

Cancer in Norway 2021

Cancer incidence, mortality, survival
and prevalence in Norway

Special issue:

Cancer survival in Norway 1965–2021: Extending standard
reporting to improve communication of survival statistics



Cancer in Norway 2021

Editor-in-chief:

Inger Kristin Larsen

Editorial team:

IK Larsen, B Møller, TB Johannesen, TE Røhsahm, TK Grimsrud, S Larønningen, AH Seglem, JJ Hestad, J Waaland, G Ursin

Data management and analyses:

B Aagnes, S Aaserud, S Breivik, MB Jerm, Y Nilssen

Coding staff:

TV Antonsen, I Aune, HH Brenn, RW Bråten, ØL Carlsen, C Cin, AH Dahlen, L Enerstvedt, I Forberg, SEO Frøland, ME Gismarvik, K Grape, MN Haneborg, S Hansen, I Hatle, IH Heien, G Kjølberg, KO Knudsen, T Lane, IM Larsson, TL Lindvik, W Melbye, KL Nilsen, T Nygård, S Nymoene, SS Olsen, AV Owren, J Pavlova, M Silva, T Sørstrøm, L Thyssell, A Tysvæ, K Østby

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Cancer in Norway 2021

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Foreword

In the second year of the COVID-19 pandemic, cancer diagnostic activity seems to have largely returned to a pre-pandemic level. In the first year, 2020, we observed a slight decline in cases of some cancer types, there was no such decline or deficit in 2021.

When looking at trends in cancer occurrence in Norway, we examine both long- and short-term changes, as well as changes in rates and absolute numbers.

Comparing of five-year rates over time enables us to see the larger picture in cancer rates rather than year-to-year fluctuations. Overall age-standardised rates in Norway have been rather stable over the past decade. From the last five-year period (2012–2016) to the current one (2017–2021), there was a slight decline among men, and slight increase among women. There is, however, a large variation in how rates have changed for individual cancer sites. Among the most common cancers, the rate of skin, non-melanoma has increased the most. The largest decline in rates has been for prostate cancer. While it is comforting that age-standardised rates remain stable over time, this is of course only part of the picture. The number of cancer cases has increased by 20% over the past decade. This means that 6000 more patients are diagnosed annually now compared to in 2011. Perhaps we need to focus more on this absolute number since it reflects the increased workload that our hospitals, specialists and general practitioners must deal with. While it is important to tell the public that cancer rates are stable, we need to acknowledge the increased pressure on primary and secondary health care services with the growing absolute numbers. More and more diagnostic activity and treatments are offered on an out-patient basis, reducing the need for hospital stays. The downside of this, however is that this simply moves the bottlenecks to out-patient clinics and primary care services.

The number of cases is not going to decline soon. The post-war baby-boomers (born in 1946–1964) are in the middle of "cancer age", and there are many people in this generation in Norway. Currently 24% of inhabitants in Norway are aged 60 years or older. We hope those who plan health care services read our reports.

The number of cancer survivors have increased with one third (100 000 cases) from 2011 to 2021. Behind this picture is our ability to diagnose more cancer cases precisely and at an early stage, and major advanced in targeted treatment. Almost 40 000 more patients are alive

after a prostate or breast cancer diagnosis than ten years ago, and 36 000 more are alive after a colorectal cancer, melanoma or lymphoma/hematopoietic cancer. This means that there are more people in the population at a higher risk of getting a second cancer, having experienced cancer treatment once before, possibly making a new treatment more complicated.

Modern diagnostic methods find more metastasis than we did previously. This makes it difficult to assess changes in stage-specific cancer rates over time. Cancers that were previously considered to be localised or regional, might have had small metastases that today would have been detected, leading to upstaging of the disease. This may explain why rates of cancer with distant metastasis have not declined that much even though more cancers are detected early.

It is difficult to compare cancer numbers from one year to the next, so our overall trend descriptions rely on longer timeframes, but the changes during the COVID-19 pandemic warrants some comments. From 2019 to 2020 we observed a decline in breast, cervical, uterine, ovarian and lung cancer (women). Part of this was due to the reduced number of women undergoing breast and cervical cancer screening, but part of the decline (uterine, ovarian and lung cancer) was not clearly understood. We speculated last year that some late-stage cancers simply never were detected among elderly patients dying of COVID-19. At the same time, we hoped that the decline in lung cancer also in women was the start of a real decline. Sadly, that was not the case. In the numbers for 2021, we see increases for breast, ovarian and lung cancer.

In this year's special issue, we are proud to show new ways of presenting survival statistics. We hope this will improve our understanding and be useful in communicating cancer survival to patients and clinicians. A large thanks to the special issue editorial team for their contribution. Thank you also to everyone who reports cancer cases to the Cancer Registry, and to all of those involved in coding cancer, those who help decipher cases that are difficult to code, those who handle the databases or analyses. Finally thank you to the editorial team. Hopefully this report will form the basis for many useful discussions.

Oslo, June 2022
Giske Ursin, MD, PhD
Director

Contents

1	Definitions	1
2	Summary	2
3	Data and data sources	4
3.1	The population of Norway	4
3.2	The Cancer Registry of Norway	5
3.3	Sources of information	7
3.4	Incidence and mortality data	9
3.5	Data quality	12
3.6	Completeness and timeliness	12
4	Statistical methods	16
4.1	Incidence and mortality	16
4.2	Prevalence	18
4.3	Survival	18
5	Incidence	20
5.1	New cancer cases	20
5.2	Incidence by age	22
5.3	Male to female ratios	26
5.4	Incidence trends	27
5.5	Cumulative risk	29
5.6	Incidence by county of residence	29
5.7	Incidence tables	29
6	Prevalence	80
7	Mortality	83
8	Survival	86
9	Trends in incidence, mortality and survival, Norway 1965–2021	101

List of Figures

3.1	Sources of information and the process of cancer registration at the Cancer Registry of Norway	8
4.1	Comparison of population weights	17
5.1	Percentage distribution of cancer incidence by age, 2017–2021	22
5.2	The most frequent types of cancer by age and sex, 2017–2021	24
	A All ages	24
	B 0–14 years	24
	C 15–24 years	24
	D 25–49 years	25
	E 50–69 years	25
	F 70+ years	25
5.3	Time trends in age-standardised (Norwegian standard) incidence rates for selected cancers, 1953–2021	27
5.4	Cumulative risk of developing cancer (%) by the age of 80 for selected cancers, 2017–2021	30
7.1	Age-standardised (Norwegian standard) mortality rates per 100 000 person-years for selected cancers, 2020	84
8.1	Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021	93
	A All sites (ICD-10 C00–96)	93
	B Mouth, pharynx (ICD-10 C00–14)	93
	C Oesophagus (ICD-10 C15)	93
	D Stomach (ICD-10 C16)	94
	E Colon (ICD-10 C18)	94
	F Rectum, rectosigmoid (ICD-10 C19–20)	94
	G Liver (ICD-10 C22)	95
	H Gallbladder, bile ducts (ICD-10 C23–24)	95
	I Pancreas (ICD-10 C25)	95
	J Lung, trachea (ICD-10 C33–34)	96
	K Melanoma of the skin (ICD-10 C43)	96
	L Breast (ICD-10 C50)	96
	M Cervix uteri (ICD-10 C53)	97
	N Corpus uteri (ICD-10 C54)	97
	O Ovary etc. (ICD-10 C56, C57.0–4, C48.2)	97
	P Prostate (ICD-10 C61)	98
	Q Testis (ICD-10 C62)	98
	R Kidney (excl. renal pelvis) (ICD-10 C64)	98
	S Urinary tract (ICD-10 C65–68)	99
	T Central nervous system (ICD-10 C70–72)	99
	U Thyroid gland (ICD-10 C73)	99
	V Hodgkin lymphoma (ICD-10 C81)	100
	W Non-Hodgkin lymphoma (ICD-10 C82–86, C96)	100
	X Leukaemia (ICD-10 C91–95)	100
9.1	Trends in incidence and mortality rates and 5-year relative survival proportions	104
	A All sites (ICD-10 C00–96)	104
	B Mouth, pharynx (ICD-10 C00–14)	104
	C Oesophagus (ICD-10 C15)	104
	D Stomach (ICD-10 C16)	105

E	Colon (ICD-10 C18)	105
F	Rectum, rectosigmoid (ICD-10 C19–20)	105
G	Liver (ICD-10 C22)	106
H	Gallbladder, bile ducts (ICD-10 C23–24)	106
I	Pancreas (ICD-10 C25)	106
J	Lung, trachea (ICD-10 C33–34)	107
K	Melanoma of the skin (ICD-10 C43)	107
L	Kidney (excl. renal pelvis) (ICD-10 C64)	107
M	Breast (ICD-10 C50)	108
N	Cervix uteri (ICD-10 C53)	108
O	Prostate (ICD-10 C61)	108
P	Corpus uteri (ICD-10 C54)	108
Q	Testis (ICD-10 C62)	108
R	Ovary etc. (ICD-10 C56, C57.0–4, C48.2)	108
S	Urinary tract (ICD-10 C65–68)	109
T	Central nervous system (ICD-10 C70–72)	109
U	Thyroid gland (ICD-10 C73)	109
V	Hodgkin lymphoma (ICD-10 C81)	110
W	Non-Hodgkin lymphoma (ICD-10 C82–86, C96)	110
X	Leukaemia (ICD-10 C91–95)	110

List of Tables

2.1	Summary of cancer statistics for selected cancers	3
3.1	Norwegian mid-year population 2021 by five-year age group and sex	4
3.2	Number of first generation immigrants by country per 1 January 2022	5
3.3	Status of the clinical registries, June 2022	7
3.4	Description of ICD-10 codes	10
3.5	Percentage distribution of morphologically verified (MV) and death certificate only (DCO) cases by primary site, 2017–2021	13
3.6	Completeness by primary site, 2017–2021	14
3.7	Registered cancer cases in Norway 2020, as obtained by 30 August 2021 and 1 May 2022	15
5.1	Number and age-standardised rates of new cases by primary site and sex, 2021	21
5.2	Median age at diagnosis at different time periods by primary site	23
5.3	Sex ratio (male:female) of age-adjusted rates (Norwegian standard) in 1987–1991 and 2017–2021 for selected cancers, sorted in descending order in last period	26
5.4	Cumulative risk of developing cancer (%) by age of 80 by primary site and sex, 2017–2021	31
5.5	Number of new cases by primary site and year, 2012–2021, males	32
5.6	Number of new cases by primary site and year, 2012–2021, females	33
5.7	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and year, 2012–2021, males	34
5.8	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and year, 2012–2021, females	35
5.9	Average annual number of new cases by primary site and five-year age group, 2017–2021, males	36
5.10	Average annual number of new cases by primary site and five-year age group, 2017–2021, females	38
5.11	Age-specific incidence rates per 100 000 person-years by primary site and five-year age group, 2017–2021, males	40
5.12	Age-specific incidence rates per 100 000 person-years by primary site and five-year age group, 2017–2021, females	42
5.13	Average annual number of new cases by primary site and five-year period, 1962–2021, males	44
5.14	Average annual number of new cases by primary site and five-year period, 1962–2021, females	46
5.15	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and five-year period, 1962–2021, males	48
5.16	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and five-year period, 1962–2021, females	50
5.17	Average annual number of new cases by primary site and county, 2017–2021, males	52
5.18	Average annual number of new cases by primary site and county, 2017–2021, females	54
5.19	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and county, 2017–2021, males	56
5.20	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and county, 2017–2021, females	58
5.21	Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, males	60
5.22	Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, females	64
5.23	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, males	68
5.24	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, females	72

5.25	Average annual number of new cases by primary site and origin, 2017–2021, males	76
5.26	Average annual number of new cases by primary site and origin, 2017–2021, females	77
5.27	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and origin, 2017–2021, males	78
5.28	Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and origin, 2017–2021, females	79
6.1	Prevalence of cancers 31 December 2011 and 31 December 2021, both sexes	81
6.2	Prevalence of patients diagnosed with distant metastases during lifetime, by health region, both sexes	82
7.1	Number of cancer deaths by primary site and sex, 2020	85
8.1	Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, males	88
8.2	Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, females	90
8.3	1-, 5-, 10-, and 15-year relative survival (%) with 95% confidence interval by primary site and sex. Period approach, 2017–2021	92

Chapter 1 Definitions

Incidence The number of new cases of a disease in a defined population within a specific period of time.

Incidence rate The number of new cases that arise in a population (incidence) divided by the number of people who are at risk of getting cancer in the same period. The rate is expressed per 100 000 person-years. Person-years is a metric that combines persons and time (in years) as the denominator in rates.

Crude rate Unadjusted rates, often estimated for the entire population, with no standardisation by age.

Age-specific rate A rate calculated within an age stratum, often a five-year interval.

Age-standardisation A procedure for adjusting rates, e.g. incidence rates, designed to minimize the disturbing effects of differences in age composition when comparing rates for different populations (observed by geographical residence or over different time periods). The adjusted rates are referred to as age-standardised (or age-adjusted) rates. For this report, we use a standard chosen to be the Norwegian mid-year population in 2014 (referred to in the text as Norwegian standard).

Prevalence Prevalence is the number or proportion of a population that has the disease at a given point in

time. In this report we use lifetime cancer prevalence that can be defined as the number of living individuals having ever been diagnosed with cancer.

Relative survival The observed survival after a given period of time in a patient group, divided by the expected survival of a comparable group in the general population, comparable with respect to key factors affecting survival such as age, sex and calendar year of observation. Relative survival is thus determined by the mortality experienced by the patients regardless of whether an excess mortality (or even deficiency) may be attributable or linked to the disease under investigation. A key advantage is that it does not require information about cause of death.

Conditional relative survival The probability of surviving an additional number of years given that the person has already survived a certain number of years. As time from diagnosis lengthens, this statistic becomes more informative to survivors than the conventional relative survival estimate. A five-year conditional relative survival that reaches close to 100% some number of years after diagnosis indicates that from that point, there is little or no excess mortality in the patient group.

Most definitions are based on Last & al, 2001^[1].

Chapter 2 Summary

The aim of the annual publication of Cancer in Norway (CiN) is to provide detailed cancer statistics. This publication should help health professionals, policy-makers and researchers to identify and make decisions about areas that need more attention and investigation. This publication may also be valuable for the media, educators and members of the public with an interest in cancer. Due to random variation in incidence rates from one year to another, cancer trends should be interpreted by examining the rates over the past several years. Furthermore, the numbers for 2021 might be slightly underreported due to delayed notification of cancer cases.

The report is available online at:

<https://www.kreftregisteret.no/>

Incidence data are available online at:

<https://www.kreftregisteret.no/Registrene/data-og-statistikk/statistikkbank/>

Incidence

A total of 36 998 new cancer cases were reported in 2021: 53.2% were among men and 46.8% were among women. The five most frequent types of cancer in men in 2017–2021 were prostate, lung, colon, skin (non-melanoma) and urinary tract. The five most frequent types of cancer in women in 2017–2021 were breast, lung, colon, skin (non-melanoma) and melanoma of the skin.

The incidence rate for all sites combined has decreased by 3.8% in men and increased by 2.1% in women when comparing the last five-year period (2017–2021) with the previous one (2012–2016) (Table 2.1). There has been a sharp increase in the incidence of skin cancer over the last 20 years, and rates are significantly higher in the last five-year period compared to the previous one for both genders. The incidence of thyriodea cancer also increase sharply. On the positive side, we observe a decline in the incidence rates for prostate, lung (among men only) and colorectal cancer. In addition, the worrying increase in cervical cancer, as we reported in the previous issue, has flattened out.

After the publication of CiN, we usually receive about 1–2% additional cases that should have been included

in the last year incidence numbers. For cervical cancer, this number is usually higher - about 8% - and this must be taken into account when interpreting the incidence numbers.

The immigrant population in Norway consists of persons from more than 200 countries. First-generation immigrants comprise 15% of the total population, and around 8% of all cancer cases diagnosed in 2021 occurred among immigrants.

Cancer incidence and COVID-19

In last year's report (CiN 2020) we could not see any convincing decrease in the incidence for the vast majority of cancers from 2019 to 2020, but there were some exceptions: The incidence rate of breast and cervical cancer decreased by 10% and 15%, respectively. There were also fewer uterine and ovarian cancers diagnosed in 2020, and the incidence rate of lung cancer in women decreased by 6%. In this year's report, we observe that the decline in incidence for breast, ovarian and lung cancer among women in 2020 is followed by increasing rates in 2021. Such an increase is not observed for cervical cancer. However, as described above, we assume that the numbers for cervical cancer in 2021 is incomplete and is thus difficult to interpret.

Prevalence

At the end of 2021 a total of 316 145 persons were alive after having had at least one cancer diagnosis at some point in time.

Mortality

There were 10 981 deaths due to cancer in 2020¹. Cancer of the lung accounts for 20% of the cancer mortality, followed by cancer in the colon (11%), prostate (9%), pancreas (7%) and female breast (5%). Together these cancer sites account for 51% of the cancer mortality.

Survival

There has been a slight increase in the five-year relative survival for most cancers when comparing the five-

¹We have not received complete data for 2021

year period (2017–2021) with the previous one. For the most common cancers, the largest increase in survival is observed for lung cancer.

Prostate cancer: Increased from 95.1% to 95.5%.

Breast cancer: Increased from 91.4% to 92.3%.

Lung cancer (M): Increased from 19.3% to 25.7%.

Lung cancer (F): Increased from 26.2% to 32.8%.

Colon cancer (M): Increased from 65.5% to 69.7%.

Colon cancer (F): Increased from 69.8% to 71.0%.

Rectum cancer (M): Increased from 71.1% to 71.9%.

Rectum cancer (F): Increased from 71.3% to 73.5%.

Table 2.1: Summary of cancer statistics for selected cancers

ICD-10	Site	Sex	Incidence cases, 2021 ¹	Incidence rate, 2017–21 ²	Change in rate (%) ³	Mortality rate, 2020 ⁴	Five-year relative survival (%)	
							2012–16	2017–21
C00–96	All sites	M	19 684	712.6	-3.8	230.4	74.4	77.1
		F	17 314	560.0	2.1	160.6	73.6	76.3
C18	Colon	M	1 517	56.6	-4.9	21.2	65.5	69.7
		F	1 687	52.5	-2.5	19.4	69.8	71.0
C19–20	Rectum, rectosigmoid	M	808	30.1	-10.6	9.0	71.1	71.9
		F	538	18.3	-9.6	4.2	71.3	73.5
C33–34	Lung, trachea	M	1 786	63.7	-8.5	42.5	19.3	25.7
		F	1 713	54.5	3.4	31.9	26.2	32.8
C43	Melanoma of the skin	M	1 279	44.9	10.3	6.8	86.9	90.3
		F	1 164	39.7	8.5	3.8	93.5	95.2
C44	Skin, non-melanoma	M	1 669	59.7	28.4	...	...	...
		F	1 428	39.1	31.6	...	...	...
C50	Breast	F	3 991	130.1	5.2	19.4	91.4	92.3
C53	Cervix uteri	F	345	13.5	0.3	3.6	80.2	82.6
C54	Corpus uteri	F	774	26.5	-4.7	2.8	85.1	85.4
C56, C57.0–4, C48.2	Ovary etc.	F	531	17.7	-9.0	9.0	48.6	51.1
C61	Prostate	M	5 188	184.3	-12.3	41.7	95.1	95.5
C62	Testis	M	295	11.0	-7.4	0.2	99.0	98.8
C65–68	Urinary tract	M	1 376	50.2	-2.0	9.9	78.6	80.3
		F	495	15.0	-6.0	3.3	72.8	75.8
C70–72	Central nervous system	M	444	16.9	-16.9	8.2	61.3	57.0
		F	544	19.3	-11.2	5.1	77.5	74.5
C73	Thyroid gland	M	163	5.1	14.0	0.6	90.0	90.0
		F	364	12.3	19.2	0.6	93.3	95.1
C82–86, C96	Non-Hodgkin lymphoma	M	604	21.7	-4.2	7.1	73.4	77.9
		F	486	15.5	-4.3	3.4	77.5	80.0
C91–95	Leukaemia	M	731	29.0	1.8	9.8	65.7	71.0
		F	600	20.3	3.2	5.6	73.9	75.7

¹ Number of new cases.

² Age-standardised (Norwegian std.) incidence rates per 100 000 person-years.

³ Percent change in age-standardised incidence rate from 2012–16 to 2017–21.

⁴ Age-standardised (Norwegian std.) mortality rates per 100 000 person-years. The mortality data is obtained from the Cause of Death Registry.

... Not estimated in this report.

Changes from the previous version

- **Staging of prostate cancer:** The proportion of patients with prostate cancer with an unknown stage is lower than that reported in CiN 2020. This is due to a change in the assessment of stage determination where cases were previously registered as an unknown stage, but which have cT = 0–2 and cN = 0 or X and cM = 0 or X is now classified as localised stage.
- **Staging of ovarian cancer:** In CiN 2020 the proportion of patients with ovarian cancer with dis-

tant stage was unusual low. This was related to a change in our code and mapping practices. The routines have now been reviewed, which have led to a higher proportion of patients with distant metastasis.

- **Adult granulosa cell tumour of ovary:** This tumour has in this edition been considered malignant and for the period 1993–2021 we have re-coded approximately 200 cases from benign to cancer hence increasing incidence compared to CiN 2020.

Chapter 3 Data and data sources

3.1 The population of Norway

By 1 January 2022 the total number of inhabitants in Norway was 5 425 270^[2]. Table 3.1 shows the age structure by sex for the Norwegian mid-year population in 2021. Back in 1953, when the cancer registration started in Norway, the number of inhabitants was 3 344 010. The population has increased by 62% from 1953 to 2022,

largely because of rising life expectancy and, more recently, due to increase in net immigration. The size of the population is expected to reach 6 million in 2050¹, and the elderly will represent an increasing proportion of the population of Norway over the next decades^[3]. Recent updates from Statistics Norway estimate that the proportion of persons 70 years or older will increase from 13%, in 2020, to 21% in 2050^[3].

Table 3.1: Norwegian mid-year population 2021 by five-year age group and sex

Age group	Males	Females	Total
0–4	144 694	136 806	281 500
5–9	158 606	150 518	309 124
10–14	168 500	159 666	328 166
15–19	162 636	154 837	317 473
20–24	174 193	162 473	336 666
25–29	188 405	178 375	366 780
30–34	195 530	187 980	383 510
35–39	185 504	175 110	360 614
40–44	179 139	169 409	348 548
45–49	188 727	179 638	368 365
50–54	192 453	183 833	376 286
55–59	175 578	167 648	343 226
60–64	156 943	153 516	310 459
65–69	140 072	141 789	281 861
70–74	127 456	131 092	258 548
75–79	94 619	104 232	198 851
80–84	53 204	67 257	120 461
85+	42 040	75 850	117 890

The immigrant population

The immigrant population is heterogeneous with respect to length of stay, country of birth and reason for immigration. The first-generation immigrants consist of persons from more than 200 countries, and by 1 January 2022 they comprise 15.1% of the total population (819 356 persons). An additional 3.8% of the Norwegian population are second-generation immigrants (born in Norway with two foreign born parents). When classifying immigrants by country of birth, immigrants from Poland are the largest group with more than 100 000 per-

sons, followed by immigrants from Lithuania, Sweden and Syria^[4].

In 2018, the Regulations (*Kreftregisterforskriften*) were revised, and the Cancer Registry of Norway (CRN) was allowed to collect and process data on country of birth. Data on cancer incidence among immigrants is now included in Cancer in Norway (CiN). As mentioned above, Norway has immigrants from more than 200 countries. The number of immigrants from most of these countries are small, and it is thus not possible to provide cancer statistics by country of birth. In this report, immigrants are therefore categorised in six groups, of which cancer

¹ Considered the scenario of medium national growth

statistics are presented for five. We do not present data for immigrants from Latin America and the Caribbean due to too few cases. Many immigrants in Norway are born in European countries, and Europe was divided in three categories: Nordic countries, Western Europe (including North America and Oceania as these coun-

tries have similar cancer patterns) and other European countries. Table 3.2 shows the countries included in each group. The countries are listed according to the number of immigrants and restricted to countries with more than 1000 immigrants.

Table 3.2: Number of first generation immigrants by country per 1 January 2022

Number of first generation immigrants	Nordic countries	Western Europe, North America and Oceania	Other European Countries	Middle East and Africa	Asia	Latin America and the Caribbean*
≥ 100 000			Poland			
50 000–99 999						
40 000–49 999			Lithuania			
30 000–39 999	Sweden			Syria		
20 000–29 999		Germany		Somalia	Philippines	
				Eritrea	Pakistan	
				Iraq	Thailand	
10 000–19 999	Denmark	United Kingdom	Russia	Iran	Afghanistan	
			Romania		India	
			Bosnia and Herzegovina		Vietnam	
			Turkey			
			Latvia			
			Kosovo			
1 000–9 999	Iceland	United States	Serbia	Ethiopia	China	Chile
	Finland	Netherlands	Bulgaria	Morocco	Sri Lanka	Brazil
		Spain	Ukraine	Sudan	Myanmar	Colombia
		France	Croatia	DR Congo	Nepal	Mexico
		Italy	Estonia	Palestine	Indonesia	Peru
		Portugal	Hungary	Lebanon	Bangladesh	Venezuela
		Canada	Slovakia	Uganda	South Korea	Argentina
		Australia	Greece	Ghana	Japan	Cuba
		Switzerland	North Macedonia	Nigeria	Kazakhstan	
		Austria	Albania	Kenya		
		Belgium	Czech Republic	Egypt		
		Ireland	Moldova	South Africa		
			Belarus	Algeria		
				The Gambia		
				Tunisia		
				Burundi		
				Saudi Arabia		

* Not shown as a separate group in table 5.25, 5.26, 5.27 and 5.28 due to few cancer cases.

3.2 The Cancer Registry of Norway

The CRN has, since the implementation of a directive from the Ministry of Health and Social Affairs in January 1952, systematically collected notifications on cancer occurrence for the Norwegian population. The registration is considered to be close to complete from 1953. The completeness for the registration period 2017–2021 is estim-

ated to be 98.6% (Table 3.6), and this is at the same level as reported for the early 2000s^[5]. The Regulations for the collection and processing of data in the CRN came into force in 2002. It is mandatory to report all malignant neoplasms and precancerous disorders and benign tumours of the central nervous system and meninges to the CRN.

Main objectives

The main objectives of the CRN can be summarized as the following:

- Collect data on cancer occurrence and describe the distribution of cancer and changes over time.
- Provide a basis for research on the aetiology, diagnostic procedures, natural course of the disease, and effects of treatment in order to determine appropriate preventive measures and to improve the quality of medical care.
- Provide advice and information to public authorities and the public about preventive measures.
- Perform epidemiological research of high international standard.

The incidence registry

The incidence registry contains basic data items collected from clinicians and pathologists, as well as data from the Norwegian Patient Registry (NPR) and the Cause of Death Registry. As of 1 May 2022, the incidence registry contained information registered since 1953 on 2 164 172 cancer cases (including premalignant, and benign conditions of the central nervous system). Of these cases, 1 299 774 (60%) are included in CiN. The main reasons for excluding cases registered in the incidence registry from the official cancer statistics are:

- Premalignant cases: 656 374 (30.3%)
- Basal cell carcinomas: 167 648 (7.7%)
- Multiple primary neoplasms, according to IARC rules: 29 538 (1.4%)
- Other reasons: 10 838 (0.5%)

”Other reasons” include, in descending order, cases registered as malignant, but not regarded as cancers (some borderline tumors of the ovary and Pagets disease of the breast), cases diagnosed before 1953 and after 2021, cases registered to persons with unknown address or unknown vital status, and cases in persons who emigrated before the date of diagnosis.

Each cancer case is based on an average of five notifications, ranging from two notifications as the lowest average number for C26 to eight as the highest for C40–41 and C81. This includes clinical notifications, pathology reports and death certificates. Death certificates are only registered if no information already exists in the incidence registry about the given case (DCN). If registering all death certificates – both those notifying the CRN of a new case and those supporting an already registered case – the average number of notifications to each case would be higher.

In addition to notifications, the CRN also receives information records from the NPR, radiation therapy machines and hospital administered cancer medications. On average, there is a solid base of notifications and information records behind each registered cancer case. The incidence registry is updated continuously with information on both new cases and cases diagnosed previous years.

The clinical registries

Clinical registries, i.e. comprehensive registration schemes dedicated to specific cancers, are established to provide detailed information about diagnostic procedures, pathology-examinations, treatment and follow-up. The aims are to provide data for monitoring patient outcome and survival, and to be an empirical basis for scientific studies concerning prognostic factors and treatment outcomes, as well as for evaluation of the quality of cancer care. Each clinical registry has an advisory board consisting of multi-disciplinary experts from clinical and research milieus in Norway. These experts advise on the contents and activities of each clinical registry and its strategic direction. Registries are integrated in the CRN coding, quality assurance and registration activities. Table 3.3 shows the status of the clinical registries as of June 2022. Recent reports (in Norwegian) from these registries are found here:

<https://www.kreftregisteret.no/Generelt/Rapporter/Arssrapport-fra-kvalitetsregistrene/>

Table 3.3: Status of the clinical registries, June 2022

Clinical registry for	Clinical reference/ project group	Established with extended data*	Clinical parameters for electronic report specified	Electronic report form in use	National status
Colorectal cancer	Yes	Yes	Yes	Yes	2009
Prostate cancer	Yes	Yes	Yes	Yes	2009
Breast cancer	Yes	Yes	Yes	Yes	2013
Childhood cancer	Yes	Yes	Yes	Yes	2013
Gynecological cancer**	Yes	Yes	Yes	Yes	2013
Lung cancer	Yes	Yes	Yes	Yes	2013
Lymphomas and lymphoid leukaemias	Yes	Yes	Yes	Yes	2013
Melanoma of the skin	Yes	Yes	Yes	Yes	2013
Oesophagus and stomach cancer	Yes	Yes	Yes	Yes	***
Sarcoma	Yes	Yes	Yes	Yes	***
Central nervous system	Yes	No	No	No	****
Urinary tract	Yes	No	Yes	No	***
Pancreatic cancer	Yes	Yes	Yes	Yes	****

* Either by having a separate clinical report form and/or by having a database with extended information beyond the incidence registry.

** Established for ovarian and cervical cancer, and will be extended to include all gynecological cancer.

*** Funding and status as national clinical registry has been applied for.

**** Applied for status as national clinical registry. The CRN has received funding from the Norwegian Cancer Society for establishment and operation for three years.

3.3 Sources of information

The sources of information and the notification process are illustrated in Figure 3.1. Information from clinical notifications, pathology reports and death certificates are the main sources that enables the CRN to code and store data on cancer patients in Norway. Information from the NPR is an important additional source for identifying cancer cases. The information is identified and linked by the personal identification number system that was established in Norway in 1964.

Information from pathology departments, hospitals and specialists

The CRN Regulations, as issued by the Ministry of Health and Social Affairs, require all health institutions in Norway involved in cancer diagnostics, treatment and follow-up to report to the CRN. Reporting should be done as soon as possible after end of diagnostics or treatment. The clinical registries use specific forms with extended information relevant for each cancer site. In addition, there are two generic forms for reporting solid or non-solid tumours not yet included in a clinical registry. These forms provide information on primary site, stage of disease, the basis for the diagnosis and primary treatment given to the patient. Clinical notifications are sent using the CRN electronic reporting service (KREMT) at the Norwegian Health Network. More information about KREMT can be found at:

<https://www.kreftregisteret.no/Registrene/Innrapportering/KREMT---Kreftregisterets-elektroniske-meldetjeneste/>

Pathology reports from hospitals and independent laboratories provide histological, cytological or autopsy information. About 80% of the pathology reports are sent electronically to the CRN. The aim is to further reduce the amount of paper copies over the next couple of years by having even more pathology departments report electronically.

Dispatching of reminders to clinicians

It is mandatory to report clinical information on all new cases of cancer, except those diagnosed at autopsy. Thus, at least one clinical notification should be registered for each cancer case. In those cases where the clinical notification is missing, a reminder is sent via the KREMT-portal to the hospital/ward/physician responsible for the treatment.

Information from national registries

The Norwegian Population Registry

The CRN receives monthly updates on patients' vital status from the Norwegian Population Registry. These data are used to estimate incidence rates and long-term survival patterns and trends.

The Norwegian Patient Registry

Since 2002, the CRN has received data from the Patient Administrative Data System used in all Norwegian hospitals. Information was first sent directly from the hospitals, and from 2010 it has been provided by the NPR. The data contain information regarding patients who have been treated for premalignant and malignant conditions, and reminders are sent to clinicians for all cancer cases not previously registered in the CRN. The NPR is a key source in finding information on unreported cases (Figure 3.1).

Cause of Death Registry

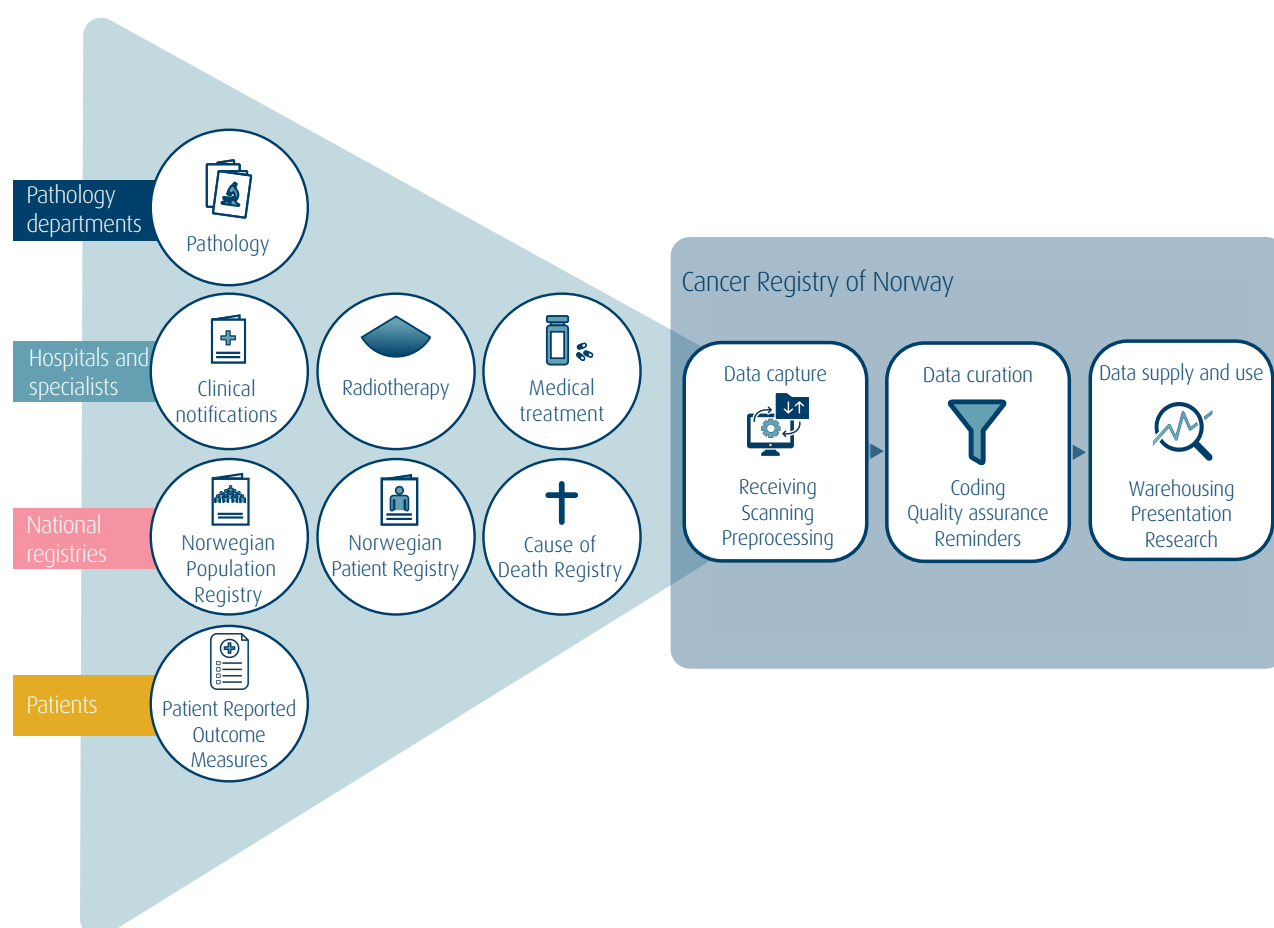
The Cause of Death Registry, run by the Norwegian Institute of Public Health, send death certificates and information on cause of death throughout the year. The automated procedure that matches registered cancer cases to death certificates is important for maintaining quality control, facilitating a high level of completeness and ensuring validity of the CRN data items. Death certificates also represent a complementary source of information on new cancer cases which are not previously reported, or where the diagnosis differs. Cancer cases first identi-

fied from death certificates are traced back to the health institution responsible for the treatment of the patient to verify the diagnosis and, if possible, get clinical information about the case. A recent study validating the cancer information on death certificates showed that 90% of the cancers mentioned on death certificates were already registered in the CRN. Of the remaining notifications, 40% were not regarded as a new case^[6].

Patient Reported Outcome Measures

Most cancer patients have received some form of treatment (surgery, radiotherapy, chemotherapy) or symptom directed palliative therapy. Extensive cancer treatments sometime cause harmful complications and late side effects, which may also affect the quality of life. To gain better knowledge in this field, the CRN now invites patients with prostate cancer, breast cancer, colorectal cancer, and melanoma of the skin to research projects and/or population surveys. Additional cancers will be included in the next few years. The results from these Patient Reported Outcome Measures (PROMs) will provide valuable information that can be used to improve current health care and optimise future treatment strategies for cancer patients.

Figure 3.1: Sources of information and the process of cancer registration at the Cancer Registry of Norway



3.4 Incidence and mortality data

The incidence data presented in the first part of this report are based on an extraction from the incidence registry on 1 May 2022. The tables and figures in general represent either the latest year of complete incidence (2021) or the latest five-year period (2017–2021). Population data, stratified by year, sex and age, are provided by Statistics Norway.

Registered codes from ICD-7, ICD-O-2 and ICD-O-3 are converted to ICD-10 using a combination of topography and morphology. According to the ICD-10 classification this means that, for example, a neuroendocrine tumour is included in the cancer site from which it originated. It is important to be aware of this, for in-

stance when interpreting the cancer statistics. It will, for instance, influence survival of C25 pancreas. The main cancer types are tabulated according to their ICD-10 categories.

Table 3.4 gives a detailed description of specific morphologies that are included or excluded in all cancer statistics presented in the present report. The “All sites” figure comprises all malignant neoplasms (ICD-10 C00–96) and the D-diagnoses listed in Table 3.4. Corresponding mortality data coded in ICD-10 were obtained from the Cause of Death Registry and are presented in the same ICD-10 categories as for the rest of this report. Of notice is that in the subsequent tables and figures the D-codes are not shown in labels due to lack of space.

Table 3.4: Description of ICD-10 codes

ICD-10	Site	Comments
C00–96	All sites	Includes the following D-diagnoses: D32–33, D35.2–4, D42–43, D44.3–5 and D45–47. Excludes all basal cell carcinomas of all topographies. Registered codes from ICD-7, ICD-O-2 and ICD-O-3 are converted to ICD-10 using a combination of topography and morphology. This means that, for example, a neuroendocrine tumor is included in the cancer site from which it originated
C00	Lip	Includes the following ICD-10 codes: C00.0–2, C00.6, C00.8 (only included if Lip NOS), C00.9
C02–06	Oral cavity	Includes the following ICD-10 codes: C00.3–5, C00.8 (if the tumor is in mucosa of upper or lower lip), C02.0–4, C02.8–9, C03.0–9, C04.0–9, C05.0, C05.8, C05.9, C06.0–9
C07–08	Salivary glands	Includes the following ICD-10 codes: C07.9, C08.0–9
C09–10, C01, C14	Oropharynx	Includes the following ICD-10 codes: C01.9, C05.1–2, C09.0–9, C10.0–9, C14.0–8
C11	Nasopharynx	Includes the following ICD-10 codes: C11.0–9
C12–13	Hypopharynx	Includes the following ICD-10 codes: C12.9, C13.0–9
C38	Heart, mediastinum and pleura	Excludes mesotheliomas (which are included in C45)
C48–49	Soft tissues etc.	Includes retroperitoneum and peritoneum (C48). In women, cases in peritoneum (C48.2) are excluded, as these are included in ovary etc. (C56, C57.0–4, C48.2)
C50	Breast	Excludes Pagets disease
C56, C57.0–4, C48.2	Ovary etc.	Excludes borderline tumours. Includes the following sites: Neoplasms in peritoneum (C48.2, epithelial tumours), fallopian tube (C57.0), broad ligament (C57.1), round ligament (C57.2), parametrium (C57.3), uterine adnexa, unspecified (C57.4), and epithelial tumors supposed to originate from tube, ovary or peritoneum. It also includes adult granulosa cell tumour
C64	Kidney (excl. renal pelvis)	Excludes non-invasive tumours
C65	Renal pelvis	Includes non-invasive papillary tumours, dysplasia and carcinoma in situ
C66	Ureter	Includes non-invasive papillary tumours, dysplasia and carcinoma in situ
C67	Bladder	Includes non-invasive papillary tumours, dysplasia and carcinoma in situ
C68	Other and unspecified urinary organs	Includes non-invasive papillary tumours, dysplasia and carcinoma in situ
C70	Meninges	Includes benign tumours (D32–33, D42–43)
C71	Brain	Includes benign tumours (D32–33, D42–43)
C72	Spinal cord, cranial nerves and other parts of central nervous system	Includes benign tumours (D32–33, D42–43)
C75	Other endocrine glands and related structures	Includes benign tumours (D35.2–4, D44.3–5)
C90	Multiple myeloma	Includes plasmacytomas (C90.2–3)
C92	Myeloid leukaemia	Includes myelodysplastic syndrome (D46)
C95	Leukaemia of unspecified cell type	Includes polycythaemia vera (D45) and other unspecified tumours in lymphatic or hematopoietic tissue (D47)

Multiple primary neoplasms

Multiple primaries occur where two or more primary cancers develop within the same organ (or a pair of organs), as opposed to a recurrence or progression of an existing cancer. They may occur at the same time (synchronous), or in sequences (metachronous).

We use the recommendations for counting multiple primary neoplasms as outlined by the IARC/WHO/ENCR/IACR Working group in 2004. These are available at:

http://www.iacr.com.fr/images/doc/MPrules_july2004.pdf

The guidelines state that when counting cases, only one tumour is recognized as arising in an organ or a pair of organs or tissue. Furthermore, the IARC recommendations has a list of 17 groups of malignant neoplasms considered to be histologically 'different' for the purpose of defining multiple tumours (as described in Table 25, page 26, World health Organization International Classification of Diseases for Oncology, third edition, first revision, 2013^[7]).

Thus, in this report only the first invasive tumour of a defined histological type is counted within one two-digit topography code (ICD-O-3) (for example breast C50). A new cancer of the same histological group in the same organ at a later point in time will not be counted. If there are different histological diagnoses, for example an adenocarcinoma and a sarcoma in the same organ, these will be counted as two cancer cases. Some organs are considered as only one organ in this respect (for example trachea C33 and lung C34). Multifocal tumours are counted only once. This is also the case for the systemic cancers like lymphomas, leukaemias and kaposi's sarcomas (defined as histological groups 8–15 in the IARC recommendations).

For metachronous cases within the same histological group, i.e. cancer cases considered to be histologically similar, the case with the first date of diagnosis is reported. For synchronous cases the case with the most severe metastasis status is reported. If the metastasis status is equal, the case with the numerically highest morphology code (ICD-O-3) is reported. Finally, if metastasis status, and morphology code is equal we report the first registered case.

In previous publications of CiN we have reported a slightly higher number of cases than if the IARC recommendations had been followed strictly because we considered non-specific groups as separate morphology groups. In this report, we have adjusted this to better comply to the IARC recommendations:

We now exclude cases with unspecific histological groups (5 and 17) if the person also is registered with another case within the same organ or pair of organs or tissue that has a specific histology (1–4, 6–7 and 16). Histology group 5 is preferred over 17 if a person only has several tumours with unspecified histology in the same organ. Among cases with tumours of haematopoietic and lymphoid tissues, we exclude cases with an unspecified histology (14) if the person also has a case with specified histology (8–13). These rules are followed regardless of time of diagnosis.

Extent of disease

In the present report we have classified stage as follows:

Localised stage: All cases where the tumour is confined to the primary organ.

Regional stage: All cases where the tumour has invaded neighbouring tissue outside of the primary organ or metastasised to regional lymph nodes.

Distant stage: All cases where the tumour has metastasised to other organs or distant lymph nodes.

Unknown: All cases where the primary origin of the tumour is not known and cases with insufficient information to set stage.

For some cases, the CRN only receive histological reports and no clinical notifications. A large proportion of these cases lack verified information on metastases at the time of diagnosis.

The following rules are used to set a specific stage for these patients: If a patient has major surgery and there is no clinical or pathological information that indicates metastasis, the patient is considered to have localised disease. If only a cytology or biopsy exist for the case, and there is no information about extent of disease, the patient is registered with an unknown stage. A detailed description of the assessment of stage is available at:

<https://metadata.kreftregisteret.no/variables/detail/733>

3.5 Data quality

A comprehensive assessment of the data quality in the CRN was conducted in 2007^[5]. Larsen & al. reported that the coding and classification systems in general followed international standards. Estimated overall completeness was 98.8% for the registration period 2001–2005, a lower completeness was observed for haematological malignancies and cancers of the central nervous system.

Practical aspects and techniques for addressing the data quality at a cancer registry, including the documentation of comparability, validity and timeliness were reviewed in 2009^[8]. Methods for the evaluation of registry completeness were also assessed the same year^[9].

Two indicators of accuracy are shown in Table 3.5, namely the percentage of cases morphologically verified (MV%), and the percentage of death certificate only registrations (DCO%).

3.6 Completeness and timeliness

Table 3.6 presents completeness estimates for the period 2017–2021. For all cancers combined, the new estimates are nearly the same as those reported for the early 2000s. We still see that some few cancers have completeness estimates below 95% (e.g. cancer of the liver, central nervous system, pancreas and leukaemia).

Table 3.7 shows the number of cancer cases diagnosed in 2020 as extracted on 30 August 2021 (for CiN 2020), and on 1 May 2022.

The number of cancer cases diagnosed in 2020 reported and appearing in this issue (CiN 2021) are 345 (1.0%) more than reported in the previous report (CiN 2020). Of note is the high percentage difference for cervical cancer (8.2%). This is probably due to unreceived biopsy reports confirming all the malignant cases, especially for those diagnosed in the latest months of 2020.

This report is published before we have received the complete numbers of deaths from the Cause of Death Registry. However, since we receive death certificates throughout the whole year, we expect that we are close to complete for death certificates for 2021.

