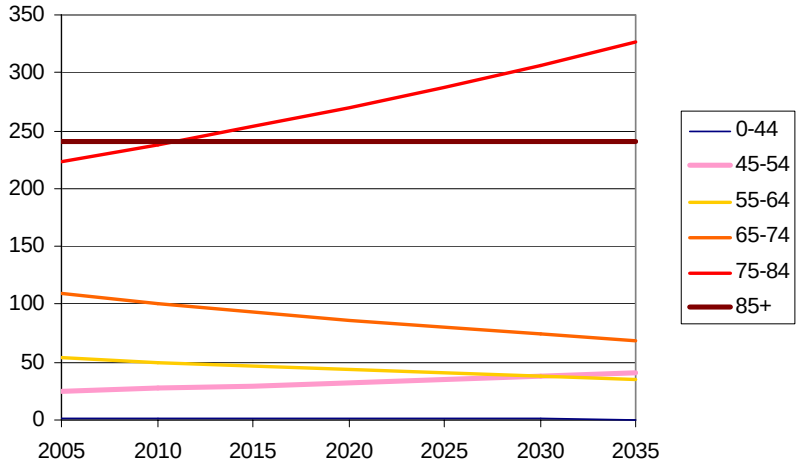
The fit of both models is tested using the deviance statistic. In practice, both linear and log-linear models will often fit the data equally well for short time periods. For all of the cancers examined here the differences in deviance between log-linear and linear models were negligible and the better model could not be determined on this basis. However, although the fit to historical data may be equally good, the projections arising from the alternative models can be quite different, as illustrated below for prostate cancer (Figure 2.2), where the log-linear model projects a rate 16 times greater than the linear model for 2035.

Figure 2.2. Projected 2035 case numbers: prostate cancer



As can be seen from the prostate cancer model and from the historical data on mortality, the assumption of exponential growth over a long period of time is usually unjustified. On the other hand, applying the linear model to decreasing trends can lead to impossible negative projections for rates. The most conservative approach is to assume a linear model for increasing rates and a log-linear model for decreasing rates. However, the trends for individual age groups for the same cancer are not necessarily all in the same direction, as illustrated for female colon cancer in Figure 2.3. It is not possible to model some age-group trends as linear and others as log-linear, and so the log and linear models in this situation may in fact give different trends, which are opposite in direction. In this case, projections based on both models have been given. In most instances, the preferred model is obvious and, for each cancer, the preferred model has been indicated. Where the choice was not clear, a model of linear increase in rate, being more probable and more conservative, has been preferred.

Figure 2.3. Projected 2005-2020 age-specific incidence rates: colon cancer in females



Rates

These projections have been based on modelling of the 1994-2003 cancer incidence data using the method of Hakulinen and Dyba (Hakulinen and Dyba 1994; Dyba and Hakulinen 2000). Poisson linear and log-linear models were fitted to age-specific cancer incidence rates for the age groups 0-44, 45-54, 55-64, 65-74, 75-84 and 85 and over. These age groups were chosen as a compromise between accurate fitting of the data (which would use many age groups) and precision of the model parameters (which falls as the number of cases in each age group decreases). The parameters produced by these models were used to calculate estimated age-specific rates for the age groups mentioned, for the years 2005, 2010, 2015 and 2020, and from these an overall age-standardised incidence rate[¶] was calculated. The model provides 95% confidence limits of the estimates, based on the uncertainty in the model parameters, and 95% prediction intervals, which include an additional uncertainty term based on the Poisson uncertainty of the individual case number/rate estimates. The 95% prediction intervals, which are given here, are a truer estimate of the uncertainty of the prediction.

For less common cancers the models, while suggesting a trend, tend to give wide prediction intervals, which often include all current rates. For these cancers a simpler model was also fitted, with only two age groups—0 to 64 and 65+. This model, because of the larger number of cases in each age group, had the potential to produce parameters with narrower confidence intervals, and therefore more precise projections. In practice, there was little gain in precision, and this was offset by the lower validity of assuming a similar trend for a wide range of age groups. All projections, therefore, were based on the six age-group model.

Case numbers

The age-specific rates were also used to calculate future case numbers, using Central Statistics Office (CSO) population projections to 2036 (Central Statistics Office, 2004). The CSO has produced a number of projections, based on different assumptions with regard to migration (M) and fertility (F) and the projections have been labelled according to these assumptions, from "M1F1"to "M2F3." The projection "M1F1" gives the highest projected population estimates, and has been used to make the projections of cancer numbers. This projected population gives the largest cancer projections, but most of the difference between the population projections is in the younger age groups, and does not have a major impact on expected cancer numbers. Table 2.2 shows the effect of using the population projections "M1F1" and "M2F3", which project the largest and smallest future populations respectively. M2F3 projects, for all cancers combined in 2020, a total for females which is 3% lower, and for males 2% lower, than does M1F1. These differences are small relative to the other uncertainties in the projections. However, population projections themselves are subject to error, and this is difficult to quantify. For instance, the recent large falls in smoking among men may have a profound effect on male life expectancy over the coming decades and this is probably not completely reflected in the projections.

¶ All age-standardised rates given in this report are expressed per 100,000 person-years and are based on the European standard population.

Table 2.2. Effect on projected cancer numbers of using population projections M1F1 and M2F3 (all cancers combined; log-linear model)

	cases per 100,000 per year	
projected age-specific incidence rates, 2020	*females*	*males*
0-44	292	86
45-54	638	464
55-64	1733	1459
65-74	2101	3563
75-84	3068	5470
85+	3982	5684
	number of cases	
using projected M1F1 population, 2020	*females*	*males*
0-44	4521	1356
45-54	2149	1603
55-64	4869	4064
65-74	4584	7444
75-84	3691	5447
85+	1913	1368
All ages	21722	21287
using projected M2F3 population, 2020	*females*	*males*
0-44	4021	1210
45-54	2105	1556
55-64	4805	3993
65-74	4534	7344
75-84	3668	5396
85+	1905	1363
All ages	21037	20861
M2F3 case prediction/M1F1 case prediction	0.97	0.98

The largest population increases in the next 30 years are expected to be in the older population (Table 2.3), and this will have the biggest impact on cancer cases.

Table 2.3. M1F1 projected populations, 2005 to 2020

		2005	**2010**	**2015**	**2020**
females	<45	1357784	1434244	1511221	1548150
	45-54	252550	281307	306675	336883
	55-64	196361	229796	252651	280981
	65-74	133547	151120	185700	218174
	75-84	91686	94679	103202	120322
	>85	31502	37321	42446	48032
males	<45	1386206	1465262	1541230	1576923
	45-54	253689	280669	310451	345429
	55-64	198973	230816	251597	278565
	65-74	124808	144022	178141	208934
	75-84	62547	70317	82043	99579
	>85	13581	16278	19276	24071

Example of methods used

The methods described above are illustrated here for all cancers combined (ICD10 C00-D96).

Table 2.4. All cancers; projected age-specific and European age-standardised incidence rates per 100,0000 person-years (EASR) 2005-2020

males	*2005*	*2010*	*2015*	*2020*
0-44	62	69	77	86
45-54	431	442	453	464
55-64	1327	1370	1414	1459
65-74	3124	3264	3410	3563
75-84	4905	5086	5274	5470
85+	5696	5692	5688	5684
EASR[¶]	*668.8*	*694.8*	*722.2*	*751.0*
females				
0-44	192	221	254	292
45-54	642	641	639	638
55-64	1322	1447	1583	1733
65-74	1989	2026	2063	2101
75-84	2873	2937	3002	3068
85+	3465	3629	3801	3982
EASR	*618.4*	*656.4*	*698.6*	*745.6*

Table 2.5. All cancers; number of projected cases 2005-2020

males	*2005*	*2010*	*2015*	*2020*
0-44	859	1013	1189	1358
45-54	1092	1239	1406	1604
55-64	2641	3162	3558	4066
65-74	3899	4701	6075	7445
75-84	3068	3577	4327	5446
85+	774	927	1096	1368
All ages	**12333**	**14619**	**17652**	**21287**
females				
0-44	2609	3167	3835	4515
45-54	1621	1802	1961	2150
55-64	2596	3325	4001	4869
65-74	2656	3061	3831	4583
75-84	2635	2781	3098	3691
85+	1092	1354	1614	1912
All ages	**13209**	**15491**	**18339**	**21722**
Both sexes	**25542**	**30110**	**35991**	**43009**

[¶] EASR: European age-standardised incidence rate (cases per 100,000 person-years).

Age-specific incidence trends for each cancer were modelled separately for both sexes and six age groups, allowing for different time trends for each of these groups (Table 2.4). The projected age-specific rates for each group were then combined to give a single age-standardised rate (European standard population). Table 2.4 shows results from the log-linear model.

The age-specific rates were multiplied by the projected population for the same year and age group, to give a projected number of cases (Table 2.5), which was summed over all age groups to give an overall number of cases for the year (as with the previous table, these are projections from the log-linear model).

The models, as mentioned above, incorporate confidence intervals for the uncertainty in the model parameters (as the model never fits the historical data precisely) and a prediction interval to allow for random variation in future numbers .Tables 2.6 and 2.7 give summary data, including prediction intervals, for 2005 to 2020, using both linear and log-linear models

Both linear and log-linear models were found to fit the data equally well. As can be seen, the trend is upward and the log-linear model gives higher rate (and case number) projections. In this case the upward trend is slight and the difference between linear and log-linear models is small.

Table 2.6. All cancers; projected European age-standardised incidence rates per 100,0000 person-years (EASR) 2005-2020

	age-standardised incidence rate per 100,0000 person-years	
Linear model	*females*	*males*
2005	615.73 (608.05; 623.42)	667.51 (658.95; 676.07)
2010	647.14 (636.79; 657.50)	691.01 (679.49; 702.52)
2015	678.56 (665.08; 692.03)	714.50 (699.50; 729.51)
2020	709.97 (693.16; 726.78)	738.00 (719.25; 756.75)
Log-linear model	*females*	*males*
2005	618.37 (610.42; 626.32)	668.76 (646.13; 677.50)
2010	656.38 (644.87; 667.89)	694.78 (668.20; 707.06)
2015	698.59 (682.33; 714.85)	722.16 (691.58; 738.90)
2020	745.55 (723.48; 767.61)	751.00 (743.04; 772.85)

The results of linear and log-linear modelling of case numbers are shown in Table 7.The number of cases is projected to increase from 25465 in 2005 to 41744 in 2020 by the linear model, and 43008 by the log-linear model.

Table 2.7. All cancers; projected European age-standardised incidence rates per 100,0000 person-years (EASR) 2005-2020

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
2005	13156 (12995; 13317)	12309 (12153; 12466)
2010	15285 (15045; 15526)	14537 (14297; 14777)
2015	17860 (17509; 18210)	17461 (17098; 17824)
2020	20819 (20328; 21311)	20924 (20396; 21452)
Log-linear model	*females*	*males*
2005	13209 (13043; 13375)	12333 (11590; 12493)
2010	15491 (15225; 15757)	14619 (13604; 14876)
2015	18339 (17924; 18755)	17652 (16300; 18059)
2020	21722 (21102; 22342)	21287 (21121; 21904)

Trends in age-standardised incidence rates for the commoner cancers between 1994 and 2003 are shown in Table 2.8. There have been statistically significant increases in rate for all cancers combined and for all invasive cancers, both including and excluding non-melanoma skin cancers (NMSC)[¶]. Statistically significant increases for both sexes have occurred for cancers of the liver and kidney and for melanoma. For women, there were also significant increases in cancers of the lung, breast, and thyroid and in gynaecological cancers[*], while for men there were increases in cancers of the prostate and testis and in lymphoma. Significant decreases occurred in cancer of the stomach for both sexes, and for cancers of the colon and bladder in men.

Table 2.8 Estimated annual percentage change in age-standardised incidence rate 1994-2003 (95% confidence intervals)

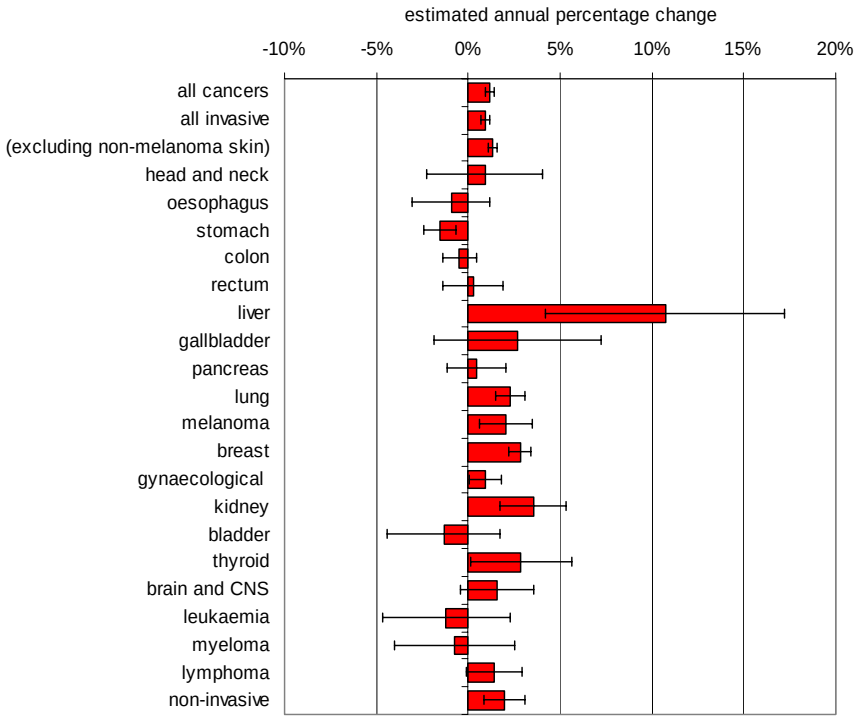
(statistically significant increases are shown in blue; decreases in red)	*females*	*males*
all cancers (invasive and non-invasive)	1.1% (0.7%; 1.6%)	1.2% (0.8%; 1.6%)
all invasive cancers	0.9% (0.4%; 1.4%)	0.9% (0.5%; 1.3%)
all invasive cancers excluding NMSC[¶]	1.3% (0.8%; 1.9%)	1.7% (1.3%; 2.1%)
head and neck	0.9% (-2.2%; 4.1%)	-4.9% (-6.3%;-3.6%)
oesophagus	-0.9% (-3.0%; 1.2%)	0.5% (-1.5%; 2.5%)
stomach	-1.5% (-2.4%;-0.7%)	-2.6% (-3.3%;-2.0%)
colon	-0.5% (-1.4%; 0.5%)	-0.7% (-1.4%;-0.1%)
rectum	0.3% (-1.4%; 1.9%)	1.1% (0.0%; 2.2%)
liver	10.7% (4.2%; 17.2%)	7.4% (4.2%; 10.6%)
gallbladder	2.7% (-1.8%; 7.2%)	-1.6% (-7.7%; 4.4%)
pancreas	0.5% (-1.1%; 2.0%)	1.3% (0.0%; 2.6%)
lung	2.3% (1.5%; 3.1%)	-0.9% (-1.7%; 0.0%)
melanoma	2.0% (0.6%; 3.5%)	3.9% (2.3%; 5.5%)
breast	2.8% (2.2%; 3.4%)	4.0% (-0.9%; 9.0%)
gynaecological*	1.0% (0.1%; 1.8%)	—
prostate	—	8.6% (7.5%; 9.7%)
testis	—	5.5% (3.2%; 7.9%)
kidney	3.5% (1.7%; 5.4%)	4.3% (2.8%; 5.8%)
bladder	-1.3% (-4.4%; 1.7%)	-2.1% (-3.3%;-0.8%)
thyroid	2.9% (0.1%; 5.7%)	0.8% (-5.6%; 7.1%)
brain and central nervous system (CNS)	1.6% (-0.4%; 3.6%)	0.4% (-0.7%; 1.6%)
lymphoma	1.4% (-0.1%; 3.0%)	1.9% (0.7%; 3.0%)
leukaemia	-1.2% (-4.7%; 2.3%)	1.3% (-0.5%; 3.2%)

¶ Non-melanoma skin cancers (NMSC) are often omitted from estimates of trends for a number of reasons—they are by far the most common cancer (almost 30% of all cancers); they rarely cause serious illness or death; and they are more likely to be missed by cancer registration than most other cancers.