Table 3.5: Percentage distribution of morphologically verified (MV) and death certificate only (DCO) cases by primary site, 2017–2021

ICD-10	Site	Cases	MV (%)	DCO (%)
C00–96	All sites	177 773	93.0	1.4
C00–14	Mouth, pharynx	3 399	98.8	0.4
C00	Lip	490	100.0	0.0
C02–06	Oral cavity	1 114	98.7	0.3
C07–08	Salivary glands	335	97.9	1.5
C09–10, C01, C14	Oropharynx	1 227	98.5	0.5
C11	Nasopharynx	87	98.9	0.0
C12–13	Hypopharynx	146	98.6	0.0
C15–26	Digestive organs	35 817	89.3	1.9
C15	Oesophagus	1 671	95.2	1.2
C16	Stomach	2 216	94.3	1.4
C17	Small intestine	1 130	95.1	1.2
C18	Colon	15 523	94.4	1.4
C19–20	Rectum, rectosigmoid	6 791	97.4	0.4
C21	Anus	514	93.0	0.0
C22	Liver	1 829	61.6	4.8
C23–24	Gallbladder, bile ducts	846	70.8	5.6
C25	Pancreas	4 661	68.7	3.0
C26	Other digestive organs	636	84.9	11.5
C30–34, C38	Respiratory organs	17 736	86.3	2.4
C30–31	Nose, sinuses	221	98.6	0.5
C32	Larynx, epiglottis	550	97.1	0.4
C33–34	Lung, trachea	16 883	85.9	2.3
C38	Heart, mediastinum and pleura	82	59.8	23.2
C40–41	Bone	279	97.5	0.7
C43	Melanoma of the skin	11 722	99.8	0.1
C44	Skin, non-melanoma	13 543	99.8	0.0
C45	Mesothelioma	411	92.9	1.0
C47	Autonomic nervous system	48	100.0	0.0
C48–49	Soft tissues	588	96.1	1.4
C50	Breast	18 438	99.4	0.4
C51–58	Female genital organs	8 955	97.1	1.2
C51–52, C57.7–9	Other female genital	617	95.3	2.6
C53	Cervix uteri	1 806	99.3	0.4
C54	Corpus uteri	3 892	98.9	0.4
C55	Uterus, other	43	60.5	20.9
C56, C57.0–4, C48.2	Ovary etc.	2 588	94.0	2.1
C58	Placenta	9	66.7	0.0
C60–63	Male genital organs	27 115	95.1	0.8
C61	Prostate	25 289	94.8	0.8
C62	Testis	1 494	99.6	0.0
C60, C63	Other male genital	332	98.8	0.9
C64–68	Urinary organs	13 485	96.1	1.0
C64	Kidney (excl. renal pelvis)	4 550	92.4	1.8
C65–68	Urinary tract	8 935	98.0	0.5
C69	Eye	417	58.0	0.5
C70–72	Central nervous system	4 999	72.9	2.5
C73	Thyroid gland	2 359	99.4	0.3
C37, C74–75	Other endocrine glands	897	64.3	1.2
C39, C76, C80	Other or unspecified	1 694	51.8	34.1
C81–96	Lymphoid/haematopoietic tissue	15 871	93.1	1.0
C81	Hodgkin lymphoma	728	100.0	0.0
C82–86, C96	Non-Hodgkin lymphoma	5 236	99.0	0.3
C88	Immunoproliferative disease	456	97.4	0.9
C90	Multiple myeloma	2 600	93.2	0.9
C91–95	Leukaemia	6 851	87.5	1.8

Table 3.6: Completeness by primary site, 2017–2021

ICD-10	Site	Completeness (%)
C00–96	All sites	98.6
C00–14	Mouth, pharynx	99.7
C00	Lip	99.7
C02–06	Oral cavity	99.8
C07–08	Salivary glands	-
C09–10, C01, C14	Oropharynx	99.7
C11	Nasopharynx	99.0
C12–13	Hypopharynx	99.5
C15–26	Digestive organs	98.8
C15	Oesophagus	99.7
C16	Stomach	99.0
C17	Small intestine	98.2
C18	Colon	99.8
C19–20	Rectum, rectosigmoid	99.9
C21	Anus	99.4
C22	Liver	81.8
C23–24	Gallbladder, bile ducts	90.4
C25	Pancreas	90.7
C26	Other digestive organs	91.2
C30–34, C38	Respiratory organs	98.9
C30–31	Nose, sinuses	99.6
C32	Larynx, epiglottis	99.8
C33–34	Lung, trachea	99.0
C38	Heart, mediastinum and pleura	92.1
C40–41	Bone	99.9
C43	Melanoma of the skin	100.0
C44	Skin, non-melanoma	99.8
C45	Mesothelioma	98.6
C47	Autonomic nervous system	-
C48–49	Soft tissues	99.6
C50	Breast	100.0
C51–58	Female genital organs	99.8
C51–52, C57.7–9	Other female genital	99.9
C53	Cervix uteri	100.0
C54	Corpus uteri	99.9
C55	Uterus, other	91.8
C56, C57.0–4, C48.2	Ovary etc.	99.7
C58	Placenta	96.4
C60–63	Male genital organs	99.6
C61	Prostate	99.7
C62	Testis	99.7
C60, C63	Other male genital	99.6
C64–68	Urinary organs	98.7
C64	Kidney (excl. renal pelvis)	96.7
C65–68	Urinary tract	99.6
C69	Eye	89.7
C70–72	Central nervous system	85.2
C73	Thyroid gland	99.5
C37, C74–75	Other endocrine glands	66.4
C39, C76, C80	Other or unspecified	68.4
C81–96	Lymphoid/haematopoietic tissue	97.2
C81	Hodgkin lymphoma	100.0
C82–86, C96	Non-Hodgkin lymphoma	99.8
C88	Immunoproliferative disease	99.6
C90	Multiple myeloma	94.9
C91–95	Leukaemia	93.9

- Not estimable (see CiN Technical Supplement^[10]).

Table 3.7: Registered cancer cases in Norway 2020, as obtained by 30 August 2021 and 1 May 2022

ICD-10	Site	Cases diagnosed 2020 as of			
		30.8.2021	1.5.2022	Difference	%
C00-96	All sites	35 515	35 860	345	1.0
C00-14	Mouth, pharynx	686	692	6	0.9
C00	Lip	100	101	1	1.0
C02-06	Oral cavity	222	224	2	0.9
C07-08	Salivary glands	60	62	2	3.3
C09-10, C01, C14	Oropharynx	249	251	2	0.8
C11	Nasopharynx	14	14	0	0.0
C12-13	Hypopharynx	41	40	-1	-2.4
C15-26	Digestive organs	7 291	7 391	100	1.4
C15	Oesophagus	388	392	4	1.0
C16	Stomach	462	470	8	1.7
C17	Small intestine	249	254	5	2.0
C18	Colon	3 121	3 137	16	0.5
C19-20	Rectum, rectosigmoid	1 373	1 394	21	1.5
C21	Anus	106	106	0	0.0
C22	Liver	377	397	20	5.3
C23-24	Gallbladder, bile ducts	179	180	1	0.6
C25	Pancreas	929	957	28	3.0
C26	Other digestive organs	107	104	-3	-2.8
C30-34, C38	Respiratory organs	3 494	3 522	28	0.8
C30-31	Nose, sinuses	49	48	-1	-2.0
C32	Larynx, epiglottis	100	101	1	1.0
C33-34	Lung, trachea	3 331	3 358	27	0.8
C38	Heart, mediastinum and pleura	14	15	1	7.1
C40-41	Bone	46	47	1	2.2
C43	Melanoma of the skin	2 338	2 348	10	0.4
C44	Skin, non-melanoma	2 901	2 907	6	0.2
C45	Mesothelioma	71	72	1	1.4
C47	Autonomic nervous system	8	8	0	0.0
C48-49	Soft tissues	122	118	-4	-3.3
C50	Breast	3 455	3 461	6	0.2
C51-58	Female genital organs	1 700	1 735	35	2.1
C51-52, C57.7-9	Other female genital	114	120	6	5.3
C53	Cervix uteri	328	355	27	8.2
C54	Corpus uteri	764	770	6	0.8
C55	Uterus, other	6	6	0	0.0
C56, C57.0-4, C48.2	Ovary etc.	487	482	-5	-1.0
C58	Placenta	1	2	1	100.0
C60-63	Male genital organs	5 370	5 413	43	0.8
C61	Prostate	5 030	5 072	42	0.8
C62	Testis	285	285	0	0.0
C60, C63	Other male genital	55	56	1	1.8
C64-68	Urinary organs	2 746	2 746	0	0.0
C64	Kidney (excl. renal pelvis)	894	899	5	0.6
C65-68	Urinary tract	1 852	1 847	-5	-0.3
C69	Eye	78	78	0	0.0
C70-72	Central nervous system	957	982	25	2.6
C73	Thyroid gland	488	516	28	5.7
C37, C74-75	Other endocrine glands	161	175	14	8.7
C39, C76, C80	Other or unspecified	390	383	-7	-1.8
C81-96	Lymphoid/haematopoietic tissue	3 213	3 266	53	1.6
C81	Hodgkin lymphoma	147	148	1	0.7
C82-86, C96	Non-Hodgkin lymphoma	1 062	1 058	-4	-0.4
C88	Immunoproliferative disease	94	101	7	7.4
C90	Multiple myeloma	556	562	6	1.1
C91-95	Leukaemia	1 354	1 397	43	3.2

Chapter 4 Statistical methods

In this report, we use four measures to describe the burden and risk of cancer: *incidence*, *mortality*, *prevalence* and *survival*.

4.1 Incidence and mortality

Incidence and mortality refer to the number of new cases and deaths, respectively. Both measures can be expressed as the absolute number, or as the rate, taking into account the size of the population at risk. Rates are essential for the comparisons of groups, and within a group over time. The denominator is the underlying person-time at risk in which the new cases or deaths in the numerator arise. Cancer incidence and mortality are presented in this report both as numbers and rates. Several different types of rates are also used in this report. We use the mid-year population (calculated as the mean of the population as obtained by January 1st and December 31st) as the denominator in the calculation of rates. For periods with several years, we use the sum of mid-year populations.

Age-specific rates

There are compelling reasons for adjusting for the distribution of age when comparing cancer risk in populations. Age is a strong determinant of cancer risk. The crude rate is a rate based on the frequency of cancer in the entire population irrespective of age. Although this measure is useful as an indicator of the total cancer burden, its utility in comparing cancer risk between different populations is severely limited when the age distribution differs between the groups, or where demographic changes in the size and age structure of a population have occurred over time.

To obtain a more accurate picture of the true risk of cancer, rates can be calculated for specific age strata, usually grouped in five-year intervals. The age-specific rate for age group i , denoted as r_i , is obtained by dividing the number of events, d_i , by the corresponding person-years, Y_i . As rates are most often given per 100 000 person-years we multiply by 100 000:

$$r_i = \frac{d_i}{Y_i} \cdot 100000$$

Usually, rates are provided separately for males and females, because of the different patterns by sex both in

terms of number of cases (see Table 5.9 and 5.10) and persons under risk (see Table 3.1). Age- and sex-specific incidence and mortality rates are the basis of epidemiological analysis of cancer frequency data. Table 3.1

Age-standardised rates

To facilitate comparisons, a summary rate is derived that takes into account age-specific rates in each comparison group. The summary measure that appears in this report is the age-standardised rate (ASR), a statistic that is independent of the effects of age, thus allowing comparisons of cancer risk between different groups and over time. The calculation of the ASR is an example of direct standardisation, whereby the observed age-specific rates are applied to a standard population. The population size or proportion in each age group of the standard population are known as the weights to be used in the standardisation process. The ASR is calculated as:

$$ASR = \frac{\sum_i r_i w_i}{\sum_i w_i}$$

where w_i is a weight given a reference population.

The World Standard Population^[11,12] has been used as reference population in several previous report of CiN. Since CiN 2014 we have used the Norwegian mid-year population in 2014 as the reference population. This standard is referred to as the *Norwegian standard*.

The two standards, using 18 age groups, are shown in Figure 4.1, and it clearly illustrates the difference between them: The Norwegian standard has higher weights for the oldest age groups.

The main advantage of using the Norwegian standard as the reference population is that we are getting age-standardised rates that resemble the crude rates for the Norwegian population. The main disadvantage is that the rates are not comparable with national rates from other countries. Table 5.1 shows the ASR in 2021 with the two different standards.

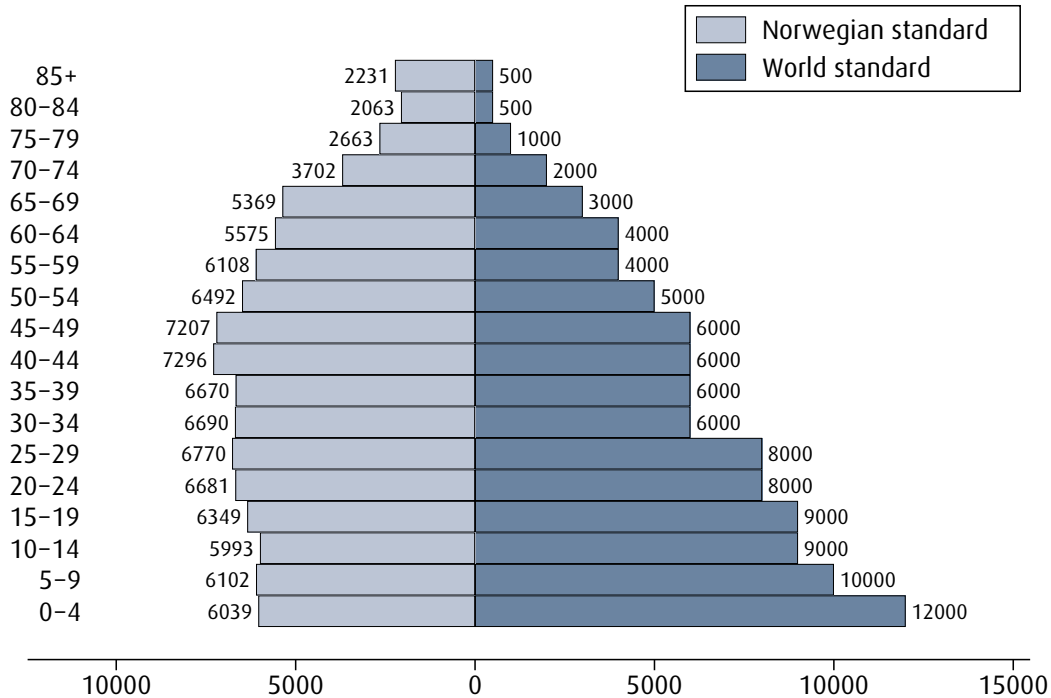
Of notice is that, in general, the ASRs with Norwegian standard gives twice as high rates as the ASRs with World standard. This is because the World standard has lower weights for the oldest age groups. Cancers that have the highest incidence rates in the youngest age groups

(e.g. testicular cancer) are less affected by the choice of reference population.

Age-standardised incidence rates (World standard) are available at:

<https://sb.kreftregisteret.no/insidens>

Figure 4.1: Comparison of population weights



Cumulative risk

The cumulative risk is the probability that an individual will develop the cancer under study during a certain age span, in the absence of other competing causes of death^[13]. The age span over which the risk is accumulated must be specified, and in this report, the range 0–79 years is used and provides an approximation of the risk of developing cancer. If before the age of 80 the cumulative risk is less than 10%, as is the case for most cancer forms, it is reasonably approximated by the cumulative rate. This is the summation of the age-specific rates over each year of age from birth to a defined upper age limit. As age-specific incidence rates are computed according to five-year age groups, the cumulative rate is five times the sum of the age-specific rates calculated over the five-year age groups, assuming the age-specific rates are the same for all ages within the five-year age stratum:

$$\text{Cumulative rate} = 5 \sum_i r_i$$

The cumulative rate has several advantages compared to age-standardised rates. First, as a form of direct standardisation, the problem of choosing an arbitrary reference population is eliminated. Second, as an approx-

imation to the cumulative risk, it has a greater intuitive appeal, and is more directly interpretable as a measurement of lifetime risk, assuming no other causes of death are in operation. The precise mathematical relationship between the two is:

$$\text{Cumulative risk} = 1 - e^{-\text{Cumulative rate}}$$

Completeness

Completeness was estimated by the use of the capture-recapture method described by Parkin and Bray^[9].

This method has been used to estimate the size of a population and is widely used in field biology to estimate the size of a closed animal population. In that purpose, and briefly explained, animals are captured, marked, and released, followed by a new catch (recapture). The number of captured animals in the first catch, the number of new animals in the second catch and the number of recaptured animals are used to estimate the number of uncaptured animals.

When this method is used to estimate completeness in a cancer registry context, we assume that cases are registered by two different data sources. Cases registered

on pathology reports and/or death certificates (source A) is the first 'catch', and cases registered on clinical notifications (source B) is the second 'catch'. A detailed description of the method can be found in CiN Technical Supplement^[10].

4.2 Prevalence

Prevalence is the number or proportion of a population that has the disease at a given point in time. It is a complex measure of cancer incidence, mortality, and other factors affecting individuals after diagnosis and treatment.

Prevalence is a useful measure of the number of persons requiring care for chronic illnesses such as hypertension and diabetes. For cancer, on the other hand, many patients diagnosed in the past may now be considered cured, that is to say they no longer have a greater risk of death. However, there may be special needs and disabilities subsequent to cancer disease and treatment, thus it is likely that the number of prevalent cancer cases also represents a useful measure.

Cancer prevalence can be defined as the number of persons alive having ever been diagnosed with cancer. Such a measure can easily be derived from the CRN data, given the registration of cases and complete follow up over many years. We provide additional estimates that may be useful for quantifying care burden. Therefore, this report shows the numbers of persons alive on December 31st 2021 who were previously diagnosed with cancer during the last year, one to four years, five to nine years, and 10 or more years.

We also show the number of patients who have been diagnosed with metastatic disease or local recurrence with metastasis and who were alive at various specific time points. This is another estimate of how the cancer burden has increased over time.

4.3 Survival

The survival time of a cancer patient is defined as the time that elapses between a cancer diagnosis and subsequent death, emigration, or end of follow-up. A common measure of survival is five-year observed survival, which represents the percentage of patients still alive five years after their date of diagnosis.

Follow-up data

To estimate long-term survival patterns and trends, vital statistics of patients diagnosed with cancer during 1965–2021 were obtained from the National Popula-

tion Registry and Statistics Norway through to December 31st 2021.

The 23 most common cancers were selected for analysis, grouped according to their respective ICD-10 categories. About 3% of cases were excluded as they were either registered on death certificate only (DCO), emigrated before diagnosis, or had zero survival time. It has been shown that exclusion of patients with a prior cancer diagnosis, which often is associated with a poorer prognosis, may artificially elevate estimates of survival^[14]. Therefore patients with previous cancer diagnoses were included in each site-specific analysis. However, to provide an estimate of "all sites" survival, analysis was restricted to first primary cancers. While the inclusion of multiple primaries has been recommended for comparative purposes, the corresponding reduction in the overall survival estimates has been shown to be negligible. In Norway, the effect of their inclusion has been shown to reduce five-year survival by less than a percentage point^[15].

Survival results should be interpreted with caution. Survival of prostate cancer and breast cancer has been affected by PSA testing and mammographic screening, respectively.

Relative survival (net survival)

Not all deaths among cancer patients are due to the cancer under study. Deaths resulting from other causes will lower the survival and may possibly invalidate comparisons between populations. Relative survival is calculated to circumvent this problem by providing an estimate of *net survival* the survival in a hypothetical world where the cancer is the only possible cause of death.

Relative survival is calculated as the observed survival proportion in a patient group divided by the expected survival of a comparable group in the general population with respect to age, sex and calendar year of investigation. At each time, $t(\text{year})$, since diagnosis, the relative survival from the cancer, $R(t)$, is defined as follows:

$$R(t) = \frac{S_O(t)}{S_E(t)}$$

where $S_O(t)$ is the *observed survival* of cancer patients, the *expected survival*, $S_E(t)$, is based on the general population survival using national population life tables from Statistics Norway by sex, one-year age group and calendar year. Age standardised relative survival (net survival) was estimated by the Stata program `stnet`^[16] using the Pohar Perme estimator^[17]. The estimates were age standardised applying weights to individuals^[18,19] based on the age distribution of the patient group the

last five-year period 2017–2021 (females and males combined for all groups, other than “All sites” where sex-specific weights were used).

For patient cohorts with complete five-year follow-up the *cohort* method was used.

With traditional cohort-based analyses, the most up-to-date estimates of long-term survival pertain to patients diagnosed in the distant past, with corresponding profiles of prognosis. A more up-to date picture of the current survival is obtained using the period method. In this report we used a five-year period window (2017–2021) to *predict* relative survival up to 15 years for patients diagnosed in 2017–2021 (Table 8.3 and Figure 8.1). The period approach consists of the pieces of survival experience observed in the period 2017–2021 for patients diagnosed up to 15 years ago. Thus, patients diagnosed in 2016–2021 contribute with (part of) their survival experience the first year of follow up, patients diagnosed in 2015–2020 contribute to the second year of follow-up, patients diagnosed in 2014–2019 contribute to the third year of follow-up and so on.

When analysing time trends in five-year relative survival (Figure 9.1) a rolling five-year window was used to obtain smoother curves. For patients with (potential) five-year observation the cohort approach was used. Thus, estimates for e.g. 2016 is based on patients diagnosed in 2012–2016. Estimates for 2021 were obtained

using the most recent five-year period window, while estimates for the years where only part of the cohort had complete follow-up (2017–2020) were obtained using a combination of the cohort and period approach to ensure that minimal survival experience from patients diagnosed in the past was used.

Estimation was performed for groups with 30 or more patients at start of follow-up.

A detailed description of the methods can be found in CiN Technical Supplement^[10].

Conditional relative survival

Cancer survivors want information on their current prognosis, once they have survived a certain period of time. Conditional survival is a key indicator in this respect, estimating survival proportions given that patients have already survived a certain duration of time^[20,21].

The time at which five-year relative survival reaches 100% is the point from which there is no excess mortality among the cancer patients, and their survival is equivalent to survival in the general population. We present estimates of sex-specific five-year relative survival conditional on being alive 1 to 10 years after diagnosis in Figure 8.1.

Estimates were not plotted when there were less than twenty patients alive ($n < 20$).

Chapter 5 Incidence

5.1 New cancer cases

Number of new cases

In 2021, there were 36 998 new cases of cancer (in 36 017 individuals) recorded in Norway, of which 19 684 cases were diagnosed in men, and 17 314 in women (Table 5.1). This is nearly 1500 more new cases of cancer than reported in CiN 2020.

The four most common cancers (cancers of the prostate, female breast, lung and colon) accounted for 43% of the new cancer cases in 2021. The proportion increases to 47% if rectal cancer is included.

In men, prostate cancer continued to be the most common cancer site, with 5188 new cases; followed by lung (1786 cases) and colon cancer (1517 cases). Breast cancer remained the most frequent cancer site in women, with 3991 new cases; followed by lung cancer (1713 cases) and colon cancer (1687 cases).

There is a steady increase in the number of new cancer cases diagnosed per year. Since 2011, this number has increased by more than 6000.

Incidence rates

Among men, there has been a slightly decrease in the age-standardised incidence rate for all sites combined since 2016 (Table 5.7), while the rate in women has stabilised during the same period (Table 5.8). The interpretation of rates from one year to another is however prone to random variations, especially for rare cancers. Thus, in order to interpret the risk of cancer we often compare rates for in five-year periods. When comparing the rates in the most recent five-year period (2017–2021) with the previous one (2012–2016) (Tables 5.15 and 5.16) we observe that:

- The rate for all cancers combined decreased by 3.8% for men and increased by 2.1% for women.
- The rate of prostate cancer decreased by 12.3%.
- The rate of breast cancer increased by 5.2%.
- The rate of lung cancer for men decreased by 8.5% and increased by 3.4% in women.

- The rate of colon cancer decreased by 4.9% in men, and 2.5% in women. The rate of rectal cancer decreased by 10.6% in men and 9.6% in women.
- The rates of melanoma of the skin increased by 10.3% in men and 8.5% in women.
- The rates of non-melanoma skin cancer, increased by 28.4% in men and 31.6% in women.
- Among more uncommon cancers, the notable increase in the rates for liver (especially in men), and thyroid cancer continues.

In 2017–2021, 9% of all cancer cases occurred in immigrants, and for most cancers immigrants have lower incidence rates compared to Norwegian-borns. Exceptions exist especially for lung cancer in men, and liver and stomach cancers in both genders, where rates are higher among some immigrant groups. The incidence numbers and rates presented in Tables 5.25–5.28 must however be interpreted with caution as the number of cancer cases among immigrants are low and prone to random variation.

Cancer incidence and COVID-19

In last year's report (CiN 2020) we could not see any convincing decrease in the incidence for the vast majority of cancers from 2019 to 2020, but there were some exceptions: The incidence rate of breast cancer decreased by 10%. Most likely because the mammographic screening program was shut down for a few months. The centers opened gradually over the summer/fall, but the number of screening examinations were markedly fewer during 2020. Moreover, a 15% decrease in incidence of cervical cancer was seen, most likely caused by lower participation in cervical screening in 2020. There were also fewer uterine and ovarian cancers diagnosed in 2020. Finally, the incidence rate of lung cancer in women decreased by 6%.

In this year's report we observe that the decline in incidence for breast, ovarian and lung cancer among women in 2020, is followed by an increase in the rates in 2021. For breast cancer we observe that the increase in rates from 2020 to 2021 is most pronounced for women in screening age (50–69 years). Such an increase is not observed for cervical cancer. However, we assume that the numbers for cervical cancer in 2021 is incomplete and is thus difficult to interpret.

Table 5.1: Number and age-standardised rates of new cases by primary site and sex, 2021

ICD-10	Site	Cases			Age-standardised rates			
		Males	Females	Total	Norwegian std.		World std.	
					Males	Females	Males	Females
C00-96	All sites	19 684	17 314	36 998	698.9	569.0	353.2	322.9
C00-14	Mouth, pharynx	477	260	737	16.8	8.5	9.4	4.8
C00	Lip	57	45	102	2.0	1.4	0.9	0.7
C02-06	Oral cavity	123	109	232	4.3	3.5	2.3	1.8
C07-08	Salivary glands	46	33	79	1.7	1.1	1.0	0.7
C09-10, C01, C14	Oropharynx	204	66	270	7.1	2.3	4.3	1.4
C11	Nasopharynx	16	5	21	0.6	0.2	0.4	0.1
C12-13	Hypopharynx	31	2	33	1.1	0.1	0.6	0.0
C15-26	Digestive organs	3 898	3 430	7 328	140.0	108.6	68.2	54.1
C15	Oesophagus	255	89	344	9.1	2.8	4.4	1.3
C16	Stomach	227	166	393	8.4	5.3	3.7	2.7
C17	Small intestine	134	111	245	4.8	3.6	2.5	2.0
C18	Colon	1 517	1 687	3 204	55.1	52.9	25.6	25.5
C19-20	Rectum, rectosigmoid	808	538	1 346	28.4	17.4	15.0	9.2
C21	Anus	37	69	106	1.3	2.3	0.7	1.4
C22	Liver	266	138	404	9.5	4.4	4.9	2.3
C23-24	Gallbladder, bile ducts	88	102	190	3.1	3.2	1.5	1.5
C25	Pancreas	502	460	962	17.9	14.5	8.7	7.2
C26	Other digestive organs	64	70	134	2.3	2.2	1.1	0.9
C30-34, C38	Respiratory organs	1 930	1 755	3 685	67.8	55.3	31.5	27.6
C30-31	Nose, sinuses	25	22	47	0.9	0.7	0.4	0.3
C32	Larynx, epiglottis	108	15	123	3.7	0.5	1.9	0.3
C33-34	Lung, trachea	1 786	1 713	3 499	62.7	53.9	28.9	26.9
C38	Heart, mediastinum and pleura	11	5	16	0.5	0.2	0.2	0.1
C40-41	Bone	31	25	56	1.1	0.9	1.0	0.9
C43	Melanoma of the skin	1 279	1 164	2 443	45.6	39.1	24.4	23.6
C44	Skin, non-melanoma	1 669	1 428	3 097	63.9	43.3	23.1	17.1
C45	Mesothelioma	75	9	84	2.6	0.3	1.0	0.1
C47	Autonomic nervous system	5	6	11	0.2	0.2	0.2	0.4
C48-49	Soft tissues	53	48	101	1.9	1.6	1.4	1.1
C50	Breast	32	3 991	4 023	1.1	138.3	0.5	88.0
C51-58	Female genital organs		1 777	1 777		59.6		36.2
C51-52, C57.7-9	Other female genital		119	119		3.8		2.0
C53	Cervix uteri		345	345		12.6		9.6
C54	Corpus uteri		774	774		25.4		14.4
C55	Uterus, other		8	8		0.3		0.1
C56, C57.0-4, C48.2	Ovary etc.		531	531		17.5		10.1
C58	Placenta		0	0		0.0		0.0
C60-63	Male genital organs	5 564		5 564	192.4		102.9	
C61	Prostate	5 188		5 188	178.6		91.5	
C62	Testis	295		295	10.8		10.0	
C60, C63	Other male genital	81		81	2.9		1.4	
C64-68	Urinary organs	2 000	801	2 801	70.2	25.5	34.4	13.4
C64	Kidney (excl. renal pelvis)	624	306	930	21.4	10.0	12.5	5.9
C65-68	Urinary tract	1 376	495	1 871	48.8	15.5	21.9	7.5
C69	Eye	41	43	84	1.5	1.4	0.9	0.8
C70-72	Central nervous system	444	544	988	15.9	18.9	11.4	13.4
C73	Thyroid gland	163	364	527	5.7	13.2	3.9	9.9
C37, C74-75	Other endocrine glands	79	76	155	2.8	2.7	2.1	2.0
C39, C76, C80	Other or unspecified	172	184	356	6.6	5.6	2.6	2.2
C81-96	Lymphoid/haematopoietic tissue	1 772	1 409	3 181	62.9	45.9	34.1	27.3
C81	Hodgkin lymphoma	73	69	142	2.6	2.5	2.0	2.3
C82-86, C96	Non-Hodgkin lymphoma	604	486	1 090	21.2	15.7	11.3	8.9
C88	Immunoproliferative disease	64	33	97	2.3	1.0	1.1	0.5
C90	Multiple myeloma	300	221	521	10.6	7.0	4.9	3.5
C91-95	Leukaemia	731	600	1 331	26.2	19.7	14.9	12.1

5.2 Incidence by age

Most cancers in Norway, over 90% in men and 86% in women, are diagnosed among people aged 50 years or more (Figure 5.1). In men, 55% of all new cases occur in men at ages from 70 years or older, while 38% of the cases are diagnosed in those aged 50 to 69 years. In women, 49% of all cases are diagnosed at age 70 years or older, and 37% are diagnosed in the age group 50 to 69 years. In the age group 25 to 49 years, a smaller proportion of the cancers are diagnosed in men (6%) than in women (13%). About 1% of all cancers occurs in children and young adults (younger than 25 years), with equal frequencies in boys and girls.

Table 5.2 shows the median age at diagnosis at different time periods. For all sites combined, the median age at diagnosis is 70 years, and this has been stable over the last decades. However, there is some variation between the sites. Cancer in the autonomic nervous system, a very rare cancer, has the lowest median age at diagnosis (8.5 years). Among the more common cancers, testis has the lowest median age at diagnosis (36 years). Non-melanoma skin cancer, on the other hand, has the highest median age (79 years). Moreover, the median age at diagnosis is 62 years for breast and 70 years for prostate cancer. For these two cancer sites there has been a reduction in median age at diagnosis with 4 and 5 years, respectively, in the latest period 2017–2021 compared to 1987–1991. For melanoma of the skin, me-

dian age at diagnosis has increased by 11 years during the same period. Changes in median age at diagnosis may be influenced by changes in the age distribution of the population, by diagnostic intensity and by the age-specific incidence rates at different periods. Thus, it might be difficult to interpret patterns and trends without information about these factors.

Figure 5.2 shows the most common cancer types by gender and age at diagnosis. The most commonly occurring cancers in boys and girls (0–14 years old) are leukaemia and tumours in the central nervous system. Testicular cancer is by far the most common cancer in young men (15–24 years) and is also the most common cancer in men aged 25–49 years. In young women, there is no single cancer standing out as the most common. Instead, thyroid gland, Hodgkin's lymphoma, skin melanoma and tumours in the central nervous system each make up 12–13% of the cases in this age group (15–24 years). Tumour in the central nervous system was previously the most common cancer among young girls (15–24 years) but has been bypassed by melanoma of the skin. Prostate cancer is the most frequent cancer in men above 50 years, while breast cancer is the most common cancer in women aged 25 through 69. For women above age 69 years, breast, colon, lung, and skin (non-melanoma) cancers stand out as the most common one. Each of them makes up between 12–14% of all the cases in the oldest age group (70+ years).

Figure 5.1: Percentage distribution of cancer incidence by age, 2017–2021

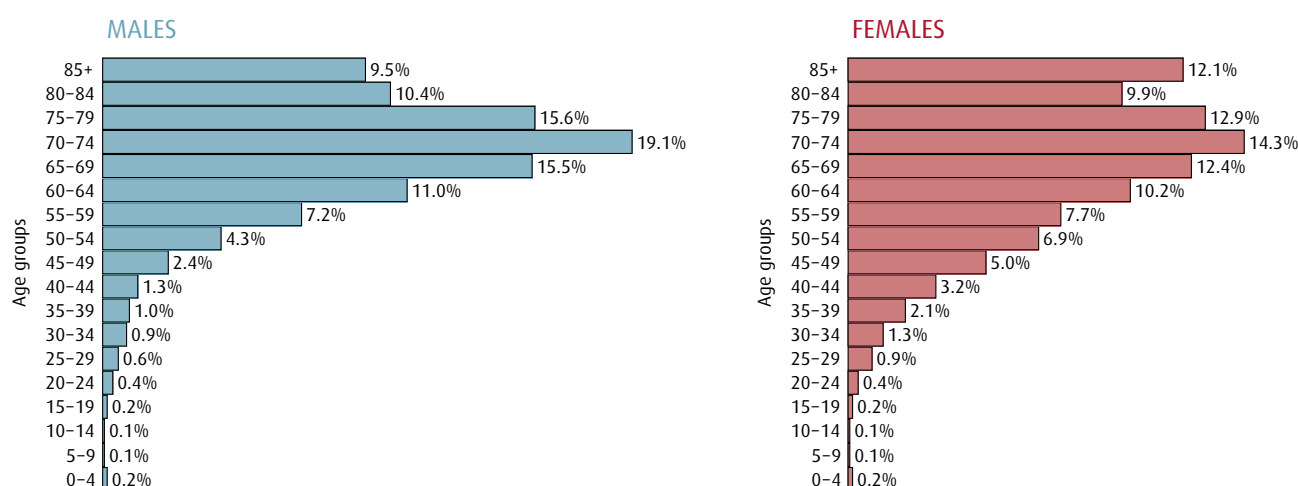


Table 5.2: Median age at diagnosis at different time periods by primary site

ICD-10	Site	Median age in			
		1987-91	1997-01	2007-11	2017-21
C00-96	All sites	70.0	70.0	68.0	70.0
C00-14	Mouth, pharynx	68.0	66.0	65.0	67.0
C00	Lip	72.0	72.5	73.0	75.0
C02-06	Oral cavity	67.0	67.0	67.0	70.0
C07-08	Salivary glands	67.0	67.0	64.0	67.0
C09-10, C01, C14	Oropharynx	63.0	60.0	61.0	63.0
C11	Nasopharynx	64.0	60.5	53.5	58.0
C12-13	Hypopharynx	65.0	67.0	66.0	69.0
C15-26	Digestive organs	72.0	74.0	72.0	72.0
C15	Oesophagus	70.0	72.0	69.0	71.0
C16	Stomach	74.0	75.0	74.0	73.0
C17	Small intestine	69.0	69.0	67.0	69.0
C18	Colon	72.0	74.0	74.0	74.0
C19-20	Rectum, rectosigmoid	72.0	72.0	70.0	70.0
C21	Anus	67.0	67.0	65.0	67.0
C22	Liver	71.0	72.0	71.0	71.0
C23-24	Gallbladder, bile ducts	73.0	74.0	73.0	73.0
C25	Pancreas	73.0	75.0	73.0	73.0
C26	Other digestive organs	79.0	78.0	75.0	74.0
C30-34, C38	Respiratory organs	68.0	70.0	70.0	72.0
C30-31	Nose, sinuses	71.0	69.5	66.0	70.0
C32	Larynx, epiglottis	67.0	68.0	67.0	70.0
C33-34	Lung, trachea	68.0	70.0	70.0	72.0
C38	Heart, mediastinum and pleura	70.0	70.5	67.0	75.0
C40-41	Bone	37.0	40.0	46.0	52.0
C43	Melanoma of the skin	56.0	59.0	63.0	67.0
C44	Skin, non-melanoma	76.0	77.0	79.0	79.0
C45	Mesothelioma	67.5	70.0	72.0	75.0
C47	Autonomic nervous system	31.0	34.0	28.0	8.5
C48-49	Soft tissues	63.0	65.0	62.5	63.5
C50	Breast	66.0	61.0	61.0	62.0
C51-58	Female genital organs	63.0	63.0	64.0	66.0
C51-52, C57.7-9	Other female genital	73.0	75.0	74.0	73.0
C53	Cervix uteri	51.0	48.0	46.0	46.0
C54	Corpus uteri	65.0	66.0	66.0	69.0
C55	Uterus, other	82.0	78.5	79.0	79.0
C56, C57.0-4, C48.2	Ovary etc.	65.0	65.0	65.0	68.0
C58	Placenta	26.0	29.0	31.0	33.0
C60-63	Male genital organs	74.0	72.0	68.0	69.0
C61	Prostate	75.0	73.0	69.0	70.0
C62	Testis	32.0	33.0	35.0	36.0
C60, C63	Other male genital	69.0	72.0	67.0	71.0
C64-68	Urinary organs	71.0	72.0	71.0	72.0
C64	Kidney (excl. renal pelvis)	69.0	70.0	67.0	67.0
C65-68	Urinary tract	72.0	73.0	73.0	73.0
C69	Eye	65.5	67.0	64.0	65.0
C70-72	Central nervous system	59.0	58.0	59.0	61.0
C73	Thyroid gland	54.0	53.0	52.0	54.0
C37, C74-75	Other endocrine glands	50.0	51.0	54.0	58.0
C39, C76, C80	Other or unspecified	74.0	77.0	79.0	79.0
C81-96	Lymphoid/haematopoietic tissue	68.0	70.0	68.0	70.0
C81	Hodgkin lymphoma	40.0	34.0	38.0	45.0
C82-86, C96	Non-Hodgkin lymphoma	67.0	67.0	66.0	70.0
C88	Immunoproliferative disease	71.0	72.0	71.0	74.0
C90	Multiple myeloma	72.0	73.0	72.0	72.0
C91-95	Leukaemia	70.0	71.0	70.0	71.0

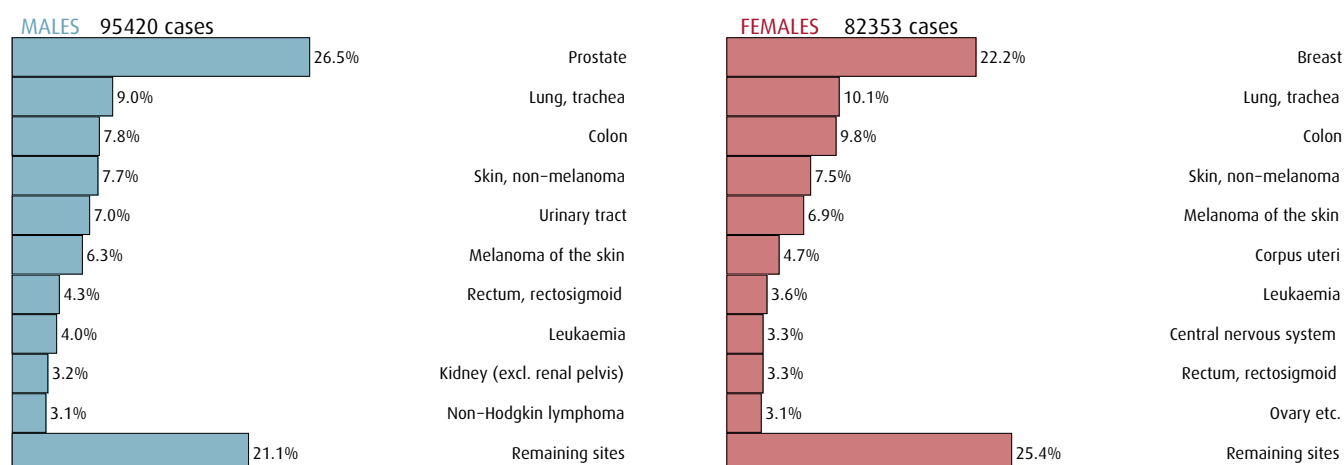
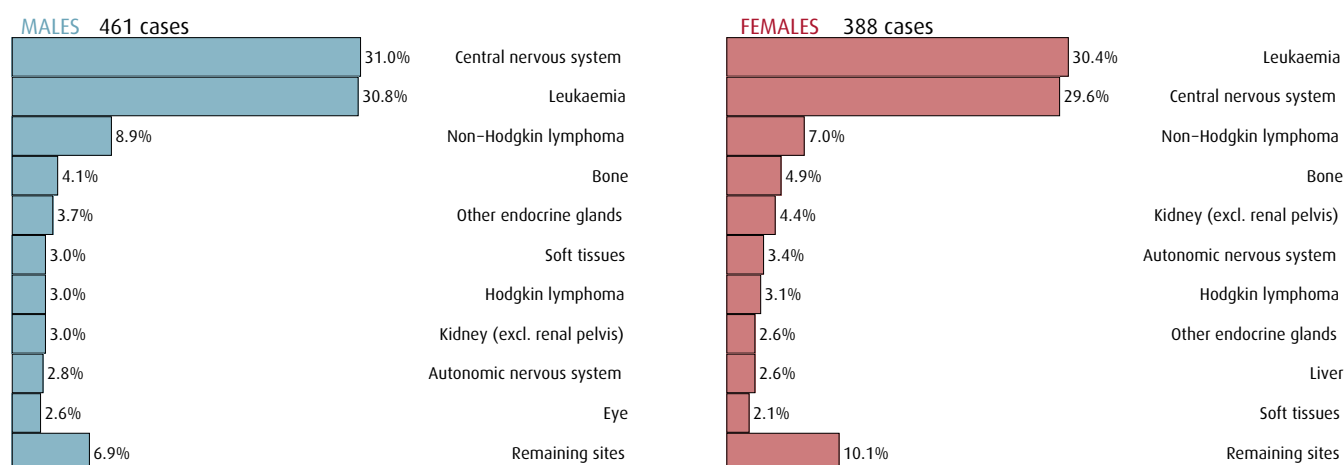
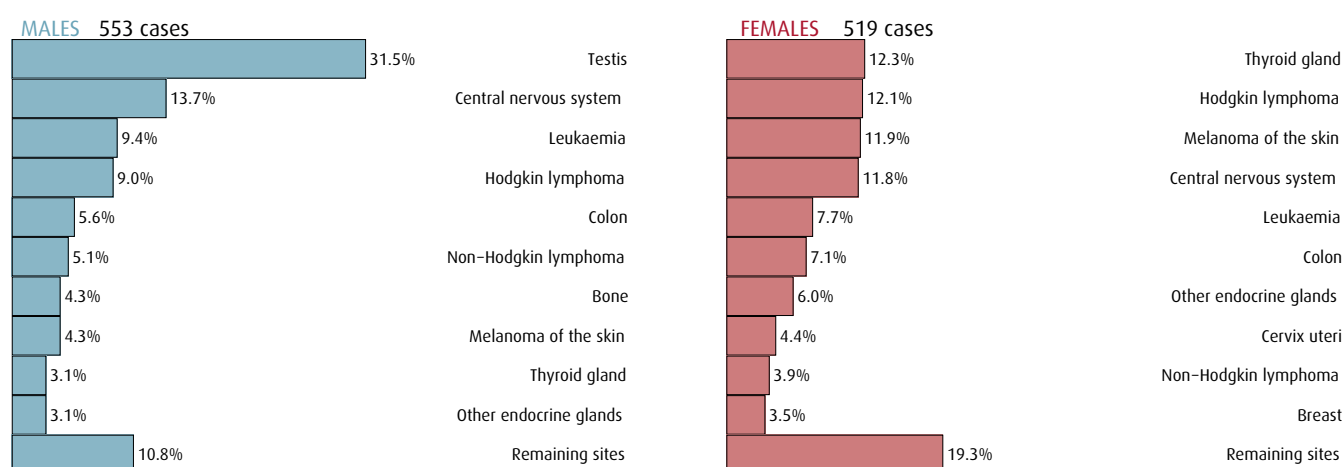
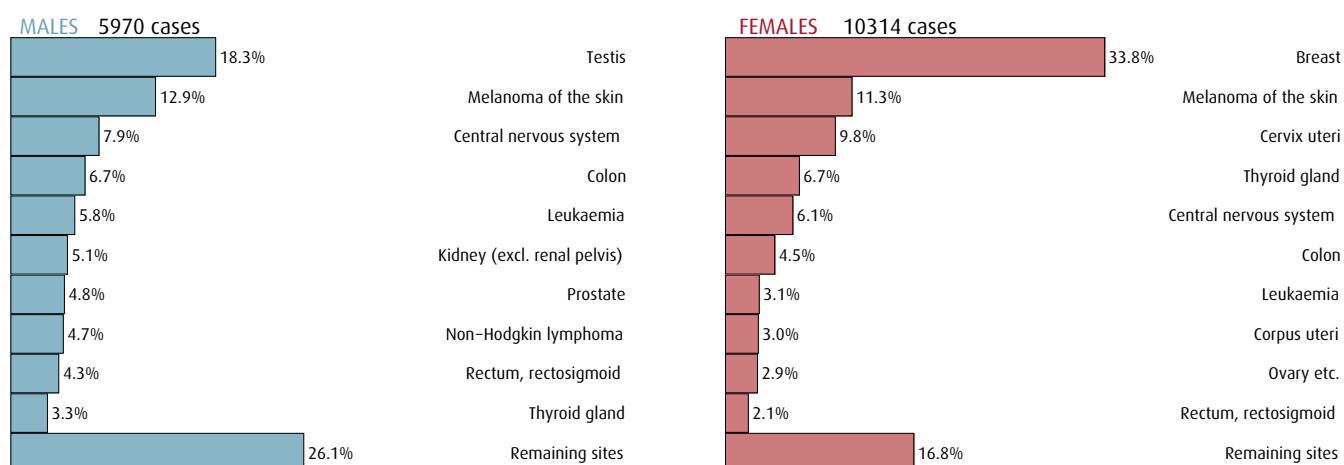
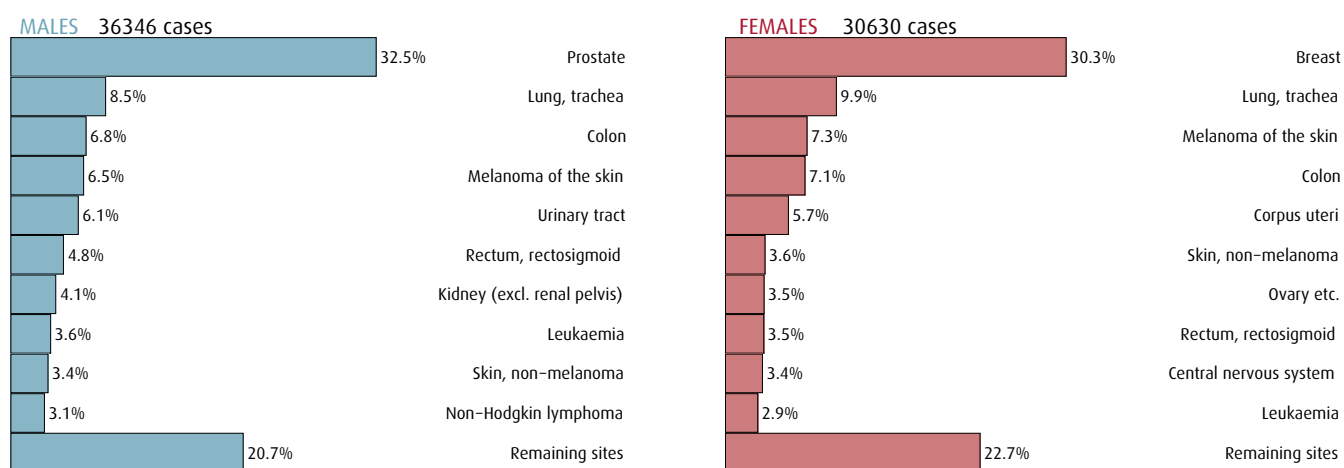
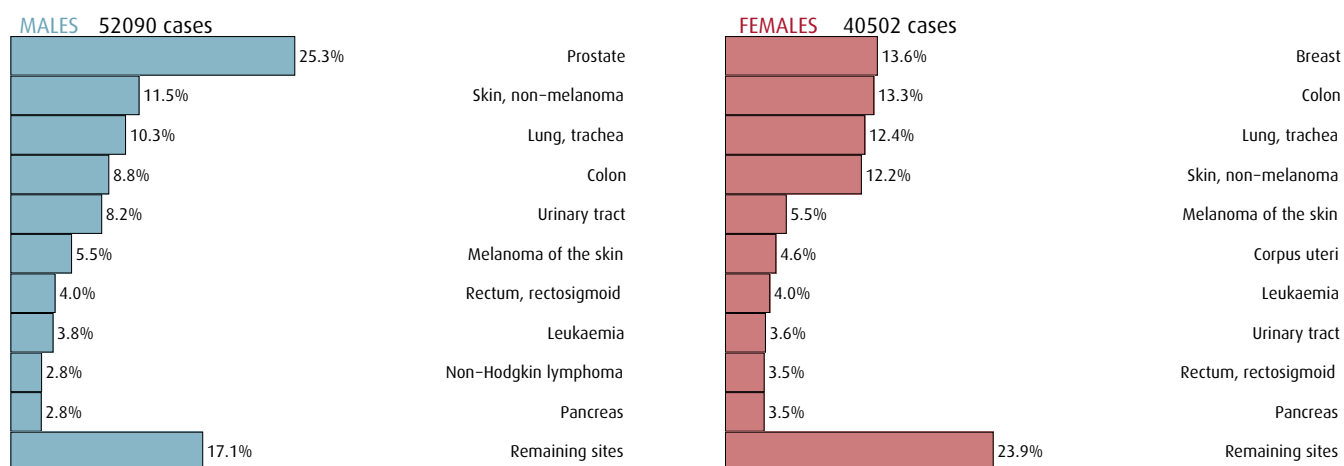
Figure 5.2: The most frequent types of cancer by age and sex, 2017–2021**Figure 5.2-A: All ages****Figure 5.2-B: 0–14 years****Figure 5.2-C: 15–24 years**

Figure 5.2: The most frequent types of cancer by age and sex, 2017–2021**Figure 5.2-D: 25–49 years****Figure 5.2-E: 50–69 years****Figure 5.2-F: 70+ years**

5.3 Male to female ratios

The age-standardised rates and male to female ratio (M:F) for selected cancer types in 1987–1991 and 2017–2021 are shown in Table 5.3. Men tend to have higher incidence rates for most cancer types in both time periods, except for cancer of thyroid gland, anus, and central nervous system. The highest M:F ratios were

observed for mesothelioma, several sites of the head and neck and for cancers in the urinary tract.

The decline in the M:F ratio for several cancers over the last 30 years is largely a result of a more rapid increase in the incidence rates in women. For lung cancer, the increase in rate in women has been accompanied by a levelling off and a slight decline in the rate in men, and the M:F ratio is now at 1.2 compared to 3.0 in the late 1980s.

Table 5.3: Sex ratio (male:female) of age-adjusted rates (Norwegian standard) in 1987–1991 and 2017–2021 for selected cancers, sorted in descending order in last period

ICD-10	Site	1987-91			2017-21		
		M	F	M:F ratio	M	F	M:F ratio
C00-96	All sites	536.4	393.7	1.4	712.6	560.0	1.3
C12-13	Hypopharynx	1.5	0.3	5.0	0.9	0.1	6.3
C45	Mesothelioma	2.1	0.3	6.4	2.6	0.5	5.5
C32	Larynx, epiglottis	6.0	0.5	11.2	3.3	0.7	5.1
C38	Heart, mediastinum and pleura	0.4	0.2	2.0	0.5	0.1	3.8
C65-68	Urinary tract	44.2	11.7	3.8	50.2	15.0	3.4
C15	Oesophagus	6.0	1.7	3.5	9.2	2.8	3.3
C09-10, C01, C14	Oropharynx	1.9	0.6	3.3	6.6	2.2	3.1
C64	Kidney (excl. renal pelvis)	14.5	8.1	1.8	22.5	9.9	2.3
C11	Nasopharynx	0.6	0.2	3.6	0.4	0.2	2.2
C22	Liver	3.5	1.8	2.0	8.8	4.3	2.1
C88	Immunoproliferative disease	0.5	0.3	1.5	2.2	1.1	2.0
C16	Stomach	30.7	14.7	2.1	10.2	5.8	1.8
C30-31	Nose, sinuses	1.3	0.6	2.1	1.0	0.6	1.7
C90	Multiple myeloma	9.1	5.8	1.6	11.3	7.1	1.6
C19-20	Rectum, rectosigmoid	30.5	18.5	1.6	30.1	18.3	1.6
C00	Lip	5.0	0.9	5.6	2.1	1.4	1.6
C44	Skin, non-melanoma	24.6	13.1	1.9	59.7	39.1	1.5
C48-49	Soft tissues	2.3	2.2	1.1	2.5	1.8	1.4
C82-86, C96	Non-Hodgkin lymphoma	14.9	11.1	1.3	21.7	15.5	1.4
C02-06	Oral cavity	4.7	2.6	1.9	4.6	3.3	1.4
C17	Small intestine	1.5	1.4	1.0	4.7	3.3	1.4
C40-41	Bone	1.0	0.6	1.5	1.2	0.8	1.4
C91-95	Leukaemia	13.4	8.5	1.6	29.0	20.3	1.4
C81	Hodgkin lymphoma	2.5	1.5	1.6	3.0	2.3	1.3
C25	Pancreas	17.1	12.1	1.4	18.6	14.1	1.3
C07-08	Salivary glands	1.0	0.6	1.7	1.4	1.0	1.3
C33-34	Lung, trachea	64.0	21.2	3.0	63.7	54.5	1.2
C47	Autonomic nervous system	0.4	0.4	1.0	0.2	0.2	1.1
C69	Eye	1.2	1.1	1.1	1.6	1.4	1.1
C43	Melanoma of the skin	21.1	21.6	1.0	44.9	39.7	1.1
C18	Colon	44.9	38.7	1.2	56.6	52.5	1.1
C26	Other digestive organs	2.3	2.7	0.9	2.4	2.1	1.1
C39, C76, C80	Other or unspecified	16.7	12.3	1.4	6.3	5.8	1.1
C37, C74-75	Other endocrine glands	2.2	1.9	1.2	3.3	3.3	1.0
C23-24	Gallbladder, bile ducts	2.9	3.2	0.9	3.0	2.9	1.0
C70-72	Central nervous system	12.8	12.5	1.0	16.9	19.3	0.9
C21	Anus	0.6	1.4	0.4	1.3	2.3	0.6
C73	Thyroid gland	2.7	6.4	0.4	5.1	12.3	0.4

5.4 Incidence trends

Figure 5.3: Time trends in age-standardised (Norwegian standard) incidence rates for selected cancers, 1953–2021

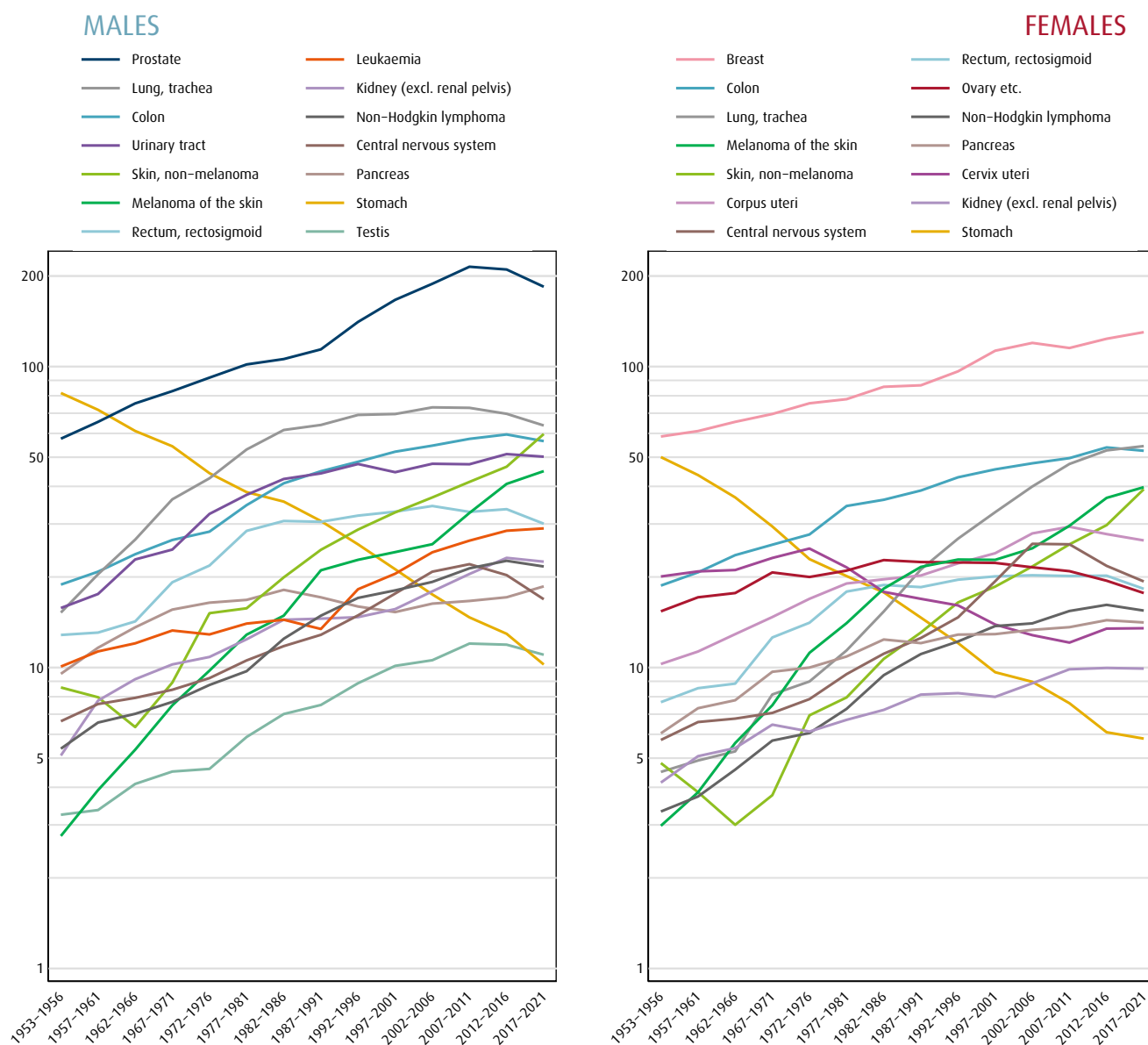


Figure 5.3 depicts time trends in incidence over seven decades for some selected cancers. The incidence rates have increased in Norway for most cancer types since the first observation period. The upward trends have been most pronounced for lung cancer among women and skin cancer (melanoma and non-melanoma) in both sexes. Stomach cancer is the only cancer that has had a sharp and steady decline in incidence since early 1950s. The rate for cervical cancer also declined from mid 1970s to late 1990s but has then after been followed by more stable rates and even had a slight increase for some few years in the last decade.

For most cancers, it is difficult to give a proper explanation of the incidence trends over time, even for can-

cers with known risk factors. Rates may also be influenced by diagnostic methods, screening activities, and changes in life expectancy or age distribution. Below we have given a short description of the trends for selected sites and listed some known factors that most possibly have influenced the trends.

Stomach cancer is the only cancer that has had a sharp and consistent decline. In the first observation period, stomach cancer was the most common cancer in men and second most common cancer in women, in line with observations of cancer mortality reported by Norwegian general practitioners one hundred years ago^[22]. The monotonous drop in incidence from 1953 until today reflects improvement in hygiene and environmental ex-

posures. Changes in the prevalence of *Helicobacter pylori* infection and in dietary habits (refrigerators) are likely contributors to this trend. The decline illustrates the vast potential for primary prevention worldwide. Interestingly, the causes of stomach cancer were not adequately known until the 1980s, and the waning of the rates has been a chance phenomenon rather than an intended one.

Prostate cancer has been the most common cancer in men for many decades, and the age-standardised incidence rate has tripled since registration started in the early 1950s. A dramatic upsurge came from around 1990 with changes in diagnostic practice with unorganised screening and testing in the primary health care system. The introduction and subsequent widespread use of the Prostate Specific Antigen (PSA) test, followed by biopsies, are considered the main explanation for the increased rate. The rate is now on the decline.

Breast cancer has been the most common cancer in women since the establishment of the Cancer Registry of Norway, and during this period the incidence rate has doubled. There has been a monotonous increase in the rate up to 1990s with a steeper increase in the mid-1990s followed by a slight decline between 2005 and 2009. The Norwegian Breast Cancer Screening Programme started in 1996, and gradually expanded to become nationwide by 2005. The programme invites women aged 50–69 years to biennial mammography. The implementation of the screening programme explains much of the increasing incidence trend from the mid-1990s to 2005. There has been a slight increase in the last ten years, and age-specific rates (not shown) indicate that the increase is primarily limited to the age group 60–79 years.

Lung cancer in women has almost had a ten folded incidence increase since early 1950s. We have observed signs of a stabilisation in the rate during recent years. However, the rate reached an all-time high level in 2018 (details are shown in Table 5.8). It is too early to decide whether 2018 represents a turning point, but it is interesting to note that the lung cancer rates seem to decline for all age groups below 80. In men, the incidence has been levelling off over the last two decades (Table 5.7), and a slight overall decline is now observed in all age groups.

Colon and rectum cancer incidence rates are sometimes presented combined. However, the incidence trends for these cancers differ — colon cancer has increased steadily throughout the registration period. Fortunately, we

are now seeing a decline among men, and a flattening among women. The incidence of rectal cancer has remained relatively stable over the last three decades in both sexes, and a decline is seen in the last few years.

Skin cancer i.e. skin melanoma and non-melanoma are cancers of concern. From being rare in 1953, they now rank among the leading cancers in men and women alike. The rates have had a remarkable increase, especially in the oldest age groups (above 70 years) (Table 5.7 and 5.8) most probably caused by adverse suntanning habits, but might also be influenced by other factors including awareness and diagnostic intensity.

Cervical cancer has had a downward incidence trend since the early 1970s. This is probably a result of identification and treatment of premalignant conditions as part of an organised screening programme. In 2009, vaccination against human papilloma virus (HPV) was introduced as part of the Norwegian Childhood Immunisation Programme for girls born in 1997 and after. A catch-up program was implemented in November 2016. In 2018, the programme also offered vaccination to boys. Still, we do not expect this primary prevention to affect the incidence rate for another 15 to 20 years. Furthermore, the worrying increase in cervical cancer, as we reported in the previous issue, has flattened out.

The incidence rates of **tumours in the central nervous system** in both sexes have declined in recent years. We believe that this is due to underreporting, and as shown in Tables 5.23–5.24 the reduction in rates is limited to non-malignant cases.

For **testicular cancer** and **non-Hodgkin lymphoma**, for example, genetic factors play a role, while other determinants are largely unknown.

Even if rates were to remain stable over the next 15 years, the number of new cases would increase as a result of the joint effects of population growth and aging. The NORDCAN project provides online access to predictions of incidence and mortality in the Nordic countries available at:

<http://www-dep.iarc.fr/nordcan.htm>

Trends in cancer incidence for all sites are given in Tables 5.15–5.16, and detailed trends in incidence, mortality and survival for 23 cancers are provided in Chapter 9.

5.5 Cumulative risk

Figure 5.4 and Table 5.4 show the cumulative risk of cancer in men and women. About four in ten Norwegians will develop a cancer before the age of 80. The risk of prostate cancer is the highest in men, as 16% will have a diagnosis by the age of 80. The risk of breast cancer is the highest in women, with 10.5%, indicating that one in ten Norwegian women will be diagnosed with the disease before turning 80. In both gender, lung and colon cancer rank second and third.

5.6 Incidence by county of residence

There has been a reform of the county structure in Norway, and the original 19 counties are now reduced to 11. The new county Viken is by far the most populous county and covers 23% of the Norwegian population. Nordland, on the other hand, has the lowest number of inhabitants and covers 4% of the population. Four of the original counties were not affected by reform, and one of these, Rogaland, had, and still has, the highest incidence

of cancer (all sites combined) for both men and women. Some of the original counties had clear differences in the cancer incidence, and the merging of counties makes it difficult to keep up with some interesting trends, e.g. the lung cancer rates in men in the former county Finnmark, which has had the highest rate of lung cancer for several decades (Tables 5.17–5.20).

Digital maps are available online at:

<https://www.kreftregisteret.no/Registrene/data-og-statistikk/statistikkbank/>

5.7 Incidence tables

Tables 5.5–5.28 provide further information on cancer incidence in Norway. The number of incident cases and rates are tabulated according to year of diagnosis (Tables 5.5–5.8), age group (Tables 5.9–5.12), five-year period (Tables 5.13–5.16), county of residence (Tables 5.17–5.20), stage (Tables 5.21–5.24), and continent of birth (Tables 5.25–5.28).

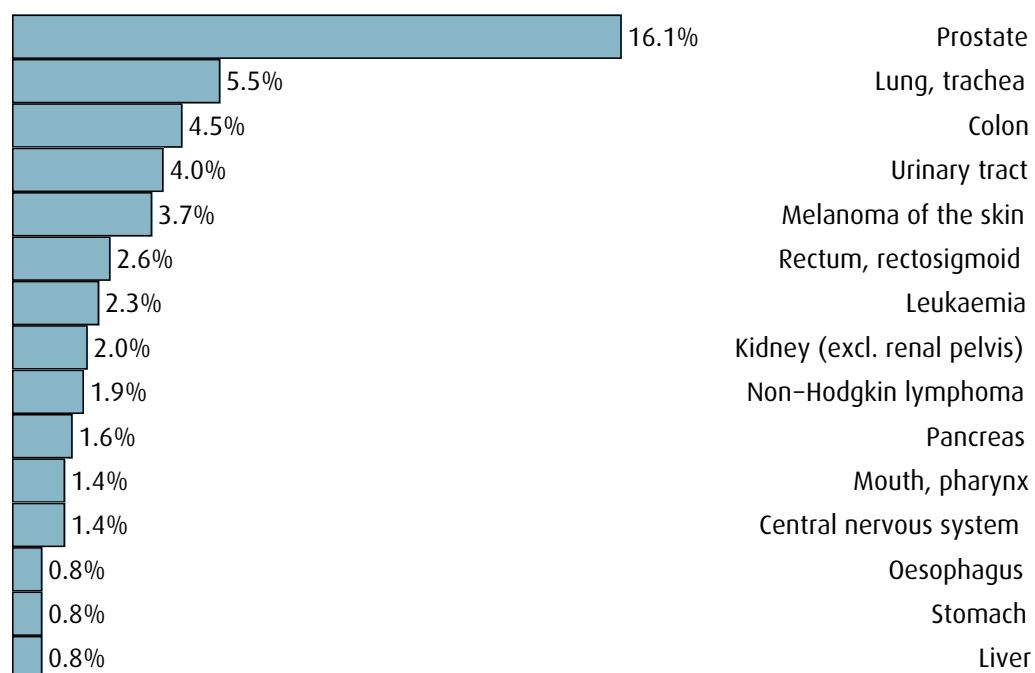
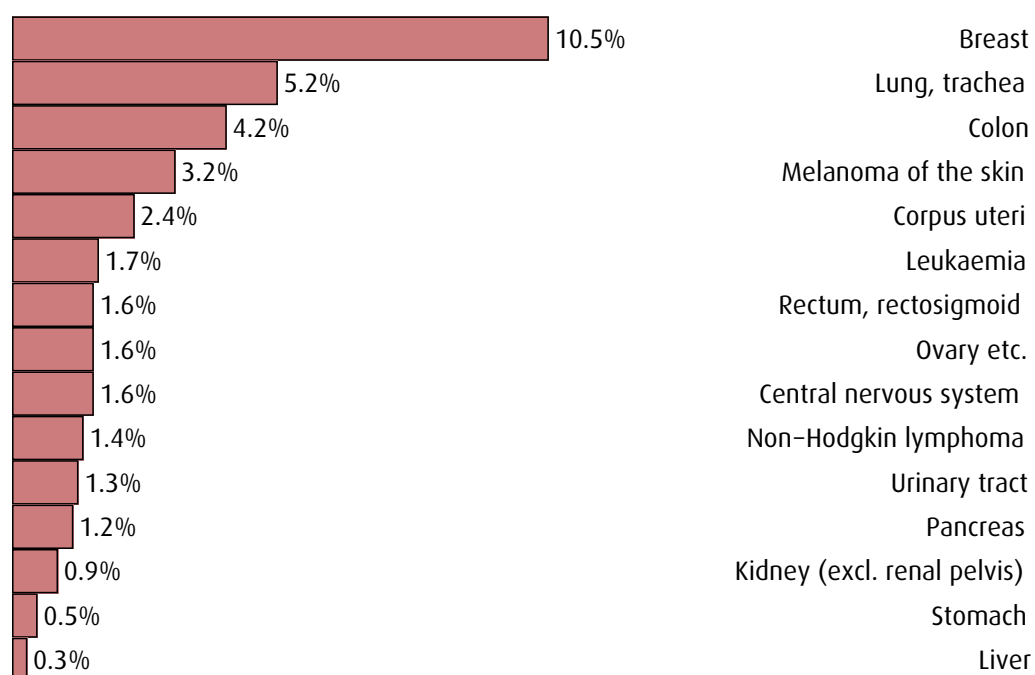
Figure 5.4: Cumulative risk of developing cancer (%) by the age of 80 for selected cancers, 2017–2021**MALES****FEMALES**

Table 5.4: Cumulative risk of developing cancer (%) by age of 80 by primary site and sex, 2017–2021

ICD-10	Site	Males	Females
C00–96	All sites	45.5	37.6
C00–14	Mouth, pharynx	1.4	0.7
C00	Lip	0.2	0.1
C02–06	Oral cavity	0.4	0.3
C07–08	Salivary glands	0.1	0.1
C09–10, C01, C14	Oropharynx	0.6	0.2
C11	Nasopharynx	0.0	0.0
C12–13	Hypopharynx	0.1	0.0
C15–26	Digestive organs	11.4	8.6
C15	Oesophagus	0.8	0.2
C16	Stomach	0.8	0.5
C17	Small intestine	0.4	0.3
C18	Colon	4.5	4.2
C19–20	Rectum, rectosigmoid	2.6	1.6
C21	Anus	0.1	0.2
C22	Liver	0.8	0.3
C23–24	Gallbladder, bile ducts	0.2	0.2
C25	Pancreas	1.6	1.2
C26	Other digestive organs	0.2	0.2
C30–34, C38	Respiratory organs	5.9	5.3
C30–31	Nose, sinuses	0.1	0.0
C32	Larynx, epiglottis	0.3	0.1
C33–34	Lung, trachea	5.5	5.2
C38	Heart, mediastinum and pleura	0.0	0.0
C40–41	Bone	0.1	0.1
C43	Melanoma of the skin	3.7	3.2
C44	Skin, non-melanoma	3.6	2.5
C45	Mesothelioma	0.2	0.0
C47	Autonomic nervous system	0.0	0.0
C48–49	Soft tissues	0.2	0.2
C50	Breast	0.1	10.5
C51–58	Female genital organs		5.2
C51–52, C57.7–9	Other female genital		0.3
C53	Cervix uteri		1.1
C54	Corpus uteri		2.4
C55	Uterus, other		0.0
C56, C57.0–4, C48.2	Ovary etc.		1.6
C58	Placenta		0.0
C60–63	Male genital organs	16.9	
C61	Prostate	16.1	
C62	Testis	0.8	
C60, C63	Other male genital	0.2	
C64–68	Urinary organs	6.0	2.2
C64	Kidney (excl. renal pelvis)	2.0	0.9
C65–68	Urinary tract	4.0	1.3
C69	Eye	0.1	0.1
C70–72	Central nervous system	1.4	1.6
C73	Thyroid gland	0.4	1.0
C37, C74–75	Other endocrine glands	0.3	0.3
C39, C76, C80	Other or unspecified	0.4	0.3
C81–96	Lymphoid/haematopoietic tissue	5.5	3.9
C81	Hodgkin lymphoma	0.3	0.2
C82–86, C96	Non-Hodgkin lymphoma	1.9	1.4
C88	Immunoproliferative disease	0.2	0.1
C90	Multiple myeloma	1.0	0.6
C91–95	Leukaemia	2.3	1.7

Table 5.5: Number of new cases by primary site and year, 2012–2021, **males**

ICD-10	Site	Year									
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
C00–96	All sites	16 783	16 828	17 470	18 099	18 572	18 550	18 716	19 066	19 404	19 684
C00–14	Mouth, pharynx	361	337	404	400	409	392	431	425	459	477
C00	Lip	62	48	62	58	51	51	51	53	65	57
C02–06	Oral cavity	108	112	115	118	123	123	138	115	122	123
C07–08	Salivary glands	30	28	45	36	43	28	43	27	38	46
C09–10, C01, C14	Oropharynx	132	126	148	159	161	155	175	197	189	204
C11	Nasopharynx	14	8	11	7	8	11	12	10	11	16
C12–13	Hypopharynx	15	15	23	22	23	24	12	23	34	31
C15–26	Digestive organs	3 329	3 443	3 490	3 646	3 717	3 686	3 883	3 834	4 031	3 898
C15	Oesophagus	175	200	225	224	214	214	243	235	296	255
C16	Stomach	286	307	307	297	309	289	244	291	289	227
C17	Small intestine	105	90	98	106	117	122	110	128	146	134
C18	Colon	1 302	1 336	1 367	1 432	1 451	1 462	1 512	1 462	1 512	1 517
C19–20	Rectum, rectosigmoid	752	802	813	798	845	800	847	785	835	808
C21	Anus	23	16	29	22	34	34	28	43	38	37
C22	Liver	138	179	147	185	195	192	226	241	258	266
C23–24	Gallbladder, bile ducts	86	96	72	81	85	65	86	80	83	88
C25	Pancreas	407	364	384	443	409	441	508	517	524	502
C26	Other digestive organs	55	53	48	58	58	67	79	52	50	64
C30–34, C38	Respiratory organs	1 784	1 721	1 782	1 749	1 832	1 862	1 821	1 788	1 844	1 930
C30–31	Nose, sinuses	32	35	30	15	25	28	24	27	29	25
C32	Larynx, epiglottis	99	105	115	88	86	72	107	85	83	108
C33–34	Lung, trachea	1 643	1 573	1 627	1 639	1 704	1 747	1 680	1 663	1 719	1 786
C38	Heart, mediastinum and pleura	10	8	10	7	17	15	10	13	13	11
C40–41	Bone	33	18	30	33	31	27	35	43	28	31
C43	Melanoma of the skin	897	851	1 040	1 045	1 082	1 173	1 178	1 215	1 183	1 279
C44	Skin, non-melanoma	895	916	1 013	1 063	1 115	1 278	1 345	1 486	1 561	1 669
C45	Mesothelioma	66	78	58	69	62	75	54	82	54	75
C47	Autonomic nervous system	5	5	7	4	2	8	8	3	2	5
C48–49	Soft tissues	82	79	63	70	57	72	60	84	63	53
C50	Breast	27	35	24	24	31	33	28	27	31	32
C60–63	Male genital organs	5 289	5 262	5 348	5 540	5 686	5 458	5 322	5 358	5 413	5 564
C61	Prostate	4 924	4 883	4 964	5 188	5 309	5 104	4 935	4 990	5 072	5 188
C62	Testis	322	332	325	292	290	290	321	303	285	295
C60, C63	Other male genital	43	47	59	60	87	64	66	65	56	81
C64–68	Urinary organs	1 606	1 626	1 755	1 834	1 911	1 877	1 889	1 971	2 002	2 000
C64	Kidney (excl. renal pelvis)	538	538	581	582	610	587	638	648	598	624
C65–68	Urinary tract	1 068	1 088	1 174	1 252	1 301	1 290	1 251	1 323	1 404	1 376
C69	Eye	29	34	49	42	40	42	43	40	47	41
C70–72	Central nervous system	538	511	536	507	435	489	465	443	439	444
C73	Thyroid gland	92	105	115	105	141	136	120	146	135	163
C37, C74–75	Other endocrine glands	148	119	127	94	116	88	94	98	91	79
C39, C76, C80	Other or unspecified	130	154	162	158	147	124	155	155	169	172
C81–96	Lymphoid/haematopoietic tissue	1 472	1 534	1 467	1 716	1 758	1 730	1 785	1 868	1 852	1 772
C81	Hodgkin lymphoma	85	72	79	109	91	94	92	68	94	73
C82–86, C96	Non-Hodgkin lymphoma	512	531	523	587	572	525	579	626	598	604
C88	Immunoproliferative disease	52	39	41	47	53	48	51	60	64	64
C90	Multiple myeloma	211	240	210	260	268	300	285	303	331	300
C91–95	Leukaemia	612	652	614	713	774	763	778	811	765	731

Table 5.6: Number of new cases by primary site and year, 2012–2021, **females**

ICD-10	Site	Year									
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
C00–96	All sites	13 832	14 281	15 066	15 554	15 701	15 813	16 189	16 581	16 456	17 314
C00–14	Mouth, pharynx	186	191	216	224	242	255	238	229	233	260
C00	Lip	37	41	31	45	46	51	34	47	36	45
C02–06	Oral cavity	67	83	98	80	108	92	108	82	102	109
C07–08	Salivary glands	17	18	27	39	29	40	29	27	24	33
C09–10, C01, C14	Oropharynx	52	38	43	55	49	60	56	63	62	66
C11	Nasopharynx	6	6	8	3	6	9	5	5	3	5
C12–13	Hypopharynx	7	5	9	2	4	3	6	5	6	2
C15–26	Digestive organs	2 933	3 022	3 130	3 256	3 200	3 241	3 222	3 232	3 360	3 430
C15	Oesophagus	72	63	71	77	72	76	80	87	96	89
C16	Stomach	182	166	189	168	152	194	165	170	181	166
C17	Small intestine	62	50	78	78	75	108	80	83	108	111
C18	Colon	1 420	1 461	1 475	1 579	1 647	1 572	1 596	1 578	1 625	1 687
C19–20	Rectum, rectosigmoid	500	579	575	579	536	538	536	545	559	538
C21	Anus	49	61	71	62	81	55	68	74	68	69
C22	Liver	81	83	89	105	116	121	119	129	139	138
C23–24	Gallbladder, bile ducts	104	104	109	83	77	83	69	93	97	102
C25	Pancreas	396	391	399	452	382	419	452	405	433	460
C26	Other digestive organs	67	64	74	73	62	75	57	68	54	70
C30–34, C38	Respiratory organs	1 359	1 382	1 507	1 577	1 564	1 593	1 734	1 731	1 678	1 755
C30–31	Nose, sinuses	19	20	19	22	15	10	17	20	19	22
C32	Larynx, epiglottis	19	21	20	20	23	18	24	20	18	15
C33–34	Lung, trachea	1 317	1 336	1 463	1 529	1 521	1 561	1 689	1 686	1 639	1 713
C38	Heart, mediastinum and pleura	4	5	5	6	5	4	4	5	2	5
C40–41	Bone	15	25	29	27	28	27	24	20	19	25
C43	Melanoma of the skin	893	899	1 012	1 001	1 061	1 063	1 167	1 135	1 165	1 164
C44	Skin, non-melanoma	791	823	928	849	1 016	1 046	1 127	1 257	1 346	1 428
C45	Mesothelioma	16	11	11	13	14	15	14	15	18	9
C47	Autonomic nervous system	0	6	8	7	2	4	2	4	6	6
C48–49	Soft tissues	50	52	48	59	53	43	51	59	55	48
C50	Breast	2 936	3 183	3 323	3 421	3 392	3 588	3 561	3 717	3 430	3 991
C51–58	Female genital organs	1 590	1 665	1 756	1 848	1 817	1 711	1 839	1 893	1 735	1 777
C51–52, C57.7–9	Other female genital	107	104	129	118	125	125	136	117	120	119
C53	Cervix uteri	312	291	358	391	367	332	381	393	355	345
C54	Corpus uteri	650	769	735	787	787	710	804	834	770	774
C55	Uterus, other	6	7	12	7	9	8	11	10	6	8
C56, C57.0–4, C48.2	Ovary etc.	511	492	520	543	525	535	504	536	482	531
C58	Placenta	4	2	2	2	4	1	3	3	2	0
C64–68	Urinary organs	672	682	655	780	785	733	747	721	744	801
C64	Kidney (excl. renal pelvis)	263	233	237	315	298	293	279	276	301	306
C65–68	Urinary tract	409	449	418	465	487	440	468	445	443	495
C69	Eye	31	45	45	41	30	42	42	46	31	43
C70–72	Central nervous system	612	566	582	559	538	610	486	536	543	544
C73	Thyroid gland	229	249	253	265	327	295	303	316	381	364
C37, C74–75	Other endocrine glands	120	142	122	120	98	98	96	93	84	76
C39, C76, C80	Other or unspecified	169	185	186	162	189	154	179	188	214	184
C81–96	Lymphoid/haematopoietic tissue	1 230	1 153	1 255	1 345	1 345	1 295	1 357	1 389	1 414	1 409
C81	Hodgkin lymphoma	62	55	59	56	77	45	61	78	54	69
C82–86, C96	Non-Hodgkin lymphoma	452	406	443	451	443	429	458	471	460	486
C88	Immunoproliferative disease	32	35	37	21	20	35	32	32	37	33
C90	Multiple myeloma	183	183	199	213	199	196	210	223	231	221
C91–95	Leukaemia	501	474	517	604	606	590	596	585	632	600

Table 5.7: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and year, 2012–2021, **males**

ICD-10	Site	Year									
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
C00–96	All sites	741.9	725.7	737.6	746.7	749.4	730.4	715.9	714.4	704.2	698.9
C00–14	Mouth, pharynx	15.4	14.1	16.5	16.0	16.1	15.0	16.2	15.7	16.5	16.8
C00	Lip	2.9	2.1	2.7	2.5	2.2	2.0	2.0	2.1	2.5	2.0
C02–06	Oral cavity	4.7	4.7	4.7	4.6	4.9	4.7	5.2	4.2	4.4	4.3
C07–08	Salivary glands	1.3	1.2	1.9	1.5	1.8	1.0	1.6	1.1	1.4	1.7
C09–10, C01, C14	Oropharynx	5.4	5.1	5.8	6.2	6.1	5.8	6.4	7.1	6.6	7.1
C11	Nasopharynx	0.6	0.3	0.4	0.3	0.3	0.4	0.5	0.4	0.4	0.6
C12–13	Hypopharynx	0.6	0.6	0.9	0.9	0.8	0.9	0.4	0.8	1.2	1.1
C15–26	Digestive organs	149.0	150.0	149.0	152.0	150.6	146.2	149.4	143.6	145.8	140.0
C15	Oesophagus	7.6	8.7	9.5	9.1	8.6	8.4	9.3	8.6	10.4	9.1
C16	Stomach	12.9	13.4	13.2	12.7	12.6	11.6	9.7	11.1	10.6	8.4
C17	Small intestine	4.6	3.8	4.1	4.3	4.6	4.7	4.1	4.7	5.3	4.8
C18	Colon	58.8	59.1	59.6	60.4	59.5	58.9	58.4	55.6	55.2	55.1
C19–20	Rectum, rectosigmoid	33.5	34.2	34.0	32.8	33.6	30.9	32.1	29.0	30.1	28.4
C21	Anus	1.0	0.7	1.2	0.9	1.4	1.3	1.1	1.6	1.4	1.3
C22	Liver	6.0	7.7	6.1	7.6	7.9	7.6	8.7	9.0	9.2	9.5
C23–24	Gallbladder, bile ducts	3.9	4.2	3.0	3.4	3.4	2.6	3.3	3.0	3.0	3.1
C25	Pancreas	18.2	15.9	16.3	18.4	16.7	17.6	19.6	19.1	18.8	17.9
C26	Other digestive organs	2.5	2.3	2.1	2.4	2.4	2.7	3.2	2.0	1.8	2.3
C30–34, C38	Respiratory organs	79.7	74.7	76.1	72.5	74.3	73.3	69.2	66.7	66.1	67.8
C30–31	Nose, sinuses	1.4	1.5	1.3	0.6	1.0	1.1	0.9	1.0	1.0	0.9
C32	Larynx, epiglottis	4.3	4.5	4.8	3.6	3.4	2.8	4.1	3.2	2.9	3.7
C33–34	Lung, trachea	73.5	68.4	69.5	68.0	69.1	68.8	63.8	61.9	61.6	62.7
C38	Heart, mediastinum and pleura	0.5	0.3	0.4	0.3	0.8	0.6	0.4	0.6	0.5	0.5
C40–41	Bone	1.3	0.7	1.2	1.3	1.2	1.0	1.3	1.6	1.0	1.1
C43	Melanoma of the skin	38.9	36.0	43.3	42.3	42.8	46.0	45.1	45.4	42.7	45.6
C44	Skin, non-melanoma	43.2	43.6	47.0	48.2	50.2	55.4	56.6	60.7	61.1	63.9
C45	Mesothelioma	3.0	3.5	2.5	3.0	2.5	3.0	2.0	3.2	2.0	2.6
C47	Autonomic nervous system	0.2	0.2	0.3	0.2	0.1	0.3	0.3	0.1	0.1	0.2
C48–49	Soft tissues	3.5	3.3	2.6	2.9	2.3	2.7	2.3	3.2	2.3	1.9
C50	Breast	1.2	1.5	1.0	1.1	1.3	1.3	1.1	1.0	1.1	1.1
C60–63	Male genital organs	230.2	223.3	221.9	223.6	224.6	210.0	198.6	196.5	192.6	192.4
C61	Prostate	215.8	208.4	207.0	210.1	210.2	196.6	184.2	182.9	180.1	178.6
C62	Testis	12.6	12.8	12.4	11.0	10.9	10.8	11.9	11.2	10.5	10.8
C60, C63	Other male genital	1.8	2.1	2.6	2.4	3.5	2.6	2.5	2.5	2.1	2.9
C64–68	Urinary organs	71.6	70.6	74.7	76.7	77.8	74.3	72.2	73.8	72.9	70.2
C64	Kidney (excl. renal pelvis)	22.8	22.4	23.5	23.3	23.8	22.4	23.6	23.6	21.4	21.4
C65–68	Urinary tract	48.7	48.2	51.2	53.4	54.1	51.8	48.6	50.2	51.5	48.8
C69	Eye	1.2	1.4	2.0	1.7	1.6	1.6	1.6	1.5	1.7	1.5
C70–72	Central nervous system	22.5	20.7	21.5	20.0	16.9	18.7	17.4	16.4	16.1	15.9
C73	Thyroid gland	3.8	4.3	4.6	4.1	5.5	5.1	4.4	5.3	4.9	5.7
C37, C74–75	Other endocrine glands	6.1	4.9	5.0	3.6	4.5	3.3	3.5	3.6	3.3	2.8
C39, C76, C80	Other or unspecified	6.2	7.3	7.3	7.0	6.5	5.3	6.5	6.4	6.7	6.6
C81–96	Lymphoid/haematopoietic tissue	64.9	65.6	61.2	70.6	70.6	67.8	68.2	69.8	67.4	62.9
C81	Hodgkin lymphoma	3.4	2.8	3.1	4.2	3.4	3.5	3.4	2.4	3.4	2.6
C82–86, C96	Non-Hodgkin lymphoma	22.4	22.4	21.8	23.9	22.7	20.5	21.8	23.2	21.5	21.2
C88	Immunoproliferative disease	2.3	1.6	1.7	1.9	2.2	1.9	2.0	2.2	2.3	2.3
C90	Multiple myeloma	9.6	10.7	8.8	10.9	10.9	11.9	11.1	11.1	11.9	10.6
C91–95	Leukaemia	27.1	28.1	25.9	29.7	31.4	30.0	29.8	30.8	28.3	26.2

Table 5.8: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and year, 2012–2021, **females**

ICD-10	Site	Year									
		2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
C00–96	All sites	525.5	534.4	555.7	565.1	560.5	555.9	559.9	565.7	549.2	569.0
C00–14	Mouth, pharynx	6.9	7.1	8.0	8.1	8.7	8.8	8.2	7.8	7.6	8.5
C00	Lip	1.3	1.5	1.1	1.5	1.6	1.7	1.1	1.5	1.1	1.4
C02–06	Oral cavity	2.5	3.1	3.6	2.8	3.9	3.1	3.7	2.8	3.2	3.5
C07–08	Salivary glands	0.6	0.7	1.0	1.4	1.0	1.4	1.0	0.9	0.8	1.1
C09–10, C01, C14	Oropharynx	2.0	1.5	1.7	2.1	1.8	2.2	2.0	2.3	2.1	2.3
C11	Nasopharynx	0.2	0.2	0.3	0.1	0.2	0.3	0.2	0.2	0.1	0.2
C12–13	Hypopharynx	0.3	0.2	0.3	0.1	0.1	0.1	0.2	0.2	0.2	0.1
C15–26	Digestive organs	108.3	109.9	112.3	114.8	110.9	110.4	108.1	106.7	108.5	108.6
C15	Oesophagus	2.7	2.3	2.6	2.7	2.5	2.6	2.7	2.8	3.1	2.8
C16	Stomach	6.7	6.0	6.8	5.8	5.3	6.6	5.6	5.7	5.9	5.3
C17	Small intestine	2.3	1.9	2.8	2.9	2.7	3.8	2.8	2.8	3.6	3.6
C18	Colon	52.4	52.5	52.6	55.3	56.6	53.2	53.0	51.8	51.9	52.9
C19–20	Rectum, rectosigmoid	18.7	21.5	21.0	20.9	19.0	18.7	18.3	18.3	18.6	17.4
C21	Anus	1.9	2.3	2.7	2.3	3.0	1.9	2.4	2.6	2.3	2.3
C22	Liver	2.9	3.1	3.2	3.7	4.1	4.1	4.1	4.2	4.6	4.4
C23–24	Gallbladder, bile ducts	3.9	3.8	3.9	2.9	2.7	2.8	2.3	3.1	3.1	3.2
C25	Pancreas	14.5	14.2	14.3	15.7	13.1	14.2	15.1	13.1	13.7	14.5
C26	Other digestive organs	2.4	2.3	2.5	2.6	2.2	2.5	1.9	2.2	1.7	2.2
C30–34, C38	Respiratory organs	51.9	51.9	55.5	56.9	55.0	54.8	58.3	57.0	53.8	55.3
C30–31	Nose, sinuses	0.7	0.7	0.7	0.8	0.5	0.4	0.6	0.7	0.6	0.7
C32	Larynx, epiglottis	0.7	0.8	0.7	0.7	0.8	0.6	0.9	0.7	0.6	0.5
C33–34	Lung, trachea	50.4	50.2	53.9	55.2	53.5	53.7	56.7	55.5	52.5	53.9
C38	Heart, mediastinum and pleura	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2
C40–41	Bone	0.6	0.9	1.1	1.0	1.1	1.0	0.9	0.7	0.7	0.9
C43	Melanoma of the skin	34.8	34.3	38.0	37.2	38.7	38.5	41.3	39.7	40.1	39.1
C44	Skin, non-melanoma	27.5	28.0	31.4	28.4	33.3	34.2	36.0	40.0	41.6	43.3
C45	Mesothelioma	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.3
C47	Autonomic nervous system	0.0	0.2	0.3	0.3	0.1	0.2	0.1	0.2	0.2	0.2
C48–49	Soft tissues	1.9	2.0	1.9	2.1	2.0	1.6	1.8	2.0	1.9	1.6
C50	Breast	114.8	122.8	126.5	128.2	125.9	131.0	128.3	132.7	120.2	138.3
C51–58	Female genital organs	61.6	63.7	66.0	68.7	66.0	61.3	65.1	65.7	59.0	59.6
C51–52, C57.7–9	Other female genital	4.0	3.7	4.5	4.2	4.4	4.3	4.6	3.9	3.9	3.8
C53	Cervix uteri	12.5	11.5	14.1	15.2	14.1	12.6	14.5	14.6	13.2	12.6
C54	Corpus uteri	25.0	29.3	27.4	29.0	28.1	25.0	27.9	28.4	25.5	25.4
C55	Uterus, other	0.2	0.2	0.4	0.2	0.3	0.3	0.3	0.3	0.2	0.3
C56, C57.0–4, C48.2	Ovary etc.	19.7	18.8	19.5	20.1	18.9	19.0	17.5	18.3	16.1	17.5
C58	Placenta	0.2	0.1	0.1	0.1	0.2	0.0	0.1	0.1	0.1	0.0
C64–68	Urinary organs	24.9	25.0	23.9	27.9	27.4	25.4	25.2	24.0	24.3	25.5
C64	Kidney (excl. renal pelvis)	10.1	8.7	8.8	11.5	10.6	10.4	9.7	9.4	10.1	10.0
C65–68	Urinary tract	14.8	16.3	15.1	16.4	16.9	15.0	15.5	14.7	14.2	15.5
C69	Eye	1.2	1.7	1.7	1.6	1.1	1.5	1.5	1.6	1.1	1.4
C70–72	Central nervous system	24.0	21.8	22.2	21.0	19.9	22.2	17.5	19.1	19.1	18.9
C73	Thyroid gland	9.2	9.8	9.8	10.1	12.4	11.1	11.2	11.7	14.1	13.2
C37, C74–75	Other endocrine glands	4.8	5.6	4.7	4.6	3.7	3.7	3.5	3.4	3.0	2.7
C39, C76, C80	Other or unspecified	5.9	6.2	6.2	5.4	6.2	4.9	5.8	6.0	6.6	5.6
C81–96	Lymphoid/haematopoietic tissue	46.6	42.8	45.8	48.5	47.7	44.8	46.7	46.9	46.8	45.9
C81	Hodgkin lymphoma	2.5	2.2	2.3	2.2	2.9	1.7	2.3	2.9	2.0	2.5
C82–86, C96	Non-Hodgkin lymphoma	17.3	15.2	16.3	16.3	15.7	14.9	15.7	15.8	15.3	15.7
C88	Immunoproliferative disease	1.2	1.3	1.3	0.8	0.7	1.2	1.0	1.0	1.2	1.0
C90	Multiple myeloma	6.8	6.6	7.1	7.6	6.9	6.7	7.2	7.4	7.4	7.0
C91–95	Leukaemia	18.8	17.4	18.8	21.7	21.4	20.5	20.5	19.8	20.9	19.7

Table 5.9: Average annual number of new cases by primary site and five-year age group, 2017–2021, **males**

ICD-10	Site	0–4	5–9	10–14	15–19	20–24	25–29	30–34
C00–96	All sites	39	26	27	42	69	114	164
C00–14	Mouth, pharynx	1	0	0	1	1	2	3
C00	Lip	0	0	0	0	0	0	0
C02–06	Oral cavity	0	0	0	0	0	1	1
C07–08	Salivary glands	0	0	0	0	0	1	1
C09–10, C01, C14	Oropharynx	0	0	0	0	0	0	0
C11	Nasopharynx	0	0	0	0	0	0	0
C12–13	Hypopharynx	0	0	0	0	0	0	0
C15–26	Digestive organs	0	0	1	3	5	10	17
C15	Oesophagus	0	0	0	0	0	0	1
C16	Stomach	0	0	0	0	0	1	1
C17	Small intestine	0	0	0	0	0	0	2
C18	Colon	0	0	1	3	3	4	8
C19–20	Rectum, rectosigmoid	0	0	0	0	0	2	4
C21	Anus	0	0	0	0	0	0	0
C22	Liver	0	0	0	0	1	1	0
C23–24	Gallbladder, bile ducts	0	0	0	0	0	1	0
C25	Pancreas	0	0	0	0	0	1	1
C26	Other digestive organs	0	0	0	0	0	0	0
C30–34, C38	Respiratory organs	1	0	0	0	1	2	2
C30–31	Nose, sinuses	0	0	0	0	0	0	0
C32	Larynx, epiglottis	0	0	0	0	0	0	0
C33–34	Lung, trachea	1	0	0	0	0	1	2
C38	Heart, mediastinum and pleura	0	0	0	0	0	0	0
C40–41	Bone	0	1	3	3	2	2	2
C43	Melanoma of the skin	0	0	0	1	4	8	18
C44	Skin, non-melanoma	1	0	0	0	1	1	3
C45	Mesothelioma	0	0	0	0	0	0	0
C47	Autonomic nervous system	2	0	0	0	0	0	0
C48–49	Soft tissues	2	1	1	0	1	1	3
C50	Breast	0	0	0	0	0	0	0
C60–63	Male genital organs	2	0	0	8	28	46	53
C61	Prostate	0	0	0	0	0	0	0
C62	Testis	2	0	0	8	27	46	53
C60, C63	Other male genital	0	0	0	0	0	0	0
C64–68	Urinary organs	2	1	0	1	2	4	8
C64	Kidney (excl. renal pelvis)	2	1	0	0	1	2	5
C65–68	Urinary tract	0	0	0	0	1	1	3
C69	Eye	2	0	0	0	0	0	0
C70–72	Central nervous system	10	10	9	8	7	12	17
C73	Thyroid gland	0	0	0	1	3	5	9
C37, C74–75	Other endocrine glands	2	0	1	2	1	1	3
C39, C76, C80	Other or unspecified	0	0	0	0	0	0	1
C81–96	Lymphoid/haematopoietic tissue	15	12	12	13	13	20	27
C81	Hodgkin lymphoma	0	1	2	4	6	9	8
C82–86, C96	Non-Hodgkin lymphoma	2	3	4	3	3	4	8
C88	Immunoproliferative disease	0	0	0	0	0	0	0
C90	Multiple myeloma	0	0	0	0	0	0	1
C91–95	Leukaemia	14	8	6	6	4	7	11

35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
195	257	464	829	1 381	2 103	2 956	3 642	2 980	1 990	1 806
5	7	19	37	53	67	73	65	49	31	24
0	1	1	2	3	5	6	10	10	9	9
2	2	5	10	13	14	20	21	15	11	7
1	2	3	3	3	4	4	5	4	3	3
1	3	8	21	31	39	33	24	15	5	4
1	0	2	1	1	2	1	1	1	1	0
0	0	0	1	2	3	7	4	4	2	1
30	52	98	185	282	401	585	737	624	447	389
1	2	6	11	17	35	44	53	36	22	20
2	4	5	11	17	25	37	51	42	35	36
3	2	7	9	14	14	19	22	16	12	9
15	19	33	57	92	131	211	280	261	194	179
5	15	26	52	67	97	129	157	120	83	57
0	1	3	3	4	5	7	5	5	1	3
1	4	5	11	25	30	39	42	35	22	20
1	1	1	5	5	6	14	17	13	9	9
1	3	11	23	37	54	77	99	84	59	49
0	1	1	3	4	4	10	12	11	9	7
5	9	21	55	100	196	317	414	333	225	168
0	1	1	1	2	3	3	5	5	2	3
1	1	1	5	7	11	16	18	16	8	6
3	7	18	48	91	182	297	390	310	213	156
0	1	1	1	0	1	1	1	1	3	3
1	1	1	1	2	2	3	4	3	1	1
29	39	60	85	117	125	148	195	163	112	101
3	6	12	22	34	71	119	242	288	292	372
0	0	0	0	2	4	9	14	19	11	9
0	0	0	0	0	0	0	0	0	0	0
2	3	4	6	5	8	6	8	8	4	5
0	1	1	1	2	3	4	6	7	3	3
49	48	87	183	421	754	1 068	1 149	812	391	325
2	7	48	163	406	741	1 054	1 136	800	383	316
46	39	35	17	10	8	4	3	1	1	1
1	1	4	4	5	5	10	11	10	7	8
14	22	51	91	163	196	287	374	322	229	182
9	16	29	47	75	80	95	117	74	39	28
5	7	22	44	88	116	193	257	248	190	154
1	1	2	3	5	6	7	6	4	3	3
19	19	27	41	40	44	48	53	43	25	23
9	7	11	15	17	15	14	16	11	5	4
3	5	7	10	10	10	9	12	8	2	3
0	0	2	5	7	12	15	26	22	25	40
26	36	61	86	121	190	245	320	265	182	156
4	5	5	4	8	7	5	9	6	2	1
10	12	23	31	43	64	86	108	88	56	42
0	0	1	2	1	6	8	12	12	8	7
1	3	9	11	21	35	46	62	50	33	31
12	16	23	38	48	77	100	130	110	83	76