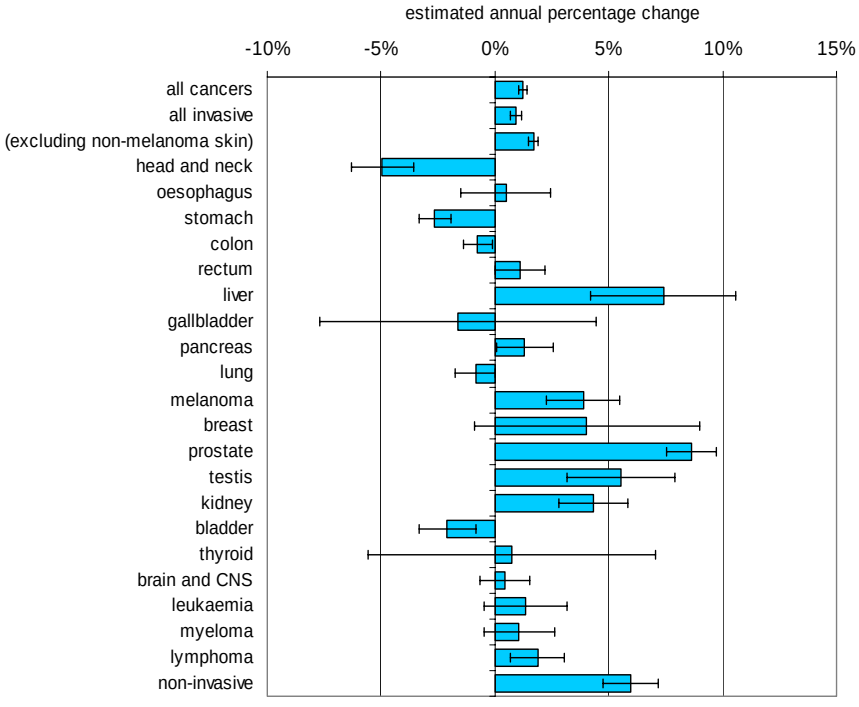
** Gynaecological cancers are those defined by ICD-10 codes C51-C57—vulva, vagina, cervix, corpus uteri, uterus (not otherwise specified), ovary and other female genital.*

Figure 2.4. Estimated annual percentage change in age-standardised rate 1994-2003

females



males



** The error bars show the 95% confidence intervals*

Chapter 3. Projections

Summary of projections of case numbers 2005-2020

Table 2.9 summarises the projections of case numbers given in the remainder of this report, showing the data from the preferred model in each case.

Table 2.9. Average number of cancer cases 1998-2002, with projected case numbers 2005-2020 (±95% prediction intervals)

site	*sex*	*1998-2002*[¶]	*preferred model*	*2005*	*2010*	*2015*	*2020*	*overall % change**
all cancers (invasive and non-	female	11394	linear	13156 ± 161	15285 ± 240	17860 ± 350	20819 ± 492	83%
invasive)	male	10625	linear	12309 ± 156	14537 ± 240	17461 ± 363	20924 ± 528	97%
all invasive cancers	female	9087	linear	10632 ± 132	12408 ± 189	14587 ± 271	17169 ± 380	89%
	male	9905	linear	11475 ± 137	13466 ± 201	16075 ± 299	19153 ± 432	93%
all invasive cancers excluding	female	6636	linear	7905 ± 113	9391 ± 162	11192 ± 232	13328 ± 324	101%
NMSC	male	7122	linear	8497 ± 118	10291 ± 172	12636 ± 254	15457 ± 366	117%
head and neck	female	72	linear	88 ± 12	103 ± 17	120 ± 24	138 ± 34	92%
	male	182	log-linear	160 ± 16	144 ± 19	131 ± 23	122 ± 29	-33%
oesophagus	female	119	linear	128 ± 15	138 ± 21	151 ± 30	165 ± 43	39%
	male	189	linear	219 ± 19	252 ± 28	296 ± 42	347 ± 60	84%
stomach	female	182	log-linear	186 ± 17	192 ± 23	203 ± 32	218 ± 43	20%
	male	287	log-linear	278 ± 21	277 ± 27	283 ± 35	290 ± 45	1%
colon	female	557	log-linear	613 ± 32	676 ± 46	761 ± 66	873 ± 95	57%
	male	613	log-linear	663 ± 33	742 ± 48	862 ± 72	1015 ± 109	66%
rectum	female	245	linear	270 ± 21	303 ± 31	347 ± 44	400 ± 63	63%
	male	446	linear	517 ± 29	616 ± 43	747 ± 64	905 ± 92	103%
liver	female	33	linear	52 ± 9	74 ± 12	101 ± 17	135 ± 23	309%
	male	59	linear	90 ± 12	125 ± 17	169 ± 24	224 ± 34	280%
gallbladder[#]	female	33	linear	40 ± 9	49 ± 13	61 ± 19	76 ± 27	130%
pancreas	female	183	linear	207 ± 18	235 ± 26	275 ± 38	324 ± 54	77%
	male	188	linear	216 ± 19	259 ± 28	317 ± 42	388 ± 60	106%

Table 2.9. Average number of cancer cases 1998-2002, with projected case numbers 2005-2020 (±95% prediction intervals)

site	*sex*	*1998-2002*¶	*preferred model*	*2005*	*2010*	*2015*	*2020*	*overall % change**
lung	female	609	linear	752 ± 35	923 ± 49	1153 ± 71	1437 ± 101	136%
	male	1031	log-linear	1113 ± 43	1236 ± 62	1410 ± 92	1638 ± 137	59%
melanoma	female	280	linear	346 ± 23	426 ± 33	523 ± 47	633 ± 64	126%
	male	172	linear	227 ± 19	293 ± 27	374 ± 39	468 ± 54	172%
breast	female	1927	linear	2472 ± 63	3117 ± 90	3856 ± 127	4734 ± 175	146%
gynaecological ↓	female	855	linear	1019 ± 41	1202 ± 58	1420 ± 83	1676 ± 115	96%
prostate	male	1689	linear	2422 ± 60	3409 ± 88	4720 ± 128	6330 ± 183	275%
testis	male	117	linear	164 ± 16	213 ± 22	266 ± 30	317 ± 40	171%
kidney	female	106	linear	143 ± 15	179 ± 21	226 ± 30	282 ± 42	166%
	male	202	linear	273 ± 21	360 ± 30	472 ± 44	612 ± 62	203%
bladder	female	128	log-linear	139 ± 15	148 ± 21	162 ± 30	180 ± 42	41%
	male	321	log-linear	332 ± 23	344 ± 31	367 ± 42	396 ± 57	23%
brain and CNS	female	131	linear	159 ± 16	192 ± 22	234 ± 32	285 ± 44	118%
	male	173	linear	194 ± 18	222 ± 26	259 ± 37	303 ± 52	75%
thyroid	female	53	linear	65 ± 10	79 ± 14	94 ± 20	109 ± 27	106%
	male	19	linear	27 ± 7	33 ± 10	39 ± 14	45 ± 19	137%
unknown primary site	female	355	log-linear	350 ± 24	356 ± 32	375 ± 44	405 ± 62	14%
	male	340	log-linear	320 ± 23	314 ± 29	324 ± 40	346 ± 58	2%
lymphoma	female	254	linear	297 ± 22	353 ± 31	423 ± 45	504 ± 62	98%
	male	302	linear	356 ± 24	434 ± 35	531 ± 50	650 ± 70	115%
leukaemia	female	161	linear	156 ± 16	165 ± 23	174 ± 34	182 ± 47	13%
	male	234	linear	262 ± 21	308 ± 30	367 ± 44	437 ± 63	87%

*¶ annual average * between 1998-2002 and 2020 # estimates could not be made for male gallbladder cancer due to small numbers*

↓Gynaecological cancers are those defined by ICD-10 codes C51-C57—vulva, vagina, cervix, corpus uteri, uterus (not otherwise specified), ovary and other female genital.

All cancers combined (ICD10 C00 to D48)

Both linear and log-linear models were found to fit the data equally well, and both are shown in Table 2.10 and Figures 2.5, 2.6.

Table 2.10. All cancers; projected European age-standardised incidence rates per 100,0000 person-years (EASR) 2005-2020

	age-standardised incidence rates per 100,0000 person-years	
Linear model	*females*	*males*
1998-2002	579.7	557.1
2005	615.7 (608.0, 623.4)	667.5 (659.0, 676.1)
2010	647.1 (636.8, 657.5)	691.0 (679.5, 702.5)
2015	678.6 (665.1, 692.0)	714.5 (699.5, 729.5)
2020	710.0 (693.2, 726.8)	738.0 (719.2, 756.8)
Log-linear model	*females*	*males*
1998-2002	579.7	557.1
2005	618.4 (610.4, 626.3)	668.8 (660.0, 677.5)
2010	656.4 (644.9, 667.9)	694.8 (682.5, 707.1)
2015	698.6 (682.3, 714.9)	722.2 (705.4, 738.9)
2020	745.5 (723.5, 767.6)	751.0 (729.1, 772.9)

The results of linear and log-linear modelling of case numbers are shown in Table 2.11 and Figures 2.7, 2.8. The number of cases in females is projected to increase from 11394 in 1998-2001 to 20819 (±491) in 2020 by the linear model, and 21722 (±620) by the log-linear model. For males the annual number of cases is predicted to increase from 10625 in 1998-2001 to 20924 (±528) by the linear model and 21287 (±518) by the log-linear model. As the cancers affecting males are different from those affecting females, it is not possible to model rates for both sexes combined. The figures given for "both sexes" are calculated by adding the male and female projections and have no prediction intervals. The total number of cancers is projected by the linear model to increase from 22019 in 1998-2002 to 41744 in 2020, an increase of 90%. The log-linear model predicts an increase of 95%.

Table 2.11. All cancers; projected case numbers 2005-2020

	number of cases (95% prediction interval)		
Linear model	*females*	*males*	*both sexes*
1998-2002	11394	10625	22019
2005	13156 (12995, 13317)	12309 (12153, 12466)	25465
2010	15285 (15045, 15526)	14537 (14297, 14777)	29822
2015	17860 (17509, 18210)	17461 (17098, 17824)	35321
2020	20819 (20328, 21311)	20924 (20396, 21452)	41744
Log-linear model	*females*	*males*	
1998-2002	11394	10625	22019
2005	13209 (13043, 13375)	12333 (12173, 12493)	25542
2010	15491 (15225, 15757)	14619 (14362, 14876)	30110
2015	18339 (17924, 18755)	17652 (17244, 18059)	35991
2020	21722 (21102, 22342)	21287 (20669, 21904)	43008

Figure 2.5. Projected age-standardised incidence rate 2005-2020: females

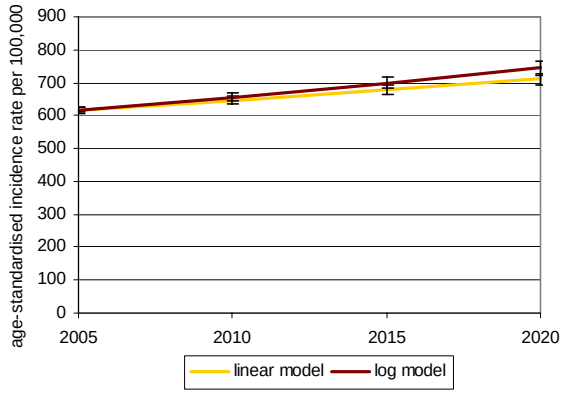


Figure 2.6. Projected age-standardised incidence rate 2005-2020: males

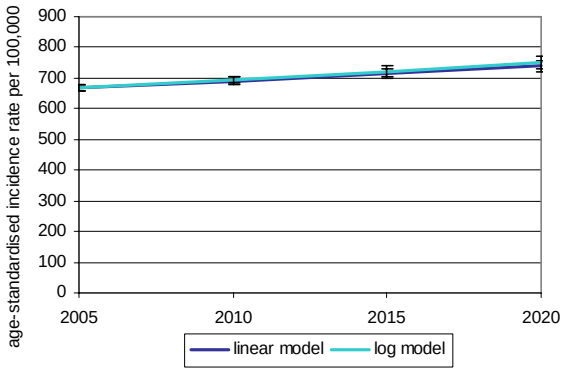


Figure 2.7. Projected number of cases 2005-2020: females

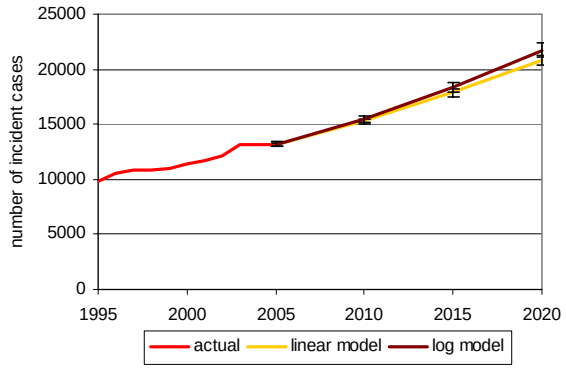


Figure 2.8. Projected number of cases 2005-2020: males

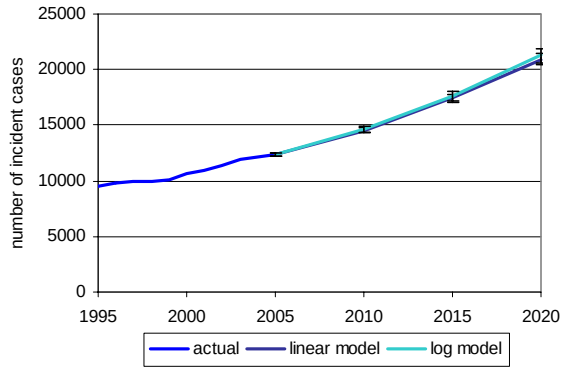


Table 2.12 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 64% of the increase in case numbers by 2020 will be due to demography, and for males, 75%.

Table 2.12. All cancers combined, case projections to 2020, based on 1998-2002 age-specific rates

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	11394	10625		
2005	12563	11837	66%	72%
2010	13953	13540	66%	28%
2015	15582	15720	65%	75%
2020	17448	18301	64%	75%

All invasive (malignant) cancers (ICD10 C00-C96)

Table 2.13. All invasive cancers, European age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	463.0	519.0
2005	496.0 (489.7, 502.3)	622.6 (615.1, 630.2)
2010	521.1 (513.0, 529.1)	640.4 (630.7, 650.0)
2015	546.1 (535.8, 556.4)	658.1 (645.7, 670.4)
2020	571.2 (558.5, 584.0)	675.8 (660.5, 691.1)
Log-linear model	*females*	*males*
1998-2002	463.0	519.0
2005	497.8 (491.3, 504.2)	623.5 (615.9, 631.1)
2010	527.0 (518.2, 535.8)	643.1 (633.0, 653.2)
2015	558.6 (546.5, 570.8)	663.7 (650.3, 677.1)
2020	592.9 (576.6, 609.2)	685.4 (668.1, 702.7)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.13, Figures 2.9, 2.10). By 2020, the projected number of cases in females will be 17169 (±380) and in males 19153 (±432), compared to an annual average of 9087 and 9905 cases respectively in 1998-2002 (Table 2.14, Figures 2.11, 2.12).

Table 2.14. All invasive cancers, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	9087	9905
2005	10632 (10500, 10764)	11475 (11338, 11613)
2010	12408 (12219, 12597)	13466 (13265, 13667)
2015	14587 (14316, 14859)	16075 (15777, 16374)
2020	17169 (16790, 17549)	19153 (18721, 19584)
Log-linear model	*females*	*males*
1998-2002	9087	9905
2005	10668 (10533, 10802)	11492 (11353, 11632)
2010	12542 (12337, 12747)	13526 (13314, 13737)
2015	14895 (14579, 15211)	16214 (15888, 16540)
2020	17751 (17280, 18223)	19413 (18926, 19900)

Table 2.15 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 64% of the increase in case numbers by 2020 will be due to demography, and for males, 78%.

Table 2.15. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	9087	9905		
2005	9998	11035	59%	72%
2010	11152	12624	62%	76%
2015	12575	14663	63%	77%
2020	14253	17079	64%	78%

Figure 2.9. Projected age-standardised incidence rate 2005-2020: females (linear model)

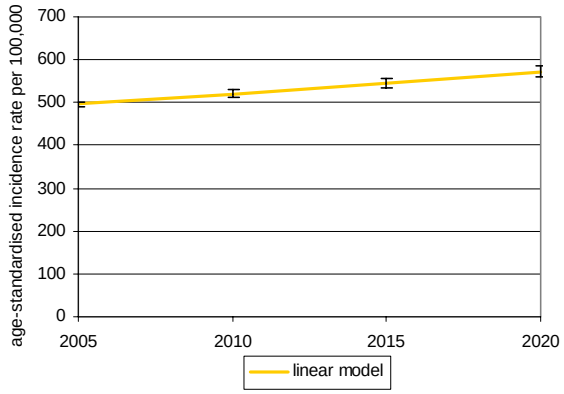


Figure 2.10. Projected age-standardised incidence rate 2005-2020: males (linear model)

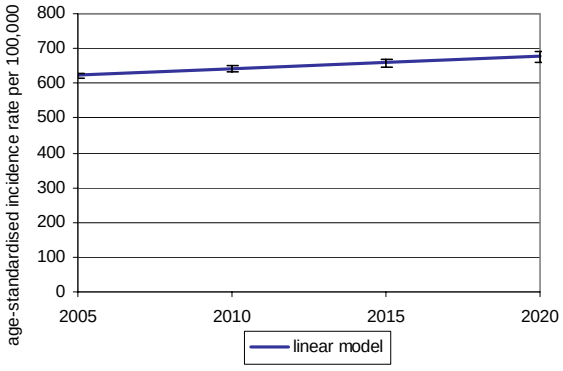


Figure 2.11. Projected number of cases 2005-2020: females (linear model)

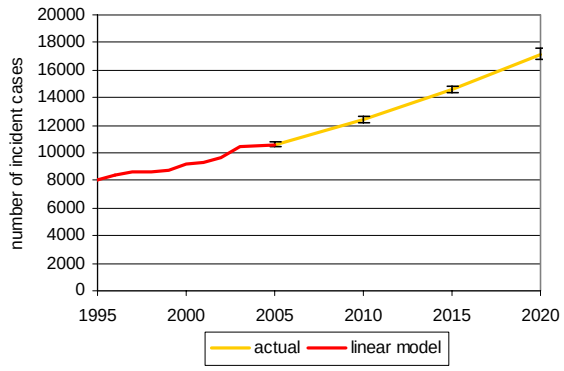
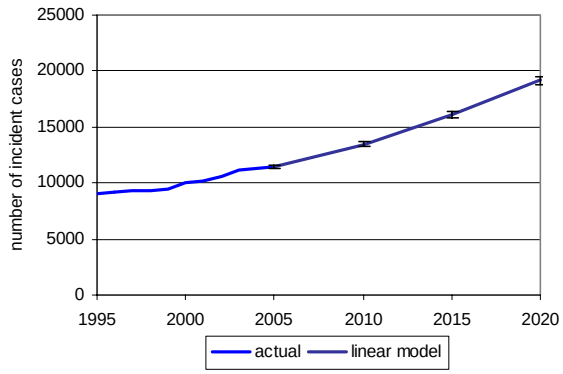


Figure 2.12. Projected number of cases 2005-2020: males (linear model)



All invasive cancers, except non-melanoma skin cancer (ICD10 C00-C96, excluding C44)

Table 2.16. All invasive cancers, except non-melanoma skin cancer, age-specific rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	342.8	429.4
2005	372.8 (367.3, 378.2)	460.7 (454.3, 467.1)
2010	398.0 (391.0, 405.0)	489.4 (481.2, 497.7)
2015	423.2 (414.3, 432.1)	518.2 (507.7, 528.7)
2020	448.4 (437.3, 459.4)	546.9 (533.9, 559.9)
Log-linear model	*females*	*males*
1998-2002	342.8	429.4
2005	375.0 (369.4, 380.6)	462.5 (455.9, 469.1)
2010	405.5 (397.6, 413.4)	495.6 (486.5, 504.8)
2015	439.0 (427.9, 450.2)	531.2 (518.6, 543.9)
2020	476.1 (460.8, 491.4)	569.6 (552.6, 586.6)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.16, Figures 2.13, 2.14). By 2020, the projected number of cases in females will be 13328 (±324) and in males 15457 (±366), compared to an annual average of 7122 cases in men and 6636 in women in 1998-2002 (Table 2.17, Figure 2.15, 2.16).

Table 2.17. All invasive cancers, except non-melanoma skin cancer, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	6636	7122
2005	7905 (7792, 8018)	8497 (8379, 8615)
2010	9391 (9229, 9553)	10291 (10119, 10463)
2015	11192 (10960, 11424)	12636 (12382, 12891)
2020	13328 (13005, 13652)	15457 (15091, 15823)
Log-linear model	*females*	*males*
1998-2002	6636	7122
2005	7951 (7834, 8067)	8531 (8411, 8652)
2010	9568 (9385, 9750)	10423 (10232, 10613)
2015	11605 (11317, 11894)	12952 (12646, 13258)
2020	14129 (13686, 14572)	16081 (15604, 16557)

Table 2.18 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 56% of the increase in case numbers by 2020 will be due to demography, and for males, 61%.

Table 2.18. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	6636	7122		
2005	7310	7931	53%	59%
2010	8154	9066	55%	61%
2015	9185	10523	56%	62%
2020	10386	12244	56%	61%

Figure 2.13. Projected age-standardised incidence rate 2005-2020: females (linear model)

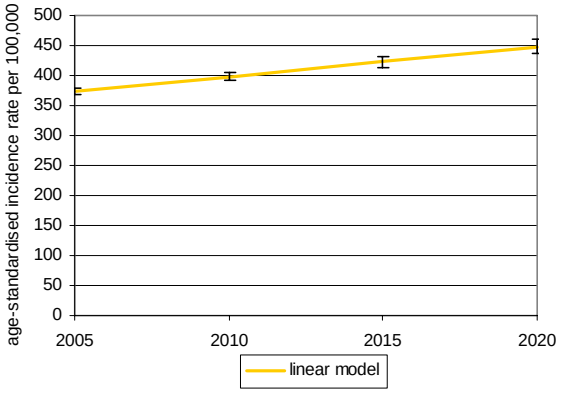


Figure 2.14. Projected age-standardised incidence rate 2005-2020: males (linear model)

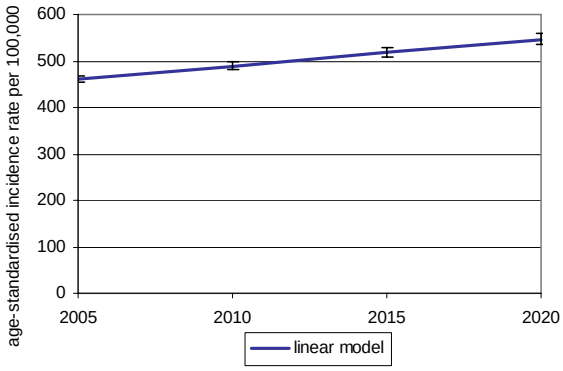


Figure 2.15. Projected number of cases 2005-2020: females (linear model)

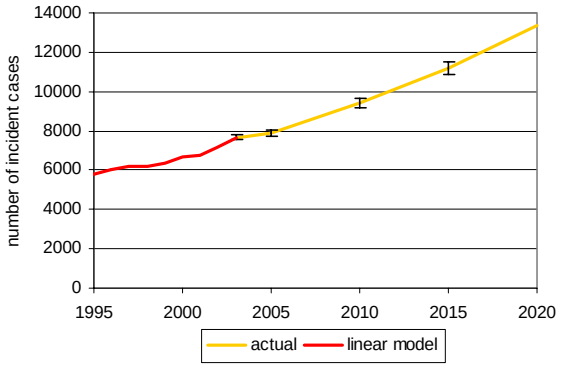
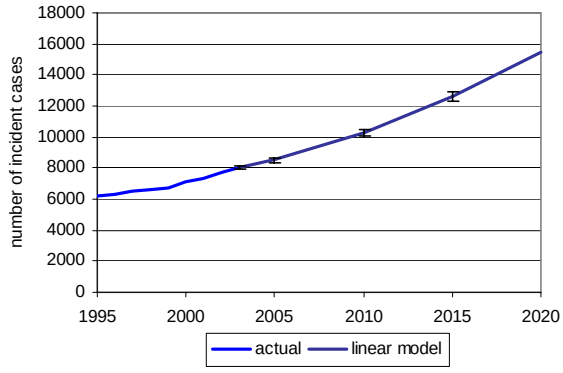


Figure 2.16. Projected number of cases 2005-2020: males (linear model)



Cancer of the head and neck (ICD10 C00-C14)

Table 2.19. Cancers of the head and neck, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	3.7	11.1
2005	4.3 (3.7, 4.9)	8.0 (7.1, 9.0)
2010	4.6 (3.9, 5.4)	4.7 (3.5, 5.9)
2015	4.9 (4.0, 5.9)	1.4 (-0.2, 2.9)
2020	5.2 (4.1, 6.4)	-2.0 (-4.0, 0.0)
Log-linear model	*females*	*males*
1998-2002	3.7	11.1
2005	4.5 (3.8, 5.1)	8.7 (7.8, 9.5)
2010	5.3 (4.2, 6.3)	6.8 (6.0, 7.7)
2015	6.5 (4.6, 8.4)	5.6 (4.6, 6.6)
2020	8.3 (5.0, 11.7)	4.7 (3.6, 5.8)

The overall trend in incidence rate is upwards in females and down in males, and the preferred models are linear for females and log-linear for males (Table 2.19, Figures 2.17, 2.18). By 2020, the projected number of cases in females will be 138 (±34) and in males 122 (±29), compared to annual averages of 72 and 182 cases respectively in 1998-2002 (Table 2.20, Figures 2.19, 2.20).

Table 2.20 Cancers of the head and neck, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	72	182
2005	88 (76, 100)	149 (132, 165)
2010	103 (86, 120)	98 (74, 123)
2015	120 (95, 144)	28 (-9, 65)
2020	138 (104, 172)	-70 (-124, -15)
Log-linear model	*females*	*males*
1998-2002	72	182
2005	91 (78, 103)	160 (144, 176)
2010	118 (95, 141)	144 (125, 163)
2015	158 (114, 203)	131 (108, 154)
2020	221 (136, 307)	122 (94, 151)

Table 2.21 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 63% of the increase in case numbers by 2020 will be due to demography, while for males, the effect predicted by demography will opposite to that predicted by the incidence rate trend.

Table 2.21. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	72	182		
2005	80	205	49%	—
2010	89	234	55%	—
2015	100	268	59%	—
2020	113	306	63%	—

Figure 2.17. Projected age-standardised incidence rate 2005-2020: females (linear model)

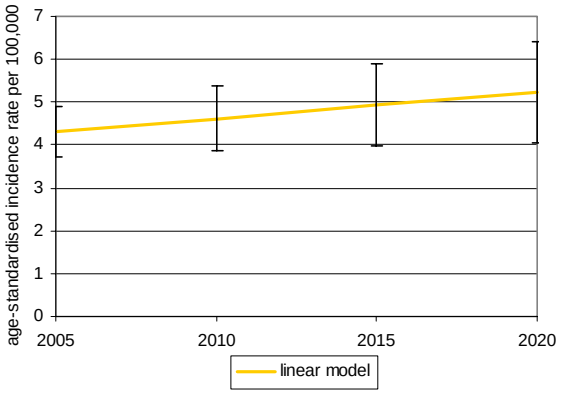


Figure 2.18. Projected age-standardised incidence rate 2005-2020: males (log-linear model)

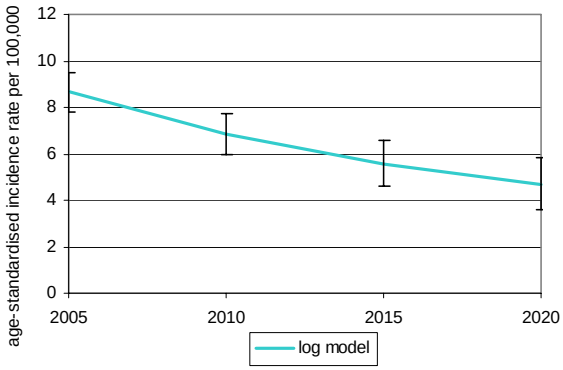


Figure 2.19. Projected number of cases 2005-2020: females (linear model)

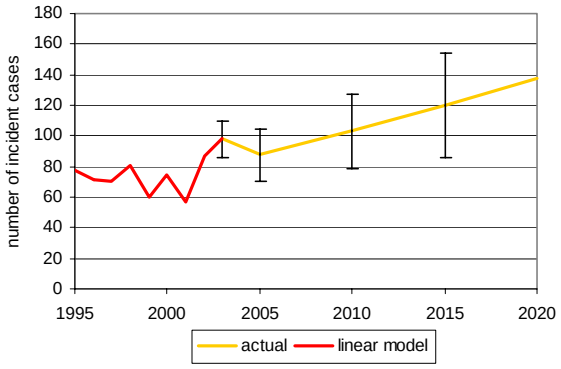
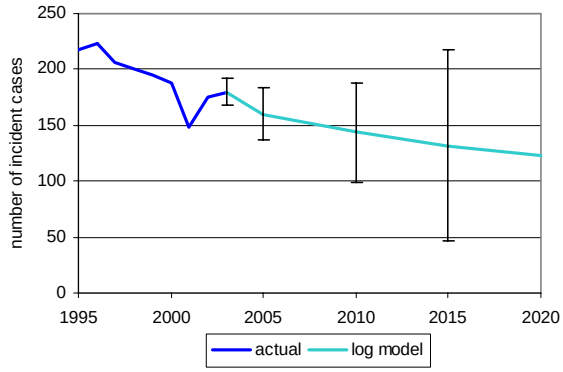


Figure 2.20. Projected number of cases 2005-2020: males (log-linear model)



Cancer of the oesophagus (ICD10 C15)

Table 2.22. Cancer of the oesophagus, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	5.5	11.4
2005	5.5 (4.9, 6.2)	11.7 (10.7, 12.7)
2010	5.3 (4.5, 6.2)	11.7 (10.3, 13.0)
2015	5.1 (4.1, 6.2)	11.7 (10.0, 13.4)
2020	4.9 (3.6, 6.3)	11.6 (9.5, 13.8)
Log-linear model	*females*	*males*
1998-2002	5.5	11.4
2005	5.6 (4.9, 6.2)	11.9 (10.8, 12.9)
2010	5.6 (4.7, 6.4)	12.3 (10.9, 13.7)
2015	5.7 (4.5, 6.9)	13.0 (11.1, 15.0)
2020	5.9 (4.2, 7.6)	14.0 (11.3, 16.6)

The linear model predicts an upward trend in both sexes, while the log-linear predicts a downward trend, so neither model is clearly preferred. However, the prediction interval for the two models overlap up to 2020, so there is no significant difference between the results of the models (Table 2.22, Figures 2.21, 2.22). The linear model projection is of 165 (±43) cases in women and 347 (±60) in men by 2020, while the log-linear projection is of 194 (±52) cases for women and 413 (±81) for men (Table 2.23, Figures 2.23, 2.24). These figures compare to an annual average of 119 cases in women and 189 in women in 1998-2002. Although the projections and trends based on the log-linear model suggest a larger increase in case numbers, as with the rates, the prediction intervals for the models overlap in all cases and so the models do not give projections which are statistically different.

Table 2.23. Cancer of the oesophagus, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	119	189
2005	128 (114, 143)	219 (200, 238)
2010	138 (117, 159)	252 (224, 280)
2015	151 (121, 181)	296 (254, 338)
2020	165 (122, 208)	347 (287, 408)
Log-linear model	*females*	*males*
1998-2002	119	189
2005	129 (115, 144)	222 (202, 241)
2010	144 (122, 165)	265 (235, 295)
2015	165 (132, 199)	327 (278, 377)
2020	194 (142, 245)	413 (332, 494)

Table 2.24 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, the increase due to demography was greater than that predicted by the linear model, and with the log-linear model the increase due to demography was 93% of the total increase seen. For males the linear model predicts that 88% of the increase in case numbers in 2020 would be due to demography, while the log-linear model predicts it would be 62%.

Table 2.24. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*		
			linear model	*log-linear model*	
	females	*males*	*males*	*females*	*males*
1998-2002 average	119	189			
2005	130	211	75%	—	68%
2010	145	242	33%	—	69%
2015	164	282	86%	97%	67%
2020	188	328	88%	93%	62%

Figure 2.21. Projected age-standardised incidence rate 2005-2020: females

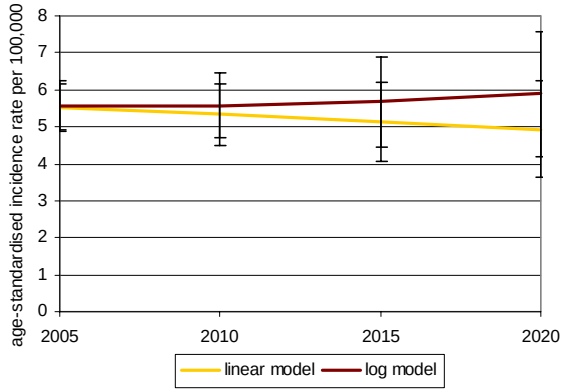


Figure 2.22. Projected age-standardised incidence rate 2005-2020: males

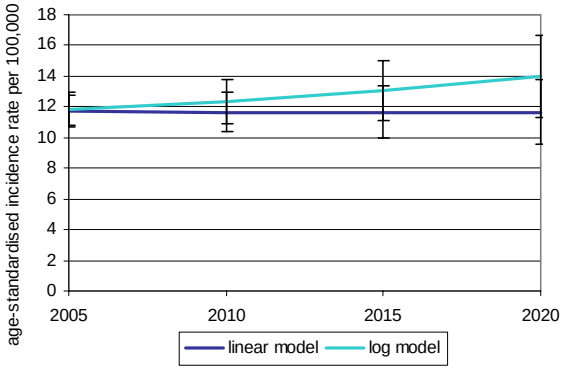


Figure 2.23. Projected number of cases 2005-2020: females

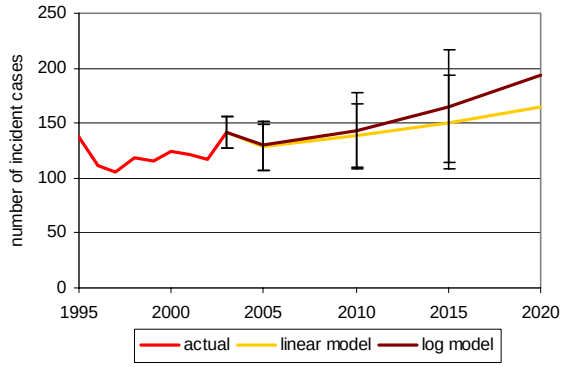
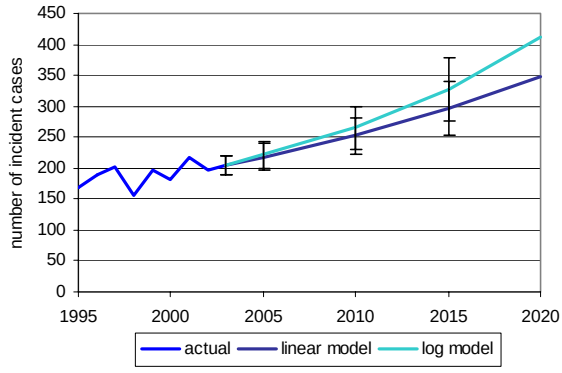


Figure 2.24. Projected number of cases 2005-2020: males



Cancer of stomach (ICD10 C16)

Table 2.25. Cancer of stomach, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	8.5	17.4
2005	7.9 (7.1, 8.7)	14.8 (13.6, 16.1)
2010	7.2 (6.1, 8.2)	12.2 (10.7, 13.8)
2015	6.4 (5.1, 7.7)	9.6 (7.5, 11.6)
2020	5.6 (4.0, 7.3)	6.9 (4.4, 9.5)
Log-linear model	*females*	*males*
1998-2002	8.5	17.4
2005	8.0 (7.2, 8.8)	15.2 (14.0, 16.3)
2010	7.5 (6.5, 8.4)	13.2 (11.9, 14.5)
2015	7.0 (5.9, 8.1)	11.6 (10.1, 13.0)
2020	6.6 (5.3, 8.0)	10.2 (8.6, 11.7)

The overall trend in incidence rate is downwards in both sexes, and the preferred models are log-linear (Table 2.25, Figures 2.27, 2.28). By 2020, the projected number of cases in females will be 218 (±43) and in males 290 (±45), compared to an annual average of 182 cases in men and 287 in women in 1998-2002 (Table 2.26, Figures 2.29, 2.30).