Table 5.10: Average annual number of new cases by primary site and five-year age group, 2017–2021, **females**

ICD-10	Site	0–4	5–9	10–14	15–19	20–24	25–29	30–34
C00–96	All sites	33	21	24	38	66	147	221
C00–14	Mouth, pharynx	0	0	0	0	1	1	4
C00	Lip	0	0	0	0	0	0	0
C02–06	Oral cavity	0	0	0	0	0	0	2
C07–08	Salivary glands	0	0	0	0	0	0	1
C09–10, C01, C14	Oropharynx	0	0	0	0	0	0	0
C11	Nasopharynx	0	0	0	0	0	0	0
C12–13	Hypopharynx	0	0	0	0	0	0	0
C15–26	Digestive organs	1	1	2	5	7	9	17
C15	Oesophagus	0	0	0	0	0	0	0
C16	Stomach	0	0	0	0	1	1	2
C17	Small intestine	0	0	0	0	0	0	0
C18	Colon	0	0	1	3	4	4	9
C19–20	Rectum, rectosigmoid	0	0	0	0	1	1	3
C21	Anus	0	0	0	0	0	0	0
C22	Liver	1	0	0	1	0	1	1
C23–24	Gallbladder, bile ducts	0	0	0	0	0	0	1
C25	Pancreas	0	0	0	1	0	1	1
C26	Other digestive organs	0	0	0	0	0	0	0
C30–34, C38	Respiratory organs	1	0	0	0	0	1	3
C30–31	Nose, sinuses	0	0	0	0	0	0	0
C32	Larynx, epiglottis	0	0	0	0	0	0	0
C33–34	Lung, trachea	1	0	0	0	0	1	2
C38	Heart, mediastinum and pleura	0	0	0	0	0	0	0
C40–41	Bone	0	1	2	2	1	0	1
C43	Melanoma of the skin	0	0	0	2	11	20	28
C44	Skin, non-melanoma	0	1	0	1	2	1	2
C45	Mesothelioma	0	0	0	0	0	0	0
C47	Autonomic nervous system	2	1	0	0	0	0	0
C48–49	Soft tissues	0	0	1	1	1	1	1
C50	Breast	0	0	0	1	3	19	49
C51–58	Female genital organs	0	0	1	2	6	40	48
C51–52, C57.7–9	Other female genital	0	0	0	0	0	0	2
C53	Cervix uteri	0	0	0	0	4	34	36
C54	Corpus uteri	0	0	0	0	0	1	4
C55	Uterus, other	0	0	0	0	0	0	0
C56, C57.0–4, C48.2	Ovary etc.	0	0	1	2	2	4	6
C58	Placenta	0	0	0	0	0	0	1
C64–68	Urinary organs	3	1	0	0	1	3	3
C64	Kidney (excl. renal pelvis)	3	1	0	0	1	1	2
C65–68	Urinary tract	0	0	0	0	1	2	1
C69	Eye	1	0	0	0	0	1	1
C70–72	Central nervous system	7	7	9	7	5	14	16
C73	Thyroid gland	0	0	0	4	9	16	23
C37, C74–75	Other endocrine glands	1	0	0	2	4	3	5
C39, C76, C80	Other or unspecified	0	0	0	0	0	1	0
C81–96	Lymphoid/haematopoietic tissue	15	9	8	11	14	18	19
C81	Hodgkin lymphoma	0	0	2	5	7	7	6
C82–86, C96	Non-Hodgkin lymphoma	2	2	1	1	3	3	4
C88	Immunoproliferative disease	0	0	0	0	0	0	0
C90	Multiple myeloma	0	0	0	0	0	0	0
C91–95	Leukaemia	13	7	4	5	3	7	8

35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
346	527	821	1 143	1 271	1 674	2 039	2 354	2 121	1 638	1 988
4	5	10	18	21	27	26	38	33	21	34
0	0	1	1	3	3	5	7	8	6	8
1	3	2	5	6	9	11	18	14	9	17
2	2	2	3	1	3	1	4	3	2	6
0	0	4	7	10	11	9	8	6	3	2
0	0	1	1	1	1	0	1	0	0	0
0	0	0	0	0	0	1	1	1	0	1
33	51	89	137	192	295	398	541	521	457	540
0	0	2	3	4	9	13	18	13	11	12
2	6	6	10	10	11	21	25	25	23	33
2	2	3	6	10	10	14	16	14	11	8
17	24	38	51	78	123	185	263	274	248	289
8	11	21	35	43	66	70	87	75	58	66
1	1	3	5	6	12	10	7	8	6	6
0	2	4	4	9	11	16	20	19	17	22
0	1	3	3	4	8	10	15	12	16	16
3	3	8	18	24	37	51	77	73	60	75
0	1	1	1	3	6	8	13	9	9	13
5	9	25	53	102	189	282	384	309	184	150
0	1	1	1	1	2	2	3	2	2	2
0	0	1	1	3	4	3	4	2	1	0
4	8	24	51	98	183	276	377	305	179	147
0	0	0	0	0	0	0	0	1	1	1
2	1	1	1	2	2	2	1	1	1	2
40	57	89	105	110	112	122	138	114	87	105
3	7	19	24	39	58	99	161	188	219	416
0	0	0	1	1	1	1	4	1	2	2
0	1	0	0	0	0	0	0	0	0	0
2	3	4	4	4	4	5	8	6	3	4
101	199	329	466	410	479	504	354	324	208	214
72	80	98	137	154	197	221	253	199	141	141
2	4	4	8	7	12	14	15	15	16	25
50	45	38	29	26	25	24	20	12	10	8
9	17	30	58	78	105	107	134	103	72	60
0	0	0	0	0	0	1	1	1	1	3
10	14	27	42	43	56	75	84	68	42	45
0	0	0	0	0	0	0	0	0	0	0
5	13	20	36	55	78	100	128	120	84	100
4	8	14	19	24	36	42	51	40	23	24
1	5	6	17	31	42	58	77	80	61	76
1	0	2	3	5	5	7	6	4	2	3
19	29	48	46	53	57	50	63	48	33	33
31	34	32	33	26	30	33	26	15	10	9
6	6	8	5	7	8	9	9	8	4	3
1	0	3	5	6	10	13	18	27	29	70
22	33	43	69	85	122	166	222	203	154	163
4	3	1	4	3	2	4	4	4	2	2
7	12	12	22	33	47	61	81	73	47	47
0	0	1	1	1	3	4	7	8	5	4
2	2	5	10	15	19	32	39	34	30	28
9	16	24	32	33	51	65	90	83	70	82

Table 5.11: Age-specific incidence rates per 100 000 person-years by primary site and five-year age group, 2017–2021, **males**

ICD-10	Site	0–4	5–9	10–14	15–19	20–24	25–29	30–34
C00–96	All sites	26.1	16.1	16.3	25.5	39.0	60.3	87.0
C00–14	Mouth, pharynx	0.4	0.0	0.1	0.4	0.3	1.0	1.4
C00	Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C02–06	Oral cavity	0.1	0.0	0.1	0.1	0.1	0.5	0.7
C07–08	Salivary glands	0.3	0.0	0.0	0.1	0.0	0.4	0.3
C09–10, C01, C14	Oropharynx	0.0	0.0	0.0	0.0	0.1	0.0	0.1
C11	Nasopharynx	0.0	0.0	0.0	0.1	0.1	0.0	0.2
C12–13	Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C15–26	Digestive organs	0.1	0.2	0.5	2.1	3.0	5.1	9.0
C15	Oesophagus	0.0	0.0	0.0	0.1	0.1	0.1	0.3
C16	Stomach	0.0	0.0	0.0	0.0	0.2	0.4	0.6
C17	Small intestine	0.0	0.0	0.0	0.0	0.2	0.1	0.8
C18	Colon	0.0	0.1	0.4	1.7	1.9	2.2	4.4
C19–20	Rectum, rectosigmoid	0.0	0.0	0.0	0.0	0.0	0.8	2.1
C21	Anus	0.0	0.0	0.0	0.0	0.0	0.1	0.0
C22	Liver	0.1	0.1	0.1	0.2	0.3	0.3	0.0
C23–24	Gallbladder, bile ducts	0.0	0.0	0.0	0.0	0.0	0.3	0.0
C25	Pancreas	0.0	0.0	0.0	0.0	0.1	0.4	0.6
C26	Other digestive organs	0.0	0.0	0.0	0.0	0.0	0.2	0.0
C30–34, C38	Respiratory organs	0.4	0.0	0.1	0.2	0.3	0.8	1.2
C30–31	Nose, sinuses	0.0	0.0	0.1	0.0	0.1	0.2	0.2
C32	Larynx, epiglottis	0.0	0.0	0.0	0.0	0.0	0.0	0.1
C33–34	Lung, trachea	0.4	0.0	0.0	0.1	0.1	0.5	0.8
C38	Heart, mediastinum and pleura	0.0	0.0	0.0	0.1	0.1	0.1	0.0
C40–41	Bone	0.3	0.5	1.6	1.8	1.0	1.1	1.0
C43	Melanoma of the skin	0.0	0.1	0.0	0.5	2.3	4.2	9.6
C44	Skin, non-melanoma	0.4	0.2	0.0	0.2	0.7	0.7	1.5
C45	Mesothelioma	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C47	Autonomic nervous system	1.6	0.0	0.1	0.1	0.2	0.0	0.0
C48–49	Soft tissues	1.1	0.4	0.4	0.2	0.8	0.6	1.4
C50	Breast	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C60–63	Male genital organs	1.1	0.1	0.0	4.7	15.7	24.4	28.0
C61	Prostate	0.0	0.0	0.0	0.0	0.1	0.0	0.0
C62	Testis	1.1	0.1	0.0	4.6	15.4	24.3	27.9
C60, C63	Other male genital	0.0	0.0	0.0	0.1	0.1	0.1	0.1
C64–68	Urinary organs	1.3	0.5	0.0	0.4	0.9	2.0	4.0
C64	Kidney (excl. renal pelvis)	1.3	0.5	0.0	0.2	0.5	1.3	2.6
C65–68	Urinary tract	0.0	0.0	0.0	0.1	0.5	0.7	1.4
C69	Eye	1.3	0.2	0.0	0.1	0.1	0.1	0.1
C70–72	Central nervous system	6.4	5.9	5.7	5.1	3.9	6.2	9.1
C73	Thyroid gland	0.0	0.0	0.1	0.5	1.5	2.4	4.8
C37, C74–75	Other endocrine glands	1.5	0.2	0.5	1.2	0.8	0.7	1.5
C39, C76, C80	Other or unspecified	0.0	0.0	0.1	0.1	0.0	0.1	0.3
C81–96	Lymphoid/haematopoietic tissue	10.3	7.6	7.0	7.8	7.5	10.7	14.2
C81	Hodgkin lymphoma	0.0	0.6	1.1	2.2	3.6	4.8	4.0
C82–86, C96	Non-Hodgkin lymphoma	1.1	1.8	2.2	1.8	1.5	1.9	4.0
C88	Immunoproliferative disease	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C90	Multiple myeloma	0.0	0.0	0.0	0.0	0.0	0.1	0.5
C91–95	Leukaemia	9.2	5.2	3.8	3.8	2.4	3.9	5.6

35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
107.0	142.1	240.8	440.0	818.8	1 369.6	2 151.5	2 931.0	3 672.4	4 088.6	4 437.4
2.6	4.1	9.8	19.8	31.2	43.6	53.0	52.5	60.6	64.5	59.0
0.1	0.3	0.4	0.8	1.5	3.4	4.7	8.0	12.3	19.3	21.1
1.1	1.2	2.5	5.2	7.7	9.4	14.8	16.7	18.7	23.4	17.2
0.5	0.9	1.5	1.5	1.5	2.3	3.1	4.0	5.4	6.2	8.4
0.5	1.4	4.2	11.3	18.4	25.3	24.2	19.5	18.2	10.3	9.3
0.3	0.2	1.1	0.4	0.8	1.2	1.0	0.6	1.0	1.6	0.5
0.0	0.0	0.1	0.5	1.2	2.1	5.2	3.5	4.9	3.7	2.5
16.7	28.6	50.9	98.4	167.0	261.1	425.7	593.2	768.5	918.4	956.0
0.8	1.1	3.1	5.9	10.2	22.8	32.2	42.5	44.4	44.4	49.2
1.0	2.3	2.7	5.7	10.2	16.4	26.8	40.9	52.3	71.9	89.0
1.5	1.2	3.6	4.8	8.2	9.4	13.5	17.5	19.7	23.8	21.1
8.1	10.5	17.2	30.5	54.6	85.3	153.4	225.6	321.9	399.4	439.9
2.7	8.5	13.4	27.7	39.8	63.3	93.9	126.5	147.9	170.9	140.6
0.2	0.3	1.5	1.4	2.4	3.0	4.8	4.0	6.4	2.9	6.4
0.8	2.1	2.4	5.9	14.6	19.5	28.2	33.6	43.6	46.0	50.1
0.5	0.4	0.6	2.5	2.8	3.8	9.9	13.5	15.5	19.3	22.1
0.8	1.7	5.7	12.3	22.0	34.9	55.9	79.3	103.5	120.4	119.9
0.2	0.3	0.6	1.6	2.1	2.6	7.1	9.7	13.3	19.3	17.7
2.5	5.2	10.8	29.1	59.5	127.9	230.6	333.3	410.1	462.7	412.9
0.1	0.4	0.4	0.6	1.4	2.2	1.9	3.7	5.9	4.1	6.4
0.7	0.6	0.5	2.7	3.9	6.9	11.9	14.8	20.0	16.4	15.7
1.5	3.9	9.3	25.5	54.2	118.3	216.0	314.2	382.5	436.8	384.4
0.2	0.3	0.5	0.3	0.0	0.5	0.7	0.6	1.7	5.3	6.4
0.5	0.4	0.7	0.7	1.1	1.2	2.3	3.4	3.5	2.9	1.5
15.8	21.7	31.3	45.2	69.2	81.7	108.0	156.6	200.6	230.9	247.2
1.8	3.2	6.2	11.9	19.9	46.1	86.5	194.9	354.7	600.8	914.2
0.0	0.0	0.0	0.2	0.9	2.6	6.4	11.4	23.4	22.6	22.1
0.0	0.2	0.0	0.1	0.2	0.0	0.1	0.3	0.2	0.4	0.0
0.9	1.4	2.1	3.0	3.1	5.1	4.5	6.3	9.4	9.0	12.8
0.0	0.3	0.3	0.4	1.3	2.1	2.9	5.0	8.6	6.2	6.4
26.8	26.5	45.1	97.4	249.8	491.2	776.9	924.9	1 000.7	802.5	797.7
1.1	4.1	25.1	86.7	240.9	482.6	766.8	914.1	986.4	787.3	776.6
25.0	21.6	18.1	8.8	6.2	5.2	2.6	2.1	1.7	1.6	1.5
0.7	0.8	1.9	1.9	2.7	3.4	7.6	8.7	12.6	13.6	19.7
7.5	12.4	26.5	48.4	96.5	127.7	209.0	301.1	397.1	470.1	447.3
4.7	8.6	15.3	24.9	44.5	51.8	68.8	94.3	90.9	79.3	69.8
2.7	3.8	11.2	23.6	52.0	75.8	140.2	206.8	306.1	390.8	377.5
0.5	0.6	0.9	1.7	2.8	3.9	4.8	4.5	5.2	5.3	6.4
10.4	10.7	14.0	21.9	23.8	28.7	35.1	42.8	52.7	51.8	56.5
4.7	3.8	5.6	8.0	10.2	9.5	10.5	13.2	13.1	9.9	8.8
1.6	2.5	3.6	5.5	6.2	6.3	6.3	9.5	10.1	4.9	7.4
0.2	0.2	1.1	2.8	4.3	7.6	10.6	20.6	26.9	51.4	97.8
14.5	20.2	31.9	45.5	71.7	123.5	178.3	257.5	327.1	374.3	383.4
2.0	2.7	2.6	2.1	4.5	4.8	3.9	7.1	6.9	3.7	2.0
5.4	6.9	12.0	16.2	25.4	41.6	62.3	86.6	108.0	115.1	103.2
0.0	0.1	0.5	1.2	0.8	3.8	5.7	9.3	15.3	17.3	16.2
0.8	1.7	4.7	5.7	12.7	23.1	33.5	50.1	61.6	67.4	75.2
6.4	8.9	12.0	20.2	28.3	50.3	72.9	104.4	135.3	170.9	186.8

Table 5.12: Age-specific incidence rates per 100 000 person-years by primary site and five-year age group, 2017–2021, **females**

ICD-10	Site	0–4	5–9	10–14	15–19	20–24	25–29	30–34
C00–96	All sites	23.0	13.6	15.3	24.6	39.9	81.6	122.3
C00–14	Mouth, pharynx	0.1	0.0	0.3	0.1	0.5	0.8	2.0
C00	Lip	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C02–06	Oral cavity	0.0	0.0	0.0	0.1	0.2	0.2	1.0
C07–08	Salivary glands	0.0	0.0	0.3	0.0	0.1	0.2	0.8
C09–10, C01, C14	Oropharynx	0.0	0.0	0.0	0.0	0.1	0.2	0.0
C11	Nasopharynx	0.1	0.0	0.0	0.0	0.0	0.1	0.1
C12–13	Hypopharynx	0.0	0.0	0.0	0.0	0.0	0.0	0.1
C15–26	Digestive organs	1.0	0.6	1.1	3.3	4.3	4.9	9.6
C15	Oesophagus	0.0	0.0	0.0	0.0	0.0	0.0	0.1
C16	Stomach	0.0	0.0	0.0	0.1	0.4	0.7	1.0
C17	Small intestine	0.0	0.0	0.0	0.0	0.1	0.0	0.2
C18	Colon	0.0	0.3	0.8	1.9	2.7	2.3	4.9
C19–20	Rectum, rectosigmoid	0.0	0.0	0.0	0.0	0.7	0.6	1.9
C21	Anus	0.0	0.0	0.0	0.1	0.0	0.0	0.2
C22	Liver	1.0	0.3	0.1	0.4	0.1	0.3	0.6
C23–24	Gallbladder, bile ducts	0.0	0.0	0.0	0.0	0.0	0.1	0.3
C25	Pancreas	0.0	0.1	0.1	0.8	0.2	0.7	0.4
C26	Other digestive organs	0.0	0.0	0.1	0.0	0.0	0.2	0.0
C30–34, C38	Respiratory organs	0.8	0.0	0.0	0.1	0.1	0.8	1.5
C30–31	Nose, sinuses	0.1	0.0	0.0	0.0	0.0	0.1	0.1
C32	Larynx, epiglottis	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C33–34	Lung, trachea	0.7	0.0	0.0	0.0	0.1	0.6	1.3
C38	Heart, mediastinum and pleura	0.0	0.0	0.0	0.1	0.0	0.1	0.1
C40–41	Bone	0.3	0.8	1.4	1.3	0.7	0.1	0.6
C43	Melanoma of the skin	0.0	0.0	0.0	1.2	6.5	11.0	15.6
C44	Skin, non-melanoma	0.3	0.4	0.0	0.4	1.5	0.8	1.1
C45	Mesothelioma	0.0	0.0	0.0	0.0	0.0	0.1	0.2
C47	Autonomic nervous system	1.3	0.5	0.0	0.1	0.1	0.0	0.1
C48–49	Soft tissues	0.3	0.3	0.5	0.4	0.5	0.4	0.7
C50	Breast	0.0	0.0	0.0	0.4	1.8	10.3	27.1
C51–58	Female genital organs	0.0	0.0	0.6	1.4	3.7	22.0	26.8
C51–52, C57.7–9	Other female genital	0.0	0.0	0.0	0.0	0.0	0.2	0.9
C53	Cervix uteri	0.0	0.0	0.1	0.3	2.6	19.0	20.1
C54	Corpus uteri	0.0	0.0	0.0	0.0	0.0	0.7	2.2
C55	Uterus, other	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C56, C57.0–4, C48.2	Ovary etc.	0.0	0.0	0.5	1.0	1.0	2.1	3.2
C58	Placenta	0.0	0.0	0.0	0.1	0.1	0.0	0.3
C64–68	Urinary organs	2.1	0.4	0.0	0.3	0.9	1.7	1.4
C64	Kidney (excl. renal pelvis)	2.0	0.4	0.0	0.1	0.4	0.8	0.9
C65–68	Urinary tract	0.1	0.0	0.0	0.1	0.5	0.9	0.6
C69	Eye	0.6	0.3	0.0	0.1	0.1	0.4	0.4
C70–72	Central nervous system	4.8	4.4	6.0	4.4	3.3	7.5	8.7
C73	Thyroid gland	0.0	0.0	0.1	2.7	5.2	9.1	12.9
C37, C74–75	Other endocrine glands	0.8	0.3	0.3	1.4	2.4	1.7	3.0
C39, C76, C80	Other or unspecified	0.1	0.0	0.0	0.0	0.0	0.3	0.2
C81–96	Lymphoid/haematopoietic tissue	10.4	5.7	5.0	7.0	8.4	9.7	10.3
C81	Hodgkin lymphoma	0.0	0.1	1.4	3.5	4.4	3.8	3.5
C82–86, C96	Non-Hodgkin lymphoma	1.6	1.2	0.9	0.5	1.9	1.9	2.2
C88	Immunoproliferative disease	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C90	Multiple myeloma	0.0	0.0	0.0	0.0	0.0	0.2	0.2
C91–95	Leukaemia	8.9	4.4	2.7	3.0	2.1	3.9	4.3

35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
201.3	308.9	448.3	638.8	785.6	1 105.1	1 474.4	1 824.4	2 316.1	2 579.5	2 600.6
2.1	3.0	5.2	10.2	13.1	17.7	18.9	29.6	35.8	32.8	44.2
0.1	0.0	0.3	0.8	1.6	2.2	3.5	5.4	9.2	9.8	10.5
0.8	1.5	1.2	2.9	4.0	6.2	7.7	13.6	15.5	14.8	22.0
0.9	0.9	0.9	1.9	0.7	1.7	1.0	3.3	3.3	3.1	7.3
0.1	0.2	2.3	4.1	6.3	7.0	6.2	6.0	6.8	4.4	3.1
0.1	0.2	0.4	0.3	0.5	0.4	0.1	0.5	0.2	0.3	0.3
0.0	0.1	0.1	0.1	0.0	0.1	0.4	0.8	0.9	0.3	1.0
19.2	30.1	48.8	76.5	118.5	194.5	288.1	419.3	569.2	719.3	706.8
0.0	0.2	1.1	1.5	2.3	6.2	9.5	13.8	14.4	16.7	16.2
1.0	3.3	3.2	5.8	6.4	7.4	14.9	19.4	27.3	35.6	43.2
1.0	1.2	1.9	3.5	6.3	6.7	10.4	12.2	15.3	18.0	10.5
9.9	14.2	20.5	28.3	48.2	81.5	134.1	203.5	299.4	390.2	377.9
4.7	6.2	11.2	19.6	26.5	43.6	50.3	67.4	81.5	90.7	86.1
0.7	0.7	1.9	2.9	3.7	8.1	7.5	5.7	8.7	8.8	7.3
0.1	1.2	2.4	2.5	5.3	7.5	11.6	15.8	20.3	26.5	28.8
0.1	0.6	1.4	1.6	2.7	5.1	7.1	11.8	13.5	24.6	21.2
1.5	2.0	4.5	10.2	15.0	24.6	37.0	59.8	79.3	94.5	98.1
0.1	0.6	0.8	0.8	2.0	3.8	5.6	9.8	9.4	13.9	17.5
2.8	5.2	13.9	29.9	63.2	124.5	203.9	297.9	337.9	289.1	196.0
0.2	0.4	0.3	0.6	0.6	1.2	1.7	2.5	2.0	3.8	2.4
0.0	0.1	0.4	0.6	1.7	2.5	2.3	3.1	2.0	1.9	0.3
2.6	4.6	13.0	28.7	60.8	120.7	199.6	292.0	333.3	282.5	192.3
0.0	0.1	0.1	0.0	0.0	0.1	0.3	0.3	0.7	0.9	1.0
0.9	0.6	0.3	0.4	1.0	1.5	1.3	1.1	1.3	1.6	2.1
23.0	33.2	48.7	58.6	68.0	74.1	88.1	107.3	124.1	137.6	137.1
2.0	4.1	10.2	13.4	24.0	38.3	71.7	124.9	205.5	345.1	544.0
0.0	0.0	0.2	0.3	0.6	0.9	0.9	2.9	1.1	3.5	2.6
0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
1.2	1.8	2.0	2.1	2.2	2.9	3.5	6.0	6.6	4.4	5.8
58.9	116.4	179.5	260.4	253.4	316.2	364.2	274.4	353.4	327.2	280.0
42.1	47.1	53.7	76.7	95.3	130.2	159.5	195.9	216.9	221.7	184.5
1.4	2.3	2.0	4.4	4.6	7.7	10.0	11.6	16.2	25.8	32.2
28.9	26.4	20.5	16.2	16.3	16.4	17.4	15.2	12.7	15.4	10.7
5.5	10.0	16.6	32.4	48.0	69.2	77.5	103.6	112.7	113.1	78.8
0.2	0.1	0.0	0.2	0.1	0.1	0.7	0.6	1.5	1.6	3.9
5.9	8.1	14.6	23.5	26.3	36.8	53.9	65.0	73.8	65.8	58.9
0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.8	7.4	10.9	20.0	33.8	51.5	72.5	99.5	131.0	132.3	130.6
2.1	4.6	7.9	10.5	14.6	23.5	30.7	39.7	43.2	35.9	31.4
0.7	2.8	3.1	9.5	19.2	28.0	41.8	59.8	87.8	96.4	99.2
0.5	0.2	1.3	1.8	3.1	3.0	4.8	4.3	4.8	2.8	3.7
10.9	16.8	26.3	25.7	32.6	37.8	36.4	48.8	52.9	51.6	43.2
18.2	19.8	17.7	18.2	16.0	19.8	23.7	20.0	16.6	16.4	11.8
3.6	3.5	4.6	2.7	4.2	5.4	6.8	6.7	8.5	6.0	3.7
0.3	0.2	1.6	3.0	4.0	6.5	9.7	13.6	29.0	46.0	91.8
12.7	19.1	23.3	38.8	52.7	80.4	120.3	171.9	221.3	242.2	212.7
2.2	1.6	0.8	2.0	1.9	1.6	2.9	3.1	4.8	3.1	2.4
4.3	6.8	6.3	12.5	20.4	31.0	44.4	63.1	80.2	74.6	62.0
0.0	0.2	0.5	0.4	0.7	2.1	2.9	5.4	8.7	7.2	4.7
0.9	0.9	2.7	5.8	9.5	12.3	23.0	30.5	37.1	46.6	36.6
5.2	9.5	12.9	18.0	20.2	33.4	47.2	69.8	90.4	110.5	107.0

Table 5.13: Average annual number of new cases by primary site and five-year period, 1962–2021, **males**

ICD-10	Site	1962–66	1967–71	1972–76	1977–81	1982–86
C00–96	All sites	4 716	5 594	6 520	7 623	8 629
C00–14	Mouth, pharynx	188	215	244	236	255
C00	Lip	90	108	110	105	94
C02–06	Oral cavity	36	53	59	66	82
C07–08	Salivary glands	13	15	14	14	15
C09–10, C01, C14	Oropharynx	24	14	29	23	30
C11	Nasopharynx	9	10	11	9	12
C12–13	Hypopharynx	17	15	22	19	22
C15–26	Digestive organs	1 740	1 890	1 975	2 191	2 375
C15	Oesophagus	78	80	81	89	84
C16	Stomach	786	745	649	600	579
C17	Small intestine	13	18	18	19	30
C18	Colon	306	368	416	541	675
C19–20	Rectum, rectosigmoid	186	270	328	448	514
C21	Anus	7	5	7	9	12
C22	Liver	23	41	54	50	68
C23–24	Gallbladder, bile ducts	22	27	29	38	47
C25	Pancreas	185	226	252	271	297
C26	Other digestive organs	135	109	142	127	68
C30–34, C38	Respiratory organs	477	676	827	1 054	1 225
C30–31	Nose, sinuses	21	21	23	25	21
C32	Larynx, epiglottis	50	68	74	94	108
C33–34	Lung, trachea	396	574	710	917	1 085
C38	Heart, mediastinum and pleura	10	13	20	19	12
C40–41	Bone	17	17	22	21	24
C43	Melanoma of the skin	80	118	162	220	264
C44	Skin, non-melanoma	68	107	189	220	301
C45	Mesothelioma	2	4	9	21	27
C47	Autonomic nervous system	15	13	12	8	8
C48–49	Soft tissues	29	38	53	57	45
C50	Breast	8	9	10	11	12
C60–63	Male genital organs	961	1 153	1 387	1 664	1 892
C61	Prostate	870	1 052	1 280	1 523	1 714
C62	Testis	68	78	85	115	149
C60, C63	Other male genital	23	23	22	26	29
C64–68	Urinary organs	431	517	677	818	961
C64	Kidney (excl. renal pelvis)	128	158	177	211	250
C65–68	Urinary tract	303	359	500	607	711
C69	Eye	17	24	18	27	25
C70–72	Central nervous system	136	150	169	195	221
C73	Thyroid gland	26	35	36	44	46
C37, C74–75	Other endocrine glands	10	21	25	32	43
C39, C76, C80	Other or unspecified	88	127	160	185	229
C81–96	Lymphoid/haematopoietic tissue	423	482	547	620	676
C81	Hodgkin lymphoma	53	61	62	68	53
C82–86, C96	Non-Hodgkin lymphoma	106	118	142	164	215
C88	Immunoproliferative disease	0	2	7	8	10
C90	Multiple myeloma	83	95	127	151	152
C91–95	Leukaemia	180	205	210	229	246

1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
9 300	10 518	11 515	12 972	15 239	17 550	19 084
252	256	260	257	306	382	437
85	65	51	44	61	56	55
81	91	87	82	91	115	124
18	18	23	20	21	36	36
33	47	62	79	105	145	184
10	10	11	10	9	10	12
26	25	27	22	19	20	25
2 387	2 437	2 551	2 716	3 021	3 525	3 866
104	107	121	138	162	208	249
519	449	381	327	305	301	268
26	33	48	53	75	103	128
760	847	947	1 037	1 187	1 378	1 493
527	562	601	660	697	802	815
11	19	17	19	23	25	36
60	59	71	82	111	169	237
49	53	61	63	70	84	80
295	280	276	310	345	401	498
36	28	28	27	47	54	62
1 285	1 390	1 438	1 557	1 670	1 774	1 849
24	20	23	22	23	27	27
105	104	107	105	97	99	91
1 148	1 251	1 293	1 417	1 539	1 637	1 719
8	15	16	13	11	10	12
20	21	20	26	28	29	33
380	428	471	521	716	983	1 206
392	479	565	670	807	1 000	1 468
37	45	56	66	68	67	68
8	6	6	5	7	5	5
43	48	50	56	61	70	66
13	12	15	15	19	28	30
2 112	2 676	3 220	3 820	4 849	5 425	5 423
1 921	2 439	2 952	3 531	4 511	5 054	5 058
166	204	238	247	293	312	299
25	33	30	42	45	59	66
1 011	1 100	1 102	1 260	1 427	1 746	1 948
254	268	293	356	447	570	619
757	832	810	904	980	1 177	1 329
23	29	27	34	32	39	43
243	289	358	440	500	505	456
51	42	49	60	71	112	140
42	55	69	95	132	121	90
279	321	287	228	172	150	155
721	884	970	1 146	1 354	1 589	1 801
51	52	58	70	77	87	84
270	318	343	388	465	545	586
8	20	30	33	34	46	57
154	163	162	183	214	238	304
237	332	377	472	564	673	770

Table 5.14: Average annual number of new cases by primary site and five-year period, 1962–2021, **females**

ICD-10	Site	1962–66	1967–71	1972–76	1977–81	1982–86
C00–96	All sites	4 667	5 444	6 177	7 039	7 937
C00–14	Mouth, pharynx	69	73	80	90	103
C00	Lip	5	6	7	9	15
C02–06	Oral cavity	22	34	34	44	53
C07–08	Salivary glands	14	13	12	15	13
C09–10, C01, C14	Oropharynx	13	8	14	12	13
C11	Nasopharynx	5	4	6	5	4
C12–13	Hypopharynx	10	7	8	5	6
C15–26	Digestive organs	1 467	1 609	1 728	2 032	2 169
C15	Oesophagus	32	28	31	31	35
C16	Stomach	532	492	419	406	387
C17	Small intestine	11	15	18	21	27
C18	Colon	359	438	513	691	785
C19–20	Rectum, rectosigmoid	140	215	261	359	405
C21	Anus	10	13	13	20	25
C22	Liver	13	23	30	36	44
C23–24	Gallbladder, bile ducts	52	59	56	73	82
C25	Pancreas	124	167	189	224	274
C26	Other digestive organs	195	159	199	171	104
C30–34, C38	Respiratory organs	111	168	202	257	351
C30–31	Nose, sinuses	12	14	13	13	15
C32	Larynx, epiglottis	5	6	7	11	11
C33–34	Lung, trachea	86	143	173	228	321
C38	Heart, mediastinum and pleura	7	5	9	5	4
C40–41	Bone	9	14	13	13	14
C43	Melanoma of the skin	93	129	200	263	361
C44	Skin, non-melanoma	40	59	118	150	226
C45	Mesothelioma	1	2	2	2	5
C47	Autonomic nervous system	9	16	9	5	6
C48–49	Soft tissues	27	28	43	44	47
C50	Breast	1 071	1 218	1 381	1 493	1 720
C51–58	Female genital organs	961	1 122	1 226	1 268	1 290
C51–52, C57.7–9	Other female genital	61	60	76	80	83
C53	Cervix uteri	359	403	441	400	354
C54	Corpus uteri	222	268	324	369	390
C55	Uterus, other	17	15	7	8	5
C56, C57.0–4, C48.2	Ovary etc.	300	372	377	408	455
C58	Placenta	3	4	1	3	3
C64–68	Urinary organs	225	273	327	376	420
C64	Kidney (excl. renal pelvis)	90	117	118	138	156
C65–68	Urinary tract	135	156	209	239	264
C69	Eye	16	18	20	21	22
C70–72	Central nervous system	118	131	151	186	224
C73	Thyroid gland	61	91	111	132	143
C37, C74–75	Other endocrine glands	7	13	16	33	47
C39, C76, C80	Other or unspecified	70	99	112	176	224
C81–96	Lymphoid/haematopoietic tissue	312	383	437	495	566
C81	Hodgkin lymphoma	37	47	43	40	38
C82–86, C96	Non-Hodgkin lymphoma	76	101	114	146	199
C88	Immunoproliferative disease	0	1	4	4	6
C90	Multiple myeloma	64	79	108	128	134
C91–95	Leukaemia	135	155	167	177	190

1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
8 556	9 609	10 648	11 948	13 124	14 887	16 471
108	130	128	152	184	212	243
20	19	16	21	36	40	43
55	63	62	70	73	87	99
12	21	20	19	25	26	31
11	18	23	30	40	47	61
3	3	3	5	4	6	5
6	5	5	7	5	5	4
2 204	2 324	2 440	2 572	2 771	3 108	3 297
39	40	50	53	59	71	86
341	295	242	230	205	171	175
31	29	43	49	62	69	98
883	1 015	1 115	1 205	1 313	1 516	1 612
422	455	476	497	519	554	543
28	36	36	45	46	65	67
42	42	47	47	69	95	129
75	73	80	78	87	95	89
282	311	326	340	363	404	434
61	27	25	28	50	68	65
481	622	767	968	1 230	1 478	1 698
14	17	15	18	20	19	18
11	20	20	16	19	21	19
451	579	724	927	1 184	1 433	1 658
5	6	7	6	7	5	4
14	18	19	19	24	25	23
443	490	512	581	735	973	1 139
304	398	475	584	722	881	1 241
7	10	9	12	13	13	14
9	7	5	4	4	5	4
46	45	51	59	64	52	51
1 820	2 073	2 462	2 740	2 819	3 251	3 657
1 318	1 396	1 441	1 570	1 650	1 735	1 791
85	95	96	102	104	117	123
346	345	310	300	295	344	361
412	467	526	649	723	746	778
6	8	9	9	7	8	9
464	477	495	506	519	518	518
6	4	4	4	2	3	2
447	481	498	566	616	715	749
181	190	189	216	250	269	291
266	291	309	350	366	446	458
25	30	28	32	33	38	41
260	316	435	596	631	571	544
135	137	124	153	190	265	332
39	49	65	106	138	120	89
285	353	337	299	209	178	184
610	729	851	934	1 092	1 266	1 373
34	34	42	48	54	62	61
243	273	317	337	387	439	461
8	13	16	21	24	29	34
133	139	147	154	167	195	216
191	269	327	375	459	540	601

Table 5.15: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and five-year period, 1962–2021, **males**

ICD-10	Site	1962–66	1967–71	1972–76	1977–81	1982–86
C00–96	All sites	357.7	393.5	429.8	475.7	513.6
C00–14	Mouth, pharynx	14.5	15.3	15.8	14.7	15.1
C00	Lip	7.3	8.0	7.2	6.8	5.7
C02–06	Oral cavity	2.9	3.7	3.9	4.1	4.9
C07–08	Salivary glands	0.8	1.0	0.9	0.9	0.8
C09–10, C01, C14	Oropharynx	1.7	0.9	1.9	1.3	1.8
C11	Nasopharynx	0.6	0.6	0.6	0.6	0.7
C12–13	Hypopharynx	1.2	1.1	1.4	1.1	1.3
C15–26	Digestive organs	134.7	135.9	133.7	139.8	144.6
C15	Oesophagus	6.1	5.8	5.5	5.6	5.0
C16	Stomach	61.1	54.4	44.2	38.3	35.6
C17	Small intestine	0.9	1.2	1.1	1.2	1.8
C18	Colon	23.8	26.5	28.3	34.7	41.0
C19–20	Rectum, rectosigmoid	14.2	19.2	21.8	28.5	30.7
C21	Anus	0.5	0.4	0.5	0.5	0.8
C22	Liver	1.6	2.8	3.4	3.0	4.0
C23–24	Gallbladder, bile ducts	1.6	1.9	2.0	2.5	2.8
C25	Pancreas	13.6	15.6	16.4	16.8	18.1
C26	Other digestive organs	11.3	8.1	10.4	8.8	4.8
C30–34, C38	Respiratory organs	32.4	42.7	49.6	61.0	69.6
C30–31	Nose, sinuses	1.6	1.4	1.4	1.4	1.3
C32	Larynx, epiglottis	3.4	4.3	4.4	5.4	6.1
C33–34	Lung, trachea	26.6	36.2	42.6	53.0	61.6
C38	Heart, mediastinum and pleura	0.7	0.8	1.1	1.1	0.7
C40–41	Bone	0.9	0.9	1.2	1.1	1.2
C43	Melanoma of the skin	5.3	7.5	9.8	12.9	14.9
C44	Skin, non-melanoma	6.3	8.9	15.2	15.7	19.9
C45	Mesothelioma	0.2	0.3	0.5	1.2	1.5
C47	Autonomic nervous system	0.9	0.8	0.6	0.4	0.4
C48–49	Soft tissues	1.9	2.6	3.4	3.4	2.5
C50	Breast	0.7	0.6	0.6	0.7	0.8
C60–63	Male genital organs	81.5	89.2	98.0	109.3	114.7
C61	Prostate	75.5	82.9	91.9	101.7	105.9
C62	Testis	4.1	4.5	4.6	5.9	7.0
C60, C63	Other male genital	2.0	1.8	1.5	1.7	1.7
C64–68	Urinary organs	32.0	34.9	43.3	49.9	56.7
C64	Kidney (excl. renal pelvis)	9.1	10.2	10.8	12.4	14.4
C65–68	Urinary tract	22.9	24.7	32.4	37.5	42.3
C69	Eye	1.1	1.4	1.0	1.6	1.4
C70–72	Central nervous system	7.9	8.4	9.2	10.6	11.8
C73	Thyroid gland	1.8	2.2	2.2	2.6	2.5
C37, C74–75	Other endocrine glands	0.6	1.2	1.4	1.7	2.2
C39, C76, C80	Other or unspecified	6.4	9.3	10.7	11.7	14.2
C81–96	Lymphoid/haematopoietic tissue	28.4	31.5	33.8	37.3	39.5
C81	Hodgkin lymphoma	3.3	3.6	3.5	3.5	2.8
C82–86, C96	Non-Hodgkin lymphoma	7.0	7.7	8.8	9.7	12.5
C88	Immunoproliferative disease	0.0	0.2	0.4	0.5	0.6
C90	Multiple myeloma	6.0	6.7	8.2	9.5	9.3
C91–95	Leukaemia	12.0	13.3	12.9	14.0	14.4

1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
536.4	590.8	628.1	673.7	720.6	740.4	712.6
14.6	14.3	13.9	13.0	14.0	15.6	16.1
5.0	3.6	2.9	2.4	3.0	2.5	2.1
4.7	5.0	4.6	4.1	4.2	4.7	4.6
1.0	1.0	1.3	1.1	1.0	1.5	1.4
1.9	2.6	3.2	3.9	4.6	5.7	6.6
0.6	0.6	0.5	0.5	0.4	0.4	0.4
1.5	1.4	1.4	1.1	0.9	0.8	0.9
140.0	138.8	140.7	142.7	144.7	150.2	144.9
6.0	6.1	6.6	7.3	7.6	8.7	9.2
30.7	25.7	21.2	17.5	14.7	12.9	10.2
1.5	1.8	2.7	2.6	3.5	4.3	4.7
44.9	48.3	52.2	54.6	57.5	59.5	56.6
30.5	32.0	33.0	34.4	32.9	33.6	30.1
0.6	1.1	0.9	1.0	1.0	1.0	1.3
3.5	3.1	3.8	4.2	5.2	7.1	8.8
2.9	3.1	3.5	3.3	3.3	3.6	3.0
17.1	16.0	15.3	16.3	16.6	17.1	18.6
2.3	1.6	1.7	1.4	2.3	2.3	2.4
71.7	76.9	77.3	80.4	79.0	75.4	68.6
1.3	1.2	1.1	1.1	1.1	1.1	1.0
6.0	5.8	5.7	5.4	4.5	4.1	3.3
64.0	69.1	69.6	73.2	73.0	69.7	63.7
0.4	0.8	0.8	0.6	0.5	0.5	0.5
1.0	1.0	1.0	1.2	1.2	1.1	1.2
21.1	22.8	24.2	25.7	32.6	40.8	44.9
24.6	28.7	32.8	36.8	41.4	46.5	59.7
2.1	2.5	3.1	3.5	3.3	2.9	2.6
0.4	0.3	0.3	0.2	0.3	0.2	0.2
2.3	2.6	2.6	2.7	2.8	2.9	2.5
0.8	0.7	0.9	0.8	0.9	1.2	1.1
123.2	151.5	178.5	201.2	228.8	224.6	197.8
114.1	140.8	166.7	188.5	214.7	210.2	184.3
7.5	8.9	10.1	10.6	12.0	11.9	11.0
1.5	1.8	1.7	2.2	2.1	2.5	2.5
58.7	62.2	60.2	65.5	67.8	74.4	72.7
14.5	14.7	15.6	17.9	20.5	23.1	22.5
44.2	47.5	44.6	47.6	47.4	51.2	50.2
1.2	1.6	1.4	1.7	1.4	1.6	1.6
12.8	14.9	17.6	20.8	22.1	20.3	16.9
2.7	2.2	2.4	2.8	3.1	4.5	5.1
2.2	2.8	3.3	4.4	5.7	4.8	3.3
16.7	19.0	16.2	12.4	8.6	6.8	6.3
40.3	48.1	51.9	57.8	62.8	66.7	67.2
2.5	2.4	2.7	3.2	3.3	3.4	3.0
14.9	17.0	18.0	19.3	21.4	22.6	21.7
0.5	1.1	1.7	1.7	1.6	2.0	2.2
9.1	9.4	9.0	9.5	10.1	10.2	11.3
13.4	18.2	20.5	24.2	26.4	28.5	29.0

Table 5.16: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and five-year period, 1962–2021, **females**

ICD-10	Site	1962–66	1967–71	1972–76	1977–81	1982–86
C00–96	All sites	292.8	313.4	334.5	358.5	381.5
C00–14	Mouth, pharynx	4.5	4.4	4.4	4.6	4.9
C00	Lip	0.3	0.4	0.4	0.5	0.7
C02–06	Oral cavity	1.5	2.1	1.9	2.3	2.4
C07–08	Salivary glands	0.8	0.8	0.7	0.7	0.6
C09–10, C01, C14	Oropharynx	0.9	0.5	0.8	0.6	0.6
C11	Nasopharynx	0.3	0.3	0.3	0.2	0.2
C12–13	Hypopharynx	0.6	0.4	0.4	0.2	0.3
C15–26	Digestive organs	98.6	95.4	93.9	101.1	99.9
C15	Oesophagus	2.3	1.7	1.6	1.6	1.6
C16	Stomach	36.8	29.4	22.9	20.1	17.8
C17	Small intestine	0.7	0.9	1.0	1.0	1.2
C18	Colon	23.6	25.6	27.7	34.4	36.1
C19–20	Rectum, rectosigmoid	8.8	12.6	14.1	17.9	18.8
C21	Anus	0.6	0.7	0.7	1.0	1.2
C22	Liver	0.8	1.3	1.5	1.8	2.1
C23–24	Gallbladder, bile ducts	3.4	3.4	3.0	3.5	3.8
C25	Pancreas	7.8	9.7	10.0	10.9	12.4
C26	Other digestive organs	13.8	10.0	11.5	8.9	4.9
C30–34, C38	Respiratory organs	6.9	9.6	10.5	12.8	16.7
C30–31	Nose, sinuses	0.8	0.9	0.7	0.6	0.7
C32	Larynx, epiglottis	0.3	0.3	0.4	0.6	0.5
C33–34	Lung, trachea	5.3	8.1	9.0	11.4	15.4
C38	Heart, mediastinum and pleura	0.4	0.3	0.5	0.3	0.2
C40–41	Bone	0.5	0.7	0.7	0.6	0.7
C43	Melanoma of the skin	5.6	7.5	11.2	14.0	18.3
C44	Skin, non-melanoma	3.0	3.8	6.9	8.0	10.7
C45	Mesothelioma	0.1	0.1	0.1	0.1	0.2
C47	Autonomic nervous system	0.5	0.8	0.4	0.3	0.3
C48–49	Soft tissues	1.7	1.6	2.4	2.2	2.2
C50	Breast	65.5	69.6	75.5	77.9	85.7
C51–58	Female genital organs	56.9	63.2	66.3	66.2	64.6
C51–52, C57.7–9	Other female genital	3.9	3.5	4.0	4.1	3.9
C53	Cervix uteri	21.1	23.1	24.9	21.5	17.8
C54	Corpus uteri	12.9	14.7	16.9	19.0	19.6
C55	Uterus, other	1.2	1.0	0.4	0.5	0.3
C56, C57.0–4, C48.2	Ovary etc.	17.7	20.7	20.0	21.0	22.8
C58	Placenta	0.2	0.2	0.1	0.1	0.1
C64–68	Urinary organs	14.2	15.6	17.2	18.4	19.3
C64	Kidney (excl. renal pelvis)	5.4	6.5	6.1	6.7	7.2
C65–68	Urinary tract	8.8	9.1	11.1	11.7	12.0
C69	Eye	0.9	1.0	1.1	1.1	1.1
C70–72	Central nervous system	6.8	7.1	7.9	9.5	11.1
C73	Thyroid gland	3.8	5.2	6.1	6.9	7.0
C37, C74–75	Other endocrine glands	0.4	0.7	0.9	1.7	2.3
C39, C76, C80	Other or unspecified	4.3	5.9	6.1	8.7	10.3
C81–96	Lymphoid/haematopoietic tissue	18.6	21.3	23.0	24.3	26.3
C81	Hodgkin lymphoma	2.2	2.6	2.3	1.9	1.7
C82–86, C96	Non-Hodgkin lymphoma	4.6	5.7	6.1	7.3	9.4
C88	Immunoproliferative disease	0.0	0.0	0.2	0.2	0.3
C90	Multiple myeloma	3.9	4.5	5.6	6.2	6.1
C91–95	Leukaemia	7.9	8.5	8.9	8.6	8.7