Table 2.26. Cancer of stomach, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	182	287
2005	184 (166, 201)	272 (250, 294)
2010	186 (161, 211)	255 (223, 287)
2015	188 (151, 225)	235 (185, 284)
2020	190 (137, 243)	201 (128, 274)
Log-linear model	*females*	*males*
1998-2002	182	287
2005	186 (168, 203)	278 (257, 299)
2010	192 (169, 216)	277 (250, 304)
2015	203 (172, 235)	283 (248, 318)
2020	218 (176, 261)	290 (245, 335)

Table 2.27 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). The effects of demographic and incidence rate trends are opposed, with demography predicting an increase in stomach cancers, and the incidence rate trends predicting a decrease.

Table 2.27. Increase in cancer numbers due to demographic factors only

	projected cases	
	females	*males*
1998-2002 average	182	287
2005	199	319
2010	221	366
2015	250	427
2020	287	499

Figure 2.25. Projected age-standardised incidence rate 2005-2020: females (log-linear model)

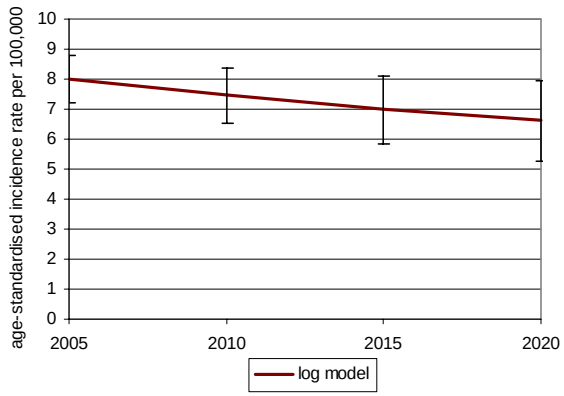


Figure 2.26. Projected age-standardised incidence rate 2005-2020: males (log-linear model)

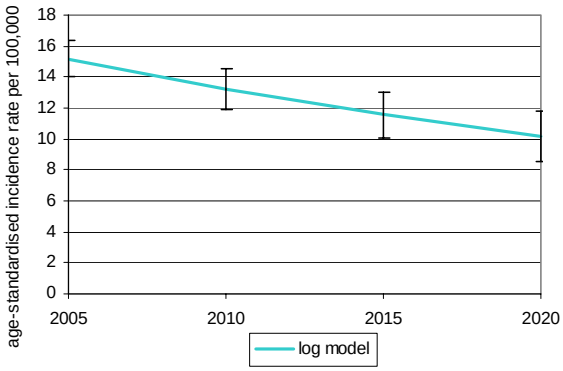


Figure 2.27. Projected number of cases 2005-2020: females (log-linear model)

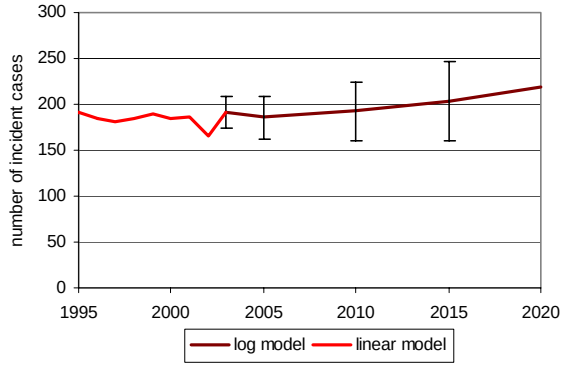
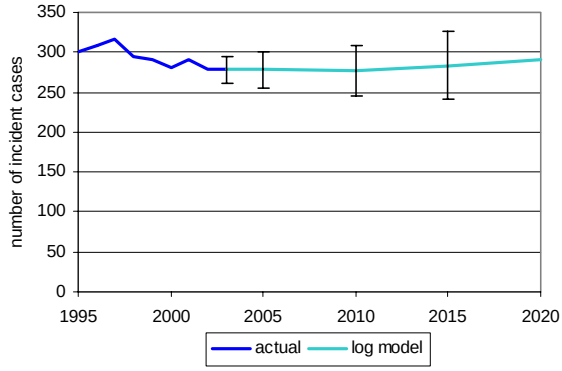


Figure 2.28. Projected number of cases 2005-2020: males (log-linear model)



Cancer of colon (ICD10 C18)

Table 2.28. Cancer of colon, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	27.0	37.1
2005	26.9 (25.4, 28.3)	35.7 (33.9, 37.6)
2010	26.3 (24.4, 28.1)	34.3 (32.0, 36.7)
2015	25.7 (23.3, 28.1)	32.9 (29.9, 35.9)
2020	25.1 (22.1, 28.1)	31.5 (27.7, 35.2)
Log-linear model	*females*	*males*
1998-2002	27.0	37.1
2005	27.0 (25.5, 28.4)	36.0 (34.2, 37.8)
2010	26.7 (24.8, 28.5)	35.2 (32.9, 37.5)
2015	26.5 (24.1, 28.8)	34.7 (31.8, 37.6)
2020	26.4 (23.5, 29.3)	34.4 (30.8, 38.1)

The overall trend in incidence rate is downwards in females and males, and the preferred models are log-linear (Table 2.28, Figures 2.29, 2.30). By 2020, the projected number of cases in females will be 873 (±95) and1015 (±109) in males compared to an annual average of 557 cases in women and 613 cases in men in 1998-2002 (Table 2.29, Figures 2.31, 2.32).

Table 2.29. Cancer of colon, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	557	613
2005	610 (578, 642)	658 (624, 691)
2010	667 (621, 712)	723 (674, 772)
2015	741 (675, 807)	820 (746, 894)
2020	834 (740, 928)	937 (829, 1045)
Log-linear model	*females*	*males*
1998-2002	557	613
2005	613 (581, 644)	663 (630, 696)
2010	676 (630, 721)	742 (694, 790)
2015	761 (695, 827)	862 (790, 935)
2020	873 (778, 968)	1015 (906, 1123)

Table 2.30 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). Because of the fall in incidence rates, the case numbers predicted by demography alone are greater than those predicted by the combination of demography and incidence rate change.

Table 2.30. Increase in cancer numbers due to demographic factors only

	projected cases	
	females	*males*
1998-2002 average	557	613
2005	609	683
2010	678	782
2015	768	913
2020	881	1071

Figure 2.29. Projected age-standardised incidence rate 2005-2020: females (log-linear model)

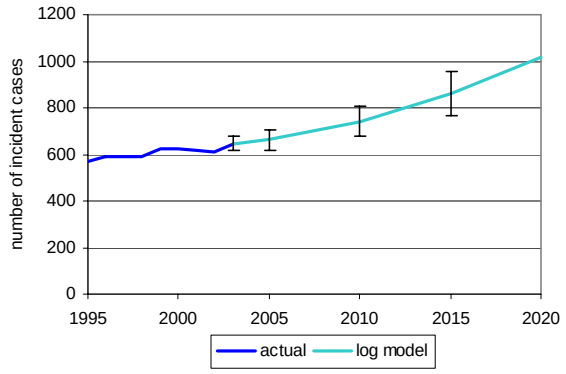


Figure 2.30. Projected age-standardised incidence rate 2005-2020: males (log-linear model)

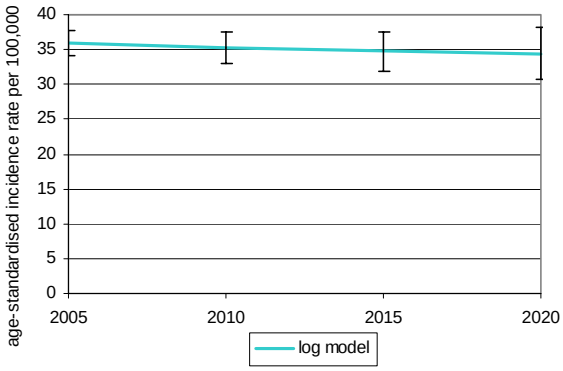


Figure 2.31. Projected number of cases 2005-2020: females (log-linear model)

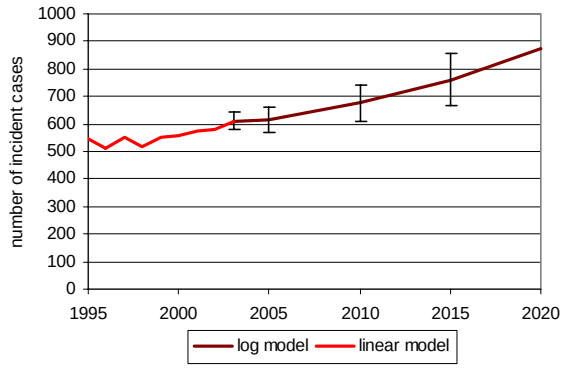
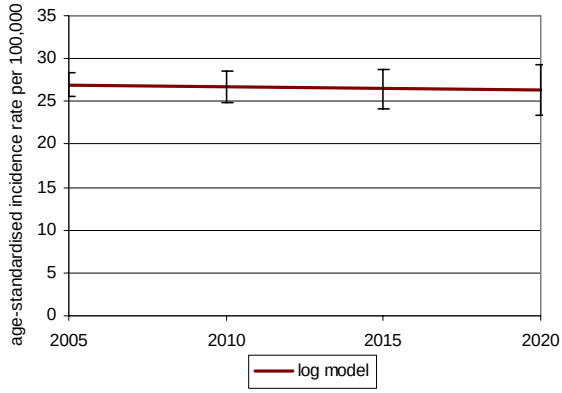


Figure 2.32. Projected number of cases 2005-2020: males (log-linear model)



Cancer of rectum and anus (ICD10 C19-C21)

Table 2.31. Cancer of rectum and anus, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	13.0	28.0
2005	12.4 (11.4, 13.4)	28.1 (26.5, 29.7)
2010	12.6 (11.3, 13.9)	29.2 (27.2, 31.3)
2015	12.8 (11.1, 14.4)	30.4 (27.7, 33.0)
2020	13.0 (10.9, 15.0)	31.5 (28.2, 34.8)
Log-linear model	*females*	*males*
1998-2002	13.0	28.0
2005	12.5 (11.5, 13.5)	28.2 (26.5, 29.8)
2010	13.0 (11.6, 14.4)	29.5 (27.3, 31.6)
2015	13.7 (11.8, 15.6)	30.9 (28.0, 33.8)
2020	14.6 (11.9, 17.4)	32.5 (28.6, 36.4)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.31, Figures 2.33, 2.34). By 2020, the projected number of cases in females will be 400 (±63) and in males 905 (±93), compared to an annual average of 261 cases in women and 460 in women in 1998-2002 (Table 2.32, Figures 2.35, 2.36).

Table 2.32. Cancer of rectum and anus, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	261	460
2005	270 (248, 291)	517 (488, 547)
2010	303 (272, 333)	616 (573, 659)
2015	347 (303, 392)	747 (683, 812)
2020	400 (337, 463)	905 (813, 998)
Log-linear model	*females*	*males*
1998-2002	261	460
2005	272 (250, 293)	518 (489, 548)
2010	311 (279, 343)	621 (575, 667)
2015	368 (318, 418)	762 (689, 835)
2020	441 (364, 518)	938 (824, 1051)

Table 2.33 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, the increase in case numbers will be less than that predicted by demography, while for males the contribution of demography to the increase will be 78%.

Table 2.33. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	261	460		95%
2005	285	515	—	29%
2010	318	590	—	79%
2015	360	687	—	76%
2020	412	798	—	95%

Figure 2.33. Projected age-standardised incidence rate 2005-2020: females (linear model)

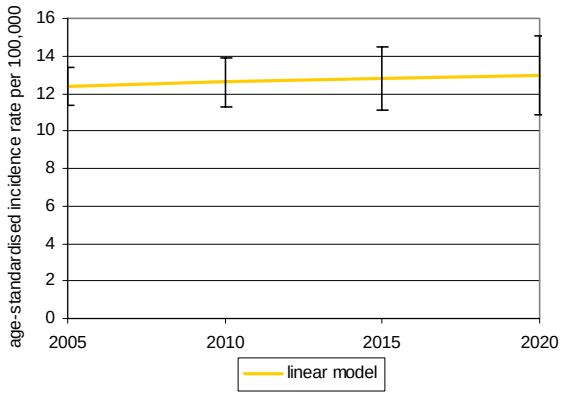


Figure 2.34. Projected age-standardised incidence rate 2005-2020: males (linear model)

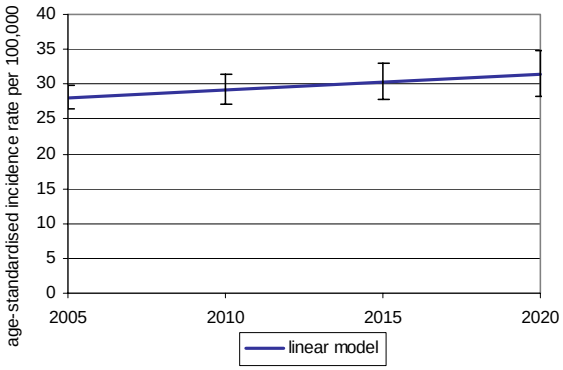


Figure 2.35. Projected number of cases 2005-2020: females (linear model)

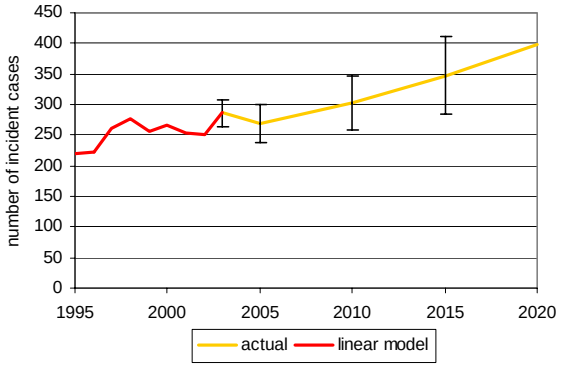
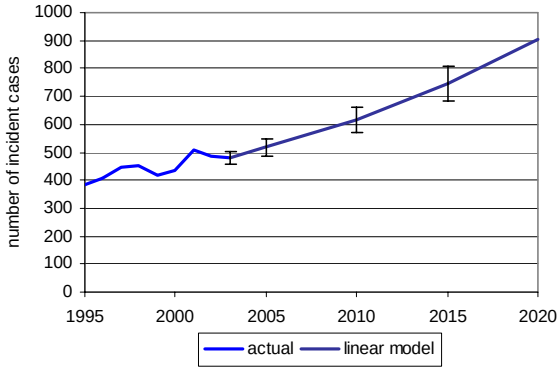


Figure 2.36. Projected number of cases 2005-2020: males (linear model)



Cancer of liver (ICD10 C22)

Table 2.34. Cancer of liver, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	1.6	3.6
2005	2.4 (2.0, 2.8)	4.8 (4.1, 5.4)
2010	3.0 (2.5, 3.5)	5.8 (5.0, 6.6)
2015	3.7 (3.1, 4.3)	6.9 (5.9, 7.9)
2020	4.3 (3.6, 5.1)	8.0 (6.8, 9.2)
Log-linear model	*females*	*males*
1998-2002	1.6	3.6
2005	2.8 (2.2, 3.3)	5.3 (4.6, 6.1)
2010	4.6 (3.4, 5.8)	8.1 (6.6, 9.7)
2015	7.7 (4.9, 10.5)	12.9 (9.3, 16.5)
2020	13.2 (6.7, 19.6)	21.0 (13.0, 28.9)

The overall trend in incidence rate is upwards for both sexes, and the preferred models are linear (Table 2.34, Figures 2.37, 2.38). By 2020, the projected number of cases in females will be 135 (±23) and 224 (±34) in males compared to an annual average of 33 cases in women and 59 in men in 1998-2002 (Table 2.35, Figures 2.39, 2.40).

Table 2.35. Cancer of liver, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	33	59
2005	52 (43, 61)	90 (78, 101)
2010	74 (61, 86)	125 (108, 142)
2015	101 (84, 118)	169 (145, 193)
2020	135 (112, 158)	224 (190, 257)
Log-linear model	*females*	*males*
1998-2002	33	59
2005	61 (50, 72)	100 (86, 114)
2010	113 (84, 142)	175 (141, 210)
2015	214 (138, 289)	316 (228, 404)
2020	415 (217, 612)	591 (368, 815)

Table 2.36 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, only 19% of the increase in case numbers by 2020 will be due to demography, and for males, 26%.

Table 2.36. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	33	59		
2005	36	66	17%	23%
2010	40	76	18%	10%
2015	46	88	19%	26%
2020	52	102	19%	26%

Figure 2.37. Projected age-standardised incidence rate 2005-2020: females (linear model)

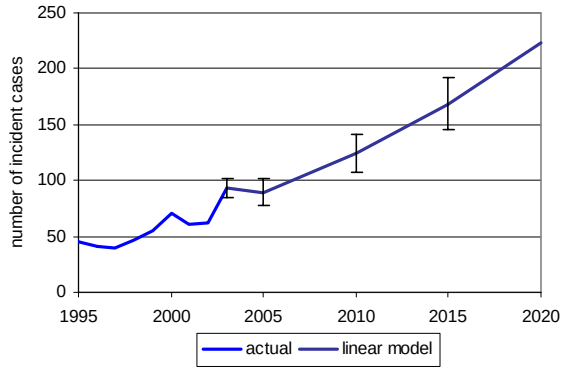


Figure 2.38. Projected age-standardised incidence rate 2005-2020: males (linear model)

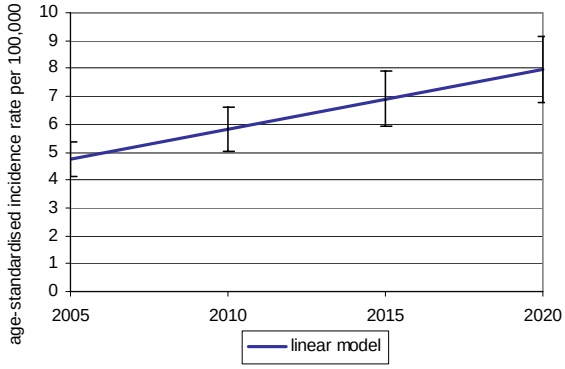


Figure 2.39. Projected number of cases 2005-2020: females (linear model)

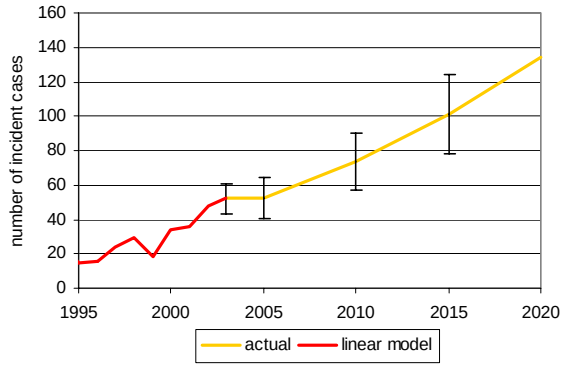
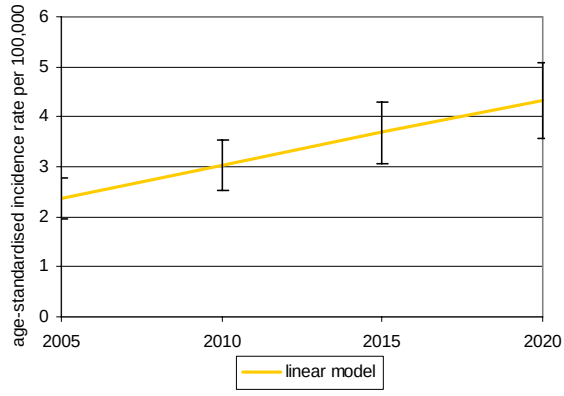


Figure 2.40. Projected number of cases 2005-2020: males (linear model)



Cancer of gallbladder (ICD10 C23)

Due to the absence of cases in a number of age groups, an age-period model could not be constructed for males.

Table 2.37. Cancer of gallbladder, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)
Linear model	*females*
1998-2002	1.6
2005	1.8 (1.4, 2.2)
2010	1.9 (1.4, 2.5)
2015	2.1 (1.4, 2.8)
2020	2.3 (1.4, 3.2)
Log-linear model	*females*
1998-2002	1.6
2005	1.8 (1.4, 2.2)
2010	2.2 (1.5, 2.9)
2015	2.7 (1.6, 3.8)
2020	3.4 (1.5, 5.4)

The overall trend in incidence rate is upwards in females, and the preferred model is linear (Table 2.37, Figure 2.41). By 2020, the projected number of cases in females will be 76 (±27) compared to an annual average of 33 cases in 1998-2002 (Table 2.38, Figure 2.42).

Table 2.38. Cancer of gallbladder, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)
Linear model	*females*
1998-2002	33
2005	40 (32, 49)
2010	49 (36, 62)
2015	61 (41, 80)
2020	76 (48, 103)
Log-linear model	*females*
1998-2002	33
2005	41 (32, 50)
2010	55 (39, 71)
2015	76 (46, 107)
2020	110 (52, 167)

Table 2.39 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 44% of the increase in case numbers by 2020 will be due to demography.

Table 2.39. Increase in cancer numbers due to demographic factors only (females only)

	projected cases	*% of increase which is due to demography*
1998-2002 average	33	
2005	36	40%
2010	40	42%
2015	45	45%
2020	52	44%

Figure 2.41. Projected age-standardised incidence rate 2005-2020: females (linear model)

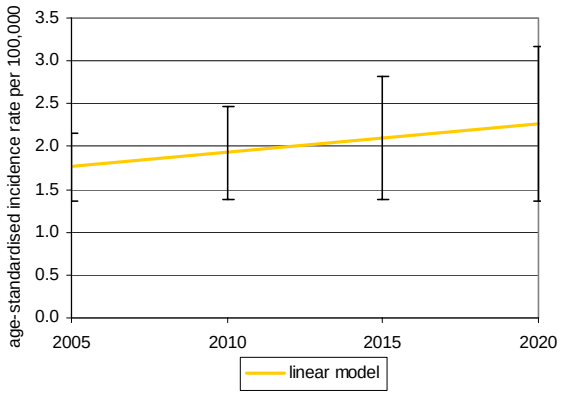
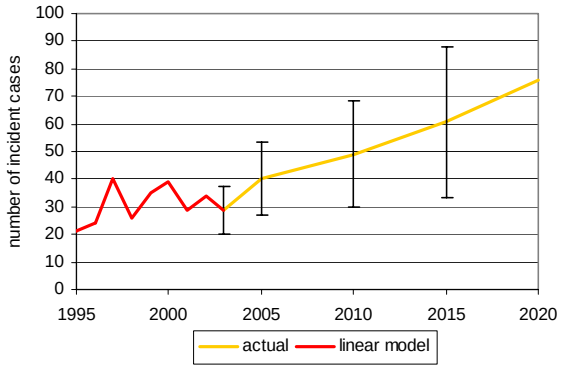


Figure 2.42. Projected number of cases 2005-2020: females (linear model)



Cancer of pancreas (ICD10 C25)

Table 2.40. Cancer of pancreas, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	8.4	11.4
2005	8.9 (8.1, 9.7)	11.9 (10.8, 12.9)
2010	9.1 (8.1, 10.2)	12.5 (11.1, 13.8)
2015	9.3 (8.0, 10.7)	13.0 (11.3, 14.8)
2020	9.5 (7.9, 11.2)	13.6 (11.5, 15.7)
Log-linear model	*females*	*males*
1998-2002	8.4	11.4
2005	9.0 (8.2, 9.8)	11.9 (10.9, 13.0)
2010	9.4 (8.3, 10.6)	12.6 (11.2, 14.1)
2015	10.2 (8.4, 12.0)	13.4 (11.4, 15.4)
2020	11.4 (8.1, 14.8)	14.2 (11.5, 17.0)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.40, Figures 2.43, 2.44). By 2020, the projected number of cases in females will be 324 (±54) and in males 388 (±60), compared to an annual average of 183 cases in women and 188 in men in 1998-2002 (Table 2.41, Figures 2.45, 2.46).

Table 2.41. Cancer of pancreas, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	183	188
2005	207 (189, 226)	216 (198, 235)
2010	235 (209, 262)	259 (231, 287)
2015	275 (237, 314)	317 (275, 358)
2020	324 (270, 379)	388 (327, 448)
Log-linear model	*females*	*males*
1998-2002	183	188
2005	209 (190, 228)	217 (198, 236)
2010	243 (214, 272)	263 (232, 293)
2015	296 (247, 346)	325 (276, 373)
2020	371 (279, 463)	404 (328, 480)

Table 2.42 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 75% of the increase in case numbers by 2020 will be due to demography, and for males, 70%.

Table 2.42. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	183	188		
2005	199	209	66%	74%
2010	221	239	72%	26%
2015	251	279	74%	71%
2020	289	328	75%	70%

Figure 2.43. Projected age-standardised incidence rate 2005-2020: females (linear model)

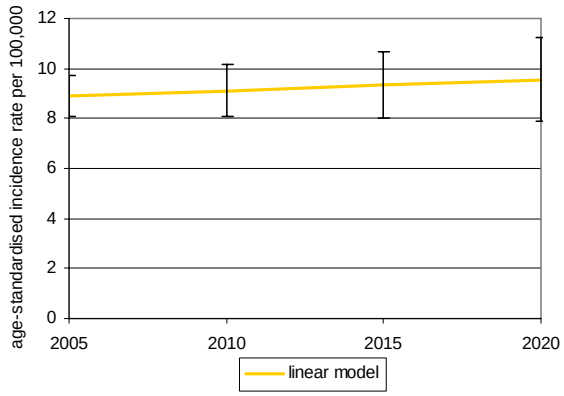


Figure 2.44. Projected age-standardised incidence rate 2005-2020: males (linear model)

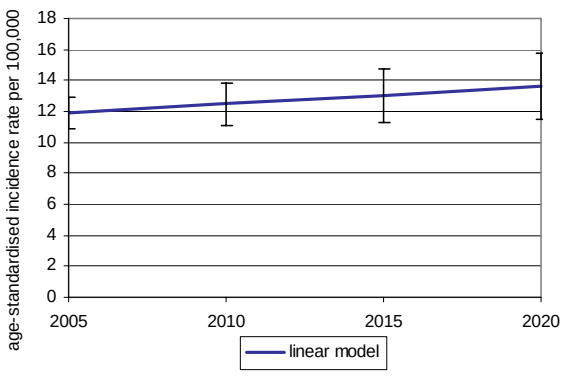


Figure 2.45. Projected number of cases 2005-2020: females (linear model)

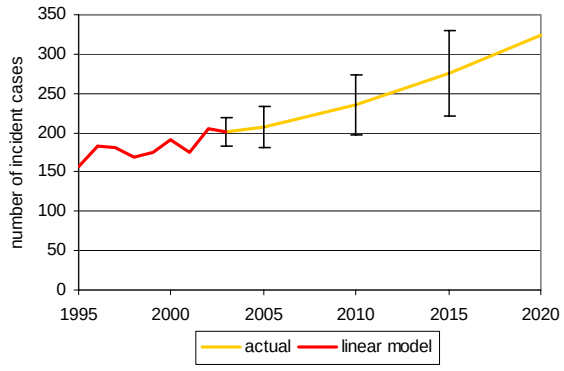
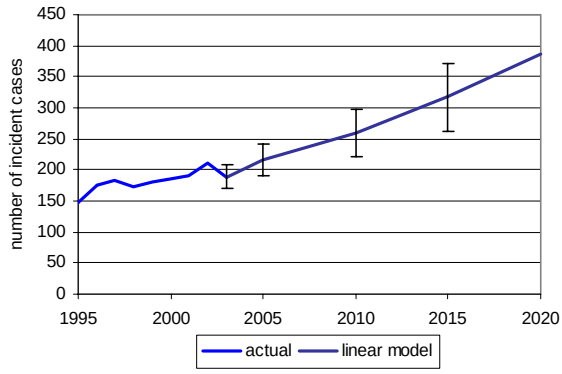


Figure 2.46. Projected number of cases 2005-2020: males (linear model)



Cancer of lung (ICD10 C34)

Table 2.43. Cancer of lung, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	30.1	62.5
2005	34.2 (32.6, 35.8)	60.1 (57.8, 62.5)
2010	37.7 (35.7, 39.8)	57.3 (54.3, 60.4)
2015	41.2 (38.6, 43.9)	54.6 (50.6, 58.5)
2020	44.8 (41.5, 48.0)	51.8 (46.9, 56.7)
Log-linear model	*females*	*males*
1998-2002	30.1	62.5
2005	34.6 (32.9, 36.3)	60.4 (58.0, 62.7)
2010	39.1 (36.6, 41.6)	58.5 (55.5, 61.4)
2015	44.3 (40.6, 47.9)	57.1 (53.4, 60.8)
2020	50.3 (45.0, 55.5)	56.2 (51.5, 60.9)

The overall trend in incidence rate is upwards in females and down in males, and the preferred models are linear for females and log-linear for males (Table 2.43, Figures 2.47, 2.48). By 2020, the projected number of cases in females will be 1437 (±101) and in males 1638 (±137), compared to an annual average of 609 cases in women and 1031 in men in 1998-2002 (Table 2.44, Figures 2.49, 2.50).

Table 2.44. Cancer of lung, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	609	1031
2005	752 (717, 786)	1108 (1065, 1151)
2010	923 (874, 973)	1212 (1148, 1276)
2015	1153 (1082, 1225)	1347 (1252, 1443)
2020	1437 (1337, 1538)	1510 (1371, 1650)
Log-linear model	*females*	*males*
1998-2002	609	1031
2005	760 (724, 796)	1113 (1070, 1156)
2010	959 (899, 1019)	1236 (1174, 1297)
2015	1245 (1143, 1347)	1410 (1319, 1502)
2020	1628 (1458, 1799)	1638 (1501, 1774)

Table 2.45 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 43% of the increase in case numbers by 2020 will be due to demography. For males, the incidence rate is predicted to decrease and so the numbers predicted by demography alone would exceed those predicted by the full model.