1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
393.8	428.1	461.4	497.8	518.0	548.7	560.0
5.0	5.8	5.6	6.4	7.3	7.8	8.2
0.9	0.8	0.7	0.8	1.4	1.4	1.4
2.6	2.8	2.6	2.9	2.8	3.2	3.3
0.6	0.9	0.9	0.8	1.0	1.0	1.0
0.6	0.9	1.1	1.4	1.7	1.8	2.2
0.2	0.1	0.1	0.2	0.2	0.2	0.2
0.3	0.2	0.3	0.3	0.2	0.2	0.1
96.2	97.9	99.9	102.3	105.3	111.3	108.4
1.7	1.7	2.1	2.1	2.2	2.5	2.8
14.7	12.1	9.6	9.0	7.6	6.1	5.8
1.4	1.3	1.9	2.1	2.5	2.5	3.3
38.7	42.9	45.6	47.7	49.6	53.9	52.5
18.5	19.6	20.1	20.3	20.2	20.2	18.3
1.4	1.7	1.6	1.9	1.8	2.4	2.3
1.8	1.8	1.9	1.9	2.6	3.4	4.3
3.2	3.0	3.3	3.0	3.3	3.4	2.9
12.1	12.9	12.9	13.3	13.6	14.4	14.1
2.7	1.1	0.9	1.1	1.8	2.4	2.1
22.6	28.8	34.7	41.6	49.3	54.3	55.8
0.6	0.7	0.6	0.7	0.8	0.7	0.6
0.5	0.9	0.9	0.7	0.8	0.8	0.7
21.2	26.8	32.8	40.0	47.5	52.7	54.5
0.2	0.3	0.3	0.2	0.3	0.2	0.1
0.6	0.8	0.8	0.8	1.0	1.0	0.8
21.6	22.9	22.8	24.9	29.6	36.6	39.7
13.1	16.5	18.6	21.7	25.7	29.7	39.1
0.3	0.4	0.4	0.5	0.5	0.5	0.5
0.4	0.3	0.2	0.2	0.2	0.2	0.2
2.2	2.0	2.2	2.5	2.5	2.0	1.8
86.7	96.4	112.9	119.9	115.3	123.8	130.1
63.8	65.2	64.5	66.8	66.6	65.2	62.1
3.8	4.1	3.8	4.1	3.9	4.2	4.1
16.9	16.1	13.9	12.8	12.1	13.5	13.5
20.2	22.2	24.0	27.9	29.4	27.8	26.5
0.3	0.3	0.4	0.3	0.2	0.3	0.3
22.4	22.3	22.3	21.5	20.9	19.4	17.7
0.2	0.2	0.2	0.2	0.1	0.1	0.1
19.8	20.5	20.7	22.8	23.9	25.9	24.9
8.1	8.2	8.0	8.9	9.9	10.0	9.9
11.7	12.2	12.7	13.9	14.0	15.9	15.0
1.1	1.3	1.2	1.3	1.3	1.5	1.4
12.5	14.7	19.4	25.8	25.7	21.8	19.3
6.4	6.3	5.5	6.5	7.8	10.3	12.3
1.9	2.3	3.0	4.6	5.7	4.7	3.3
12.3	14.5	13.3	11.1	7.4	6.0	5.8
27.2	31.4	35.7	38.1	42.9	46.3	46.2
1.5	1.5	1.9	2.0	2.3	2.4	2.3
11.1	12.2	13.7	14.0	15.4	16.2	15.5
0.3	0.6	0.7	0.8	0.9	1.0	1.1
5.8	5.7	6.1	6.1	6.5	7.0	7.1
8.5	11.5	13.4	15.1	17.8	19.6	20.3

Table 5.17: Average annual number of new cases by primary site and county, 2017–2021, **males**

ICD-10	Site	Norway	Viken	Oslo	Innlandet
C00–96	All sites	19 084	4 425	1 808	1 513
C00–14	Mouth, pharynx	437	103	49	32
C00	Lip	55	10	5	5
C02–06	Oral cavity	124	30	13	10
C07–08	Salivary glands	36	10	3	3
C09–10, C01, C14	Oropharynx	184	47	21	12
C11	Nasopharynx	12	2	3	0
C12–13	Hypopharynx	25	4	5	2
C15–26	Digestive organs	3 866	838	348	326
C15	Oesophagus	249	50	24	23
C16	Stomach	268	58	22	17
C17	Small intestine	128	25	13	9
C18	Colon	1 493	322	123	123
C19–20	Rectum, rectosigmoid	815	169	70	78
C21	Anus	36	8	7	3
C22	Liver	237	53	26	22
C23–24	Gallbladder, bile ducts	80	22	7	7
C25	Pancreas	498	117	48	38
C26	Other digestive organs	62	15	7	6
C30–34, C38	Respiratory organs	1 849	401	157	154
C30–31	Nose, sinuses	27	5	3	4
C32	Larynx, epiglottis	91	17	10	6
C33–34	Lung, trachea	1 719	374	141	143
C38	Heart, mediastinum and pleura	12	4	2	1
C40–41	Bone	33	6	4	3
C43	Melanoma of the skin	1 206	301	126	85
C44	Skin, non-melanoma	1 468	371	126	96
C45	Mesothelioma	68	19	4	4
C47	Autonomic nervous system	5	2	1	0
C48–49	Soft tissues	66	15	8	5
C50	Breast	30	5	3	2
C60–63	Male genital organs	5 423	1 292	527	441
C61	Prostate	5 058	1 220	480	413
C62	Testis	299	61	39	23
C60, C63	Other male genital	66	12	8	5
C64–68	Urinary organs	1 948	451	179	154
C64	Kidney (excl. renal pelvis)	619	144	55	46
C65–68	Urinary tract	1 329	307	124	108
C69	Eye	43	10	4	4
C70–72	Central nervous system	456	103	48	31
C73	Thyroid gland	140	29	18	7
C37, C74–75	Other endocrine glands	90	26	7	5
C39, C76, C80	Other or unspecified	155	39	11	14
C81–96	Lymphoid/haematopoietic tissue	1 801	414	186	149
C81	Hodgkin lymphoma	84	19	9	6
C82–86, C96	Non-Hodgkin lymphoma	586	125	61	51
C88	Immunoproliferative disease	57	12	6	2
C90	Multiple myeloma	304	75	28	28
C91–95	Leukaemia	770	183	82	62

Vestfold og Telemark	Agder	Rogaland	Vestland	Møre og Romsdal	Trøndelag	Nordland	Troms og Finnmark
1 714	1 091	1 726	2 334	1 002	1 590	996	885
41	27	34	48	22	31	25	24
6	5	7	7	3	5	2	2
13	9	10	13	8	7	6	6
2	4	2	5	1	4	1	1
16	9	12	20	9	13	13	12
1	0	1	1	1	1	0	1
3	1	2	3	1	2	2	1
339	213	317	491	235	347	222	191
23	18	25	25	12	24	13	10
24	14	18	36	17	23	20	19
12	6	11	18	9	13	6	7
135	81	126	201	99	133	84	66
68	39	70	109	46	75	52	39
3	1	3	3	2	2	2	2
21	16	16	23	14	22	12	11
6	3	5	12	5	6	3	5
42	29	39	57	26	44	28	29
6	5	4	7	4	4	2	4
165	122	165	227	108	135	105	110
2	2	2	3	1	2	1	1
12	5	6	13	6	7	6	4
149	115	157	211	101	127	98	104
2	1	1	1	0	0	1	0
2	2	3	5	1	4	1	2
125	80	105	149	40	114	37	41
165	111	141	199	43	111	59	46
6	7	6	9	3	4	3	1
0	0	1	1	0	0	0	0
6	4	5	6	5	5	4	5
2	3	3	4	2	2	2	2
435	275	548	642	283	445	297	235
403	253	515	598	262	417	283	213
26	19	29	35	16	23	12	16
6	3	5	8	5	5	2	7
179	106	158	221	122	162	115	100
56	38	50	75	35	54	34	31
123	68	108	147	87	108	81	69
4	2	3	6	3	4	2	2
41	28	48	55	18	37	26	21
13	10	9	18	5	14	6	11
7	3	11	14	3	5	5	5
18	9	11	19	10	11	7	6
166	90	158	219	100	156	80	83
8	6	6	11	5	7	4	4
50	32	51	72	34	52	25	33
7	1	5	6	4	6	5	3
32	13	24	37	17	25	13	11
68	38	72	94	40	66	33	31

Table 5.18: Average annual number of new cases by primary site and county, 2017–2021, **females**

ICD-10	Site	Norway	Viken	Oslo	Innlandet
C00–96	All sites	16 471	3 855	1 700	1 296
C00–14	Mouth, pharynx	243	55	28	20
C00	Lip	43	8	4	3
C02–06	Oral cavity	99	20	11	8
C07–08	Salivary glands	31	10	4	2
C09–10, C01, C14	Oropharynx	61	15	7	7
C11	Nasopharynx	5	1	1	0
C12–13	Hypopharynx	4	1	2	0
C15–26	Digestive organs	3 297	730	325	285
C15	Oesophagus	86	19	11	8
C16	Stomach	175	39	20	13
C17	Small intestine	98	22	10	9
C18	Colon	1 612	358	149	136
C19–20	Rectum, rectosigmoid	543	114	54	46
C21	Anus	67	16	8	4
C22	Liver	129	29	14	15
C23–24	Gallbladder, bile ducts	89	19	10	10
C25	Pancreas	434	100	42	38
C26	Other digestive organs	65	16	7	7
C30–34, C38	Respiratory organs	1 698	390	165	138
C30–31	Nose, sinuses	18	4	3	3
C32	Larynx, epiglottis	19	3	3	1
C33–34	Lung, trachea	1 658	382	158	134
C38	Heart, mediastinum and pleura	4	1	1	0
C40–41	Bone	23	6	3	1
C43	Melanoma of the skin	1 139	262	111	79
C44	Skin, non-melanoma	1 241	301	101	71
C45	Mesothelioma	14	3	2	2
C47	Autonomic nervous system	4	1	0	0
C48–49	Soft tissues	51	13	8	5
C50	Breast	3 657	905	421	277
C51–58	Female genital organs	1 791	421	185	156
C51–52, C57.7–9	Other female genital	123	29	11	10
C53	Cervix uteri	361	84	46	30
C54	Corpus uteri	778	180	76	73
C55	Uterus, other	9	2	1	1
C56, C57.0–4, C48.2	Ovary etc.	518	126	50	42
C58	Placenta	2	0	0	0
C64–68	Urinary organs	749	175	63	61
C64	Kidney (excl. renal pelvis)	291	70	19	24
C65–68	Urinary tract	458	105	44	37
C69	Eye	41	10	4	4
C70–72	Central nervous system	544	122	58	43
C73	Thyroid gland	332	73	49	18
C37, C74–75	Other endocrine glands	89	24	9	5
C39, C76, C80	Other or unspecified	184	40	16	17
C81–96	Lymphoid/haematopoietic tissue	1 373	324	151	112
C81	Hodgkin lymphoma	61	15	8	5
C82–86, C96	Non-Hodgkin lymphoma	461	96	46	38
C88	Immunoproliferative disease	34	6	4	2
C90	Multiple myeloma	216	55	21	20
C91–95	Leukaemia	601	152	71	48

Vestfold og Telemark	Agder	Rogaland	Vestland	Møre og Romsdal	Trøndelag	Nordland	Troms og Finnmark
1 496	978	1 380	1 955	808	1 415	832	755
21	13	19	26	11	24	13	12
4	3	4	5	2	6	1	1
8	4	8	13	5	8	6	7
2	2	2	3	1	2	2	1
7	3	4	4	2	6	4	3
0	0	1	1	0	0	0	0
1	0	0	0	0	0	0	0
292	183	243	400	195	294	191	158
9	6	5	7	5	8	5	4
12	11	9	23	10	17	12	10
9	6	8	13	6	9	5	2
145	92	124	193	103	145	92	75
53	24	39	70	32	54	32	25
9	3	6	8	2	4	5	3
9	7	10	14	5	13	6	8
6	4	8	11	3	9	4	6
37	26	31	56	24	32	27	22
4	4	4	6	4	5	4	3
140	112	142	182	91	147	99	91
2	1	2	1	0	2	1	0
1	1	1	2	1	2	2	1
137	110	139	179	90	143	97	89
0	0	0	1	0	0	0	0
1	1	2	3	2	2	1	1
118	88	108	136	44	119	35	40
143	108	129	182	32	85	46	42
1	1	2	1	1	1	1	0
1	0	0	0	0	1	0	0
4	4	4	3	3	4	2	2
309	200	319	411	193	305	166	151
162	104	145	223	78	149	85	84
12	7	8	15	5	12	8	5
33	18	33	43	13	28	16	16
68	48	59	103	34	68	36	33
1	1	0	1	1	0	0	1
48	31	44	61	24	41	23	27
0	0	0	0	0	0	0	1
73	40	57	79	37	67	52	45
27	16	23	36	14	28	19	16
46	25	34	42	24	39	33	29
3	2	3	5	1	4	2	2
50	26	52	72	21	41	30	29
30	13	21	39	14	37	19	18
7	4	10	14	2	4	4	5
19	11	14	23	9	13	14	9
122	69	110	157	73	117	71	66
3	4	5	7	3	5	2	3
42	26	37	56	24	42	27	26
3	1	3	4	2	5	3	1
20	9	17	24	10	15	15	10
55	28	48	66	34	49	24	26

Table 5.19: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and county, 2017–2021, **males**

ICD-10	Site	Norway	Viken	Oslo	Innlandet
C00–96	All sites	712.6	713.9	706.0	670.1
C00–14	Mouth, pharynx	16.1	16.0	18.4	14.2
C00	Lip	2.1	1.6	2.2	2.0
C02–06	Oral cavity	4.6	4.7	4.5	4.3
C07–08	Salivary glands	1.4	1.7	1.2	1.2
C09–10, C01, C14	Oropharynx	6.6	7.1	7.9	5.4
C11	Nasopharynx	0.4	0.4	1.0	0.2
C12–13	Hypopharynx	0.9	0.6	1.8	1.0
C15–26	Digestive organs	144.9	135.8	136.7	143.9
C15	Oesophagus	9.2	7.9	9.5	9.9
C16	Stomach	10.2	9.6	8.3	7.5
C17	Small intestine	4.7	3.9	4.4	4.2
C18	Colon	56.6	52.9	49.3	54.3
C19–20	Rectum, rectosigmoid	30.1	26.9	26.8	34.4
C21	Anus	1.3	1.2	2.8	1.3
C22	Liver	8.8	8.4	10.3	9.8
C23–24	Gallbladder, bile ducts	3.0	3.6	2.7	3.1
C25	Pancreas	18.6	19.0	19.9	16.7
C26	Other digestive organs	2.4	2.4	2.8	2.6
C30–34, C38	Respiratory organs	68.6	64.1	62.6	66.0
C30–31	Nose, sinuses	1.0	0.8	1.1	1.7
C32	Larynx, epiglottis	3.3	2.7	4.1	2.7
C33–34	Lung, trachea	63.7	59.8	56.6	61.3
C38	Heart, mediastinum and pleura	0.5	0.8	0.8	0.4
C40–41	Bone	1.2	1.0	1.4	1.4
C43	Melanoma of the skin	44.9	48.6	47.8	39.0
C44	Skin, non-melanoma	59.7	65.7	58.4	44.4
C45	Mesothelioma	2.6	3.3	1.9	1.7
C47	Autonomic nervous system	0.2	0.3	0.3	0.1
C48–49	Soft tissues	2.5	2.5	2.8	2.5
C50	Breast	1.1	0.8	1.2	1.0
C60–63	Male genital organs	197.8	203.8	201.5	192.2
C61	Prostate	184.3	191.8	188.8	176.7
C62	Testis	11.0	10.1	9.5	13.5
C60, C63	Other male genital	2.5	1.9	3.3	2.0
C64–68	Urinary organs	72.7	72.5	70.8	68.1
C64	Kidney (excl. renal pelvis)	22.5	22.4	20.7	20.6
C65–68	Urinary tract	50.2	50.1	50.1	47.5
C69	Eye	1.6	1.6	1.4	1.8
C70–72	Central nervous system	16.9	16.4	16.3	14.3
C73	Thyroid gland	5.1	4.6	5.7	3.4
C37, C74–75	Other endocrine glands	3.3	4.0	2.6	2.3
C39, C76, C80	Other or unspecified	6.3	6.9	4.8	6.1
C81–96	Lymphoid/haematopoietic tissue	67.2	66.2	71.2	67.5
C81	Hodgkin lymphoma	3.0	2.9	2.6	3.0
C82–86, C96	Non-Hodgkin lymphoma	21.7	19.6	23.2	23.1
C88	Immunoproliferative disease	2.2	2.0	2.5	1.0
C90	Multiple myeloma	11.3	12.2	10.7	12.2
C91–95	Leukaemia	29.0	29.4	32.1	28.3

Vestfold og Telemark	Agder	Rogaland	Vestland	Møre og Romsdal	Trøndelag	Nordland	Troms og Finnmark
736.5	716.1	805.2	737.3	678.8	667.0	700.2	683.0
17.4	18.1	15.6	15.0	15.0	13.2	17.5	18.4
2.5	3.2	3.3	2.2	2.0	2.2	1.4	2.0
5.8	5.9	4.6	3.9	5.5	2.9	4.2	4.4
0.8	2.8	1.0	1.6	0.8	1.4	0.8	1.0
6.7	5.7	5.2	6.1	5.8	5.4	9.3	9.1
0.4	0.0	0.4	0.3	0.5	0.5	0.3	0.9
1.1	0.5	1.0	0.8	0.5	0.8	1.4	1.0
145.7	139.8	149.9	155.3	160.2	145.7	155.8	147.3
9.7	11.6	11.7	7.8	8.1	10.2	9.5	7.8
10.9	9.0	8.8	11.8	11.9	10.1	14.1	14.4
5.4	3.8	4.9	5.5	6.1	5.6	4.3	5.4
58.4	54.2	60.7	64.0	67.9	56.0	59.0	51.3
28.7	26.0	31.6	34.2	31.1	30.8	36.1	29.6
1.2	0.8	1.5	0.9	1.5	0.9	1.4	1.2
8.7	10.4	7.4	7.4	9.8	9.5	8.5	8.4
2.6	2.0	2.7	3.7	3.1	2.5	2.2	3.6
17.7	19.3	18.4	17.7	17.9	18.3	19.6	22.5
2.4	2.7	2.1	2.3	2.9	1.7	1.2	3.0
68.9	78.7	78.3	71.6	71.6	55.9	72.6	85.4
1.0	1.3	0.9	0.8	0.7	0.7	0.9	1.1
4.8	2.7	2.6	4.0	3.8	2.7	4.0	3.2
62.1	74.1	74.5	66.4	67.1	52.4	67.3	81.1
1.0	0.5	0.3	0.3	0.0	0.1	0.4	0.0
0.9	1.4	1.3	1.4	0.6	1.7	0.5	1.3
54.0	51.6	49.0	47.0	27.7	48.2	26.8	31.2
76.0	79.2	73.4	67.0	30.7	50.6	44.1	38.3
2.7	4.7	3.1	2.9	1.9	1.6	2.1	0.7
0.2	0.0	0.2	0.3	0.0	0.1	0.2	0.0
2.5	2.5	2.1	1.9	3.4	1.9	3.0	3.5
0.6	1.8	1.3	1.4	1.3	1.0	1.3	1.2
183.1	176.2	247.0	198.7	187.3	182.7	204.3	177.4
167.4	161.5	233.3	185.1	171.3	170.7	192.1	159.4
12.9	12.6	11.5	10.9	12.1	9.8	10.7	12.8
2.9	2.1	2.3	2.7	3.9	2.2	1.5	5.2
76.9	68.6	74.3	69.8	83.2	67.9	81.0	77.3
23.8	23.9	22.5	22.8	24.2	22.5	24.1	22.7
53.0	44.8	51.8	47.0	59.0	45.4	56.9	54.6
1.6	1.4	1.3	1.8	1.9	1.8	1.4	1.4
17.8	17.9	21.0	17.3	12.6	15.9	19.1	16.9
5.6	6.3	4.1	5.7	3.3	5.8	4.8	8.3
3.0	2.3	4.6	4.4	1.9	1.9	3.4	3.9
8.4	6.7	6.0	6.3	7.1	5.2	5.4	5.1
71.3	59.1	72.7	69.5	69.0	65.8	56.8	65.3
3.6	4.2	2.5	3.3	3.4	2.8	3.1	2.9
21.6	21.5	22.7	22.6	23.1	21.4	17.4	26.1
2.9	0.5	2.3	1.8	3.0	2.7	2.9	2.6
13.5	8.4	11.0	11.8	11.6	10.7	9.3	9.0
29.7	24.5	34.3	30.0	27.8	28.2	24.1	24.7

Table 5.20: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and county, 2017–2021, **females**

ICD-10	Site	Norway	Viken	Oslo	Innlandet
C00–96	All sites	560.0	558.0	549.1	537.1
C00–14	Mouth, pharynx	8.2	7.9	9.0	8.5
C00	Lip	1.4	1.1	1.5	1.0
C02–06	Oral cavity	3.3	2.8	3.4	3.4
C07–08	Salivary glands	1.0	1.5	1.2	0.9
C09–10, C01, C14	Oropharynx	2.2	2.2	2.3	3.0
C11	Nasopharynx	0.2	0.2	0.2	0.2
C12–13	Hypopharynx	0.1	0.1	0.5	0.0
C15–26	Digestive organs	108.4	102.9	106.4	111.0
C15	Oesophagus	2.8	2.6	3.8	3.0
C16	Stomach	5.8	5.4	6.6	5.1
C17	Small intestine	3.3	3.1	3.4	3.7
C18	Colon	52.5	50.3	48.1	52.1
C19–20	Rectum, rectosigmoid	18.3	16.3	17.8	18.8
C21	Anus	2.3	2.3	2.7	1.5
C22	Liver	4.3	4.0	4.5	6.1
C23–24	Gallbladder, bile ducts	2.9	2.6	3.4	3.7
C25	Pancreas	14.1	13.9	13.9	14.4
C26	Other digestive organs	2.1	2.4	2.3	2.6
C30–34, C38	Respiratory organs	55.8	54.4	54.2	53.1
C30–31	Nose, sinuses	0.6	0.6	0.9	1.1
C32	Larynx, epiglottis	0.7	0.5	0.9	0.5
C33–34	Lung, trachea	54.5	53.2	52.0	51.3
C38	Heart, mediastinum and pleura	0.1	0.1	0.4	0.2
C40–41	Bone	0.8	0.9	0.8	0.8
C43	Melanoma of the skin	39.7	38.7	35.2	34.4
C44	Skin, non-melanoma	39.1	41.3	31.8	25.3
C45	Mesothelioma	0.5	0.4	0.7	0.9
C47	Autonomic nervous system	0.2	0.2	0.1	0.0
C48–49	Soft tissues	1.8	1.9	2.4	2.0
C50	Breast	130.1	135.2	138.1	123.9
C51–58	Female genital organs	62.1	61.7	58.7	68.5
C51–52, C57.7–9	Other female genital	4.1	4.1	3.8	4.5
C53	Cervix uteri	13.5	13.4	12.9	16.5
C54	Corpus uteri	26.5	25.8	25.3	29.6
C55	Uterus, other	0.3	0.3	0.2	0.3
C56, C57.0–4, C48.2	Ovary etc.	17.7	18.1	16.5	17.7
C58	Placenta	0.1	0.1	0.1	0.0
C64–68	Urinary organs	24.9	24.8	20.7	24.3
C64	Kidney (excl. renal pelvis)	9.9	10.1	6.2	9.8
C65–68	Urinary tract	15.0	14.7	14.5	14.5
C69	Eye	1.4	1.4	1.4	1.7
C70–72	Central nervous system	19.3	18.5	18.3	19.2
C73	Thyroid gland	12.3	11.5	14.3	9.3
C37, C74–75	Other endocrine glands	3.3	3.8	3.0	2.3
C39, C76, C80	Other or unspecified	5.8	5.5	5.2	6.4
C81–96	Lymphoid/haematopoietic tissue	46.2	46.8	48.8	45.4
C81	Hodgkin lymphoma	2.3	2.5	2.2	2.6
C82–86, C96	Non-Hodgkin lymphoma	15.5	13.6	15.2	15.1
C88	Immunoproliferative disease	1.1	0.9	1.4	0.7
C90	Multiple myeloma	7.1	7.9	7.1	7.4
C91–95	Leukaemia	20.3	21.9	22.9	19.5

Vestfold og Telemark	Agder	Rogaland	Vestland	Møre og Romsdal	Trøndelag	Nordland	Troms og Finnmark
581.0	577.6	590.6	568.8	520.9	553.6	564.8	559.8
8.3	7.4	8.0	7.6	7.0	8.9	8.9	8.6
1.5	1.8	1.7	1.5	1.2	2.2	0.9	0.6
2.9	2.4	3.5	3.7	3.3	2.9	4.2	4.9
0.9	1.2	0.7	0.9	0.6	0.9	1.0	0.6
2.6	1.9	1.7	1.1	1.6	2.6	2.6	2.4
0.2	0.1	0.4	0.3	0.2	0.1	0.0	0.2
0.2	0.0	0.0	0.1	0.1	0.1	0.3	0.0
107.9	103.5	102.6	112.3	118.8	109.8	123.1	112.9
3.1	3.2	2.2	1.8	3.2	2.8	3.3	2.5
4.4	6.4	3.7	6.5	6.4	6.5	7.5	7.0
3.4	3.6	3.3	3.7	3.9	3.5	3.3	1.7
53.0	52.1	52.0	53.7	61.7	53.1	58.4	53.0
20.0	13.9	16.6	20.5	20.7	20.3	21.7	18.3
3.6	1.5	2.5	2.3	1.2	1.8	3.2	2.3
3.3	3.8	4.4	3.9	2.9	5.0	3.9	6.0
2.2	2.1	3.3	3.0	2.1	3.3	2.5	4.0
13.5	14.5	13.0	15.3	14.3	11.8	16.8	15.9
1.4	2.4	1.7	1.7	2.4	1.8	2.6	2.2
51.6	64.2	61.1	51.5	56.1	54.8	63.7	63.8
0.7	0.3	0.7	0.3	0.3	0.6	0.4	0.1
0.5	0.8	0.5	0.6	0.5	0.8	1.1	1.1
50.4	62.9	59.8	50.5	55.2	53.5	62.2	62.5
0.0	0.1	0.0	0.2	0.2	0.0	0.0	0.2
0.6	0.6	0.9	0.9	1.1	0.9	0.8	1.1
47.6	54.8	46.7	40.1	29.3	48.7	26.2	30.4
50.3	59.5	53.8	47.4	18.1	30.8	28.7	30.3
0.3	0.3	0.7	0.2	0.8	0.3	0.7	0.1
0.6	0.1	0.2	0.0	0.2	0.4	0.2	0.1
1.7	2.2	1.8	1.0	1.8	1.6	1.4	1.3
126.9	124.0	138.9	127.2	133.8	125.9	121.3	117.5
65.2	63.0	62.4	66.3	52.4	59.9	59.4	64.3
4.5	4.2	3.5	4.1	3.2	4.4	5.5	3.8
15.5	11.8	14.4	13.8	10.6	12.4	13.4	14.1
26.0	27.9	25.4	30.2	22.2	26.5	24.6	25.2
0.3	0.6	0.2	0.2	0.4	0.2	0.0	0.8
18.6	18.4	18.9	18.0	16.0	16.3	15.9	20.0
0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.5
26.9	23.2	24.5	22.3	22.8	25.5	33.8	32.3
10.4	9.3	10.1	10.5	8.7	11.0	12.9	11.8
16.5	13.9	14.4	11.8	14.1	14.5	20.9	20.5
1.4	1.0	1.1	1.5	1.0	1.8	1.4	1.7
21.1	16.4	22.2	22.2	14.6	17.0	21.5	22.2
13.6	8.5	9.3	12.7	10.2	15.8	15.0	15.0
3.0	2.6	4.4	4.5	1.7	1.6	3.1	4.0
6.9	6.0	5.7	5.8	4.8	4.5	8.2	6.2
47.2	40.3	46.5	45.1	46.4	45.3	47.3	47.9
1.4	2.5	2.2	2.3	2.5	2.2	1.6	2.6
16.1	15.6	15.8	16.3	14.7	16.3	18.2	18.6
1.0	0.7	1.1	1.0	1.4	1.8	2.0	0.8
7.4	5.3	7.3	6.6	6.0	5.8	9.4	7.0
21.3	16.2	20.2	18.8	21.8	19.2	16.2	18.9

Table 5.21: Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, **males**

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C00–14	Mouth, pharynx	Total	188	215	244	236
		Localised	133	137	161	149
		Regional	44	47	67	72
		Distant	6	10	10	8
		Unknown	5	21	6	7
C15	Oesophagus	Total	78	80	81	89
		Localised	46	41	37	44
		Regional	10	13	18	18
		Distant	18	18	22	22
		Unknown	4	8	4	5
C16	Stomach	Total	786	745	649	600
		Localised	220	183	164	177
		Regional	173	151	145	154
		Distant	342	328	297	233
		Unknown	50	84	43	36
C18	Colon	Total	306	368	416	541
		Localised	125	136	149	151
		Regional	72	89	120	217
		Distant	97	125	132	152
		Unknown	13	19	15	20
C19–20	Rectum, rectosigmoid	Total	186	270	328	448
		Localised	90	125	154	202
		Regional	50	72	90	153
		Distant	41	59	75	83
		Unknown	6	14	8	11
C22	Liver	Total	23	41	54	50
		Localised	11	20	24	24
		Regional	1	1	5	4
		Distant	10	16	21	16
		Unknown	0	4	3	5
C23–24	Gallbladder, bile ducts	Total	22	27	29	38
		Localised	8	9	8	11
		Regional	4	3	7	9
		Distant	9	12	13	16
		Unknown	1	2	1	2
C25	Pancreas	Total	185	226	252	271
		Localised	54	52	49	44
		Regional	21	30	33	35
		Distant	101	125	147	161
		Unknown	9	19	21	32
C33–34	Lung, trachea	Total	396	574	710	917
		Localised	136	187	225	300
		Regional	84	109	132	163
		Distant	154	242	303	390
		Unknown	22	36	49	64
C43	Melanoma of the skin	Total	80	118	162	220
		Localised	53	74	127	181
		Regional	11	15	16	16
		Distant	15	17	16	16
		Unknown	1	12	3	7
C61	Prostate	Total	870	1 052	1 280	1 523
		Localised	581	654	861	1 019
		Regional	31	41	73	66
		Distant	209	236	270	331
		Unknown	49	122	76	107

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21	2017-21 (%)
255	252	256	260	257	306	382	437	100.0
152	141	118	94	82	114	140	131	29.9
89	82	91	99	121	143	192	202	46.2
5	10	12	12	12	12	17	11	2.6
9	19	35	54	42	37	33	93	21.3
84	104	107	121	138	162	208	249	100.0
36	28	22	19	28	28	31	25	9.9
22	24	25	24	37	47	59	82	33.1
22	34	25	36	44	49	54	61	24.6
5	18	34	43	29	39	63	80	32.3
579	519	449	381	327	305	301	268	100.0
168	137	89	57	59	62	54	38	14.2
160	144	130	111	102	86	89	79	29.6
205	176	141	133	116	105	90	77	28.7
46	62	90	80	50	52	68	74	27.5
675	760	847	947	1037	1187	1378	1493	100.0
200	235	218	161	186	173	255	267	17.9
275	281	359	460	524	629	685	787	52.7
174	210	221	248	262	323	363	347	23.2
25	34	49	77	64	61	75	93	6.2
514	527	562	601	660	697	802	815	100.0
218	209	199	162	167	129	189	198	24.3
184	195	211	239	283	364	390	380	46.7
92	98	104	121	131	150	158	160	19.6
21	25	48	80	80	54	65	76	9.4
68	60	59	71	82	111	169	237	100.0
33	27	20	22	25	42	51	52	21.9
6	3	3	5	8	12	19	26	10.8
19	12	11	17	20	29	39	35	14.8
10	17	26	27	29	28	60	124	52.5
47	49	53	61	63	70	84	80	100.0
16	16	11	10	11	13	10	8	10.0
10	9	10	13	22	25	40	32	39.6
16	14	15	16	18	20	21	19	23.6
5	10	17	22	13	12	13	22	26.9
297	295	280	276	310	345	401	498	100.0
59	56	32	16	24	28	30	34	6.9
41	26	34	39	72	78	87	101	20.2
155	161	130	136	164	191	208	222	44.6
42	51	84	85	50	49	77	141	28.4
1085	1148	1251	1293	1417	1539	1637	1719	100.0
342	326	275	195	186	231	278	335	19.5
219	227	258	324	413	435	475	489	28.4
431	457	478	570	670	724	693	725	42.2
93	139	240	203	149	149	191	169	9.9
264	380	428	471	521	716	983	1206	100.0
217	325	357	290	284	494	829	998	82.7
19	16	15	16	22	35	73	116	9.6
18	23	24	29	34	30	36	43	3.5
10	15	32	135	181	156	44	49	4.1
1714	1921	2439	2952	3531	4511	5054	5058	100.0
1098	1200	1117	913	1567	2060	2504	2659	52.6
64	61	104	120	253	908	1360	1461	28.9
440	483	390	402	419	419	375	420	8.3
112	177	828	1517	1293	1123	815	517	10.2

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Table 5.21: Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, **males** (Continued)

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C62	Testis	Total	68	78	85	115
		Localised	44	50	46	63
		Regional	4	7	17	26
		Distant	19	18	21	24
		Unknown	1	3	1	2
C64	Kidney (excl. renal pelvis)	Total	128	158	177	211
		Localised	69	74	75	81
		Regional	17	23	39	50
		Distant	39	56	59	75
		Unknown	3	5	3	5
C65–68	Urinary tract	Total	303	359	500	607
		Localised	256	281	395	493
		Regional	24	40	62	63
		Distant	18	20	33	38
		Unknown	5	18	11	14
C70–72	Central nervous system	Total	136	150	169	195
		Non-malignant	36	45	48	60
		Malignant	100	105	121	135
C73	Thyroid gland	Total	26	35	36	44
		Localised	5	12	17	21
		Regional	13	13	14	16
		Distant	8	8	5	7
		Unknown	0	1	0	1

	1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21	2017-21 (%)
	149	166	204	238	247	293	312	299	100.0
	83	111	141	132	141	209	259	217	72.7
	41	28	35	37	45	37	32	61	20.5
	23	24	22	31	25	29	20	17	5.7
	2	3	6	37	36	17	1	3	1.1
	250	254	268	293	356	447	570	619	100.0
	111	115	132	109	163	253	401	385	62.3
	50	44	39	43	39	44	51	81	13.1
	79	80	66	75	84	90	77	76	12.3
	10	15	31	66	70	61	41	76	12.3
	711	757	832	810	904	980	1 177	1 329	100.0
	581	623	633	423	498	691	1 032	1 146	86.2
	63	55	45	46	78	76	77	92	7.0
	28	34	28	37	40	44	43	50	3.7
	39	45	127	303	287	169	24	41	3.1
	221	243	289	358	440	500	505	456	100.0
	70	76	128	171	242	270	255	195	42.8
	152	167	161	187	198	230	250	261	57.2
	46	51	42	49	60	71	112	140	100.0
	20	27	19	19	19	25	53	60	42.6
	17	15	12	17	26	33	45	56	39.7
	8	8	9	7	7	7	7	6	4.3
	1	1	2	6	8	5	7	19	13.4

Table 5.22: Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, **females**

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C00–14	Mouth, pharynx	Total	69	73	80	90
		Localised	41	40	42	54
		Regional	23	27	29	29
		Distant	3	3	5	3
		Unknown	2	4	5	5
C15	Oesophagus	Total	32	28	31	31
		Localised	21	17	15	17
		Regional	3	3	7	5
		Distant	4	6	6	7
		Unknown	3	3	3	2
C16	Stomach	Total	532	492	419	406
		Localised	156	109	103	117
		Regional	98	85	89	104
		Distant	218	233	193	150
		Unknown	60	64	34	36
C18	Colon	Total	359	438	513	691
		Localised	148	164	180	192
		Regional	84	119	154	277
		Distant	108	132	159	190
		Unknown	19	23	20	32
C19–20	Rectum, rectosigmoid	Total	140	215	261	359
		Localised	67	95	122	162
		Regional	37	59	76	116
		Distant	29	52	56	70
		Unknown	7	10	8	11
C22	Liver	Total	13	23	30	36
		Localised	6	9	16	17
		Regional	1	1	1	1
		Distant	6	11	11	14
		Unknown	1	2	1	4
C23–24	Gallbladder, bile ducts	Total	52	59	56	73
		Localised	15	14	15	22
		Regional	8	9	11	10
		Distant	27	35	26	36
		Unknown	2	2	3	5
C25	Pancreas	Total	124	167	189	224
		Localised	41	41	43	44
		Regional	12	19	24	30
		Distant	63	89	103	125
		Unknown	8	18	19	25
C33–34	Lung, trachea	Total	86	143	173	228
		Localised	28	47	51	68
		Regional	10	20	27	31
		Distant	43	65	84	108
		Unknown	5	11	11	20
C43	Melanoma of the skin	Total	93	129	200	263
		Localised	76	91	176	236
		Regional	7	8	10	9
		Distant	8	13	11	13
		Unknown	3	17	3	6

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21	2017-21 (%)
103	108	130	128	152	184	212	243	100.0
55	66	69	49	54	82	98	102	42.0
40	32	36	40	60	71	88	82	33.8
3	4	4	6	5	5	5	6	2.3
5	6	20	33	33	26	20	53	21.9
35	39	40	50	53	59	71	86	100.0
16	13	9	9	12	15	14	12	13.6
8	8	6	8	14	15	14	24	27.6
5	9	6	11	12	13	16	16	18.2
4	9	18	23	15	17	27	35	40.7
387	341	295	242	230	205	171	175	100.0
119	101	65	41	42	46	29	25	14.2
97	87	72	62	64	45	40	42	23.9
127	113	94	79	82	72	51	52	29.6
45	41	64	60	42	42	51	57	32.4
785	883	1015	1115	1205	1313	1516	1612	100.0
222	273	270	200	221	199	264	283	17.6
338	347	429	549	612	718	800	846	52.5
190	219	236	259	290	322	355	358	22.2
35	45	80	108	82	74	98	125	7.7
405	422	455	476	497	519	554	543	100.0
170	184	163	135	131	108	145	139	25.6
141	136	160	184	211	256	252	246	45.3
73	72	78	88	91	105	105	103	18.9
21	30	53	70	65	50	51	56	10.2
44	42	42	47	47	69	95	129	100.0
18	18	12	10	13	23	27	24	18.9
3	2	2	5	6	9	11	16	12.5
14	10	8	11	8	17	22	24	18.3
9	12	20	21	20	19	34	65	50.3
82	75	73	80	78	87	95	89	100.0
24	23	16	9	14	14	10	9	9.9
21	14	12	14	18	25	37	28	31.5
29	23	22	28	26	33	32	28	31.1
9	15	23	28	19	14	15	24	27.5
274	282	311	326	340	363	404	434	100.0
59	67	40	24	30	42	40	28	6.5
35	28	32	40	67	77	88	85	19.5
137	133	129	144	168	181	183	171	39.5
43	54	110	117	74	63	92	150	34.5
321	451	579	724	927	1184	1433	1658	100.0
81	115	119	98	137	217	288	384	23.2
59	84	118	167	245	300	375	437	26.4
148	197	224	336	448	550	597	663	40.0
33	54	117	123	97	116	174	174	10.5
361	443	490	512	581	735	973	1139	100.0
321	408	426	328	337	532	867	999	87.7
16	12	10	11	17	26	44	80	7.0
13	11	17	21	20	17	23	25	2.2
11	12	36	152	207	160	40	35	3.1

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Table 5.22: Average annual number of new cases for selected cancers by stage and period of diagnosis, 1962–2021, **females** (Continued)

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C50	Breast	Total	1 071	1 218	1 381	1 493
		I	505	584	699	800
		II	348	384	421	425
		III	93	77	107	93
		IV	97	119	110	110
		Unknown	27	52	44	65
C53	Cervix uteri	Total	359	403	441	400
		I	144	199	235	206
		II	135	124	112	85
		III	48	47	59	55
		IV	22	19	24	23
		Unknown	11	14	11	30
C54	Corpus uteri	Total	222	268	324	369
		Localised	184	212	269	284
		Regional	13	15	23	45
		Distant	23	36	29	32
		Unknown	2	5	3	9
C56, C57.0–4, C48.2	Ovary etc.	Total	300	372	377	408
		Localised	99	120	129	97
		Regional	15	22	22	38
		Distant	177	218	219	262
		Unknown	9	12	7	11
C64	Kidney (excl. renal pelvis)	Total	90	117	118	138
		Localised	52	62	60	64
		Regional	9	16	23	27
		Distant	27	35	31	43
		Unknown	2	4	4	4
C65–68	Urinary tract	Total	135	156	209	239
		Localised	86	103	140	169
		Regional	22	22	30	33
		Distant	20	22	28	22
		Unknown	7	9	11	14
C70–72	Central nervous system	Total	118	131	151	186
		Non-malignant	56	58	61	83
		Malignant	62	72	90	103
C73	Thyroid gland	Total	61	91	111	132
		Localised	29	48	67	83
		Regional	22	27	28	32
		Distant	8	11	13	13
		Unknown	1	4	2	4

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21	2017-21 (%)
1 720	1 820	2 073	2 462	2 740	2 819	3 251	3 657	100.0
803	313	470	795	1 077	1 200	1 443	1 589	43.4
547	689	653	949	1 130	990	1 057	1 085	29.7
108	113	74	131	166	251	362	364	10.0
111	125	120	136	134	114	120	159	4.3
152	581	757	451	233	264	269	461	12.6
354	346	345	310	300	295	344	361	100.0
190	127	127	160	155	137	139	182	50.3
71	70	58	63	55	63	65	50	14.0
53	41	33	35	30	21	25	40	11.0
20	14	15	21	23	21	20	27	7.5
19	94	112	32	36	52	96	62	17.2
390	412	467	526	649	723	746	778	100.0
292	301	327	326	397	521	553	556	71.5
46	47	47	58	78	58	51	79	10.2
39	50	60	70	84	97	94	75	9.6
12	14	33	72	90	47	47	68	8.7
455	464	477	495	506	519	518	518	100.0
119	130	122	98	94	107	108	104	20.0
35	21	16	14	14	19	18	39	7.5
284	296	307	326	346	351	362	339	65.5
17	17	32	58	53	42	30	36	7.0
156	181	190	189	216	250	269	291	100.0
69	92	100	72	100	143	189	178	61.3
34	26	22	20	23	21	20	34	11.8
46	48	44	50	41	44	30	32	11.1
8	15	25	47	51	42	30	46	15.8
264	266	291	309	350	366	446	458	100.0
197	204	194	136	180	243	366	361	78.8
30	21	22	24	37	35	36	50	11.0
17	20	18	26	25	25	21	23	5.0
20	20	56	123	108	63	22	24	5.2
224	260	316	435	596	631	571	544	100.0
104	137	187	291	434	461	402	356	65.4
121	123	129	143	163	170	169	188	34.6
143	135	137	124	153	190	265	332	100.0
97	89	83	56	71	102	161	196	59.2
33	33	37	39	47	61	80	86	26.0
10	9	10	11	10	7	10	6	1.9
3	4	7	19	25	20	14	43	12.9

Table 5.23: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, **males**

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C00–14	Mouth, pharynx	Total	14.5	15.3	15.8	14.7
		Localised	10.5	9.7	10.5	9.4
		Regional	3.2	3.3	4.4	4.4
		Distant	0.5	0.7	0.6	0.5
		Unknown	0.3	1.5	0.4	0.5
C15	Oesophagus	Total	6.1	5.8	5.5	5.6
		Localised	3.8	3.1	2.6	2.9
		Regional	0.7	0.9	1.1	1.0
		Distant	1.2	1.3	1.4	1.3
		Unknown	0.4	0.6	0.3	0.4
C16	Stomach	Total	61.1	54.4	44.2	38.3
		Localised	18.3	14.3	11.9	11.9
		Regional	12.3	10.0	9.3	9.4
		Distant	25.3	22.5	19.2	14.3
		Unknown	5.2	7.6	3.8	2.7
C18	Colon	Total	23.8	26.5	28.3	34.7
		Localised	9.9	10.1	10.2	9.9
		Regional	5.1	6.1	7.9	13.6
		Distant	7.4	8.7	8.9	9.5
		Unknown	1.4	1.7	1.3	1.6
C19–20	Rectum, rectosigmoid	Total	14.2	19.2	21.8	28.5
		Localised	6.9	9.1	10.5	13.3
		Regional	3.7	4.8	5.8	9.2
		Distant	3.0	4.1	4.9	5.1
		Unknown	0.7	1.2	0.7	0.9
C22	Liver	Total	1.6	2.8	3.4	3.0
		Localised	0.8	1.4	1.5	1.4
		Regional	0.1	0.1	0.4	0.2
		Distant	0.7	1.0	1.3	1.0
		Unknown	0.0	0.3	0.2	0.3
C23–24	Gallbladder, bile ducts	Total	1.6	1.9	2.0	2.5
		Localised	0.6	0.6	0.5	0.8
		Regional	0.3	0.2	0.5	0.5
		Distant	0.8	0.8	0.9	1.1
		Unknown	0.0	0.2	0.1	0.1
C25	Pancreas	Total	13.6	15.6	16.4	16.8
		Localised	4.1	3.7	3.3	2.9
		Regional	1.6	2.0	2.2	2.1
		Distant	7.2	8.6	9.5	9.7
		Unknown	0.7	1.4	1.4	2.1
C33–34	Lung, trachea	Total	26.6	36.2	42.6	53.0
		Localised	9.2	11.8	13.6	17.5
		Regional	5.4	6.6	7.6	9.1
		Distant	10.3	15.2	18.2	22.3
		Unknown	1.6	2.6	3.1	4.1
C43	Melanoma of the skin	Total	5.3	7.5	9.8	12.9
		Localised	3.6	4.7	7.6	10.6
		Regional	0.7	0.9	1.0	1.0
		Distant	1.0	1.1	1.0	0.9
		Unknown	0.0	0.8	0.2	0.4

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
15.1	14.6	14.3	13.9	13.0	14.0	15.6	16.1
9.1	8.3	6.5	5.1	4.2	5.3	5.8	4.9
5.2	4.6	5.1	5.2	6.0	6.3	7.7	7.3
0.3	0.5	0.6	0.6	0.6	0.6	0.7	0.4
0.6	1.2	2.0	3.0	2.2	1.8	1.4	3.5
5.0	6.0	6.1	6.6	7.3	7.6	8.7	9.2
2.2	1.7	1.3	1.0	1.5	1.3	1.3	0.9
1.2	1.3	1.4	1.3	1.9	2.2	2.4	3.0
1.2	1.9	1.4	1.9	2.3	2.3	2.2	2.2
0.3	1.1	2.0	2.4	1.6	1.8	2.7	3.0
35.6	30.7	25.7	21.2	17.5	14.7	12.9	10.2
11.1	8.6	5.1	3.2	3.2	3.1	2.3	1.4
9.2	7.9	7.2	6.0	5.3	4.0	3.8	3.0
11.9	10.1	7.8	7.3	6.1	5.0	3.8	2.8
3.3	4.0	5.6	4.8	2.9	2.6	3.0	3.0
41.0	44.9	48.3	52.2	54.6	57.5	59.5	56.6
12.3	13.7	12.3	8.8	9.8	8.3	10.9	10.1
16.4	16.5	20.5	25.2	27.5	30.6	29.5	29.6
10.4	12.4	12.3	13.5	13.6	15.4	15.5	12.9
1.9	2.3	3.2	4.6	3.6	3.2	3.7	3.9
30.7	30.5	32.0	33.0	34.4	32.9	33.6	30.1
13.3	12.1	11.3	8.8	8.8	6.1	7.9	7.3
10.5	11.1	11.7	12.9	14.5	17.1	16.3	13.9
5.4	5.6	5.8	6.6	6.8	7.0	6.5	5.9
1.5	1.7	3.1	4.6	4.3	2.7	2.9	2.9
4.0	3.5	3.1	3.8	4.2	5.2	7.1	8.8
2.0	1.6	1.1	1.2	1.3	2.0	2.1	1.9
0.4	0.2	0.1	0.3	0.4	0.5	0.7	0.9
1.1	0.7	0.6	0.9	1.0	1.3	1.6	1.3
0.6	1.0	1.4	1.5	1.5	1.3	2.6	4.7
2.8	2.9	3.1	3.5	3.3	3.3	3.6	3.0
1.0	1.0	0.6	0.5	0.6	0.6	0.5	0.3
0.5	0.5	0.6	0.7	1.1	1.2	1.6	1.2
0.9	0.7	0.8	0.9	0.9	1.0	0.9	0.7
0.3	0.6	1.0	1.3	0.7	0.6	0.6	0.9
18.1	17.1	16.0	15.3	16.3	16.6	17.1	18.6
3.9	3.3	2.0	0.9	1.3	1.4	1.3	1.3
2.4	1.5	1.8	2.1	3.7	3.7	3.6	3.6
9.0	9.2	7.1	7.4	8.5	9.0	8.7	8.1
2.8	3.1	5.0	4.9	2.8	2.5	3.5	5.6
61.6	64.0	69.1	69.6	73.2	73.0	69.7	63.7
19.5	18.1	15.0	10.5	9.5	11.0	11.7	12.2
12.2	12.4	14.0	17.1	21.2	20.6	19.9	17.8
24.4	25.3	26.4	30.5	34.5	34.0	29.3	26.7
5.5	8.1	13.7	11.5	8.0	7.3	8.8	7.0
14.9	21.1	22.8	24.2	25.7	32.6	40.8	44.9
12.1	17.9	18.9	14.8	14.0	22.4	34.3	37.1
1.1	0.9	0.8	0.8	1.1	1.7	3.1	4.3
1.0	1.3	1.4	1.6	1.7	1.4	1.5	1.6
0.6	0.9	1.7	7.0	9.0	7.2	1.9	1.9