Table 2.45. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	609	1031		
2005	660	1147	35%	—
2010	734	1317	40%	—
2015	838	1540	42%	—
2020	968	1805	43%	—

Figure 2.47. Projected number of cases 2005-2020: females (linear model)

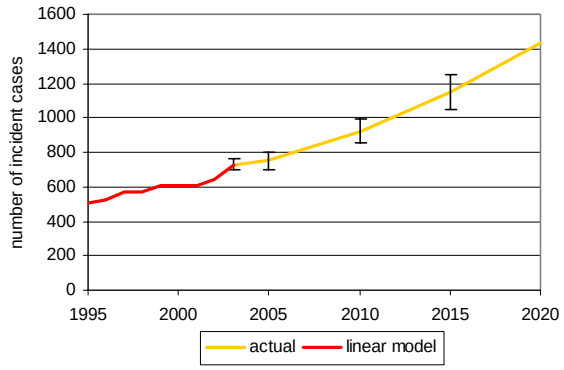


Figure 2.48. Projected number of cases 2005-2020: males (log-linear model)

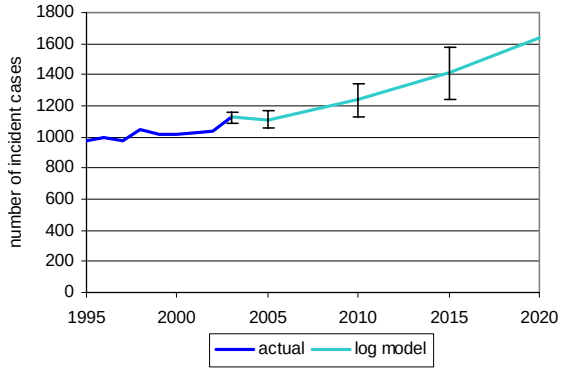


Figure 2.49. Projected age-standardised incidence rate 2005-2020: females (linear model)

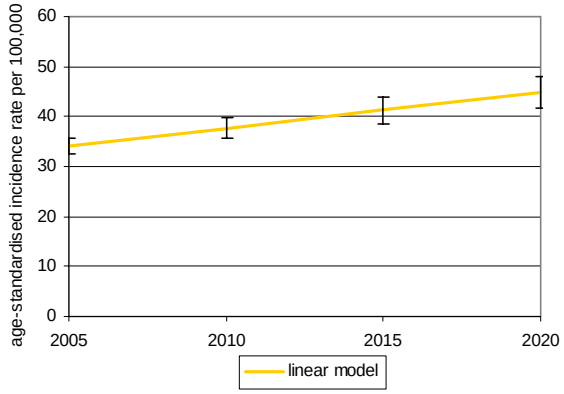
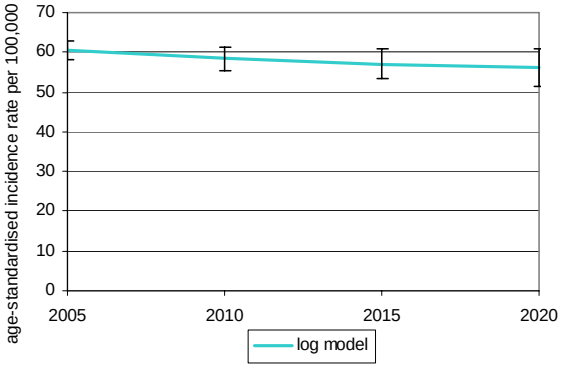


Figure 2.50. Projected age-standardised incidence rate 2005-2020: males (log-linear model)



Melanoma of skin (ICD10 C43)

Table 2.46. Melanoma of skin, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	14.6	10.1
2005	16.5 (15.3, 17.6)	12.0 (11.0, 13.0)
2010	18.2 (16.8, 19.7)	13.8 (12.5, 15.1)
2015	19.9 (18.1, 21.8)	15.6 (13.9, 17.2)
2020	21.7 (19.4, 24.0)	17.3 (15.3, 19.4)
Log-linear model	*females*	*males*
1998-2002	14.6	10.1
2005	16.8 (15.6, 18.0)	12.3 (11.2, 13.4)
2010	19.6 (17.8, 21.5)	14.8 (13.1, 16.5)
2015	23.3 (20.4, 26.3)	18.0 (15.2, 20.7)
2020	28.3 (23.5, 33.2)	21.8 (17.6, 26.0)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.46, Figures 2.51, 2.52). By 2020, the projected number of cases in females will be 633 (±64) and in males 468 (±54), compared to an annual average of 280 cases in women and 172 in men in 1998-2002 (Table 2.47, Figures 2.53, 2.54).

Table 2.47. Melanoma of skin, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	280	172
2005	346 (323, 370)	227 (208, 246)
2010	426 (393, 460)	293 (266, 320)
2015	523 (476, 570)	374 (335, 413)
2020	633 (569, 697)	468 (414, 522)
Log-linear model	*females*	*males*
1998-2002	280	172
2005	355 (330, 380)	232 (212, 253)
2010	466 (422, 511)	315 (279, 351)
2015	632 (545, 720)	432 (367, 498)
2020	879 (701, 1057)	591 (476, 705)

Table 2.48 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 41% of the increase in case numbers by 2020 will be due to demography, and for males, 35%.

Table 2.48. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	280	172		
2005	311	193	46%	38%
2010	346	217	45%	15%
2015	384	245	43%	36%
2020	424	276	41%	35%

Figure 2.51. Projected age-standardised incidence rate 2005-2020: females (linear model)

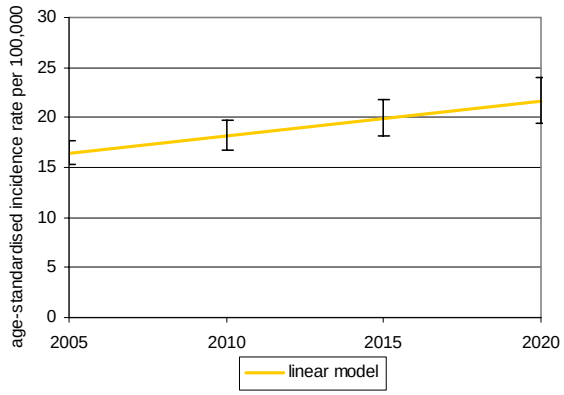


Figure 2.52. Projected age-standardised incidence rate 2005-2020: males (linear model)

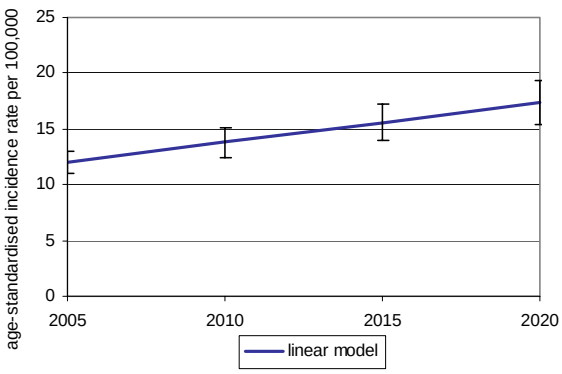


Figure 2.53. Projected number of cases 2005-2020: females (linear model)

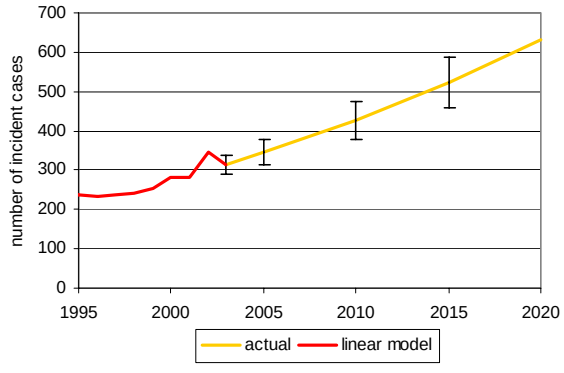
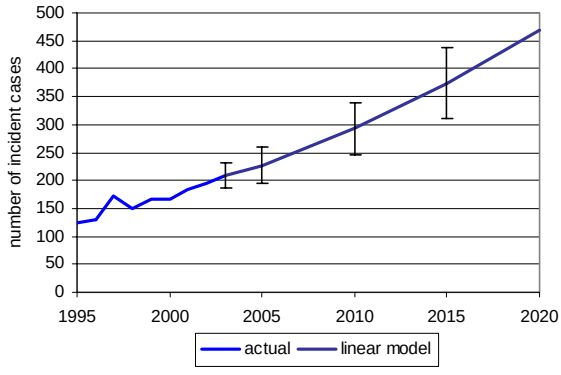


Figure 2.54. Projected number of cases 2005-2020: males (linear model)



Cancer of breast (ICD10 C50) (females only)

Table 2.49. Cancer of breast, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)
Linear model	*females*
1998-2002	107.2
2005	123.5 (120.3, 126.7)
2010	139.1 (135.1, 143.2)
2015	154.8 (149.6, 159.9)
2020	170.4 (164.1, 176.8)
Log-linear model	*females*
1998-2002	107.2
2005	126.2 (122.8, 129.6)
2010	149.1 (143.7, 154.4)
2015	177.3 (168.8, 185.8)
2020	212.4 (199.0, 225.7)

The overall trend in incidence rate is upwards and the preferred model is linear (Table 2.49, Figure 2.55). By 2020, the projected number of cases in females will be 4734 (±175), compared to an annual average of 1927 cases in 1998-2002 (Table 2.50, Figure 2.56).

Table 2.50. Cancer of breast, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)
Linear model	*females*
1998-2002	1927
2005	2472 (2409, 2534)
2010	3117 (3027, 3207)
2015	3856 (3729, 3983)
2020	4734 (4559, 4909)
Log-linear model	*females*
1998-2002	1927
2005	2523 (2456, 2590)
2010	3335 (3218, 3452)
2015	4403 (4195, 4611)
2020	5864 (5503, 6225)

Table 2.51 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 40% of the increase in case numbers by 2020 will be due to demography.

Table 2.51. Increase in cancer numbers due to demographic factors only

	projected cases	*% of total increase which is due to demography*
	females	*females*
1998-2002 average	1927	
2005	2152	41%
2010	2415	41%
2015	2713	41%
2020	3040	40%

Figure 2.55. Projected number of cases 2005-2020: females (linear model)

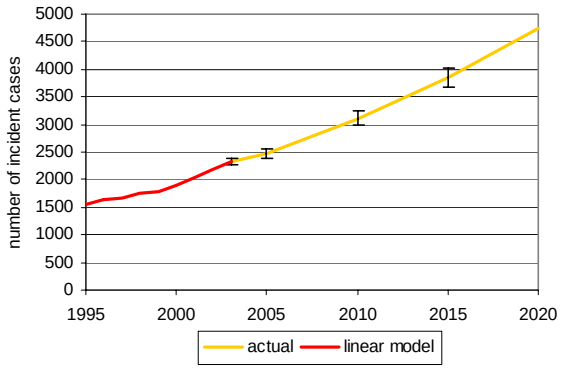
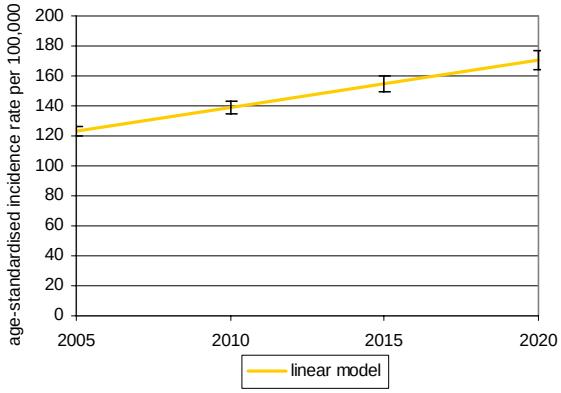


Figure 2.56. Projected age-standardised incidence rate 2005-2020: females (linear model)



Gynaecological cancers (ICD10 C51-C58)

Table 2.52. Gynaecological cancers, age-standardised incidence rate projections to 2020 (95% prediction intervals)

Linear model	*age-standardised incidence rates per 100,0000 person-years (95% prediction interval)*
1998-2002	46.2
2005	50.0 (48.0, 52.0)
2010	52.9 (50.3, 55.5)
2015	55.8 (52.4, 59.1)
2020	58.6 (54.5, 62.8)
Log-linear model	
1998-2002	46.2
2005	50.2 (48.1, 52.3)
2010	53.5 (50.6, 56.4)
2015	57.1 (53.1, 61.1)
2020	60.9 (55.6, 66.2)

The overall trend in incidence rate is upwards, and the preferred model is linear (Table 2.52, Figure 2.57). By 2020, the projected number of cases will be 1676 (±115), compared to an annual average of 855 in 1998-2002 (Table 2.53, Figure 2.58).

Table 2.53. Gynaecological cancers, case projections to 2020 (95% prediction intervals)

Linear model	*number of cases (95% prediction interval)*
1998-2002	855
2005	1019 (978, 1060)
2010	1202 (1144, 1260)
2015	1420 (1336, 1503)
2020	1676 (1561, 1791)
Log-linear model	
1998-2002	855
2005	1023 (981, 1064)
2010	1217 (1152, 1281)
2015	1456 (1355, 1556)
2020	1747 (1595, 1898)

Table 2.54 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only).In 2020, 58% of the increase in case numbers by 2020 will be due to demography.

Table 2.54. Increase in cancer numbers due to demographic factors only

	projected cases	*% of total increase which is due to demography*
1998-2002 average	855	
2005	949	57%
2010	1061	59%
2015	1191	59%
2020	1330	58%

Figure 2.57. Projected age-standardised incidence rate 2005-2020

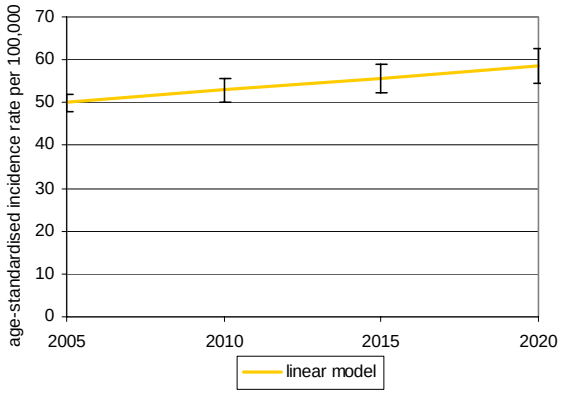
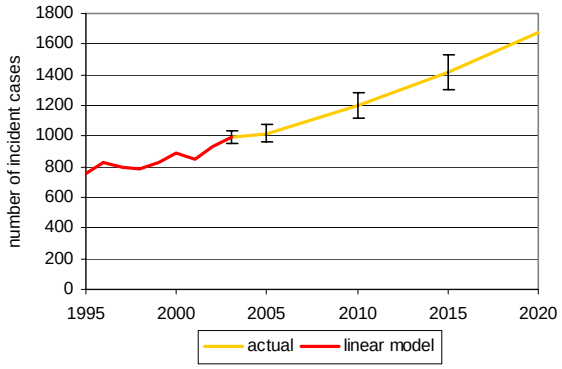


Figure 2.58. Projected number of cases 2005-2020



Cancer of prostate (ICD10 C61)

Table 2.55. Cancer of prostate, age-standardised incidence rate projections to 2020 (95% prediction intervals)

Linear model	*age-standardised incidence rates per 100,0000 person-years (95% prediction interval)*
1998-2002	103.0
2005	133.0 (129.7, 136.4)
2010	163.1 (158.9, 167.3)
2015	193.1 (187.9, 198.4)
2020	223.2 (216.8, 229.6)
Log-linear model	
1998-2002	103.0
2005	148.8 (144.7, 152.9)
2010	233.1 (223.8, 242.5)
2015	389.1 (364.4, 413.9)
2020	688.5 (622.8, 754.1)

The overall trend in incidence rate is upwards, and the preferred model is linear (Table 2.55, Figure 2.59). By 2020, the projected number of cases will be 6330 (±183), compared to an annual average of 1689 in 1998-2002 (Table 2.56, Figure 2.60).

Table 2.56. Cancer of prostate, case projections to 2020 (95% prediction intervals)

Linear model	*number of cases (95% prediction interval)*
1998-2002	1689
2005	2422 (2361, 2482)
2010	3409 (3321, 3497)
2015	4720 (4591, 4848)
2020	6330 (6147, 6513)
Log-linear model	
1998-2002	1689
2005	2706 (2633, 2780)
2010	4862 (4668, 5057)
2015	9291 (8719, 9863)
2020	18436 (16764, 20107)

Table 2.57 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). Only 28% of the increase in case numbers by 2020 will be due to demography.

Table 2.57. Increase in cancer numbers due to demographic factors only

	projected cases	*% of total increase which is due to demography*
1998-2002 average	1689	
2005	1879	26%
2010	2163	10%
2015	2542	28%
2020	2997	28%

Figure 2.59. Projected age-standardised incidence rate 2005-2020: (linear model)

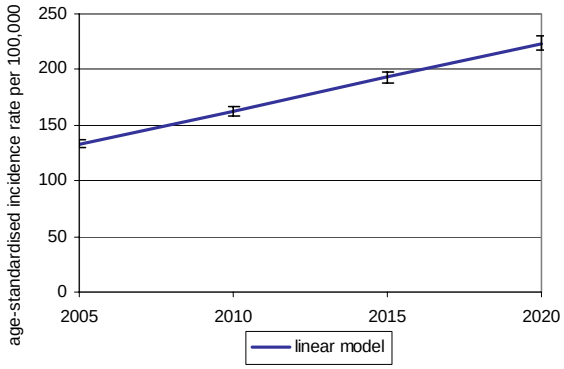
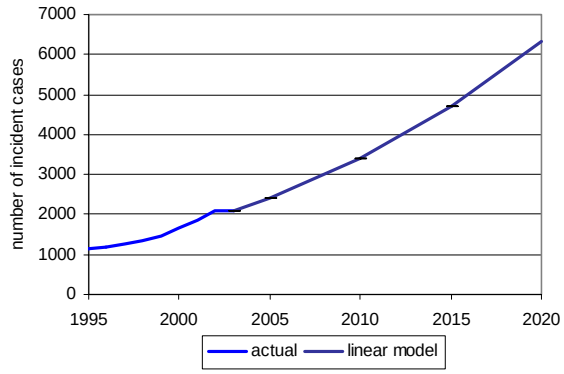


Figure 2.60. Projected number of cases 2005-2020: (linear model)



Cancer of testis (ICD10 C62)

Table 2.58. Cancer of testis, age-standardised incidence rate projections to 2020 (95% prediction intervals)

Linear model	*age-standardised incidence rates per 100,0000 person-years (95% prediction interval)*
1998-2002	5.8
2005	7.8 (7.0, 8.5)
2010	9.5 (8.4, 10.5)
2015	11.1 (9.8, 12.4)
2020	12.8 (11.2, 14.4)
Log-linear model	
1998-2002	5.8
2005	8.2 (7.4, 9.1)
2010	11.2 (9.7, 12.8)
2015	15.3 (12.5, 18.1)
2020	21.1 (16.2, 25.9)

The overall trend in incidence rate is upwards, and the preferred model is linear (Table 2.58, Figure 2.61). By 2020, the projected number of cases will be 317 (±40), compared to an annual average of 117 in 1998-2002 (Table 2.59, Figure 2.62).

Table 2.59. Cancer of testis, case projections to 2020 (95% prediction intervals)

Linear model	*number of cases (95% prediction interval)*
1998-2002	117
2005	164 (148, 180)
2010	213 (191, 235)
2015	266 (236, 296)
2020	317 (277, 357)
Log-linear model	
1998-2002	117
2005	173 (155, 191)
2010	253 (218, 287)
2015	367 (300, 434)
2020	520 (400, 641)

Table 2.60 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). Only 13% of the increase in case numbers by 2020 will be due to demography.

Table 2.60. Increase in cancer numbers due to demographic factors only

	projected cases	*% of total increase which is due to demography*
1998-2002 average	117	
2005	130	27%
2010	138	11%
2015	143	17%
2020	142	13%

Figure 2.61. Projected age-standardised incidence rate 2005-2020: (linear model)

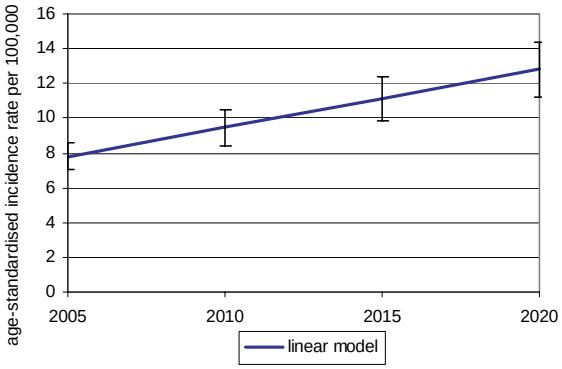
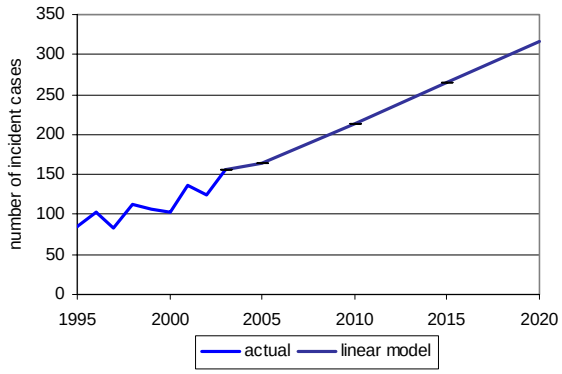


Figure 2.62. Projected number of cases 2005-2020: (linear model)



Cancer of kidney (ICD10 C64)

Table 2.61. Cancer of kidney, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	5.6	12.4
2005	6.8 (6.1, 7.5)	14.8 (13.7, 15.9)
2010	7.7 (6.8, 8.6)	17.2 (15.7, 18.6)
2015	8.6 (7.5, 9.8)	19.5 (17.7, 21.4)
2020	9.5 (8.1, 11.0)	21.9 (19.7, 24.1)
Log-linear model	*females*	*males*
1998-2002	5.6	12.4
2005	7.1 (6.3, 7.8)	15.4 (14.2, 16.7)
2010	8.7 (7.4, 10.0)	19.9 (17.7, 22.1)
2015	10.9 (8.7, 13.2)	26.4 (22.0, 30.8)
2020	14.0 (10.2, 17.9)	36.1 (27.4, 44.9)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.61, Figures 2.63, 2.64). By 2020, the projected number of cases in females will be 282 (±42) and in males 612 (±62), compared to an annual average of 106 cases in women and 202 in men in 1998-2002 (Table 2.62, Figures 2.65, 2.66).

Table 2.62. Cancer of kidney, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	106	202
2005	143 (128, 158)	273 (252, 293)
2010	179 (158, 200)	360 (330, 391)
2015	226 (196, 256)	472 (428, 516)
2020	282 (240, 324)	612 (550, 674)
Log-linear model	*females*	*males*
1998-2002	106	202
2005	148 (132, 164)	284 (261, 307)
2010	200 (171, 230)	415 (370, 460)
2015	284 (227, 342)	630 (531, 728)
2020	408 (299, 518)	997 (769, 1225)

Table 2.63 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For both females and males, 35% of the increase in case numbers by 2020 will be due to demography.

Table 2.63. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	106	202		
2005	117	227	29%	34%
2010	131	259	35%	14%
2015	148	299	35%	36%
2020	167	345	35%	35%

Figure 2.63. Projected age-standardised incidence rate 2005-2020: females (linear model)

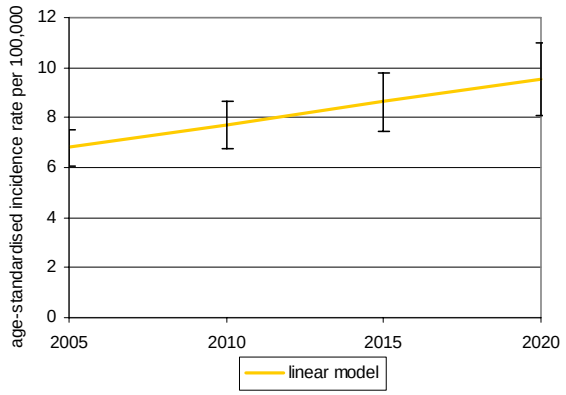


Figure 2.64. Projected age-standardised incidence rate 2005-2020: males (linear model)

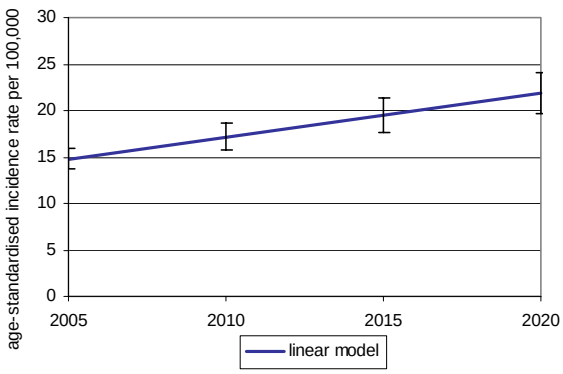


Figure 2.65. Projected number of cases 2005-2020: females (linear model)

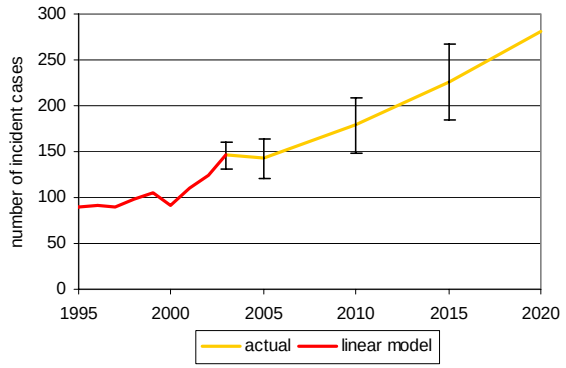
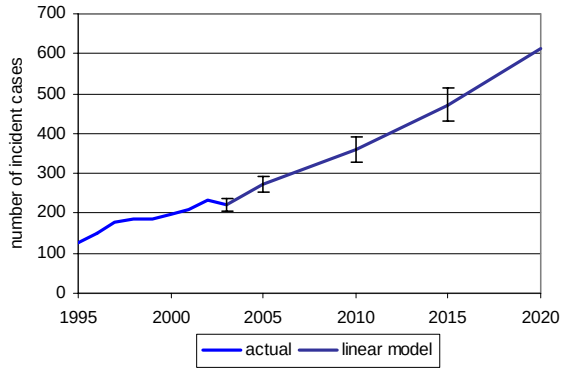


Figure 2.66. Projected number of cases 2005-2020: males (linear model)



Cancer of bladder (ICD10 C67)

Table 2.64. Cancer of bladder, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	6.2	19.5
2005	6.2 (5.5, 6.9)	18.1 (16.8, 19.4)
2010	5.8 (4.9, 6.7)	16.0 (14.3, 17.7)
2015	5.4 (4.2, 6.5)	13.9 (11.7, 16.1)
2020	5.0 (3.6, 6.4)	11.8 (9.1, 14.6)
Log-linear model	*females*	*males*
1998-2002	6.2	19.5
2005	6.2 (5.5, 6.9)	18.2 (17.0, 19.5)
2010	5.9 (5.0, 6.7)	16.6 (15.1, 18.1)
2015	5.6 (4.6, 6.7)	15.1 (13.3, 16.9)
2020	5.5 (4.2, 6.8)	13.8 (11.8, 15.8)

The overall trend in incidence rate is downwards in both sexes, and the preferred models are log-linear (Table 2.64, Figures 2.67, 2.68). By 2020, the projected number of cases in females will be 180 (±42) and in males 396 (±57), compared to an annual average of 128 cases in women and 321 in men in 1998-2002 (Table 2.65, Figures 2.69, 2.70).

Table 2.65. Cancer of bladder, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	128	321
2005	139 (124, 154)	329 (306, 353)
2010	146 (124, 167)	333 (298, 368)
2015	156 (124, 187)	340 (287, 393)
2020	165 (121, 210)	344 (266, 422)
Log-linear model	*females*	*males*
1998-2002	128	321
2005	139 (124, 154)	332 (308, 355)
2010	148 (127, 169)	344 (313, 375)
2015	162 (132, 192)	367 (325, 410)
2020	180 (137, 222)	396 (339, 454)

Table 2.66 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). The projected increase is less than would be expected from demographic change alone.

Table 2.66. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	128	321		
2005	140	357	—	—
2010	156	409	—	—
2015	178	479	—	—
2020	204	565	—	—

Figure 2.67. Projected age-standardised incidence rate 2005-2020: females (log-linear model)

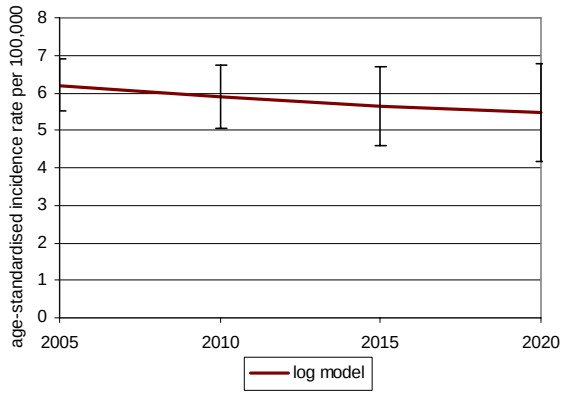


Figure 2.68. Projected age-standardised incidence rate 2005-2020: males (log-linear model)

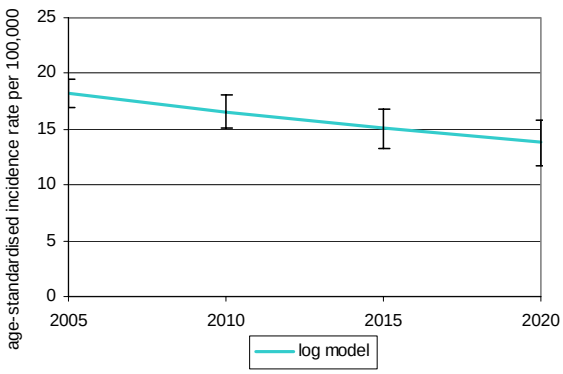


Figure 2.69. Projected number of cases 2005-2020: females (log-linear model)

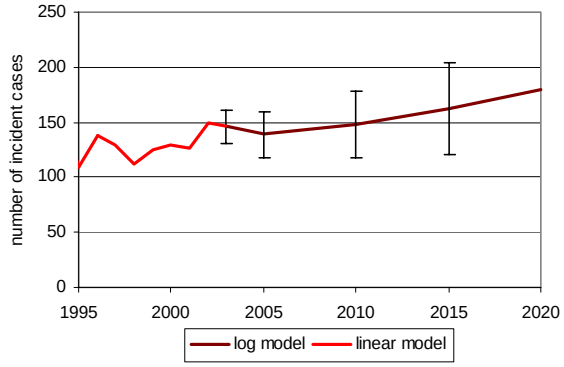
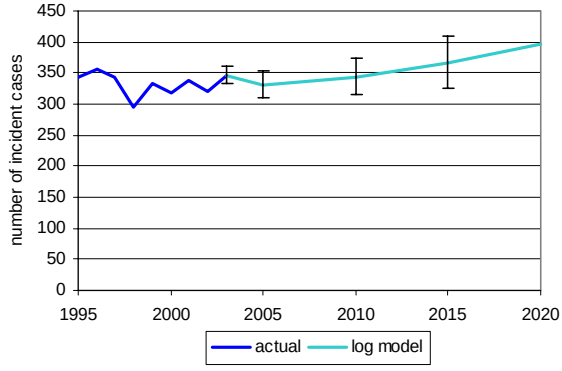


Figure 2.70. Projected number of cases 2005-2020: males (log-linear model)



Cancer of brain and central nervous system (ICD71- C72)

Table 2.67. Cancer of brain and central nervous system, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	6.7	10.0
2005	7.4 (6.6, 8.1)	10.2 (9.2, 11.1)
2010	7.9 (7.0, 8.9)	10.4 (9.2, 11.6)
2015	8.5 (7.3, 9.7)	10.7 (9.2, 12.3)
2020	9.1 (7.6, 10.6)	11.0 (9.1, 12.9)
Log-linear model	*females*	*males*
1998-2002	6.7	10.0
2005	7.6 (6.8, 8.4)	10.5 (9.5, 11.5)
2010	9.2 (7.8, 10.7)	11.9 (10.1, 13.6)
2015	12.7 (8.5, 16.9)	14.8 (10.2, 19.4)
2020	21.2 (6.8, 35.6)	21.1 (7.6, 34.7)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.67, Figures 2.73, 2.74). By 2020, the projected number of cases in females will be 285 (±44) and in males 303 (±52), compared to an annual average of 131 cases in women and 173 in men in 1998-2002 (Table 2.68, Figures 2.75, 2.76).

Table 2.68. Cancer of brain and central nervous system, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	131	173
2005	159 (143, 175)	194 (176, 211)
2010	192 (170, 215)	222 (196, 248)
2015	234 (202, 266)	259 (221, 296)
2020	285 (241, 329)	303 (251, 355)
Log-linear model	*females*	*males*
1998-2002	131	173
2005	167 (149, 184)	199 (180, 217)
2010	238 (194, 283)	248 (214, 282)
2015	407 (235, 579)	343 (250, 437)
2020	856 (169, 1543)	562 (231, 893)

Table 2.69 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 42% of the increase in case numbers by 2020 will be due to demography, and for males, 89%.

Table 2.69. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	131	173	42%	89%
2005	143	191	44%	32%
2010	158	214	43%	80%
2015	176	241	42%	73%
2020	195	268	42%	89%

Figure 2.71. Projected age-standardised incidence rate 2005-2020: females (linear model)

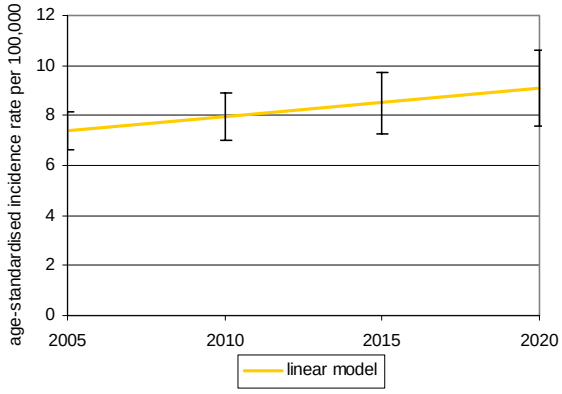


Figure 2.72. Projected age-standardised incidence rate 2005-2020: males (linear model)

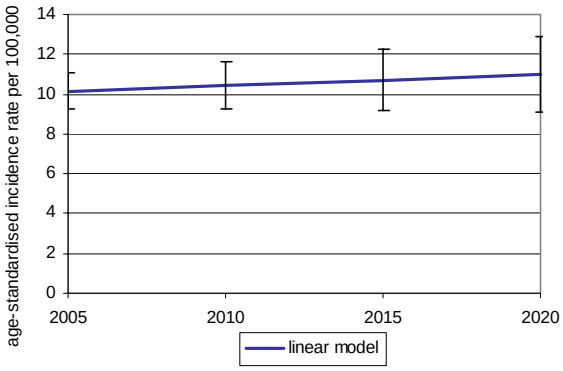


Figure 2.73. Projected number of cases 2005-2020: females (linear model)

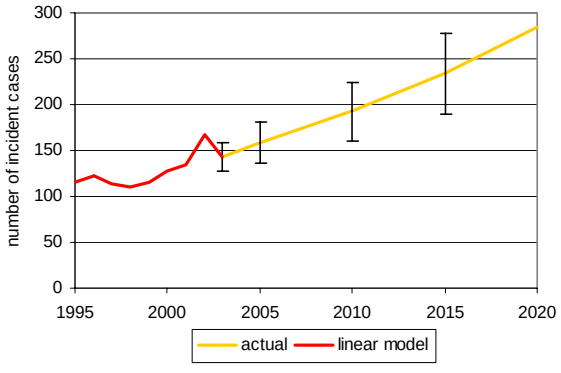
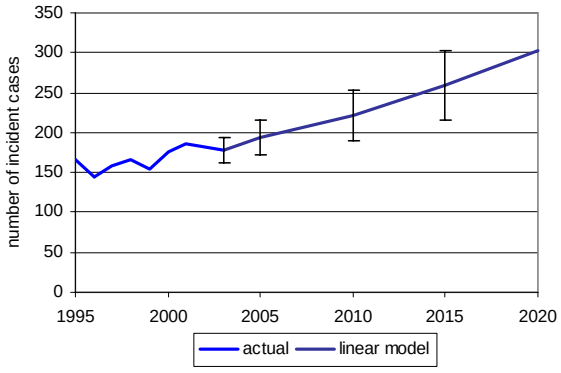


Figure 2.74. Projected number of cases 2005-2020: males (linear model)



Cancer of thyroid (ICD10 C73)

Table 2.70. Cancer of thyroid, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	2.8	1.1
2005	3.1 (2.6, 3.6)	1.4 (1.1, 1.8)
2010	3.5 (2.8, 4.1)	1.5 (1.1, 2.0)
2015	3.8 (3.0, 4.7)	1.6 (1.0, 2.2)
2020	4.2 (3.2, 5.2)	1.7 (1.0, 2.5)
Log-linear model	*females*	*males*
1998-2002	2.8	1.1
2005	3.4 (2.9, 4.0)	1.5 (1.1, 1.9)
2010	4.5 (3.5, 5.5)	1.8 (1.2, 2.5)
2015	6.4 (4.3, 8.4)	2.5 (1.1, 3.9)
2020	9.3 (5.1, 13.5)	3.7 (0.7, 6.8)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.70, Figures 2.75, 2.76). By 2020, the projected number of cases in females will be 109 (±27) and in males 45 (±19), compared to an annual average of 53 cases in women and 19 in men in 1998-2002 (Table 2.71, Figures 2.77, 2.78).