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Table 5.23: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, **males** (Continued)

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C61	Prostate	Total	75.5	82.9	91.9	101.7
		Localised	50.3	51.1	60.7	67.0
		Regional	2.9	3.2	5.5	4.3
		Distant	17.6	18.1	19.3	22.3
		Unknown	4.7	10.5	6.4	8.1
C62	Testis	Total	4.1	4.5	4.6	5.9
		Localised	2.6	2.9	2.5	3.2
		Regional	0.3	0.4	0.9	1.3
		Distant	1.1	1.0	1.1	1.2
		Unknown	0.1	0.2	0.1	0.1
C64	Kidney (excl. renal pelvis)	Total	9.1	10.2	10.8	12.4
		Localised	5.0	5.0	4.7	4.8
		Regional	1.1	1.4	2.3	2.9
		Distant	2.7	3.5	3.6	4.3
		Unknown	0.3	0.3	0.3	0.4
C65–68	Urinary tract	Total	22.9	24.7	32.4	37.5
		Localised	19.3	19.1	25.4	30.3
		Regional	1.8	2.9	3.9	3.8
		Distant	1.3	1.4	2.3	2.4
		Unknown	0.4	1.3	0.8	1.0
C70–72	Central nervous system	Total	7.9	8.4	9.2	10.6
		Non-malignant	2.2	2.6	2.7	3.4
		Malignant	5.8	5.8	6.5	7.2
C73	Thyroid gland	Total	1.8	2.2	2.2	2.6
		Localised	0.4	0.8	1.1	1.2
		Regional	0.8	0.7	0.8	0.9
		Distant	0.6	0.6	0.3	0.4
		Unknown	0.0	0.1	0.0	0.1

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
105.9	114.1	140.8	166.7	188.5	214.7	210.2	184.3
67.2	70.8	63.7	50.8	82.5	96.0	101.4	94.8
3.8	3.6	6.2	6.9	13.5	43.5	56.7	52.7
27.5	28.5	22.5	22.8	22.7	21.0	16.8	16.6
7.4	11.2	48.4	86.2	69.9	54.2	35.3	20.2
7.0	7.5	8.9	10.1	10.6	12.0	11.9	11.0
3.9	5.0	6.1	5.6	6.0	8.6	9.9	8.0
1.9	1.3	1.5	1.6	1.9	1.5	1.2	2.3
1.1	1.1	1.0	1.4	1.1	1.2	0.8	0.6
0.1	0.1	0.3	1.6	1.6	0.7	0.1	0.1
14.4	14.5	14.7	15.6	17.9	20.5	23.1	22.5
6.4	6.5	7.2	5.7	8.1	11.4	16.0	13.8
2.9	2.5	2.2	2.3	1.9	2.0	2.1	2.9
4.5	4.6	3.6	3.9	4.3	4.2	3.2	2.8
0.6	0.9	1.7	3.7	3.6	2.8	1.9	3.0
42.3	44.2	47.5	44.6	47.6	47.4	51.2	50.2
34.6	36.3	35.9	23.1	26.0	33.3	44.8	43.2
3.6	3.1	2.6	2.5	4.0	3.6	3.3	3.4
1.6	2.0	1.6	2.1	2.1	2.2	1.9	1.9
2.6	2.7	7.5	16.9	15.4	8.3	1.2	1.7
11.8	12.8	14.9	17.6	20.8	22.1	20.3	16.9
3.9	4.1	6.6	8.4	11.4	11.8	10.3	7.2
7.9	8.8	8.3	9.2	9.5	10.2	10.0	9.7
2.5	2.7	2.2	2.4	2.8	3.1	4.5	5.1
1.1	1.4	1.0	0.9	0.9	1.1	2.1	2.1
0.9	0.8	0.6	0.8	1.2	1.5	1.8	2.0
0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2
0.1	0.1	0.2	0.3	0.4	0.2	0.3	0.7

Table 5.24: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, **females**

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C00–14	Mouth, pharynx	Total	4.5	4.4	4.4	4.6
		Localised	2.6	2.4	2.3	2.8
		Regional	1.6	1.6	1.6	1.4
		Distant	0.2	0.2	0.3	0.1
		Unknown	0.1	0.2	0.3	0.3
C15	Oesophagus	Total	2.3	1.7	1.6	1.6
		Localised	1.5	1.0	0.8	0.9
		Regional	0.2	0.2	0.4	0.3
		Distant	0.3	0.3	0.3	0.3
		Unknown	0.3	0.2	0.1	0.1
C16	Stomach	Total	36.8	29.4	22.9	20.1
		Localised	11.2	6.9	5.9	5.9
		Regional	5.9	4.7	4.6	5.0
		Distant	14.4	13.4	10.4	7.3
		Unknown	5.3	4.5	2.1	2.0
C18	Colon	Total	23.6	25.6	27.7	34.4
		Localised	9.9	9.7	9.8	9.6
		Regional	5.2	6.6	8.0	13.6
		Distant	6.8	7.6	8.5	9.4
		Unknown	1.7	1.7	1.4	1.8
C19–20	Rectum, rectosigmoid	Total	8.8	12.6	14.1	17.9
		Localised	4.3	5.7	6.6	8.2
		Regional	2.2	3.3	4.0	5.6
		Distant	1.8	3.0	2.9	3.5
		Unknown	0.5	0.7	0.5	0.6
C22	Liver	Total	0.8	1.3	1.5	1.8
		Localised	0.3	0.5	0.8	0.8
		Regional	0.0	0.1	0.1	0.1
		Distant	0.4	0.6	0.6	0.7
		Unknown	0.0	0.1	0.0	0.2
C23–24	Gallbladder, bile ducts	Total	3.4	3.4	3.0	3.5
		Localised	1.0	0.8	0.9	1.1
		Regional	0.5	0.5	0.6	0.5
		Distant	1.8	2.0	1.3	1.7
		Unknown	0.1	0.1	0.2	0.2
C25	Pancreas	Total	7.8	9.7	10.0	10.9
		Localised	2.6	2.4	2.3	2.1
		Regional	0.7	1.1	1.2	1.5
		Distant	4.0	5.1	5.4	6.0
		Unknown	0.5	1.2	1.1	1.3
C33–34	Lung, trachea	Total	5.3	8.1	9.0	11.4
		Localised	1.7	2.7	2.6	3.3
		Regional	0.6	1.1	1.4	1.6
		Distant	2.6	3.7	4.4	5.4
		Unknown	0.3	0.7	0.6	1.0
C43	Melanoma of the skin	Total	5.6	7.5	11.2	14.0
		Localised	4.5	5.3	9.9	12.6
		Regional	0.4	0.5	0.5	0.5
		Distant	0.5	0.7	0.6	0.7
		Unknown	0.2	1.0	0.1	0.3

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
4.9	5.0	5.8	5.6	6.4	7.3	7.8	8.2
2.6	3.0	3.1	2.1	2.3	3.2	3.6	3.4
1.9	1.5	1.6	1.8	2.6	2.9	3.3	2.8
0.1	0.2	0.2	0.3	0.2	0.2	0.2	0.2
0.3	0.3	0.9	1.4	1.3	1.0	0.7	1.8
1.6	1.7	1.7	2.1	2.1	2.2	2.5	2.8
0.8	0.6	0.4	0.4	0.5	0.5	0.5	0.4
0.4	0.4	0.3	0.4	0.6	0.6	0.5	0.8
0.2	0.4	0.3	0.5	0.5	0.5	0.6	0.5
0.2	0.3	0.7	0.9	0.5	0.6	0.9	1.1
17.8	14.7	12.1	9.6	9.0	7.6	6.1	5.8
5.5	4.4	2.6	1.6	1.6	1.7	1.1	0.8
4.4	3.8	3.0	2.5	2.5	1.7	1.4	1.4
5.8	4.8	3.9	3.3	3.3	2.7	1.9	1.8
2.2	1.7	2.5	2.2	1.5	1.5	1.7	1.8
36.1	38.7	42.9	45.6	47.7	49.6	53.9	52.5
10.2	11.9	11.3	8.2	8.7	7.6	9.5	9.3
15.4	15.2	18.2	22.4	24.3	27.3	28.4	27.5
8.8	9.8	10.1	10.8	11.7	12.4	12.8	11.9
1.7	1.9	3.2	4.2	3.1	2.4	3.1	3.9
18.8	18.5	19.6	20.1	20.3	20.2	20.2	18.3
7.9	8.1	7.1	5.8	5.4	4.3	5.3	4.7
6.5	6.0	7.0	7.8	8.6	10.0	9.2	8.3
3.3	3.1	3.4	3.7	3.8	4.1	3.9	3.5
1.0	1.3	2.2	2.8	2.5	1.8	1.8	1.8
2.1	1.8	1.8	1.9	1.9	2.6	3.4	4.3
0.8	0.8	0.5	0.4	0.5	0.9	1.0	0.8
0.2	0.1	0.1	0.2	0.2	0.4	0.4	0.5
0.7	0.4	0.3	0.5	0.3	0.7	0.8	0.8
0.4	0.5	0.8	0.8	0.8	0.7	1.2	2.1
3.8	3.2	3.0	3.3	3.0	3.3	3.4	2.9
1.1	1.0	0.7	0.4	0.5	0.5	0.4	0.3
1.0	0.6	0.5	0.6	0.8	1.0	1.4	0.9
1.3	1.0	0.9	1.2	1.0	1.3	1.2	0.9
0.4	0.6	0.9	1.1	0.6	0.5	0.5	0.8
12.4	12.1	12.9	12.9	13.3	13.6	14.4	14.1
2.7	2.8	1.6	0.9	1.1	1.5	1.4	1.0
1.6	1.3	1.4	1.7	2.7	3.0	3.2	2.8
6.2	5.7	5.6	6.0	6.8	7.0	6.6	5.6
1.9	2.2	4.3	4.4	2.7	2.2	3.1	4.7
15.4	21.2	26.8	32.8	40.0	47.5	52.7	54.5
3.7	5.3	5.5	4.5	5.9	8.9	10.7	12.6
2.9	4.1	5.6	7.7	10.6	12.1	13.9	14.4
7.2	9.5	10.7	15.5	19.5	22.1	22.1	22.0
1.5	2.4	5.0	5.2	3.9	4.4	6.1	5.5
18.3	21.6	22.9	22.8	24.9	29.6	36.6	39.7
16.3	20.0	19.8	14.7	14.6	21.6	32.8	35.0
0.8	0.5	0.5	0.4	0.7	1.0	1.6	2.8
0.7	0.5	0.8	0.9	0.9	0.7	0.8	0.8
0.5	0.5	1.7	6.7	8.8	6.4	1.4	1.1

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Table 5.24: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years for selected cancers by stage and period of diagnosis, 1962–2021, **females** (Continued)

ICD-10	Site	Stage	1962–66	1967–71	1972–76	1977–81
C50	Breast	Total	65.5	69.6	75.5	77.9
		I	30.8	33.5	38.2	41.7
		II	20.6	21.4	22.9	22.2
		III	6.1	4.5	5.9	4.8
		IV	6.2	6.9	5.9	5.6
		Unknown	1.9	3.2	2.7	3.7
C53	Cervix uteri	Total	21.1	23.1	24.9	21.5
		I	8.4	11.6	13.8	11.4
		II	7.9	7.0	6.1	4.5
		III	2.9	2.6	3.1	2.9
		IV	1.3	1.1	1.3	1.2
		Unknown	0.7	0.9	0.6	1.6
C54	Corpus uteri	Total	12.9	14.7	16.9	19.0
		Localised	10.7	11.6	14.1	14.8
		Regional	0.8	0.8	1.2	2.2
		Distant	1.4	2.0	1.5	1.6
		Unknown	0.1	0.3	0.2	0.5
C56, C57.0–4, C48.2	Ovary etc.	Total	17.7	20.7	20.0	21.0
		Localised	5.9	6.7	7.0	5.1
		Regional	0.9	1.2	1.2	2.0
		Distant	10.4	12.0	11.5	13.4
		Unknown	0.6	0.8	0.4	0.6
C64	Kidney (excl. renal pelvis)	Total	5.4	6.5	6.1	6.7
		Localised	3.1	3.5	3.2	3.1
		Regional	0.5	0.9	1.2	1.3
		Distant	1.6	1.9	1.6	2.1
		Unknown	0.1	0.2	0.2	0.2
C65–68	Urinary tract	Total	8.8	9.1	11.1	11.7
		Localised	5.6	6.0	7.4	8.3
		Regional	1.4	1.2	1.6	1.6
		Distant	1.2	1.3	1.5	1.1
		Unknown	0.5	0.7	0.7	0.7
C70–72	Central nervous system	Total	6.8	7.1	7.9	9.5
		Non-malignant	3.3	3.2	3.3	4.3
		Malignant	3.4	3.8	4.6	5.2
C73	Thyroid gland	Total	3.8	5.2	6.1	6.9
		Localised	1.8	2.8	3.7	4.5
		Regional	1.4	1.6	1.5	1.6
		Distant	0.5	0.6	0.7	0.6
		Unknown	0.1	0.3	0.2	0.2

1982-86	1987-91	1992-96	1997-01	2002-06	2007-11	2012-16	2017-21
85.7	86.7	96.4	112.9	119.9	115.3	123.8	130.1
39.6	15.0	22.2	38.3	49.5	50.7	56.0	57.5
27.6	33.3	30.8	43.6	49.3	40.4	40.2	38.4
5.2	5.3	3.2	5.8	6.9	10.2	13.7	12.9
5.4	5.8	5.7	6.0	5.6	4.5	4.5	5.5
7.9	27.3	34.5	19.2	8.6	9.5	9.4	15.9
17.8	16.9	16.1	13.9	12.8	12.1	13.5	13.5
9.7	6.2	5.9	7.2	6.7	5.7	5.5	7.0
3.7	3.5	2.8	2.8	2.4	2.6	2.5	1.8
2.6	2.0	1.5	1.5	1.3	0.9	1.0	1.5
1.0	0.7	0.7	1.0	1.0	0.9	0.8	1.0
1.0	4.6	5.2	1.4	1.5	2.1	3.7	2.3
19.6	20.2	22.2	24.0	27.9	29.4	27.8	26.5
15.0	15.0	15.7	15.1	17.3	21.3	20.7	19.1
2.3	2.3	2.2	2.6	3.3	2.4	1.9	2.7
1.8	2.3	2.8	3.1	3.6	3.9	3.5	2.5
0.6	0.6	1.5	3.1	3.7	1.8	1.7	2.2
22.8	22.4	22.3	22.3	21.5	20.9	19.4	17.7
6.1	6.4	5.8	4.5	4.1	4.4	4.2	3.7
1.8	1.1	0.8	0.6	0.6	0.7	0.7	1.3
14.0	14.2	14.4	14.7	14.7	14.3	13.6	11.5
0.8	0.7	1.4	2.5	2.1	1.5	1.0	1.1
7.2	8.1	8.2	8.0	8.9	9.9	10.0	9.9
3.3	4.1	4.4	3.2	4.3	5.8	7.2	6.2
1.5	1.2	1.0	0.8	0.9	0.8	0.7	1.2
2.1	2.2	1.9	2.1	1.6	1.7	1.1	1.1
0.3	0.6	0.9	1.9	2.0	1.6	1.0	1.4
12.0	11.7	12.2	12.7	13.9	14.0	15.9	15.0
9.0	9.0	8.3	5.8	7.3	9.3	13.2	11.9
1.3	1.0	0.9	1.0	1.4	1.4	1.3	1.6
0.8	0.8	0.8	1.1	1.0	1.0	0.7	0.7
0.9	0.9	2.3	4.9	4.2	2.4	0.7	0.7
11.1	12.5	14.7	19.4	25.8	25.7	21.8	19.3
5.1	6.6	8.7	12.9	18.8	18.8	15.4	12.7
6.0	5.9	6.0	6.4	7.0	6.9	6.4	6.6
7.0	6.4	6.3	5.5	6.5	7.8	10.3	12.3
4.9	4.4	3.9	2.6	3.0	4.3	6.3	7.3
1.5	1.5	1.7	1.7	2.0	2.5	3.1	3.2
0.5	0.4	0.5	0.4	0.4	0.3	0.4	0.2
0.2	0.2	0.3	0.8	1.1	0.8	0.5	1.6

Table 5.25: Average annual number of new cases by primary site and origin, 2017–2021, **males**

ICD-10	Site	Norwegian born	Nordic countries	W Europe, North America and Oceania	Other European Countries	Middle East and Africa	Asia
C00–96	All sites	17 549	292	331	310	198	151
C00–14	Mouth, pharynx	392	9	9	9	6	6
C00	Lip	52	0	1	1	0	0
C02–06	Oral cavity	110	3	3	2	1	3
C07–08	Salivary glands	33	1	1	1	1	1
C09–10, C01, C14	Oropharynx	169	3	3	4	1	1
C11	Nasopharynx	6	1	0	1	3	1
C12–13	Hypopharynx	22	0	0	0	1	0
C15–26	Digestive organs	3 560	57	61	57	44	34
C15	Oesophagus	230	5	5	4	1	0
C16	Stomach	235	2	6	8	7	3
C17	Small intestine	119	1	2	2	2	0
C18	Colon	1 398	17	19	18	13	8
C19–20	Rectum, rectosigmoid	756	15	12	9	7	5
C21	Anus	34	0	1	0	0	0
C22	Liver	203	4	4	5	7	9
C23–24	Gallbladder, bile ducts	71	2	2	2	0	1
C25	Pancreas	455	9	10	7	5	6
C26	Other digestive organs	58	1	0	0	1	1
C30–34, C38	Respiratory organs	1 681	29	35	43	18	17
C30–31	Nose, sinuses	24	0	0	1	0	0
C32	Larynx, epiglottis	81	1	2	3	2	1
C33–34	Lung, trachea	1 566	27	32	39	15	16
C38	Heart, mediastinum and pleura	11	0	0	0	1	0
C40–41	Bone	27	1	1	2	1	1
C43	Melanoma of the skin	1 141	18	16	13	1	1
C44	Skin, non-melanoma	1 391	18	22	6	5	3
C45	Mesothelioma	64	1	1	0	0	0
C47	Autonomic nervous system	5	0	0	0	0	0
C48–49	Soft tissues	58	2	1	2	1	1
C50	Breast	28	0	1	0	1	0
C60–63	Male genital organs	5 029	86	94	60	48	34
C61	Prostate	4 699	80	84	48	44	33
C62	Testis	268	5	8	11	3	1
C60, C63	Other male genital	61	1	1	1	0	0
C64–68	Urinary organs	1 764	29	36	50	28	17
C64	Kidney (excl. renal pelvis)	551	8	12	22	8	7
C65–68	Urinary tract	1 213	21	24	27	20	10
C69	Eye	40	0	1	1	0	0
C70–72	Central nervous system	399	9	9	18	10	6
C73	Thyroid gland	117	3	4	5	5	4
C37, C74–75	Other endocrine glands	74	1	2	4	4	4
C39, C76, C80	Other or unspecified	144	1	2	3	1	1
C81–96	Lymphoid/haematopoietic tissue	1 635	26	36	35	27	22
C81	Hodgkin lymphoma	73	1	2	3	3	2
C82–86, C96	Non-Hodgkin lymphoma	528	9	13	13	10	7
C88	Immunoproliferative disease	54	1	1	1	0	0
C90	Multiple myeloma	283	3	5	3	3	3
C91–95	Leukaemia	696	12	16	16	11	11

Table 5.26: Average annual number of new cases by primary site and origin, 2017–2021, **females**

ICD-10	Site	Norwegian born	Nordic countries	W Europe, North America and Oceania	Other European Countries	Middle East and Africa	Asia
C00–96	All sites	14 980	272	251	340	158	256
C00–14	Mouth, pharynx	222	4	4	4	2	4
C00	Lip	41	1	1	0	0	0
C02–06	Oral cavity	91	2	2	1	0	1
C07–08	Salivary glands	27	0	1	1	0	2
C09–10, C01, C14	Oropharynx	56	1	1	1	0	0
C11	Nasopharynx	3	0	0	0	1	0
C12–13	Hypopharynx	4	0	0	0	0	0
C15–26	Digestive organs	3 055	48	40	47	23	37
C15	Oesophagus	79	1	2	1	1	1
C16	Stomach	149	3	3	8	3	6
C17	Small intestine	90	2	1	1	1	0
C18	Colon	1 512	23	17	17	8	13
C19–20	Rectum, rectosigmoid	506	7	6	8	4	7
C21	Anus	62	2	1	0	0	0
C22	Liver	113	1	2	4	2	6
C23–24	Gallbladder, bile ducts	81	1	1	2	1	1
C25	Pancreas	403	7	7	5	3	3
C26	Other digestive organs	60	1	0	1	1	0
C30–34, C38	Respiratory organs	1 587	24	21	23	6	14
C30–31	Nose, sinuses	16	0	0	0	0	0
C32	Larynx, epiglottis	17	0	0	1	0	0
C33–34	Lung, trachea	1 551	23	20	22	6	14
C38	Heart, mediastinum and pleura	3	0	0	0	0	0
C40–41	Bone	20	1	0	1	0	0
C43	Melanoma of the skin	1 083	18	14	11	2	1
C44	Skin, non-melanoma	1 173	18	18	6	3	3
C45	Mesothelioma	12	0	0	0	0	0
C47	Autonomic nervous system	4	0	0	0	0	0
C48–49	Soft tissues	46	1	0	2	1	0
C50	Breast	3 235	72	69	99	51	84
C51–58	Female genital organs	1 595	31	29	54	18	42
C51–52, C57.7–9	Other female genital	115	2	1	1	1	2
C53	Cervix uteri	309	6	7	19	3	13
C54	Corpus uteri	699	15	13	20	7	16
C55	Uterus, other	8	0	0	0	0	0
C56, C57.0–4, C48.2	Ovary etc.	462	9	9	14	6	11
C58	Placenta	2	0	0	0	0	0
C64–68	Urinary organs	689	12	10	14	5	8
C64	Kidney (excl. renal pelvis)	265	4	4	8	3	4
C65–68	Urinary tract	424	8	6	7	3	3
C69	Eye	37	0	0	1	1	1
C70–72	Central nervous system	475	10	10	18	10	12
C73	Thyroid gland	257	8	7	20	12	22
C37, C74–75	Other endocrine glands	74	1	1	4	4	3
C39, C76, C80	Other or unspecified	173	2	2	2	1	2
C81–96	Lymphoid/haematopoietic tissue	1 242	21	24	33	18	22
C81	Hodgkin lymphoma	51	1	2	3	3	1
C82–86, C96	Non-Hodgkin lymphoma	413	8	7	11	5	11
C88	Immunoproliferative disease	32	1	0	0	0	0
C90	Multiple myeloma	202	2	3	4	1	2
C91–95	Leukaemia	544	10	12	15	9	7

Table 5.27: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and origin, 2017–2021, **males**

ICD-10	Site	Norwegian born	Nordic countries	W Europe, North America and Oceania	Other European Countries	Middle East and Africa	Asia
C00–96	All sites	728.1	707.9	668.7	507.6	459.2	396.2
C00–14	Mouth, pharynx	16.3	18.6	18.2	11.6	13.4	12.7
C00	Lip	2.2	0.8	3.1	2.8	0.6	0.0
C02–06	Oral cavity	4.6	8.0	5.5	2.0	0.9	5.2
C07–08	Salivary glands	1.4	1.2	1.8	0.6	4.2	1.2
C09–10, C01, C14	Oropharynx	7.0	6.5	6.9	3.9	1.0	3.7
C11	Nasopharynx	0.2	1.3	0.5	2.2	4.1	1.7
C12–13	Hypopharynx	0.9	0.8	0.3	0.1	2.6	1.0
C15–26	Digestive organs	147.8	141.0	120.5	112.5	108.0	89.9
C15	Oesophagus	9.4	13.5	8.3	5.9	4.3	0.3
C16	Stomach	9.9	5.1	14.0	18.5	19.6	7.0
C17	Small intestine	5.0	3.3	4.1	3.7	2.4	0.6
C18	Colon	58.4	42.0	38.2	41.5	33.8	24.5
C19–20	Rectum, rectosigmoid	31.1	38.1	23.1	18.0	10.3	12.9
C21	Anus	1.4	0.7	0.8	0.2	0.6	0.6
C22	Liver	8.4	7.8	7.6	8.9	20.3	21.5
C23–24	Gallbladder, bile ducts	3.0	6.9	4.3	4.8	0.4	2.6
C25	Pancreas	18.7	21.9	19.3	10.7	14.4	18.1
C26	Other digestive organs	2.4	1.7	0.8	0.3	1.9	1.9
C30–34, C38	Respiratory organs	68.3	72.9	72.0	75.5	51.4	52.0
C30–31	Nose, sinuses	1.0	1.6	0.6	0.5	0.4	0.4
C32	Larynx, epiglottis	3.3	2.6	3.3	4.6	3.8	3.2
C33–34	Lung, trachea	63.6	67.2	67.8	70.3	46.6	48.4
C38	Heart, mediastinum and pleura	0.5	1.5	0.2	0.1	0.7	0.0
C40–41	Bone	1.2	1.6	1.4	1.6	1.0	1.0
C43	Melanoma of the skin	48.3	40.8	30.6	14.7	0.6	1.9
C44	Skin, non-melanoma	60.9	60.9	59.2	16.5	19.8	13.7
C45	Mesothelioma	2.6	4.5	4.2	0.0	0.2	0.6
C47	Autonomic nervous system	0.2	0.0	0.0	0.1	0.0	0.2
C48–49	Soft tissues	2.5	5.3	0.7	1.2	1.3	3.1
C50	Breast	1.1	0.8	1.6	0.9	1.8	0.0
C60–63	Male genital organs	204.5	196.7	183.3	109.8	116.4	99.7
C61	Prostate	188.8	184.5	168.6	102.2	114.0	96.6
C62	Testis	13.1	8.5	11.0	4.6	2.4	1.5
C60, C63	Other male genital	2.6	3.7	3.6	3.0	0.0	1.6
C64–68	Urinary organs	72.8	70.6	73.2	76.9	67.2	41.0
C64	Kidney (excl. renal pelvis)	22.6	17.7	22.5	22.6	15.7	14.3
C65–68	Urinary tract	50.2	53.0	50.8	54.3	51.5	26.6
C69	Eye	1.7	0.4	1.7	0.2	0.0	1.0
C70–72	Central nervous system	17.1	21.3	14.3	16.1	11.6	9.5
C73	Thyroid gland	5.1	5.9	5.7	3.1	6.3	5.4
C37, C74–75	Other endocrine glands	3.1	1.9	3.0	2.6	3.7	7.2
C39, C76, C80	Other or unspecified	6.3	4.9	6.9	9.2	2.6	7.0
C81–96	Lymphoid/haematopoietic tissue	68.2	60.0	72.3	55.0	53.6	50.4
C81	Hodgkin lymphoma	3.2	2.1	2.9	2.8	2.9	2.7
C82–86, C96	Non-Hodgkin lymphoma	21.9	21.0	21.4	17.4	17.6	15.6
C88	Immunoproliferative disease	2.2	2.1	1.8	3.1	0.6	0.4
C90	Multiple myeloma	11.7	6.5	10.1	5.1	6.4	6.8
C91–95	Leukaemia	29.2	28.4	36.1	26.6	26.0	24.9

Table 5.28: Age-standardised (Norwegian standard) incidence rates per 100 000 person-years by primary site and origin, 2017–2021, **females**

ICD-10	Site	Norwegian born	Nordic countries	W Europe, North America and Oceania	Other European Countries	Middle East and Africa	Asia
C00–96	All sites	573.2	522.7	488.6	428.5	358.2	349.8
C00–14	Mouth, pharynx	8.3	7.9	8.7	4.6	3.0	4.8
C00	Lip	1.4	1.7	1.3	0.1	0.0	0.0
C02–06	Oral cavity	3.3	3.8	4.0	1.2	0.5	2.2
C07–08	Salivary glands	1.1	0.0	1.1	0.7	0.3	1.0
C09–10, C01, C14	Oropharynx	2.3	1.7	1.9	2.4	1.3	1.0
C11	Nasopharynx	0.1	0.7	0.3	0.1	1.0	0.3
C12–13	Hypopharynx	0.1	0.0	0.0	0.1	0.0	0.2
C15–26	Digestive organs	110.8	91.0	82.1	75.9	63.1	75.9
C15	Oesophagus	2.8	1.9	4.8	1.0	2.6	2.5
C16	Stomach	5.4	5.4	5.7	8.3	4.1	9.8
C17	Small intestine	3.4	3.8	3.1	1.2	2.9	0.4
C18	Colon	54.2	44.2	36.1	30.3	21.8	26.6
C19–20	Rectum, rectosigmoid	19.0	14.3	11.0	11.2	10.6	11.6
C21	Anus	2.4	3.8	2.3	0.1	0.0	0.2
C22	Liver	4.1	1.5	3.5	4.7	5.3	15.0
C23–24	Gallbladder, bile ducts	2.9	1.5	1.7	3.9	4.6	2.7
C25	Pancreas	14.4	13.4	13.0	13.5	9.9	6.5
C26	Other digestive organs	2.1	1.2	0.8	1.7	1.2	0.5
C30–34, C38	Respiratory organs	57.2	45.4	42.9	44.1	22.6	28.2
C30–31	Nose, sinuses	0.6	0.7	0.7	0.7	1.5	0.0
C32	Larynx, epiglottis	0.7	0.8	0.7	0.5	0.3	0.0
C33–34	Lung, trachea	55.8	43.9	41.5	42.9	19.5	28.0
C38	Heart, mediastinum and pleura	0.1	0.0	0.0	0.1	1.3	0.1
C40–41	Bone	0.8	1.7	0.7	1.1	0.2	0.6
C43	Melanoma of the skin	43.9	35.6	24.6	10.9	4.1	1.2
C44	Skin, non-melanoma	40.0	34.6	38.1	14.5	13.5	7.7
C45	Mesothelioma	0.4	0.7	0.9	0.9	0.0	0.3
C47	Autonomic nervous system	0.2	0.0	0.0	0.0	0.3	0.0
C48–49	Soft tissues	1.8	3.0	0.3	1.8	2.8	0.6
C50	Breast	133.0	139.4	128.0	108.4	95.7	97.4
C51–58	Female genital organs	63.5	58.2	53.3	60.6	43.6	47.8
C51–52, C57.7–9	Other female genital	4.3	3.0	2.1	2.4	1.0	3.7
C53	Cervix uteri	14.6	9.9	10.9	13.0	5.0	10.5
C54	Corpus uteri	26.5	28.4	24.0	28.1	22.2	18.4
C55	Uterus, other	0.3	0.0	0.0	0.0	2.6	0.0
C56, C57.0–4, C48.2	Ovary etc.	17.7	16.9	16.3	17.1	12.8	15.1
C58	Placenta	0.1	0.0	0.0	0.0	0.0	0.1
C64–68	Urinary organs	25.2	23.2	21.4	21.2	15.5	10.8
C64	Kidney (excl. renal pelvis)	10.1	7.4	8.3	11.3	6.1	5.8
C65–68	Urinary tract	15.1	15.8	13.1	9.9	9.4	5.1
C69	Eye	1.5	1.0	0.7	0.4	2.4	0.5
C70–72	Central nervous system	19.5	19.0	19.6	16.4	18.8	11.5
C73	Thyroid gland	11.4	15.2	12.2	16.5	15.5	18.2
C37, C74–75	Other endocrine glands	3.2	2.1	2.2	4.3	7.3	2.8
C39, C76, C80	Other or unspecified	5.9	3.6	3.5	3.9	5.4	4.7
C81–96	Lymphoid/haematopoietic tissue	46.5	41.1	49.4	43.1	44.4	36.9
C81	Hodgkin lymphoma	2.3	1.1	2.7	2.4	3.7	1.4
C82–86, C96	Non-Hodgkin lymphoma	15.4	17.0	14.3	14.5	16.5	19.6
C88	Immunoproliferative disease	1.1	1.9	0.4	0.7	0.6	0.4
C90	Multiple myeloma	7.3	2.8	6.0	6.7	2.8	2.5
C91–95	Leukaemia	20.4	18.2	26.0	18.8	20.8	12.9

Chapter 6 Prevalence

As of December 31st 2021, a total of 316 145 individuals were alive and previously diagnosed with cancer in Norway. The cancer prevalence in Table 6.1 provides the numbers of cancer survivors by time after a given diagnosis (< 1, 1–4, 5–9 and ≥ 10 years), and approximates the number of patients in Norway (of both sexes) potentially requiring some form of cancer care. The highest prevalence was seen for breast cancer (54 827), prostate cancer (59 077), melanoma of the skin (31 350) and colon cancer (25 508).

Differences in prognosis and median age at diagnosis (rather than incidence) explain much of the site-specific variability in prevalence. In terms of new incident cases, there are 43% more cases of lung cancer compared to melanoma of the skin in Norway in 2021, but the number of lung cancer survivors ten years after diagnosis is only

11% of surviving melanoma patients. This reflects the vast difference in prognosis for the two patient groups.

Table 6.2 shows the number of patients with distant metastases alive at specific time points. Only patients with metastasis confirmed histologically are included. The number is increasing over the years, probably caused by improvements in the diagnostic quality. This also means that patients with only small distant metastases may contribute to a better prognosis in a group with otherwise quite severe disease. We see that patients with metastatic disease now live longer, have more often diagnostic work-up and surgery for metastatic lesions, and are also given more chemotherapy than before. This patient group represents an increasing demand of personnel and costs in the health care system.

Table 6.1: Prevalence of cancers 31 December 2011 and 31 December 2021, both sexes

ICD-10	Site	Total no. of persons alive		Years after diagnosis			
		31.12.2011	31.12.2021	<1	1–4	5–9	10+
C00–96	All sites	217 977	316 145	25 979	82 472	76 649	131 045
C00–14	Mouth, pharynx	4 012	6 209	656	1 911	1 528	2 114
C00	Lip	1 098	1 181	98	310	281	492
C02–06	Oral cavity	1 275	1 906	197	593	462	654
C07–08	Salivary glands	517	757	71	187	173	326
C09–10, C01, C14	Oropharynx	934	2 110	256	739	562	553
C11	Nasopharynx	119	182	21	52	41	68
C12–13	Hypopharynx	89	123	24	53	21	25
C15–26	Digestive organs	32 599	46 725	5 442	14 556	11 814	14 913
C15	Oesophagus	421	964	239	380	217	128
C16	Stomach	1 969	2 112	279	620	462	751
C17	Small intestine	861	1 607	205	606	408	388
C18	Colon	17 938	25 508	2 728	8 009	6 608	8 163
C19–20	Rectum, rectosigmoid	10 035	13 596	1 225	3 921	3 543	4 907
C21	Anus	620	989	97	299	262	331
C22	Liver	322	856	208	340	167	141
C23–24	Gallbladder, bile ducts	358	548	111	193	108	136
C25	Pancreas	721	1 582	511	609	277	185
C26	Other digestive organs	141	190	54	54	36	46
C30–34, C38	Respiratory organs	7 095	12 124	2 474	4 833	2 616	2 201
C30–31	Nose, sinuses	310	380	39	107	88	146
C32	Larynx, epiglottis	1 115	1 124	109	292	271	452
C33–34	Lung, trachea	5 635	10 620	2 343	4 450	2 262	1 565
C38	Heart, mediastinum and pleura	72	77	8	18	8	43
C40–41	Bone	704	915	52	153	152	558
C43	Melanoma of the skin	19 442	31 350	2 378	8 115	7 117	13 740
C44	Skin, non-melanoma	12 732	20 980	2 940	8 035	4 749	5 256
C45	Mesothelioma	118	143	56	65	15	7
C47	Autonomic nervous system	244	252	10	27	24	191
C48–49	Soft tissues	1 272	1 571	84	316	303	868
C50	Breast	38 250	54 827	3 919	12 882	12 617	25 409
C51–58	Female genital organs	21 347	25 396	1 576	5 240	5 035	13 545
C51–52, C57.7–9	Other female genital	870	1 094	107	295	250	442
C53	Cervix uteri	6 847	7 762	318	1 247	1 283	4 914
C54	Corpus uteri	9 251	11 545	736	2 563	2 598	5 648
C55	Uterus, other	40	43	3	3	9	28
C56, C57.0–4, C48.2	Ovary etc.	4 542	5 199	444	1 211	964	2 580
C58	Placenta	143	151	0	8	13	130
C60–63	Male genital organs	41 255	67 993	5 372	18 850	19 814	23 957
C61	Prostate	34 637	59 077	5 028	17 630	18 238	18 181
C62	Testis	6 320	8 555	292	1 168	1 487	5 608
C60, C63	Other male genital	430	661	77	172	172	240
C64–68	Urinary organs	16 613	25 053	2 508	7 726	6 717	8 102
C64	Kidney (excl. renal pelvis)	5 089	8 789	837	2 682	2 482	2 788
C65–68	Urinary tract	11 633	16 501	1 703	5 147	4 300	5 351
C69	Eye	952	1 240	81	277	252	630
C70–72	Central nervous system	11 589	14 838	831	2 506	3 061	8 440
C73	Thyroid gland	4 606	7 292	505	1 624	1 490	3 673
C37, C74–75	Other endocrine glands	3 329	4 401	145	657	981	2 618
C39, C76, C80	Other or unspecified	536	683	116	190	139	238
C81–96	Lymphoid/haematopoietic tissue	18 664	30 477	2 753	9 061	7 487	11 176
C81	Hodgkin lymphoma	2 333	3 162	140	517	616	1 889
C82–86, C96	Non-Hodgkin lymphoma	7 235	11 474	986	3 122	2 882	4 484
C88	Immunoproliferative disease	480	829	92	306	230	201
C90	Multiple myeloma	1 710	3 037	444	1 389	718	486
C91–95	Leukaemia	6 999	12 191	1 119	3 822	3 088	4 162

Table 6.2: Prevalence of patients diagnosed with distant metastases during lifetime, by health region, both sexes

Health region	Alive by					
	31.12.1996	31.12.2001	31.12.2006	31.12.2011	31.12.2016	31.12.2021
South-Eastern	4 778	5 843	7 075	8 584	10 126	11 764
Western	1 615	2 119	2 520	2 957	3 653	4 264
Central	1 212	1 423	1 817	2 120	2 457	2 792
Northern	772	914	1 216	1 443	1 648	1 974
Norway	8 377	10 299	12 628	15 104	17 884	20 794

Chapter 7 Mortality

The mortality data is obtained from the Cause of Death Registry. Of note is that mortality data for 2021 was not complete when this report was published (June 2022), and we therefore report figures for 2020.

There were 10 981 deaths from cancer in Norway in 2020, of which 5916 were men, and 5065 women (Table 7.1) ¹. Cancer of the lung accounts for 20% of the cancer mortality, followed by cancer in the colon (11%), prostate (9%), pancreas (7%) and female breast (5%). Together these cancer sites account for 51% of the cancer mortality.

Among men, lung cancer caused 1162 deaths in 2020. Prostate cancer (954 deaths), colon cancer (534 deaths) and pancreatic cancer (393 deaths) represent the second,

third and fourth most frequent causes of cancer death among men, respectively.

Lung cancer mortality also ranks highest among women (1006 deaths), followed by colon (625 deaths), breast (591 deaths) and pancreatic cancer (378 deaths). Figure 7.1 shows the distribution of age-standardised mortality rates for selected cancer sites. There is at least a 10-fold difference in rates across these cancers. Given the very poor prognosis for pancreatic cancer, it ranks among the top four causes of cancer death among both men and women, even though pancreatic cancer only is a moderately common cancer.

The trends section in this report examines the incidence, mortality, and survival for 23 selected cancer sites.

¹We have not received complete data for mortality for 2021.

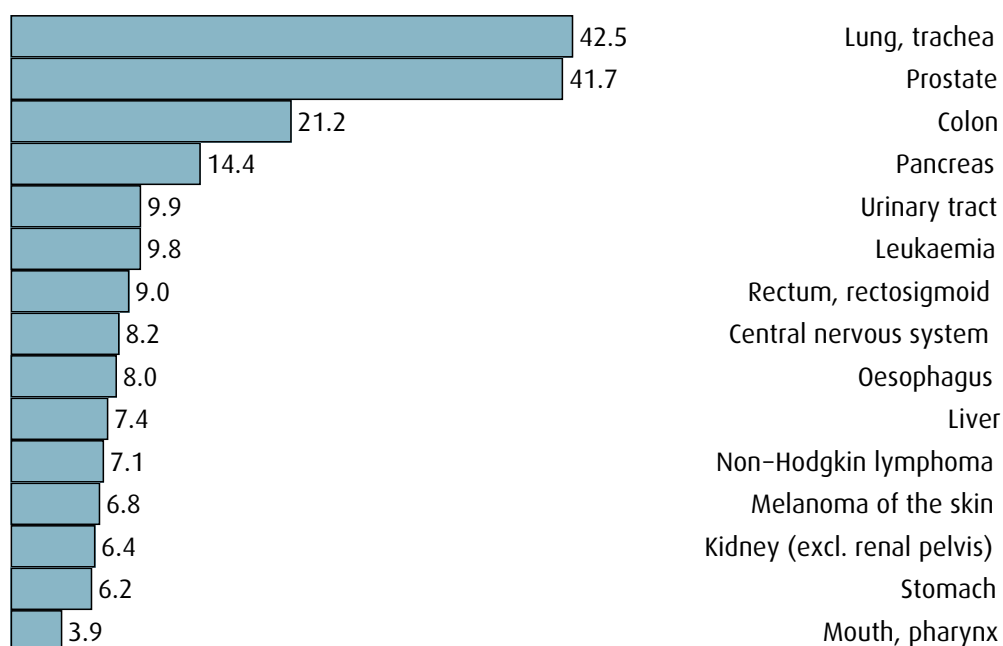
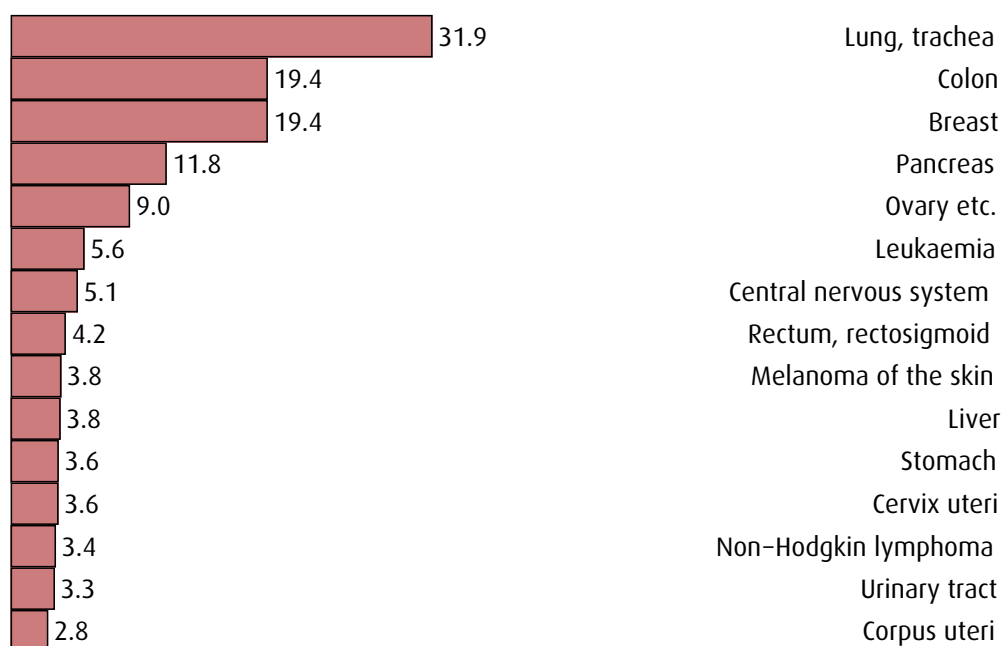
Figure 7.1: Age-standardised (Norwegian standard) mortality rates per 100 000 person-years for selected cancers, 2020**MALES****FEMALES**

Table 7.1: Number of cancer deaths by primary site and sex, 2020

ICD-10	Site	Males	Females	Total
C00-96	All sites	5 916	5 065	10 981
C00-14	Mouth, pharynx	105	48	153
C00	Lip	4	1	5
C02-06	Oral cavity	34	30	64
C07-08	Salivary glands	16	4	20
C09-10, C01, C14	Oropharynx	33	9	42
C11	Nasopharynx	1	1	2
C12-13	Hypopharynx	17	3	20
C15-26	Digestive organs	1 896	1 576	3 472
C15	Oesophagus	217	78	295
C16	Stomach	163	114	277
C17	Small intestine	47	24	71
C18	Colon	534	625	1 159
C19-20	Rectum, rectosigmoid	235	130	365
C21	Anus	6	15	21
C22	Liver	203	120	323
C23-24	Gallbladder, bile ducts	43	46	89
C25	Pancreas	393	378	771
C26	Other digestive organs	55	46	101
C30-34, C38	Respiratory organs	1 211	1 026	2 237
C30-31	Nose, sinuses	13	8	21
C32	Larynx, epiglottis	33	8	41
C33-34	Lung, trachea	1 162	1 006	2 168
C38	Heart, mediastinum and pleura	3	4	7
C40-41	Bone	13	11	24
C43	Melanoma of the skin	174	121	295
C44	Skin, non-melanoma	31	27	58
C45	Mesothelioma	56	12	68
C47	Autonomic nervous system	2	2	4
C48-49	Soft tissues	49	44	93
C50	Breast	10	591	601
C51-58	Female genital organs		589	589
C51-52, C57.7-9	Other female genital		59	59
C53	Cervix uteri		106	106
C54	Corpus uteri		91	91
C55	Uterus, other		58	58
C56, C57.0-4, C48.2	Ovary etc.		275	275
C58	Placenta		0	0
C60-63	Male genital organs	961		961
C61	Prostate	954		954
C62	Testis	5		5
C60, C63	Other male genital	2		2
C64-68	Urinary organs	407	188	595
C64	Kidney (excl. renal pelvis)	166	80	246
C65-68	Urinary tract	241	108	349
C69	Eye	4	1	5
C70-72	Central nervous system	223	154	377
C73	Thyroid gland	14	19	33
C37, C74-75	Other endocrine glands	8	8	16
C39, C76, C80	Other or unspecified	162	229	391
C81-96	Lymphoid/haematopoietic tissue	589	419	1 008
C81	Hodgkin lymphoma	12	10	22
C82-86, C96	Non-Hodgkin lymphoma	182	111	293
C88	Immunoproliferative disease	9	7	16
C90	Multiple myeloma	136	108	244
C91-95	Leukaemia	250	183	433

Chapter 8 Survival

Long-term estimates of survival are becoming increasingly relevant as life expectancy amongst cancer patients increases and cancer care continues to advance^[23]. Table 8.3 gives the 1-year, 5-year, 10-year and 15-year relative survival estimates (with 95% confidence intervals) for the follow-up period 2017–2021 by cancer site and sex. Less frequent cancer diagnoses and groups with low survival will have few cases left especially at 10 and 15 years after diagnosis, and the 95% confidence intervals should be taken into consideration in any interpretation of the relative survival estimates.

Given that cancer patients survive longer, there is a need to communicate information about prognosis not only at the time of diagnosis, but also later because prognosis tends to improve for those surviving the first year(s) after diagnosis^[21].

Figures 8.1–A to 8.1–X depict these two aspects of cancer survival in Norway for all cancers combined and for 23 specific cancer sites. Relative survival estimates are presented by sex and age, 1 to 15 years after diagnosis, with age strata determined specifically according to relevant biological and/or clinical criteria.

For some sites, the cumulative survival curve tends to level off a certain number of years after diagnosis, indicating that from this point forward, the cancer patient group has similar mortality as the comparable group without cancer, or in other words, statistically, these patients appear to be “cured”^[24]. This concept of “statistical cure” involves attributes of survival observed among patients as a group, and should be distinguished from clinical cure, which is determined on the basis of lack of specific symptoms in an individual.

Estimates of five-year relative survival conditional on being alive 1 to 10 years after diagnosis are included in the sex-specific figures, which better quantify the prognosis of cancer patients at time points beyond the initial diagnosis (Figure 8.1–A to 8.1–X, dashed lines). When conditional five-year relative survival is above 90–95% we usually say that there is little or no excess mortality — analogous to the notion of statistical cure that may be observed in the long-term relative survival estimates.