Table 2.71. Cancer of thyroid, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	53	19
2005	65 (55, 75)	27 (21, 34)
2010	79 (65, 93)	33 (23, 42)
2015	94 (74, 114)	39 (25, 53)
2020	109 (82, 136)	45 (25, 64)
Log-linear model	*females*	*males*
1998-2002	53	19
2005	71 (60, 83)	28 (21, 36)
2010	102 (80, 125)	40 (25, 54)
2015	154 (105, 204)	60 (27, 94)
2020	235 (133, 338)	95 (20, 170)

Table 2.72 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 43% of the increase in case numbers by 2020 will be due to demography, and for males, 42%.

Table 2.72. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	53	19		
2005	59	21	48%	25%
2010	65	24	46%	18%
2015	71	27	43%	38%
2020	77	30	43%	42%

Figure 2.75. Projected age-standardised incidence rate 2005-2020: females (linear model)

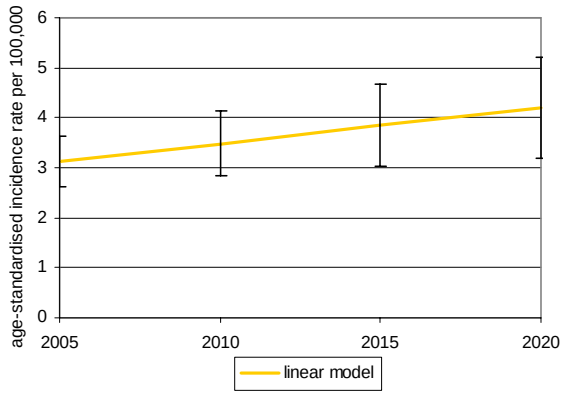


Figure 2.76. Projected age-standardised incidence rate 2005-2020: males (linear model)

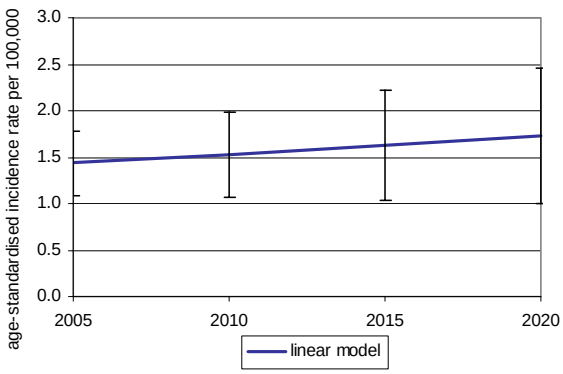


Figure 2.77. Projected number of cases 2005-2020: females (linear model)

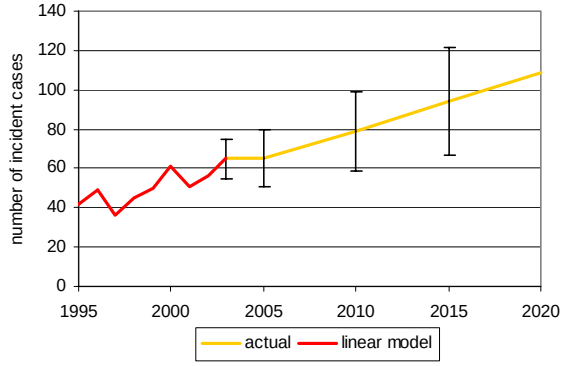
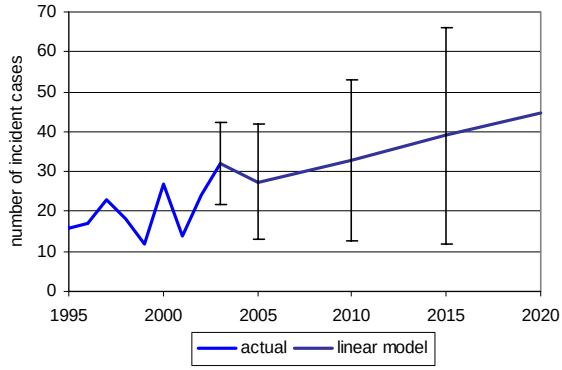


Figure 2.78. Projected number of cases 2005-2020: males (linear model)



Lymphoma (ICD10 C81-C85)

Table 2.73. Lymphoma, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	8.0	11.1
2005	14.2 (13.2, 15.3)	18.8 (17.5, 20.1)
2010	15.3 (13.9, 16.7)	20.5 (18.8, 22.1)
2015	16.3 (14.6, 18.1)	22.1 (20.0, 24.3)
2020	17.4 (15.2, 19.6)	23.8 (21.2, 26.4)
Log-linear model	*females*	*males*
1998-2002	8.0	11.1
2005	14.3 (13.2, 15.4)	19.1 (17.8, 20.4)
2010	15.6 (14.0, 17.1)	21.6 (19.6, 23.6)
2015	16.9 (14.8, 19.1)	24.9 (21.6, 28.1)
2020	18.5 (15.5, 21.4)	29.1 (23.8, 34.4)

The overall trend in incidence rate is upwards in both sexes, and the preferred models are linear (Table 2.73, Figures 2.79, 2.80). By 2020, the projected number of cases in females will be 504 (±62) and in males 650 (±70), compared to an annual average of 153 cases in women and 192 in men in 1998-2002 (Table 2.74, Figures 2.81, 2.82).

Table 2.74. Lymphoma, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	153	192
2005	297 (275, 319)	356 (332, 380)
2010	353 (321, 384)	434 (399, 469)
2015	423 (378, 467)	531 (481, 581)
2020	504 (442, 566)	650 (580, 720)
Log-linear model	*females*	*males*
1998-2002	153	192
2005	299 (276, 321)	361 (336, 386)
2010	359 (323, 394)	458 (415, 500)
2015	438 (383, 494)	594 (519, 670)
2020	536 (450, 622)	798 (655, 941)

Table 2.75 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, 53% of the increase in case numbers by 2020 will be due to demography, and for males, 51%.

Table 2.75. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	254	302		
2005	278	335	55%	63%
2010	308	377	55%	22%
2015	346	427	54%	55%
2020	386	480	53%	51%

Figure 2.79. Projected age-standardised incidence rate 2005-2020: females (linear model)

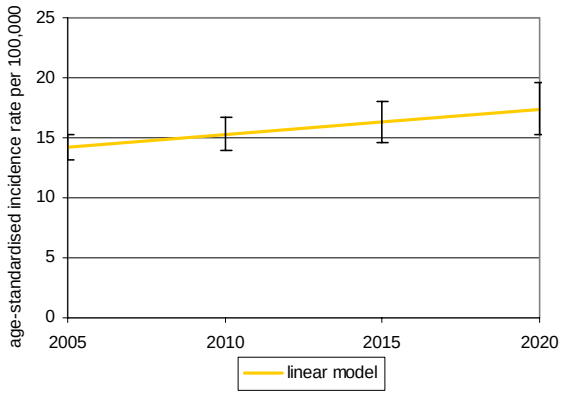


Figure 2.80. Projected age-standardised incidence rate 2005-2020: males (linear model)

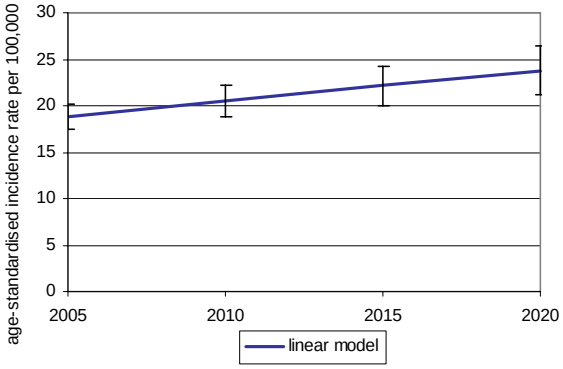


Figure 2.81. Projected number of cases 2005-2020: females (linear model)

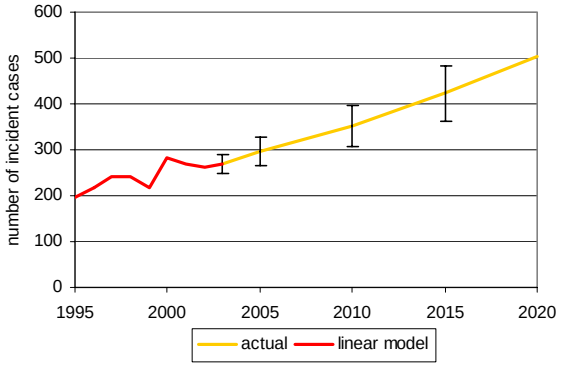
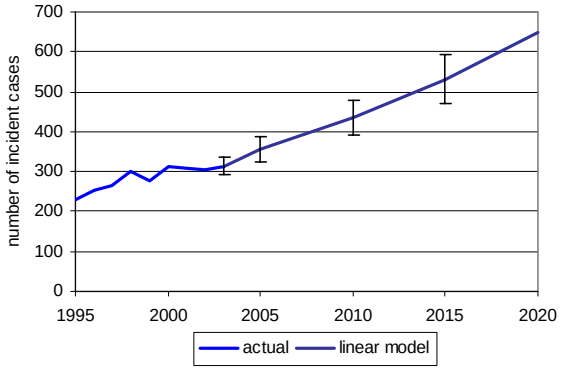


Figure 2.82. Projected number of cases 2005-2020: males (linear model)



Leukaemia (ICD10 C91-C95)

Table 2.76. Leukaemia, age-standardised incidence rate projections to 2020 (95% prediction intervals)

	age-standardised incidence rates per 100,0000 person-years (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	7.4	12.8
2005	7.1 (6.3, 7.9)	14.0 (12.8, 15.1)
2010	6.7 (5.7, 7.7)	14.6 (13.2, 16.0)
2015	6.3 (5.0, 7.6)	15.2 (13.4, 17.1)
2020	5.9 (4.3, 7.5)	15.9 (13.6, 18.2)
Log-linear model	*females*	*males*
1998-2002	7.4	12.8
2005	7.2 (6.4, 7.9)	14.1 (12.9, 15.2)
2010	7.0 (6.1, 8.0)	15.1 (13.5, 16.8)
2015	7.1 (5.8, 8.3)	16.6 (14.1, 19.1)
2020	7.3 (5.5, 9.1)	18.7 (14.7, 22.6)

The overall trend in incidence rate is upwards for males and the preferred model is linear. In females, the linear model projects decrease, and the log-linear model increase, in rate. There is little to distinguish between these two models and their projections overlap in all years described (Table 2.76, Figures 2.83, 2.34). The linear model, being more conservative in its projections, is preferred. By 2020, the projected number of cases in females will be 182 (±47) and in males 437 (±63), compared to an annual average of 146 cases in women and 217 in men in 1998-2002 (Table 2.77, Figures 2.85, 2.86).

Table 2.77. Leukaemia, case projections to 2020 (95% prediction intervals)

	number of cases (95% prediction interval)	
Linear model	*females*	*males*
1998-2002	146	217
2005	156 (140, 173)	262 (241, 282)
2010	165 (142, 189)	308 (278, 338)
2015	174 (141, 208)	367 (322, 411)
2020	182 (135, 229)	437 (373, 500)
Log-linear model	*females*	*males*
1998-2002	146	217
2005	158 (142, 174)	264 (242, 285)
2010	174 (150, 198)	319 (285, 353)
2015	200 (160, 240)	397 (339, 455)
2020	237 (167, 307)	505 (403, 607)

Table 2.78 shows the number of cases that would be expected if there were no change in the age-specific incidence rates between 1998-2002 and 2020 (i.e. the effects of demographic change only). For females, the projected increase is less than predicted by demography alone, while for males 64% of the increase in case numbers by 2020 will be due to demography.

Table 2.78. Increase in cancer numbers due to demographic factors only

	projected cases		*% of total increase which is due to demography*	
	females	*males*	*females*	*males*
1998-2002 average	146	217		
2005	159	241	—	53%
2010	176	273	—	25%
2015	196	312	—	64%
2020	220	358	—	64%

Figure 2.83. Projected number of cases 2005-2020: females (linear model)

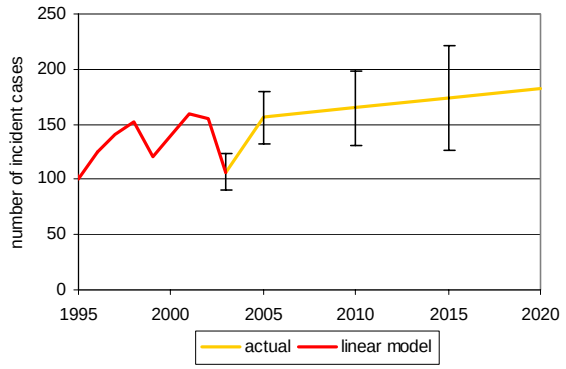


Figure 2.84. Projected number of cases 2005-2020: males (linear model)

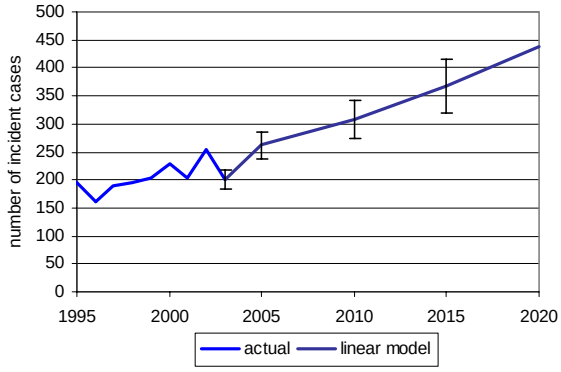


Figure 2.85. Projected age-standardised incidence rate 2005-2020: females (linear model)

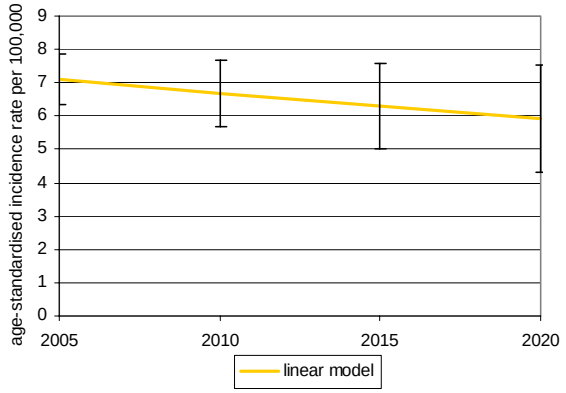
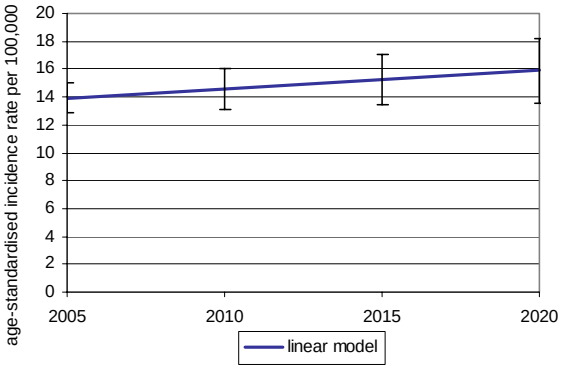


Figure 2.86. Projected age-standardised incidence rate 2005-2020: males (linear model)



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Trends in Irish cancer incidence rates 1994-2002
with predictions to 2020

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