The overall profile of the sex- and age-specific survival of all cancer patients 1 to 15 years after diagnosis in

Norway is presented in Figure 8.1–A. The combined cancer group is an aggregate of many different cancer types with different diagnostic and treatment possibilities, and survival estimates will particularly be influenced by PSA testing for prostate cancer and mammographic screening for female breast cancer.

The cumulative five-year relative survival described by cancer site, sex and age, and five-year conditional relative survival by site and age (Figures 8.1–B to 8.1–X) are fairly self-explanatory and highlight the wide variations in patient survival according to these three variables. The 84 percentage-point difference in five-year survival among patients with testicular cancer (Figure 8.1–Q) compared to patients with pancreatic cancer (Figure 8.1–I) strikingly illustrates the wide differences in prognosis according to cancer type. Moreover, long-term survival following diagnosis of melanoma of the skin and cancers of the oral cavity, central nervous system, colon and thyroid gland clearly varies between men and women. This may be due to biological or anatomical differences or be related to sex-specific differences in stage at presentation¹, subsite or histological type, as well as levels of co-morbidity.

The overall cancer survival tends to diminish with increasing age at diagnosis, yet the age-specific differences are rather narrow for for example colon cancer (Figure 8.1–E) relative to cervical cancer (Figure 8.1–M) or non-Hodgkin lymphoma (Figure 8.1–W). For certain cancers, including breast and corpus uteri cancer, long-term survival among patients diagnosed before the age of 50 are slightly lower than for patients diagnosed at the ages 50–59. This in part represents the diagnosis of more aggressive tumours in the younger age group, and, for breast cancer, the impact of screening in the older group.

The figures also illustrate a positive aspect of cancer survival; cancer patients who are alive a certain time after diagnosis show good prospects of surviving their cancer and being cured. In fact, for more than two-thirds of the cancer groups, the five-year conditional relative survival reaches 90% 2–5 years after diagnosis. In general terms, this means that survivors of these cancers will, within a few years of diagnosis, have mortality rates similar to that of the general population, and would be considered (statistically) cured. The extent to which survivors may

¹For cancers of the central nervous system, this is particularly noticeable. Among men, 58.1% of these tumors are malignant. The corresponding proportion among women is 34.1%.

be considered cured does however vary; five-year conditional survival from breast cancer reaches 90% 1 year after diagnosis (Figure 8.1–L) and slowly increases to about 93% 10 years from diagnosis. As is evident from the continual decline in long-term breast cancer cumulative survival, there remains a persistent excess mortality for women with this disease.

Tables 8.1 and 8.2 provide the five-year relative survival estimates over the last four decades by cancer site and stage for males and females, respectively. While the stage-specific count of cases by five-year period of diagnosis in Tables 5.21 and 5.22 are not equivalent to the size of the patient groups used in the survival calculations, the numbers do provide a reasonable indication of the absolute number of patients involved in the survival analyses at different time periods and their relative distribution.

Table 8.1: Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, **males**

ICD-10	Site	Stage	Relative survival (%)							
			1982–86	1987–91	1992–96	1997–01	2002–06	2007–11	2012–16	2017–21*
C00–96	All sites	Total	43.7	46.8	51.9	57.6	63.1	69.4	74.4	77.1
		Total	56.6	58.1	55.5	55.1	55.9	65.0	67.9	72.5
C00–14	Mouth, pharynx	Localised	76.3	81.0	81.6	81.1	80.4	83.1	85.1	87.7
		Regional	25.9	27.4	27.3	33.4	39.2	50.4	61.8	65.2
		Distant	-	7.3	11.8	6.2	12.6	7.8	6.1	10.4
		Unknown	54.8	38.2	51.9	56.2	60.7	76.0	57.4	72.7
		Total	4.5	5.4	5.6	6.8	8.2	13.5	20.3	22.2
C15	Oesophagus	Localised	6.9	13.0	15.6	24.1	22.8	32.5	56.5	66.5
		Regional	5.7	4.8	3.8	8.0	11.5	14.4	24.4	32.2
		Distant	-	0.5	0.6	0.5	-	1.6	3.0	3.3
		Unknown	-	4.8	3.5	7.2	4.3	15.1	12.7	11.4
C16	Stomach	Total	17.3	19.4	17.5	19.1	20.5	25.0	27.4	30.9
		Localised	40.6	50.1	57.3	57.1	58.7	63.6	68.9	80.5
		Regional	18.8	20.5	16.8	21.0	22.2	24.8	33.4	38.5
		Distant	1.5	1.2	0.7	2.0	1.5	3.5	2.8	4.4
		Unknown	6.9	3.9	9.3	20.1	27.1	24.3	20.1	23.2
C18	Colon	Total	48.6	47.5	53.0	56.0	58.0	60.6	65.5	69.7
		Localised	78.7	76.9	87.5	96.2	88.8	92.3	95.0	97.1
		Regional	56.1	57.1	64.3	68.5	72.3	78.1	83.9	85.3
		Distant	5.1	4.2	4.2	6.7	7.9	12.8	14.3	16.0
		Unknown	33.2	25.9	33.2	54.3	56.4	44.7	23.5	47.1
C19–20	Rectum, rectosigmoid	Total	44.0	47.6	51.7	57.7	61.0	66.3	71.1	71.9
		Localised	67.2	72.0	81.9	85.2	88.6	91.9	97.8	97.5
		Regional	39.8	45.8	52.3	66.4	69.7	80.4	82.3	81.2
		Distant	2.4	4.1	3.5	10.3	11.7	15.7	21.6	25.0
		Unknown	29.4	34.3	27.9	50.4	57.6	47.8	40.8	55.3
C22	Liver	Total	2.6	3.4	6.2	6.1	6.3	13.9	19.1	25.3
		Localised	5.1	6.4	12.2	15.7	10.2	24.8	42.3	50.8
		Regional	-	-	-	-	1.7	5.3	6.1	12.0
		Distant	-	-	2.2	-	2.2	2.5	3.1	3.9
		Unknown	2.3	1.6	3.3	2.8	6.9	13.2	11.7	18.3
C23–24	Gallbladder, bile ducts	Total	11.5	10.9	9.2	14.7	14.6	16.9	19.3	26.8
		Localised	24.4	19.9	21.4	31.5	40.5	32.5	60.7	60.9
		Regional	19.1	14.0	11.9	21.8	14.7	21.9	18.9	30.2
		Distant	1.4	1.9	1.5	1.4	4.0	2.5	0.8	1.6
		Unknown	-	-	1.7	12.0	9.6	8.3	-	37.0
C25	Pancreas	Total	1.2	1.7	2.5	2.5	4.8	5.9	10.9	14.7
		Localised	3.2	3.2	8.6	8.6	20.0	24.4	51.8	56.2
		Regional	1.6	5.7	6.6	5.4	6.2	9.1	19.5	25.6
		Distant	0.3	1.0	0.8	1.4	2.1	2.1	1.8	2.6
		Unknown	2.6	0.6	1.6	2.3	4.1	8.1	8.5	16.5
C33–34	Lung, trachea	Total	7.4	7.1	7.8	8.5	10.0	12.9	19.3	25.7
		Localised	17.1	15.5	21.9	32.5	39.7	44.2	56.3	64.0
		Regional	7.7	8.7	7.8	9.0	11.3	15.3	23.4	31.9
		Distant	0.4	0.8	0.4	0.7	1.1	2.1	2.4	5.1
		Unknown	2.8	5.7	5.8	7.4	10.9	12.1	15.2	17.8
C43	Melanoma of the skin	Total	68.0	69.8	75.0	75.8	76.2	79.2	86.9	90.3
		Localised	76.7	77.9	81.0	85.7	83.4	87.5	92.8	95.2
		Regional	29.2	35.1	41.7	40.0	37.7	40.4	64.8	74.9
		Distant	2.0	7.9	14.8	11.5	11.9	11.7	25.2	41.4
		Unknown	67.1	39.8	67.8	73.0	81.2	74.0	63.1	59.8
C61	Prostate	Total	57.2	59.8	68.4	80.2	85.9	92.4	95.1	95.5
		Localised	73.6	74.9	80.3	96.2	96.8	101.7	103.3	102.4
		Regional	42.0	54.0	60.2	73.2	81.7	93.9	95.2	95.9
		Distant	21.6	24.9	24.5	26.4	31.1	37.2	39.9	45.1
		Unknown	53.3	64.7	71.9	83.5	88.6	95.3	99.1	98.3

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Table 8.1: Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, **males** (Continued)

ICD-10	Site	Stage	Relative survival (%)							
			1982–86	1987–91	1992–96	1997–01	2002–06	2007–11	2012–16	2017–21*
C62	Testis	Total	92.6	94.5	96.0	96.4	97.1	97.8	99.0	98.8
		Localised	98.2	98.0	99.4	99.1	100.0	99.1	99.8	100.1
		Regional	95.5	95.6	96.9	97.5	94.9	96.0	98.5	97.6
		Distant	68.0	77.1	74.7	75.7	84.0	90.3	88.9	87.5
		Unknown	-	-	91.7	101.5	97.4	99.9	-	-
C64	Kidney (excl. renal pelvis)	Total	41.6	43.0	50.8	51.2	60.1	66.3	77.2	78.9
		Localised	71.8	68.1	76.6	78.9	85.0	87.1	91.9	92.6
		Regional	44.1	50.9	53.4	52.3	55.6	57.9	64.9	70.2
		Distant	7.2	5.8	6.0	6.7	8.4	9.3	17.3	21.9
		Unknown	42.1	-	27.9	56.0	68.2	70.5	50.4	59.7
C65–68	Urinary tract	Total	64.3	67.1	71.2	69.3	72.3	74.5	78.6	80.3
		Localised	71.7	73.7	77.7	80.5	84.8	84.2	85.5	87.2
		Regional	22.9	29.3	24.9	26.4	27.6	29.7	31.8	36.0
		Distant	2.9	7.9	6.7	4.7	5.7	5.3	5.1	9.5
		Unknown	67.3	66.4	68.5	68.2	72.6	73.1	49.6	62.4
C70–72	Central nervous system	Total	34.3	36.9	45.5	51.9	60.4	60.2	61.3	57.0
		Non-malignant	72.4	71.6	80.4	90.3	93.1	92.1	95.4	96.7
		Malignant	16.6	22.4	21.5	19.4	22.5	24.4	29.2	28.0
C73	Thyroid gland	Total	80.3	81.1	76.9	81.5	84.9	89.2	90.0	90.0
		Localised	98.5	94.7	98.6	98.4	97.0	101.1	101.9	100.5
		Regional	80.1	88.7	89.4	81.2	89.2	93.2	87.0	88.9
		Distant	39.1	31.2	27.5	-	-	-	37.2	-
		Unknown	-	-	-	-	-	-	74.7	77.3
C81	Hodgkin lymphoma	Total	62.5	73.1	75.6	80.5	79.3	79.5	84.4	91.2
C82–86, C96	Non-Hodgkin lymphoma	Total	42.2	41.9	46.2	47.9	59.0	66.3	73.4	77.9
C91–95	Leukaemia	Total	26.5	33.8	41.8	48.6	54.6	60.5	65.7	71.0

* For 2017–21 the 5-year relative survival estimates are based on the period approach (observation window 2017–21).

- Not estimated due to too few patients (see Chapter 4).

Table 8.2: Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, **females**

ICD-10	Site	Stage	Relative survival (%)							
			1982–86	1987–91	1992–96	1997–01	2002–06	2007–11	2012–16	2017–21*
C00–96	All sites	Total	53.4	56.4	59.1	62.8	66.3	69.5	73.6	76.3
		Total	56.6	64.7	61.0	59.5	67.6	72.9	74.0	76.7
C00–14	Mouth, pharynx	Localised	70.7	81.0	82.2	84.6	82.1	88.4	88.7	91.1
		Regional	40.7	43.0	35.5	38.3	51.9	54.7	57.7	62.7
		Distant	-	-	-	5.6	-	-	-	-
		Unknown	-	-	53.5	59.2	81.5	87.0	84.8	83.5
		Total	8.2	9.2	12.0	8.0	9.7	18.0	27.9	29.8
C15	Oesophagus	Localised	12.3	17.6	27.4	24.8	23.5	40.1	48.1	61.7
		Regional	6.0	6.9	9.2	5.2	7.9	17.3	41.9	32.1
		Distant	-	-	-	-	2.8	-	11.7	11.3
		Unknown	-	15.1	8.1	7.1	7.7	13.9	18.7	25.9
C16	Stomach	Total	21.6	22.3	22.5	24.5	24.2	25.8	29.9	31.2
		Localised	51.4	52.8	63.5	72.5	64.9	65.6	75.2	81.7
		Regional	21.8	22.8	27.9	29.8	22.5	22.4	30.7	35.2
		Distant	1.1	0.7	1.7	3.2	4.3	2.7	5.6	7.7
		Unknown	14.1	11.1	9.3	20.6	35.2	30.5	32.1	26.8
C18	Colon	Total	48.7	52.7	55.1	58.7	61.8	65.1	69.8	71.0
		Localised	79.3	82.2	86.6	90.3	94.7	95.8	98.1	97.4
		Regional	55.9	62.0	64.8	71.6	74.3	81.0	84.5	85.4
		Distant	4.0	5.0	5.4	8.5	11.4	14.0	19.9	20.9
		Unknown	21.1	33.1	45.7	56.4	62.5	41.9	31.9	45.7
C19–20	Rectum, rectosigmoid	Total	49.1	53.5	59.1	60.9	66.2	68.6	71.3	73.5
		Localised	74.5	76.8	87.4	93.3	93.4	95.8	97.5	96.8
		Regional	44.8	52.1	59.9	64.8	72.5	79.8	81.1	84.5
		Distant	5.0	2.3	6.1	7.8	11.6	20.5	21.9	23.6
		Unknown	31.8	47.2	45.3	56.8	68.1	51.1	45.2	53.1
C22	Liver	Total	7.4	8.7	9.7	8.2	14.3	19.0	26.6	24.8
		Localised	11.8	15.9	13.5	18.8	25.6	38.3	49.3	45.9
		Regional	-	-	-	-	-	11.3	24.1	34.1
		Distant	2.2	2.3	3.1	-	4.2	4.2	10.3	5.4
		Unknown	-	4.7	13.0	6.7	14.8	12.3	16.6	18.2
C23–24	Gallbladder, bile ducts	Total	12.7	9.8	9.9	12.7	12.6	16.9	20.5	24.9
		Localised	29.1	17.6	28.3	43.8	29.4	37.8	42.0	69.8
		Regional	10.9	11.5	12.6	18.4	19.1	26.8	29.2	34.2
		Distant	-	-	-	2.4	1.1	2.0	3.2	1.1
		Unknown	6.4	9.1	6.1	9.1	8.8	18.4	-	22.1
C25	Pancreas	Total	1.8	2.6	3.7	3.7	4.2	7.3	11.9	14.6
		Localised	4.3	7.3	16.1	23.4	18.0	35.1	52.0	51.3
		Regional	3.1	3.7	7.0	3.2	6.1	8.6	14.7	20.2
		Distant	0.8	0.5	1.3	1.2	1.8	2.2	2.3	2.7
		Unknown	1.2	4.0	1.3	5.3	3.8	8.4	10.8	14.5
C33–34	Lung, trachea	Total	6.4	9.1	11.0	10.8	13.8	17.9	26.2	32.8
		Localised	18.1	23.3	32.1	41.9	49.7	55.0	67.1	73.3
		Regional	5.6	9.1	12.3	10.3	13.3	18.7	31.2	38.0
		Distant	0.4	1.2	1.0	1.1	2.0	2.6	4.1	7.0
		Unknown	5.7	7.3	5.3	13.5	18.4	17.8	21.2	27.6
C43	Melanoma of the skin	Total	80.6	87.6	86.3	88.1	87.1	88.1	93.5	95.2
		Localised	86.9	92.3	90.8	94.8	93.8	93.3	97.1	98.4
		Regional	42.0	43.7	51.4	52.1	59.5	54.0	71.4	78.3
		Distant	5.2	15.3	22.6	17.6	23.5	30.6	38.0	52.2
		Unknown	80.8	70.0	79.2	89.3	86.1	83.9	75.9	70.2

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Table 8.2: Five-year relative survival by primary site, stage and period of diagnosis, 1982–2021, **females** (Continued)

ICD-10	Site	Stage	Relative survival (%)							
			1982–86	1987–91	1992–96	1997–01	2002–06	2007–11	2012–16	2017–21*
C50	Breast	Total	73.9	76.0	79.2	85.1	87.6	89.2	91.4	92.3
		I	87.0	94.9	96.2	98.6	99.4	100.3	100.3	100.4
		II	67.9	74.0	75.4	85.6	89.2	92.2	95.4	96.2
		III	50.4	46.4	59.9	63.5	66.7	77.8	78.7	79.8
		IV	15.4	22.0	23.2	20.8	22.2	24.5	32.4	36.6
		Unknown	85.4	85.4	83.2	88.7	76.7	70.5	75.8	81.8
C53	Cervix uteri	Total	70.5	69.2	73.4	75.1	77.8	78.7	80.2	82.6
		I	85.8	85.2	91.6	91.3	93.9	94.3	95.3	95.7
		II	56.4	60.2	61.8	62.2	77.5	78.7	81.8	79.6
		III	31.1	19.7	33.9	44.2	49.4	45.1	53.7	55.3
		IV	6.1	-	22.3	12.3	18.9	20.4	22.0	20.7
		Unknown	74.2	73.2	74.9	77.6	76.7	77.8	80.3	82.4
C54	Corpus uteri	Total	70.6	72.6	76.0	80.1	81.9	84.3	85.1	85.4
		Localised	82.6	83.8	88.3	92.0	92.0	95.9	96.5	97.4
		Regional	55.0	64.0	67.7	73.3	75.3	68.2	64.7	68.2
		Distant	23.5	25.2	34.8	32.9	39.6	39.9	40.7	39.6
		Unknown	40.6	49.9	53.0	83.1	86.3	76.6	65.3	60.1
C56, C57.0–4, C48.2 Ovary etc.		Total	33.3	35.2	36.6	41.8	42.6	45.1	48.6	51.1
		Localised	76.3	80.5	83.1	94.1	85.0	89.9	97.4	100.1
		Regional	42.7	45.8	47.4	58.7	68.7	60.2	67.0	64.8
		Distant	15.0	16.7	19.4	26.2	29.1	31.5	35.6	38.0
		Unknown	39.1	29.1	36.6	54.5	60.6	49.2	48.6	37.1
C64	Kidney (excl. renal pelvis)	Total	46.8	53.1	54.5	57.3	65.3	73.9	78.3	80.7
		Localised	71.2	79.1	77.5	87.1	88.1	91.0	91.4	93.2
		Regional	50.3	51.7	52.2	48.5	50.7	49.0	65.1	72.3
		Distant	8.9	9.4	4.0	13.6	12.8	18.3	15.4	18.8
		Unknown	-	19.9	39.4	57.3	65.4	81.5	40.6	52.5
C65–68	Urinary tract	Total	56.7	61.8	60.8	62.5	63.9	66.1	72.8	75.8
		Localised	68.2	71.6	72.2	82.6	80.4	78.5	81.3	85.1
		Regional	15.5	19.6	21.9	27.4	21.3	23.4	31.6	40.2
		Distant	7.0	2.7	7.0	2.3	7.0	6.9	6.6	10.2
		Unknown	43.6	64.7	55.0	60.5	63.1	68.7	41.1	39.4
C70–72	Central nervous system	Total	50.3	56.6	61.4	69.9	76.5	77.9	77.5	74.5
		Non-malignant	83.6	82.5	88.1	91.7	94.4	95.9	97.3	96.9
		Malignant	20.4	26.7	25.3	26.7	27.6	28.9	29.9	28.9
C73	Thyroid gland	Total	86.3	89.0	90.3	87.8	89.7	92.8	93.3	95.1
		Localised	94.1	95.2	98.3	103.8	101.8	102.4	100.7	99.3
		Regional	80.4	86.1	87.7	85.0	87.5	91.2	91.6	92.9
		Distant	-	41.0	60.0	48.3	41.7	-	-	-
		Unknown	-	-	-	86.6	87.2	81.9	74.5	92.4
C81	Hodgkin lymphoma	Total	65.4	71.3	75.4	85.2	82.4	81.3	89.1	88.8
C82–86, C96	Non-Hodgkin lymphoma	Total	48.1	55.5	49.6	56.1	65.0	74.0	77.5	80.0
C91–95	Leukaemia	Total	27.5	36.0	49.0	54.7	60.5	67.9	73.9	75.7

* For 2017–21 the 5-year relative survival estimates are based on the period approach (observation window 2017–21).

- Not estimated due to too few patients (see Chapter 4).

Table 8.3: 1-, 5-, 10-, and 15-year relative survival (%) with 95% confidence interval by primary site and sex. Period approach, 2017–2021

ICD-10	Site	Sex	1-year	5-year	10-year	15-year
C00–14	Mouth, pharynx	M	89.3 (87.8–90.8)	72.5 (69.9–75.2)	64.7 (60.5–69.2)	55.1 (43.8–69.3)
		F	90.5 (88.6–92.4)	76.7 (73.6–80.0)	65.8 (61.1–70.8)	52.7 (43.1–64.3)
C15	Oesophagus	M	51.7 (48.8–54.8)	22.2 (19.6–25.1)	17.7 (14.9–21.1)	17.1 (13.2–22.0)
		F	56.0 (51.1–61.4)	29.8 (25.0–35.5)	25.6 (20.3–32.5)	20.2 (11.9–34.2)
C16	Stomach	M	59.2 (56.5–62.1)	30.9 (28.2–34.0)	25.0 (21.5–29.2)	17.2 (11.8–25.3)
		F	56.0 (52.5–59.7)	31.2 (27.7–35.2)	31.6 (27.0–37.0)	36.1 (27.2–48.0)
C18	Colon	M	85.5 (84.6–86.5)	69.7 (68.1–71.3)	62.2 (59.1–65.5)	53.7 (45.8–63.1)
		F	84.8 (84.0–85.7)	71.0 (69.7–72.4)	68.9 (66.6–71.4)	68.7 (63.1–74.9)
C19–20	Rectum, rectosigmoid	M	89.2 (88.1–90.3)	71.9 (70.1–73.8)	66.9 (63.8–70.2)	65.9 (58.0–75.0)
		F	89.9 (88.6–91.1)	73.5 (71.4–75.6)	65.6 (62.3–69.1)	59.1 (52.6–66.5)
C22	Liver	M	50.5 (47.2–54.1)	25.3 (22.0–29.2)	16.4 (9.3–29.0)	12.2 (6.2–23.7)
		F	47.0 (42.7–51.8)	24.8 (20.9–29.4)	18.4 (14.4–23.5)	17.2 (11.7–25.2)
C23–24	Gallbladder, bile ducts	M	59.4 (54.2–65.1)	26.8 (22.1–32.5)	19.4 (13.6–27.6)	19.1 (12.3–29.6)
		F	57.6 (52.5–63.3)	24.9 (20.3–30.5)	21.0 (16.1–27.3)	13.7 (7.5–25.1)
C25	Pancreas	M	39.7 (37.6–42.0)	14.7 (13.1–16.6)	10.2 (7.8–13.3)	5.9 (1.2–29.5)
		F	41.2 (38.9–43.7)	14.6 (12.8–16.6)	11.2 (9.1–13.7)	7.7 (4.6–13.1)
C33–34	Lung, trachea	M	52.7 (51.6–53.9)	25.7 (24.6–26.9)	17.1 (15.8–18.5)	12.3 (10.6–14.3)
		F	59.5 (58.4–60.7)	32.8 (31.6–34.1)	23.0 (21.6–24.5)	16.6 (14.8–18.5)
C43	Melanoma of the skin	M	97.5 (96.9–98.0)	90.3 (89.0–91.6)	87.0 (84.2–89.9)	92.3 (87.0–98.0)
		F	98.5 (98.0–99.0)	95.2 (94.1–96.4)	93.2 (90.5–96.0)	90.2 (84.6–96.1)
C50	Breast	F	98.2 (97.9–98.4)	92.3 (91.7–92.9)	86.6 (85.5–87.8)	81.1 (78.3–84.0)
C53	Cervix uteri	F	93.6 (92.4–94.8)	82.6 (80.7–84.6)	78.3 (75.8–80.9)	75.9 (72.0–80.0)
C54	Corpus uteri	F	94.7 (93.9–95.5)	85.4 (83.9–87.0)	86.1 (83.5–88.8)	84.4 (78.0–91.4)
C56, C57.0–4, C48.2	Ovary etc.	F	84.5 (83.0–86.1)	51.1 (48.9–53.3)	38.7 (36.2–41.3)	35.2 (31.5–39.3)
C61	Prostate	M	99.5 (99.3–99.7)	95.5 (95.0–96.1)	91.6 (90.4–92.9)	82.9 (79.9–86.1)
C62	Testis	M	99.3 (98.8–99.8)	98.8 (98.0–99.6)	99.3 (98.3–100.3)	98.4 (97.0–99.9)
C64	Kidney (excl. renal pelvis)	M	90.7 (89.5–91.9)	78.9 (76.9–80.8)	70.4 (67.2–73.7)	61.0 (53.8–69.2)
		F	91.5 (89.9–93.1)	80.7 (78.2–83.4)	72.9 (68.8–77.2)	59.9 (51.9–69.1)
C65–68	Urinary tract	M	90.9 (90.1–91.8)	80.3 (78.7–81.9)	76.9 (73.8–80.2)	64.0 (55.2–74.3)
		F	86.7 (85.1–88.2)	75.8 (73.4–78.3)	66.7 (62.6–71.0)	56.4 (47.4–67.2)
C70–72	Central nervous system	M	76.7 (74.8–78.6)	57.0 (54.7–59.3)	53.7 (51.0–56.6)	48.6 (43.6–54.1)
		F	86.3 (85.0–87.7)	74.5 (72.6–76.4)	71.2 (68.8–73.8)	69.1 (65.5–73.0)
C73	Thyroid gland	M	94.8 (93.0–96.5)	90.0 (87.0–93.0)	84.4 (79.6–89.4)	81.7 (73.6–90.6)
		F	96.7 (95.7–97.7)	95.1 (93.5–96.8)	95.8 (92.8–98.9)	101.6 (95.9–107.6)
C81	Hodgkin lymphoma	M	95.5 (93.4–97.6)	91.2 (88.1–94.3)	86.5 (82.4–90.8)	83.1 (78.3–88.2)
		F	93.4 (90.2–96.6)	88.8 (84.4–93.3)	81.4 (75.6–87.6)	77.8 (70.6–85.8)
C82–86, C96	Non-Hodgkin lymphoma	M	88.1 (86.7–89.4)	77.9 (75.8–80.0)	66.9 (63.4–70.5)	60.2 (54.0–67.0)
		F	89.4 (88.0–90.8)	80.0 (77.8–82.2)	71.4 (68.4–74.6)	62.8 (55.0–71.8)
C91–95	Leukaemia	M	86.1 (84.9–87.4)	71.0 (69.1–73.0)	62.3 (59.3–65.5)	49.3 (43.3–56.2)
		F	87.3 (86.0–88.7)	75.7 (73.7–77.8)	66.4 (63.1–69.8)	56.7 (51.3–62.8)

- Not estimated due to too few patients (see Chapter 4).

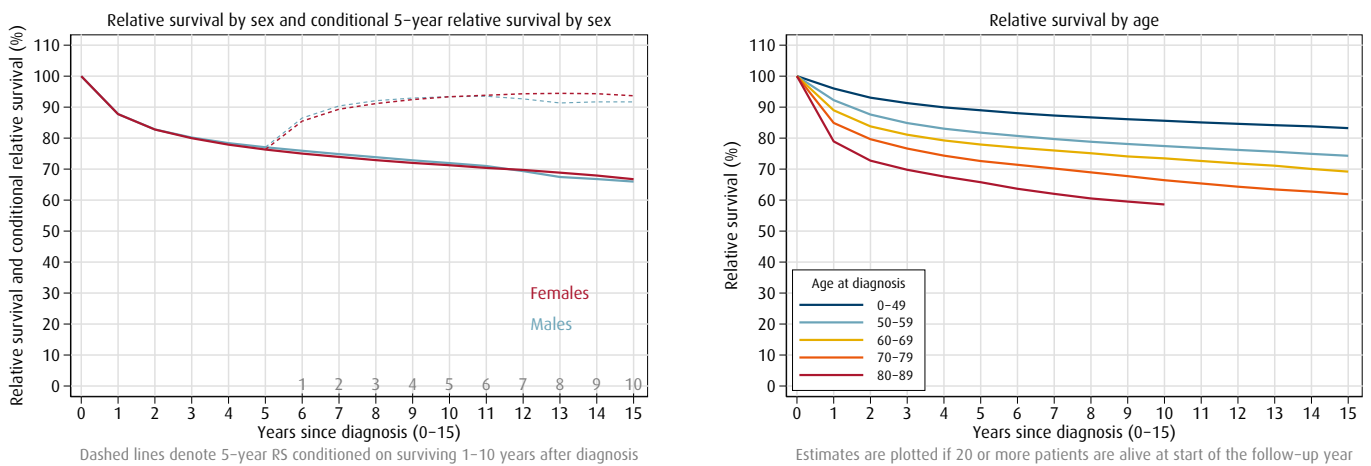
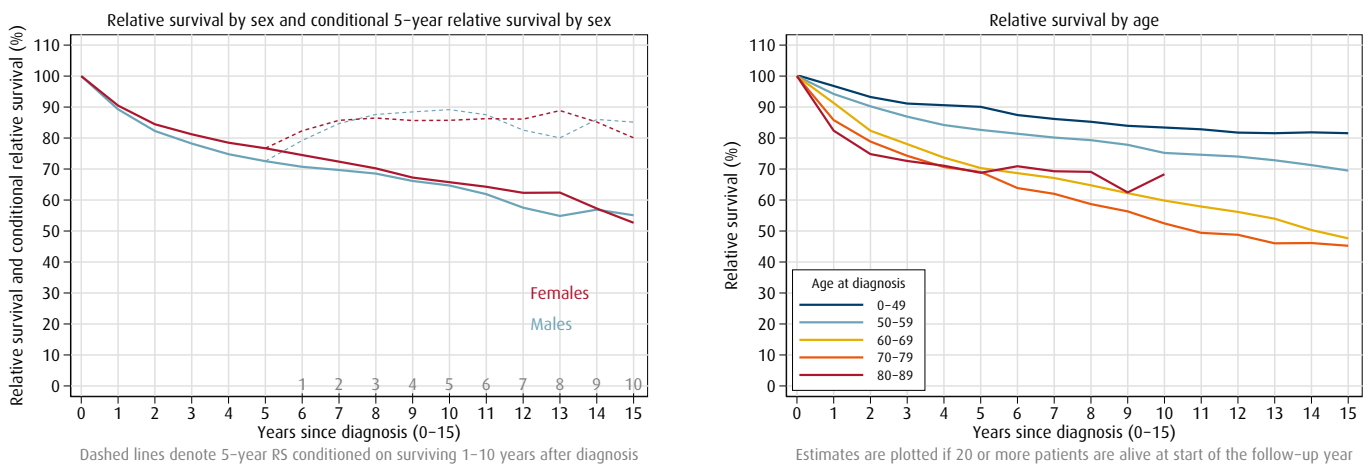
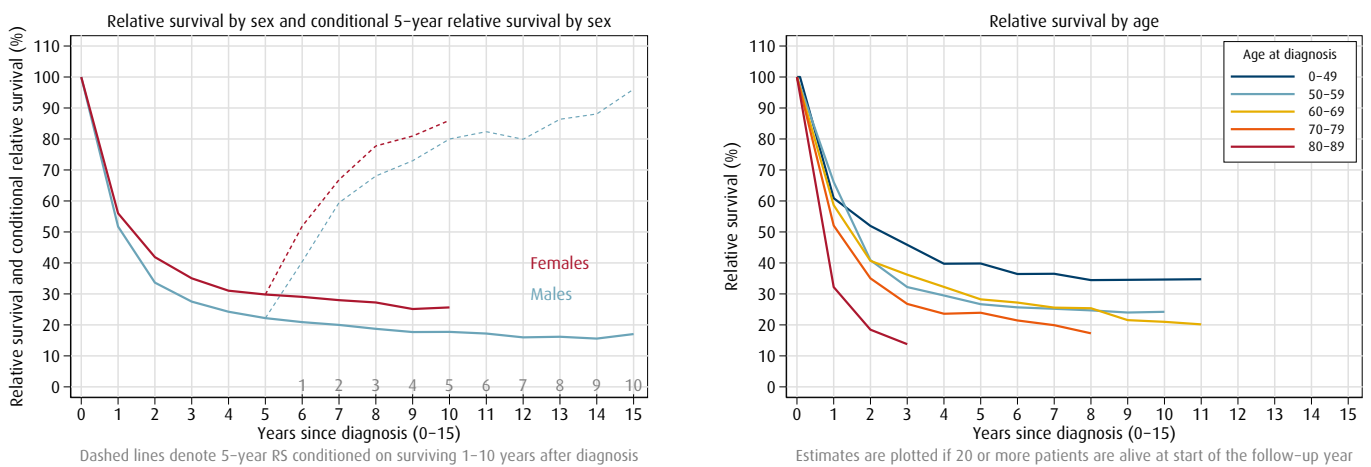
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-A: All sites (ICD-10 C00–96)****Figure 8.1-B: Mouth, pharynx (ICD-10 C00–14)****Figure 8.1-C: Oesophagus (ICD-10 C15)**

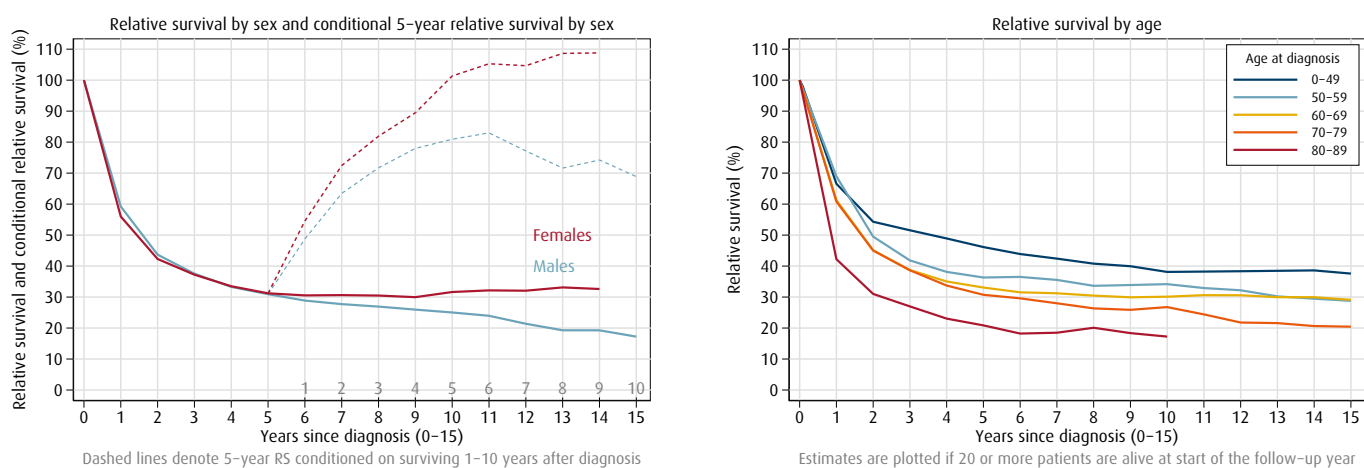
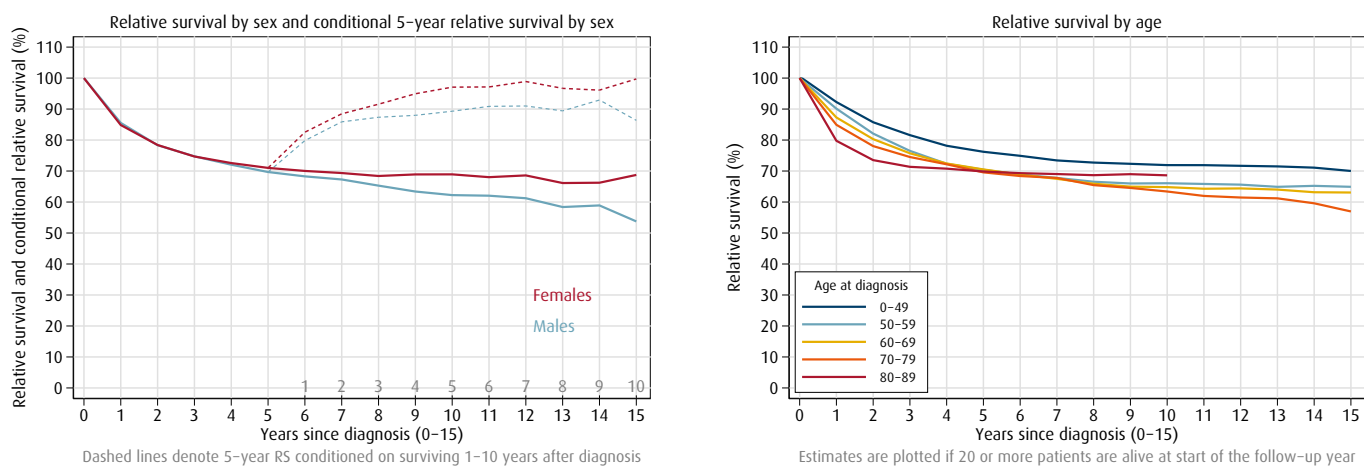
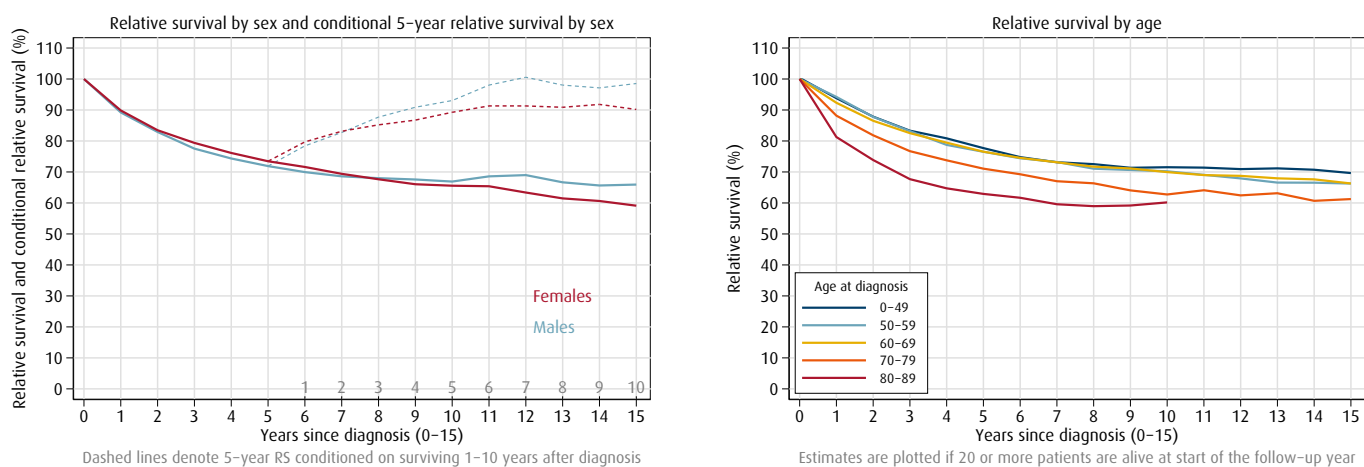
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-D: Stomach (ICD-10 C16)****Figure 8.1-E: Colon (ICD-10 C18)****Figure 8.1-F: Rectum, rectosigmoid (ICD-10 C19–20)**

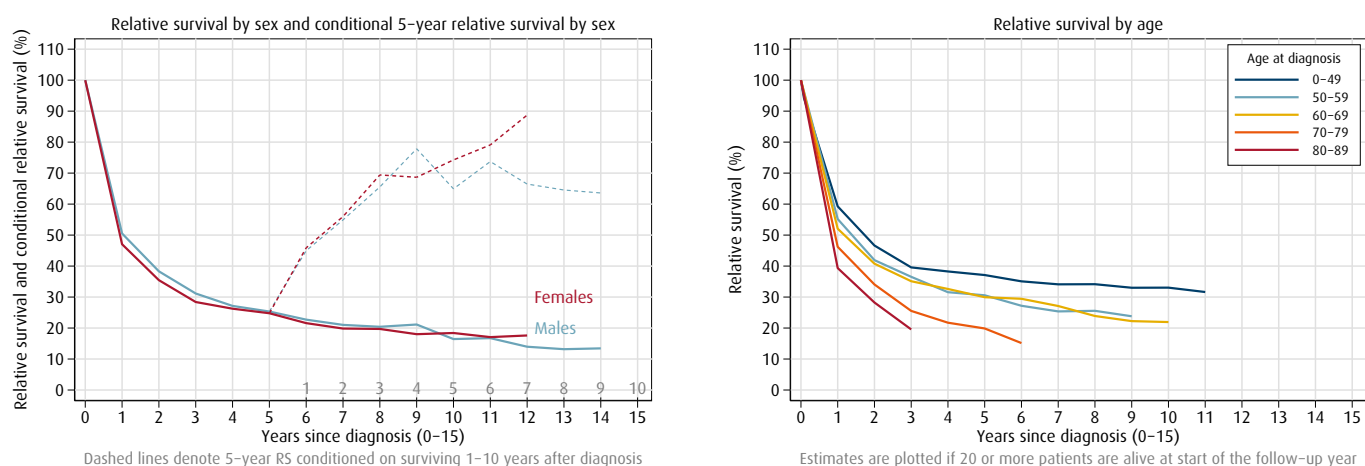
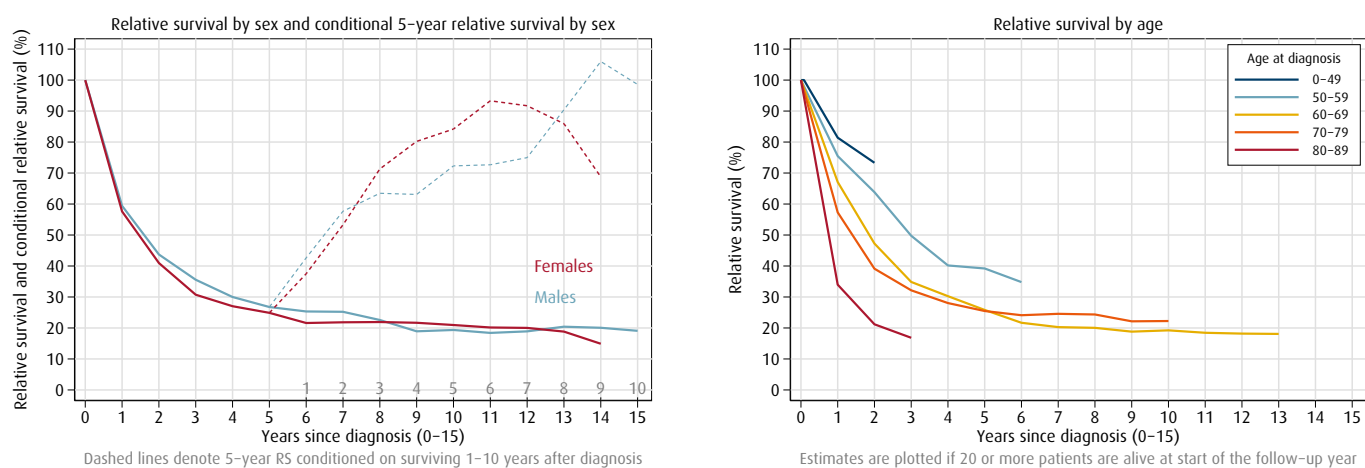
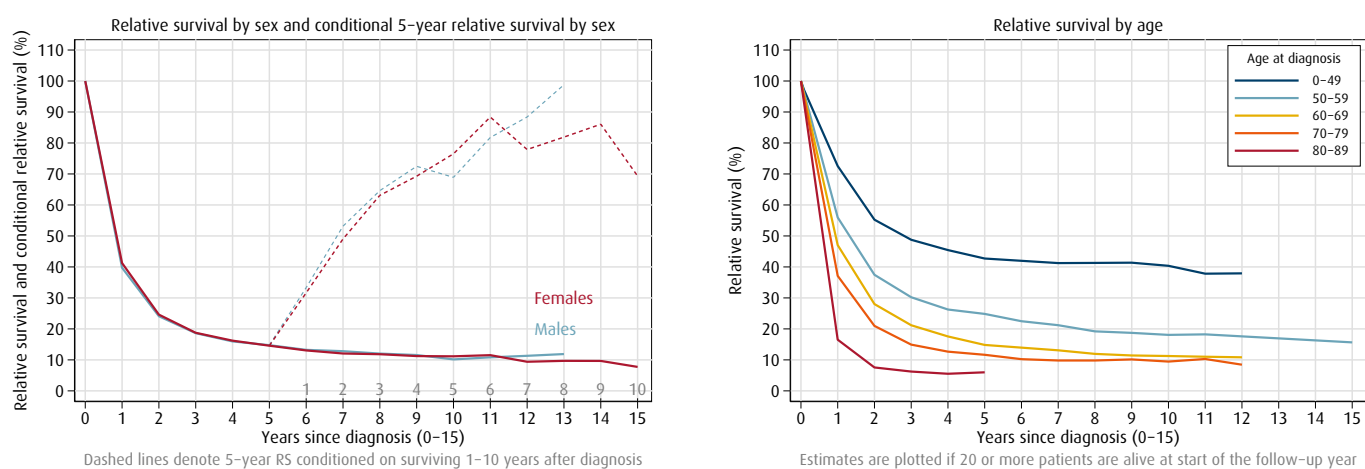
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-G: Liver (ICD-10 C22)****Figure 8.1-H: Gallbladder, bile ducts (ICD-10 C23–24)****Figure 8.1-I: Pancreas (ICD-10 C25)**

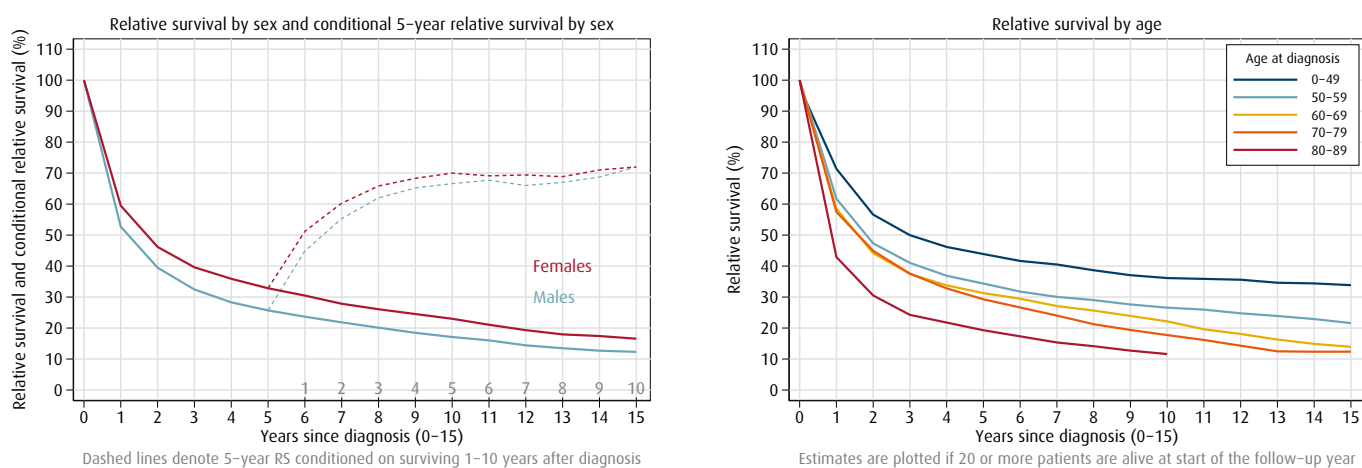
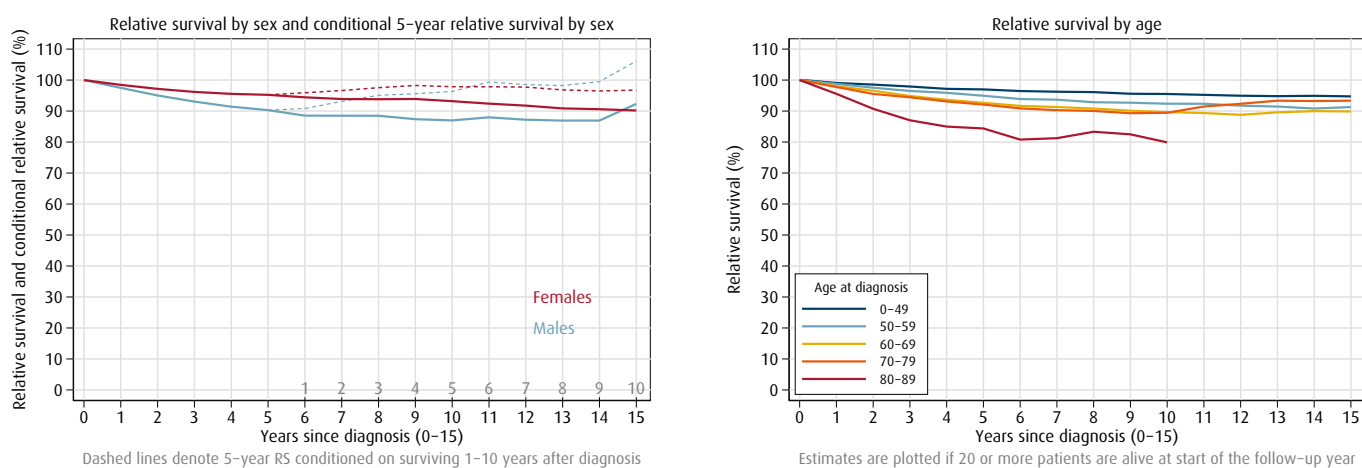
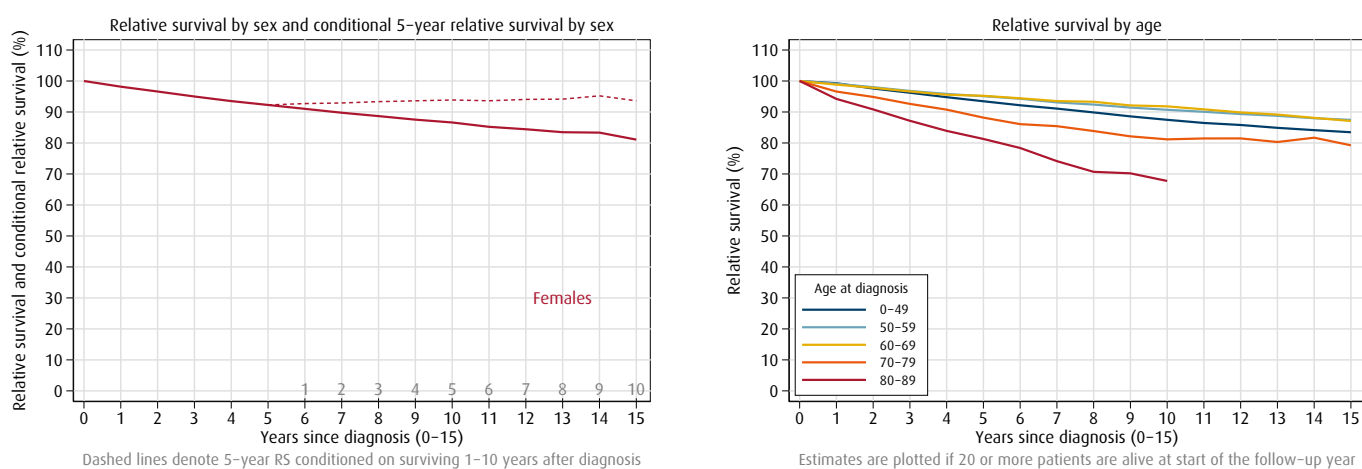
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-J:** Lung, trachea (ICD-10 C33–34)**Figure 8.1-K:** Melanoma of the skin (ICD-10 C43)**Figure 8.1-L:** Breast (ICD-10 C50)

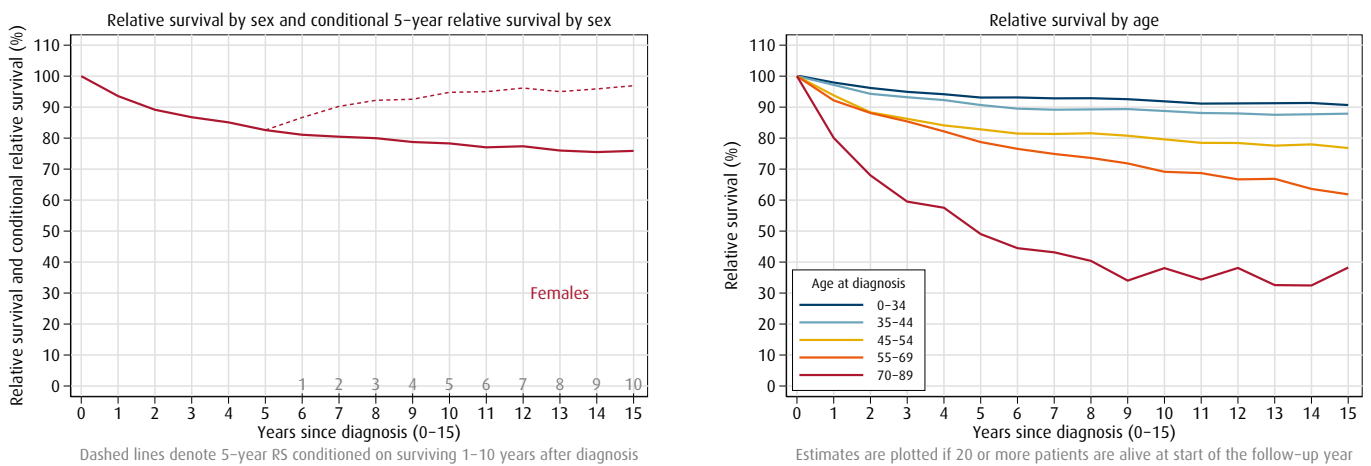
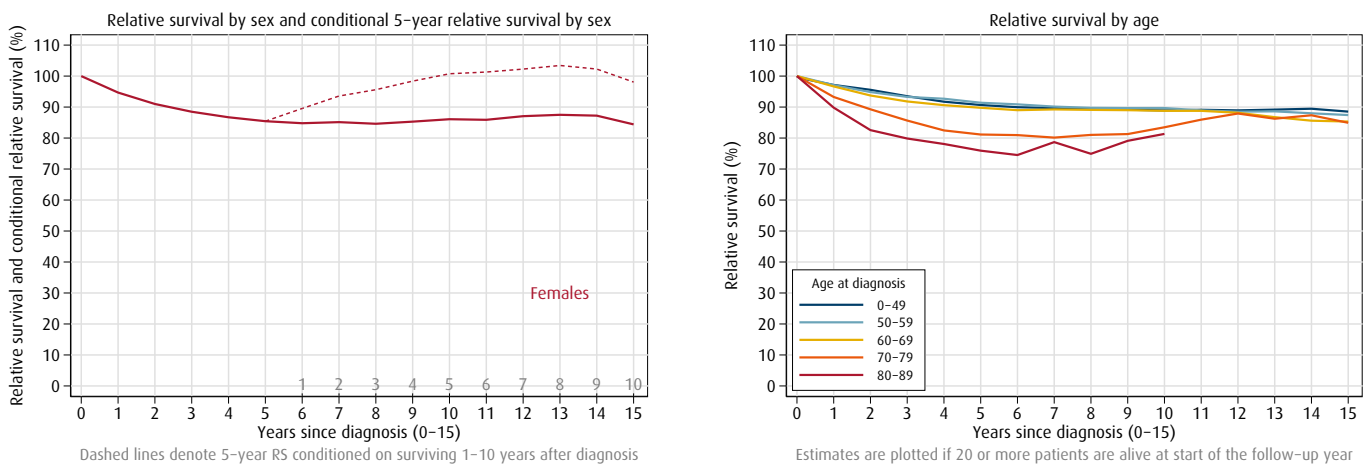
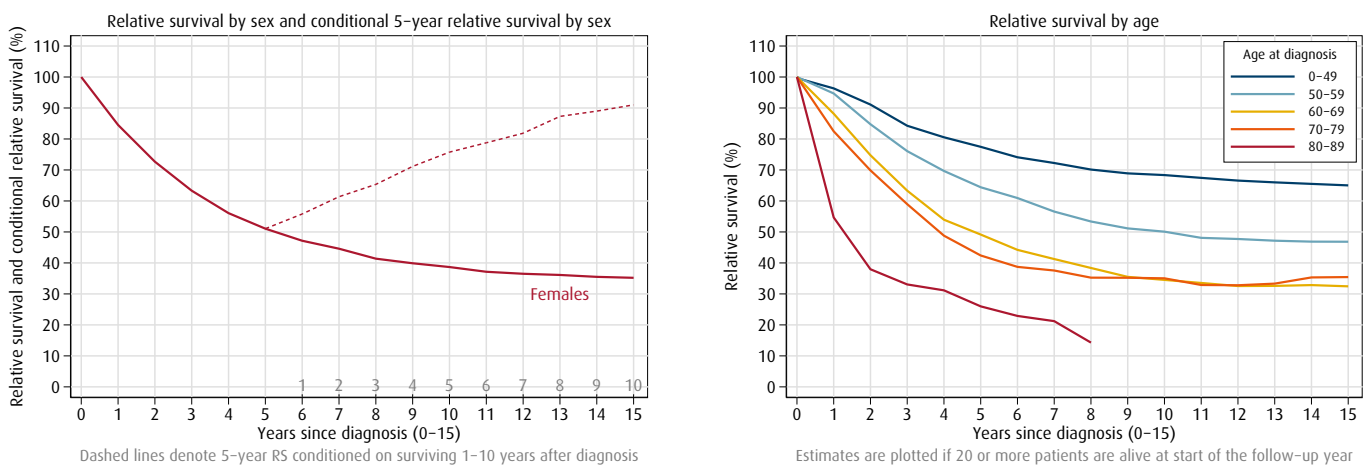
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-M: Cervix uteri (ICD-10 C53)****Figure 8.1-N: Corpus uteri (ICD-10 C54)****Figure 8.1-O: Ovary etc. (ICD-10 C56, C57.0–4, C48.2)**

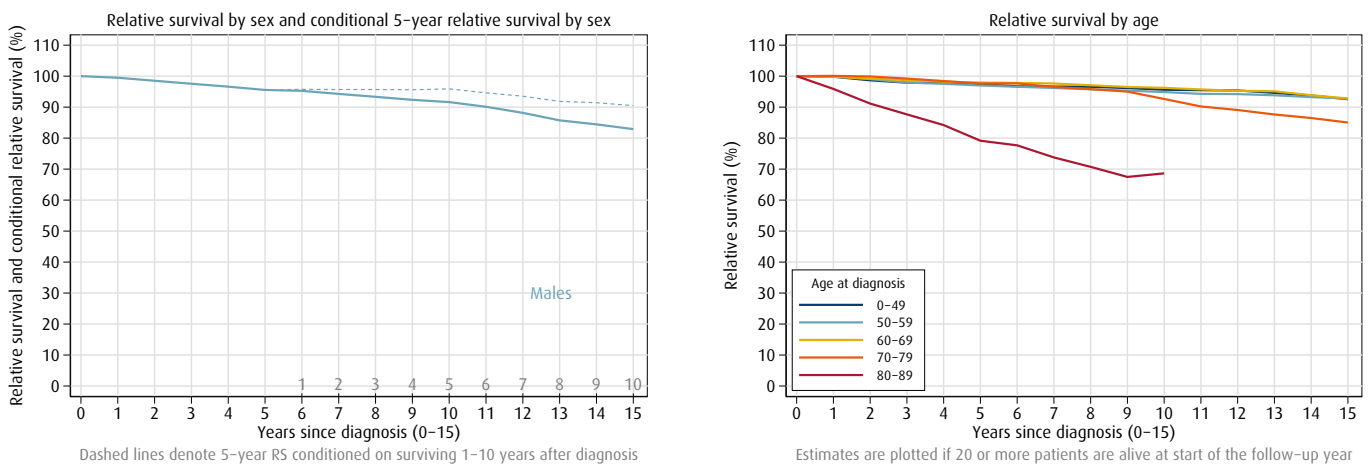
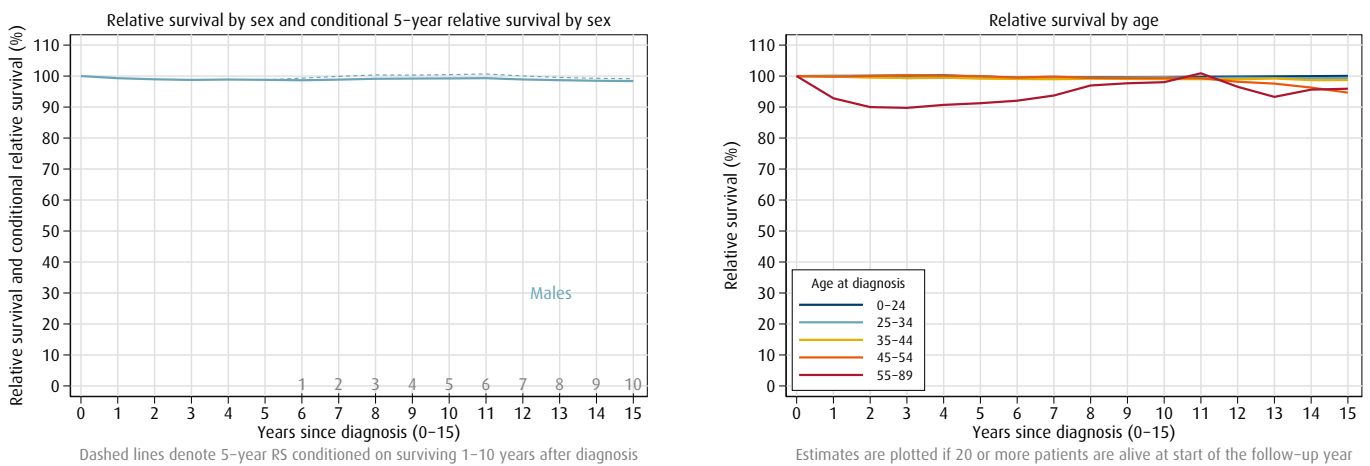
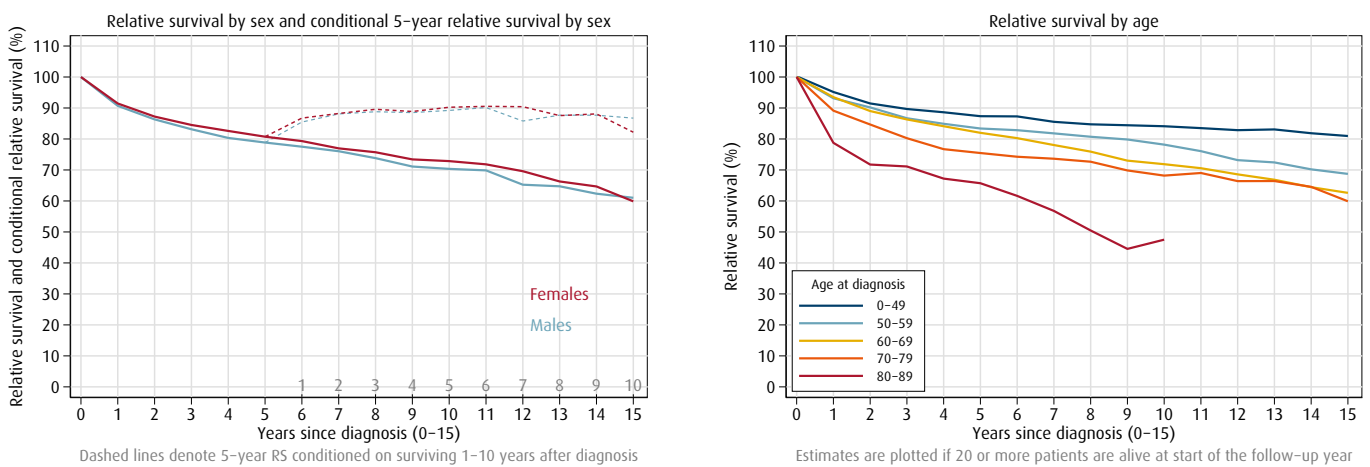
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-P: Prostate (ICD-10 C61)****Figure 8.1-Q: Testis (ICD-10 C62)****Figure 8.1-R: Kidney (excl. renal pelvis) (ICD-10 C64)**

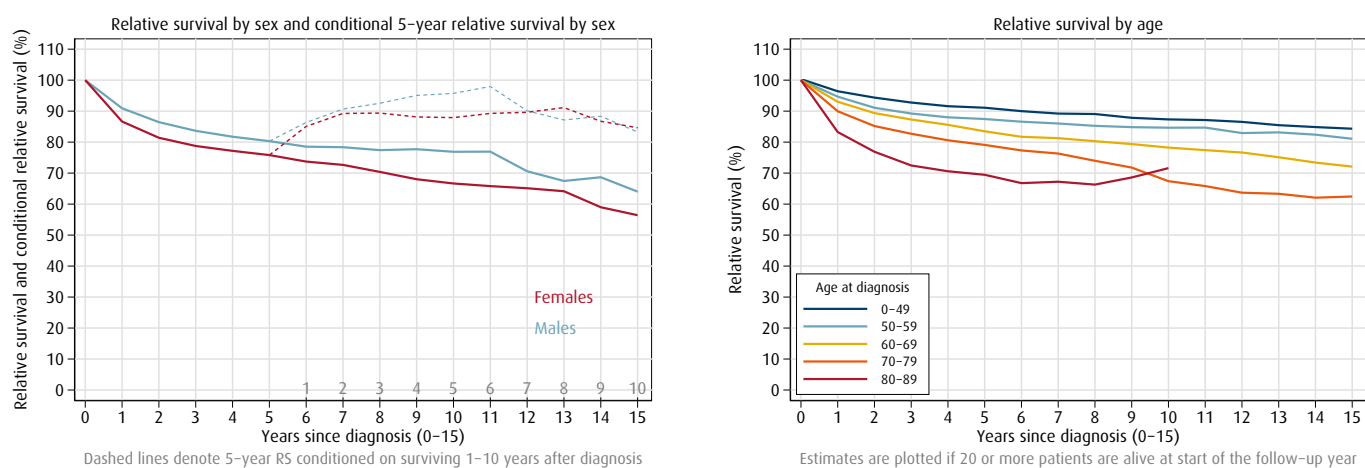
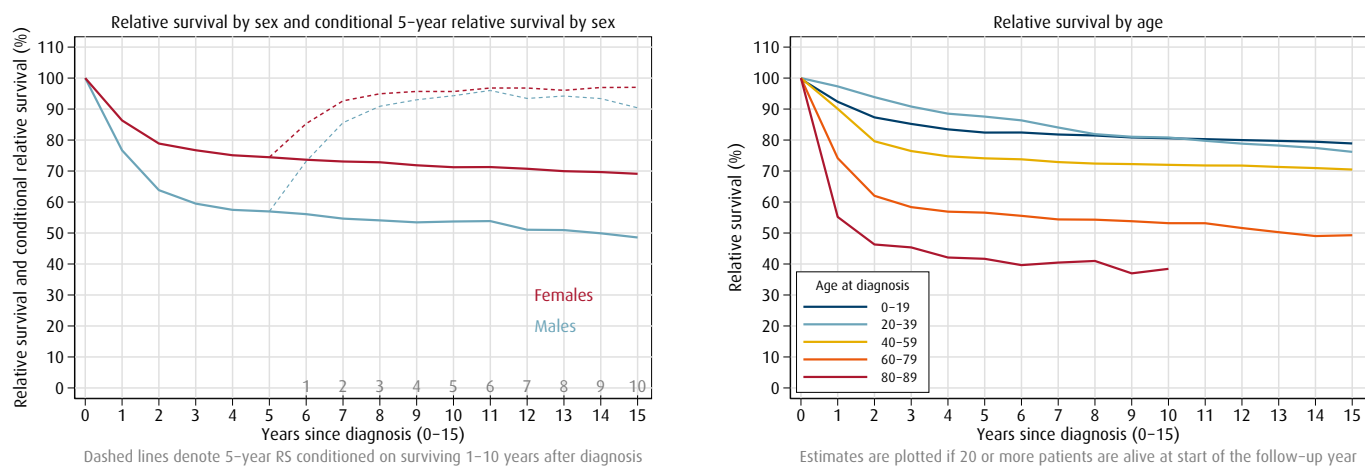
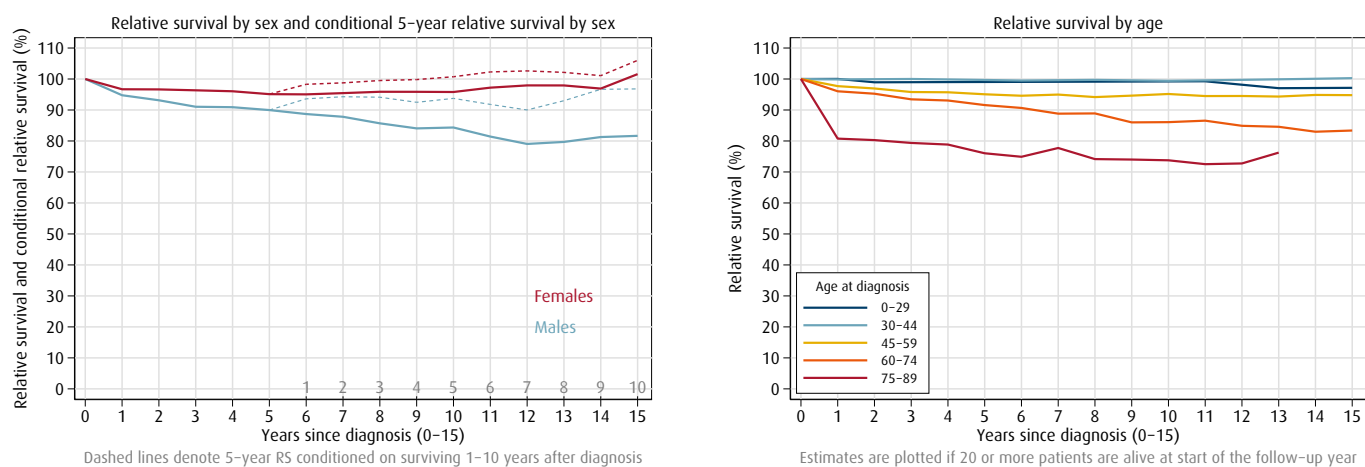
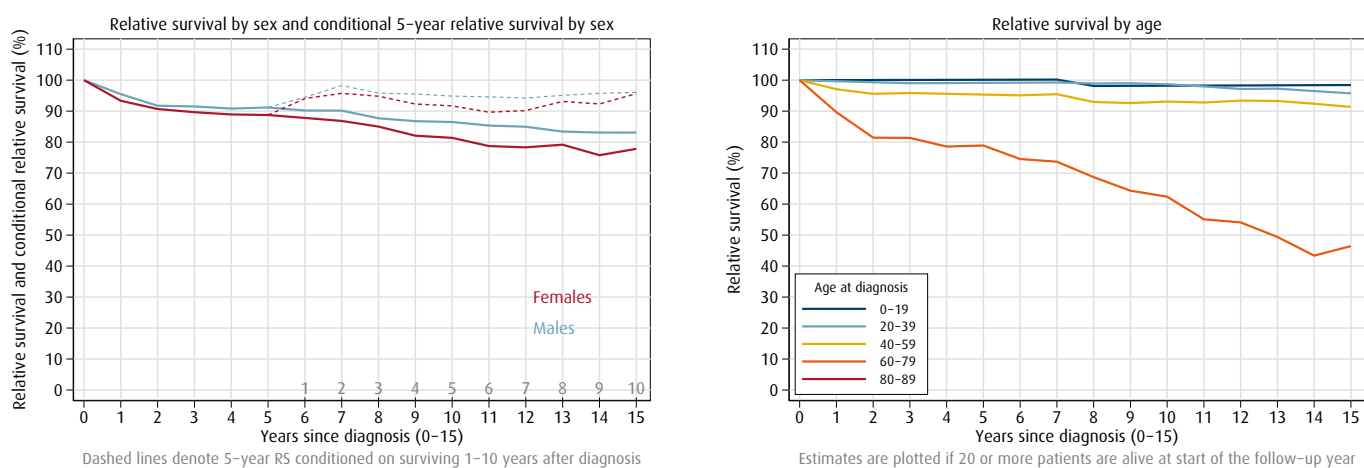
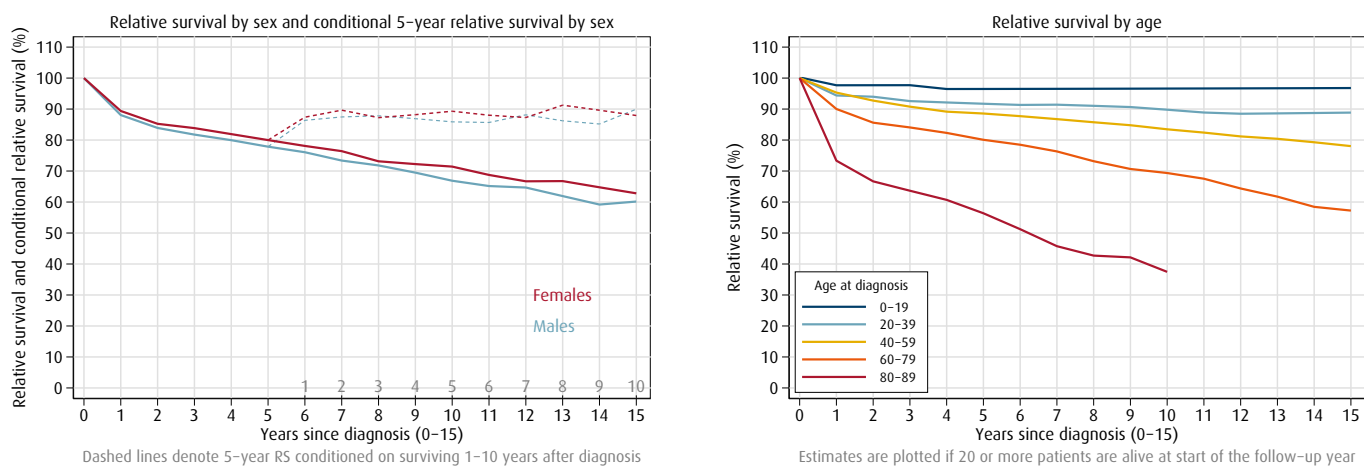
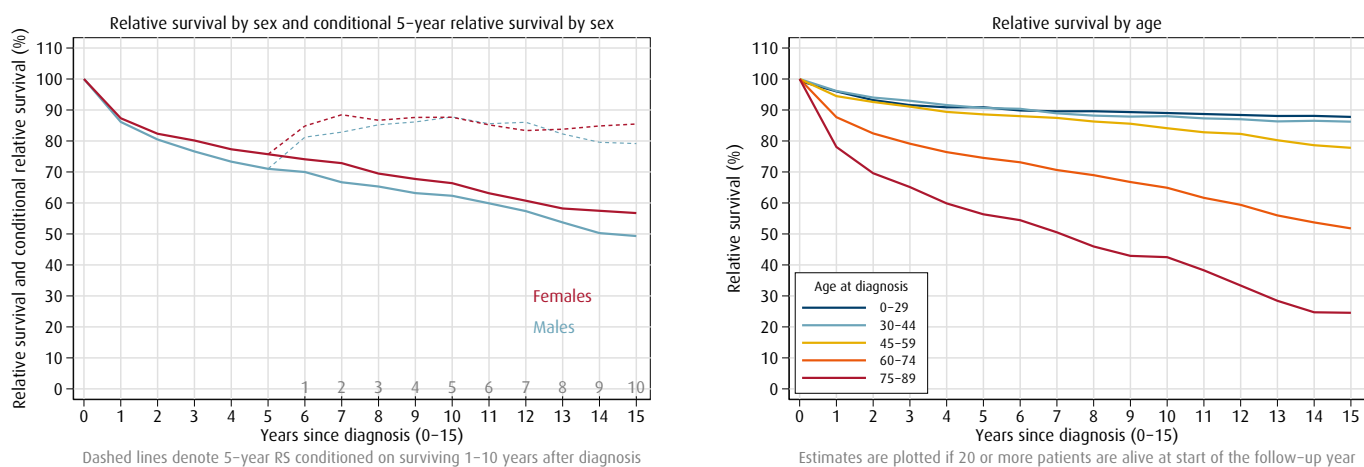
Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-S: Urinary tract (ICD-10 C65–68)****Figure 8.1-T: Central nervous system (ICD-10 C70–72)****Figure 8.1-U: Thyroid gland (ICD-10 C73)**

Figure 8.1: Relative survival (RS) up to 15 years after diagnosis by sex and age, 2017–2021**Figure 8.1-V: Hodgkin lymphoma (ICD-10 C81)****Figure 8.1-W: Non-Hodgkin lymphoma (ICD-10 C82–86, C96)****Figure 8.1-X: Leukaemia (ICD-10 C91–95)**

Chapter 9 Trends in incidence, mortality and survival, Norway 1965–2021

There has been considerable discussion of the relative merits of analysing incidence, mortality and survival rates in cancer research, and specifically of analysing time trend in these disease measures^[25–29]. Trend analyses may provide some insight into changes in the distribution of risk factors, and into the impact of interventions and screening aimed at prevention or early diagnosis. Mortality rates and survival proportions are both key measures of disease outcome, and may, of course, reflect the incidence rates or alert us to beneficial effects of screening, more effective therapies, or improved disease management.

The contribution of artefacts to the observed cancer incidence and mortality trends has been comprehensively addressed^[30,31]. The accuracy of death certificates has also been discussed^[32–34]. Apart from artefacts related to registration practices, many of the factors that affect incidence also apply to mortality, given that both rely on the frequency of the disease and the accuracy of the initial cancer diagnosis. As with incidence, survival estimates may be affected by changes in diagnostic methods and precision, as well as the extent of cancer screening that detect more cases in an earlier stage of the disease.

There is a general consensus that a combined description of trends in incidence, mortality and survival aids our understanding of the underlying biological, epidemiological and clinical processes. As each indicator is subject to unique or shared artefacts that tend to vary according to cancer type over time, their simultaneous assessment often enables the identification of systematic deviations in one or more of the three measures. Figures 9.1–A to 9.1–X present time trends during 1965–2021 for age-standardised incidence and mortality rates and five-year relative survival estimates (mortality through 2020, only). It should be noted that these summary measures will often fail to reflect true underlying age-calendar-year interactions for specific cancers, such as differences in survival and mortality trends by age with respect to calendar time, or the presence of strong birth cohort influences in incidence trends.

The trends for **all sites** in Figure 9.1–A show a persistent increase in cancer survival in Norway for both genders over the last five decades. The incidence rates have also increased, but for men the trend has levelled off and

a decrease is seen for the last few years. The mortality rates were fairly stable until the late 1990s both for men and women. From 2000 onwards, it was a notable decline in the mortality rate in men, and a slight decline in women, still, both incidence and mortality were always lower in women than in men. The interpretation of these aggregated estimates is complex, in that they comprise many different cancer types, with rates differing between women and men, some of them sex-specific cancer types, which all may vary in terms of their capacity to be diagnosed as well as treated.

Among men, 27% of all cancers diagnosed in 2021 were **prostate cancers**. General screening for prostate cancer using the PSA test is not recommended in Norway. However, the doubling in incidence and the improved relative survival from 1990 to mid-2000s (Figure 9.1–O) probably reflects the availability and upsurge in the use of the PSA test for early detection of disease. During the last two decades, the incidence of prostate cancer has stabilised, and a marked decrease is seen in the last five to six years. Mortality declined from around 1996, and both early diagnosis and improved and more active treatment may have had an impact. These trends may also result from improved workup and diagnostics as suggested in Table 5.23 of the present report, demonstrating trends in age-standardised incidence rates according to stage of the cancer disease. Since 1992, there has been an eight-fold increase of cancer prostate with regional spreading (invading neighbouring tissue or metastasised to regional lymph nodes), while the rate of prostate cancer with distant metastases has decreased somewhat. Improved diagnostics may secure a more adequate treatment.

Breast cancer comprised more than 20% of all female cancer cases. There has been a monotonous increase in the incidence rate up to 2005 with a steeper increase in the mid-1990s followed by a slight but notable decline between 2005 and 2009 (Figure 9.1–M). The Norwegian Breast Cancer Screening Programme started as a four-year pilot project in four of the former nineteen Norwegian counties in 1996, and gradually expanded to become nationwide by 2005. The programme invites women aged 50–69 years to biennial mammography. The implementation of the screening programme explains

much of the increasing incidence trend from the mid 1990s to 2005. The figures for recent years indicate a new increase in incidence. The age-specific rates show that the rise primarily is limited to the age group 60–79 (not shown). The increase may thus be related to more sensitive diagnostic methods both within and outside the screening programme, combined with women continuing to have mammography after the age of 70. There was a drop in breast cancer incidence from 2019 to 2020, which is possibly explained by the fact that all screening activity in the Mammography programme ceased for a few months from mid-March 2020, when large parts of society in general closed down to limit infection of COVID-19 in the population. In 2021, the incidence rates increased to a level above that observed in 2019.

Breast cancer mortality was almost stable up to the mid-1990s when it began declining (Figure 9.1–M). This good news most likely reflect a combination of improved diagnostics, better treatment, and the implementation of the screening programme for breast cancer. Today, 92% of women with breast cancer survive their cancer for five years or more (5-year relative survival).

The trends in **lung cancer** incidence and mortality rates have followed each other closely. Since early 2000s, the distance between the rates has increased, reflecting improved survival for these patients. Although the survival for lung cancer is still poor compared to other cancers, it has increased by more 10 percentage-points during the last ten years, and 26% of men and 33% of women with lung cancer now survive their cancer for at least five years. The varying incidence trends by sex reflect the different phases of the smoking epidemic in Norwegian men and women (Figure 9.1–J). Overall, lung cancer incidence and mortality rates among males began to level off in the mid-1990s and have declined the past ten years. For women, we have observed signs of a stabilisation in the rate during recent years. However, the rate reached an all-time high level in 2018. Although it is too early to decide whether 2018 represents a turning point, it is interesting to note that the lung cancer rates seem to decline for all age groups below 80. The number of new lung cancer cases among women surpassed that of men in 2018 and 2019, while the rates still are lower due to a higher number of women attaining high age. The severity of this observation is illustrated by the fact that lung cancer has surpassed breast cancer as the most frequent cause of cancer death among women.

The incidence of **cancer in colon and rectum** has increased for many decades, but the rectal cancer rate levelled off in the 1990s and is now declining. For colon cancer, a levelling off has been seen in the incidence rate since around 2010, and among men we even spot a slight decline (Figure 9.1–E and 9.1–F). Of particular

note is the increasing survival and declining mortality from rectal cancer in both sexes, and the mortality is now nearly half of what it used to be before 1995. The most important determinants are probably the national introduction of total mesorectal excision in the early 1990s, increased specialisation, and use of preoperative radiation. However, our colon cancer incidence and mortality rates are among the highest in the world and remain a serious health concern.

Some other specific sites are also worthy of note. The long-term decline in **stomach cancer** incidence and mortality is most likely caused by better hygiene and increased intake of fresh or frozen food, which have reduced the prevalence of *Helicobacter pylori* infections and reduced the use of potentially harmful methods of food preservation. The survival of stomach cancer has increased slowly from 10% to 30% five-year relative survival over the last 50 years (Figure 9.1–D).

In contrast, the incidence rate of **testicular cancer** increased gradually until 2007 (Figure 9.1–Q). An improvement in therapy started in the 1970s with the introduction of cisplatin for advanced germ cell tumours, leading to greatly improved prognosis for testicular cancer in young and middle-aged men. This cancer now has the highest five-year relative survival.

A remarkable increase in incidence rates has been seen during the last decades for **melanoma of the skin** in both sexes (Figure 9.1–K). The steep rise is suggested to result from sun exposure habits. However, we cannot exclude the possibility that increased awareness, both in the general population and among general practitioners, and sliding of the diagnostic criteria, may also have contributed to the increase. The moderate but steady increase in melanoma mortality until 2010 indicates that some of the increase in incidence is indeed caused by a higher risk of the disease.

The classification of diseases changes over time, and sometimes this appears clearly in the incidence trends. In 2002, polycythaemia vera (D45), myelodysplastic syndromes (D46) and other neoplasms of uncertain or unknown behaviour of lymphoid, hematopoietic and related tissue (D47) were included in the statistics for **leukaemia**, and this inclusion caused a sudden rise in the incidence in men. In 2020, a review was made of all registered cases of malignant and benign cases, and we then identified benign cases (D45, D46 and D47) that were registered before 2002, while they were previously not counted in the statistics. This is the explanation for the sharp increase in incidence from 1992 to 1993 (Figure 9.1–X). Moreover, due to international guidelines of conversions between ICD-O-3 and ICD-10 and stricter adherence to these in this report there are some cases

that have been reclassified from non-Hodgkin lymphoma to chronic lymphatic leukaemia. The treatment of leukaemia has improved, and a steep prolonged increase in the survival is observed since the early 1970s.

Cancer of the bladder and urinary tract is the fourth most frequent cancer in men but is less frequent in women. For men, the incidence rate increased gradually until the early 1990s, but has since then been less pronounced. For women, a slight increase has lasted until recent years. The incidence trends for both sexes are weak reflexions of the incidence rates of lung cancer, as the two cancer forms share a common important cause: tobacco smoking. The mortality rate has decreased since early 2000, reflecting the increase in survival (Figure 9.1–S).

Finally, among more uncommon cancer sites, there has been a notable increase in the rates for **liver and thyroid cancer** in both genders (Figures 9.1–G and 9.1–U). The rise of thyroid cancers during the last decade is also seen in the other Nordic countries, except in Iceland where the rates have been consistently higher than in Scandinavia since 1960. We do not know the exact reason for the Scandinavian increase, but similar trends have been observed internationally, possibly linked to changes in

the diagnostic workup. There has been an increased use of ultrasound, CT and MRI for other indications, possibly resulting in incidental findings of tumours in the thyroid^[35]. The increased rate of liver cancer was earlier suspected to be due to a rising proportion of immigrants from areas with higher risk of liver cancer. A study from 2018, revealed that this assumption was incorrect, and that there is an increase in liver cancer incidence also among Norwegian-born^[36].

In summary, the overall trends in cancer survival reflect a complex pattern of factors operating together, such as screening programmes, unrecommended screening, and improved diagnostics, all associated with some degree of overdiagnosis (tumours that would have remained harmless throughout life), improved treatment, and improved general health (less comorbidity among cancer patients). For prostate and breast cancer, both early diagnosis and improvements in treatment are likely to have played a role. For rectal cancer, the improved survival is most likely caused by better treatment.

Note: For Figure 9.1–F, the mortality rate for rectosigmoid (C19–20) includes anal cancer.

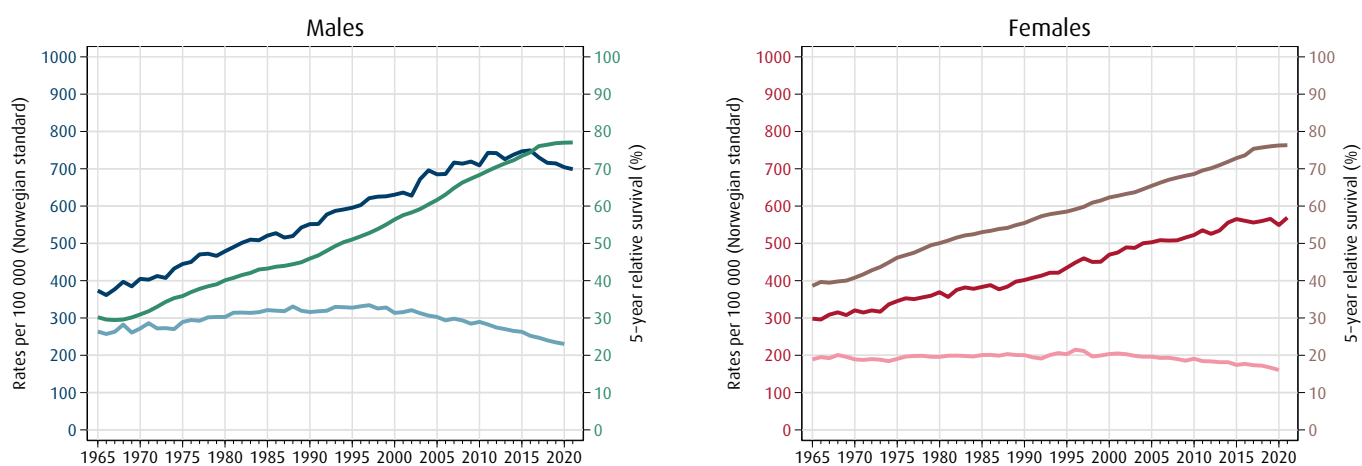
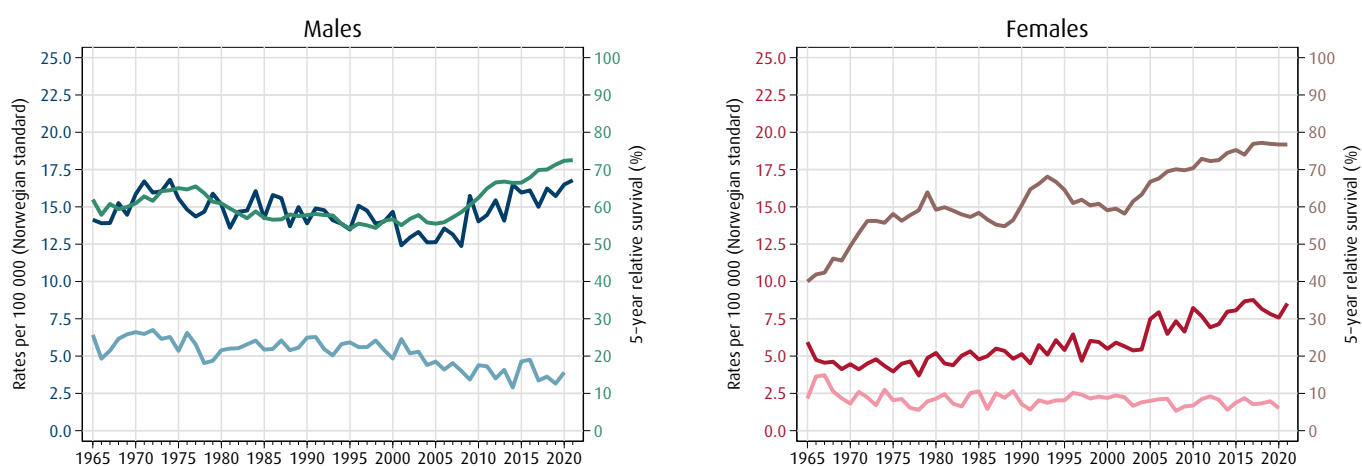
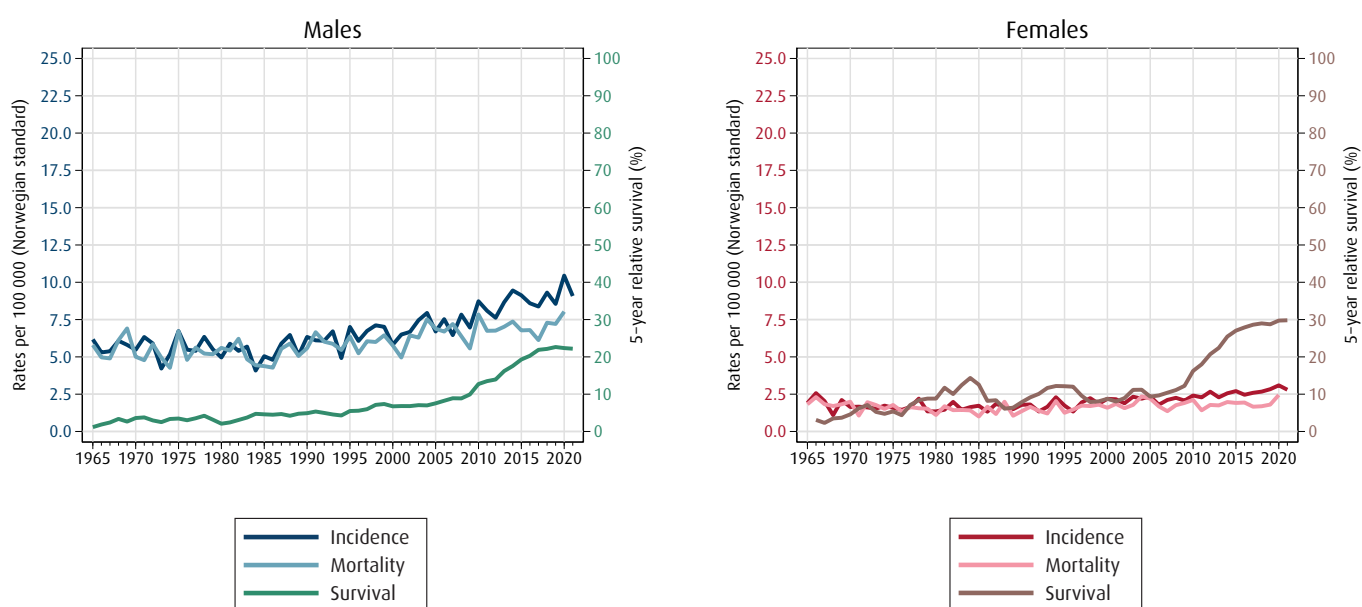
Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-A: All sites (ICD-10 C00-96)****Figure 9.1-B: Mouth, pharynx (ICD-10 C00-14)****Figure 9.1-C: Oesophagus (ICD-10 C15)**

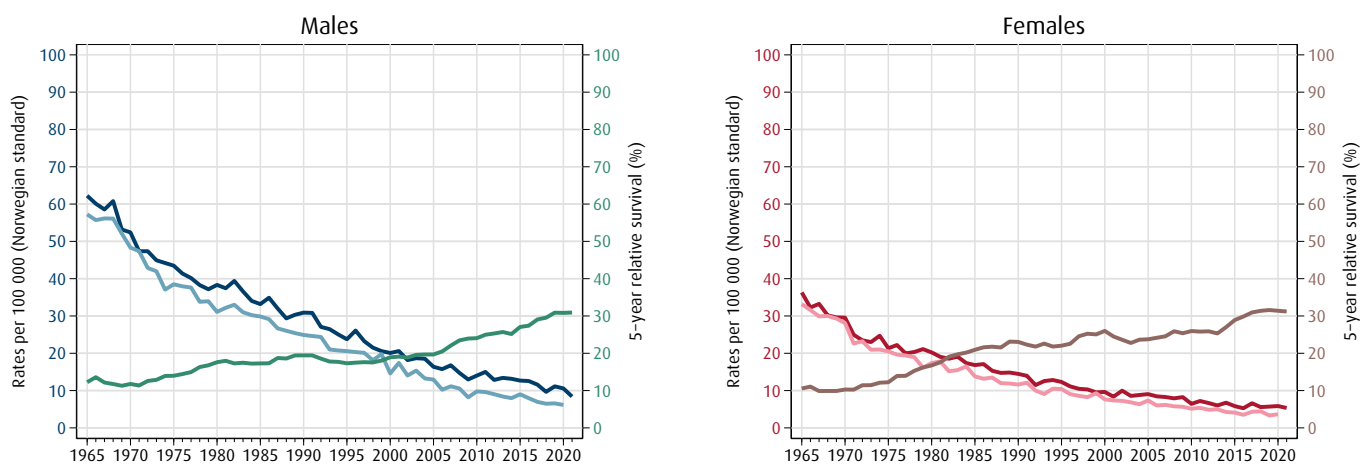
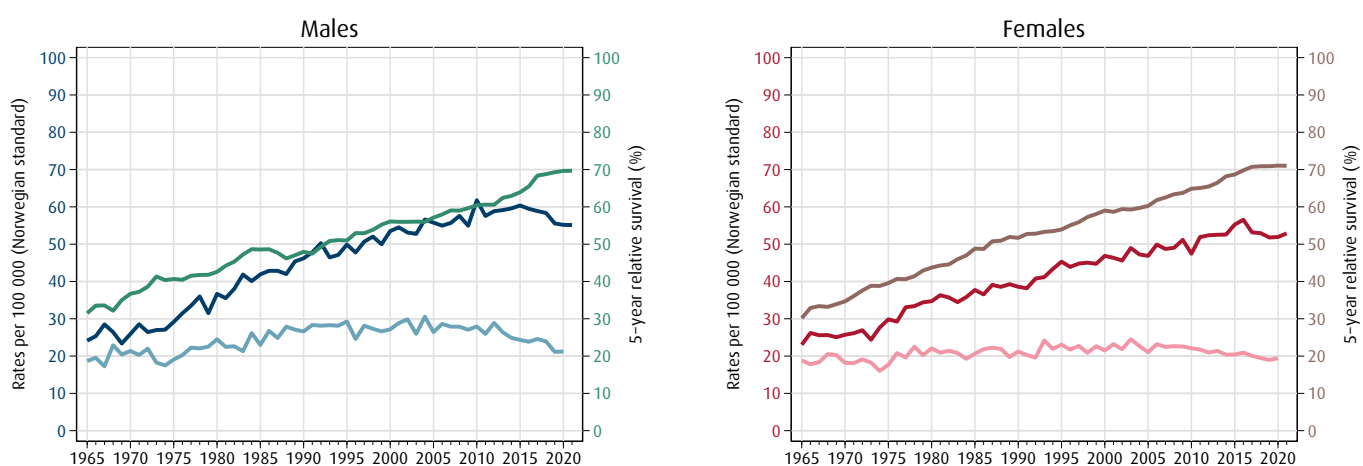
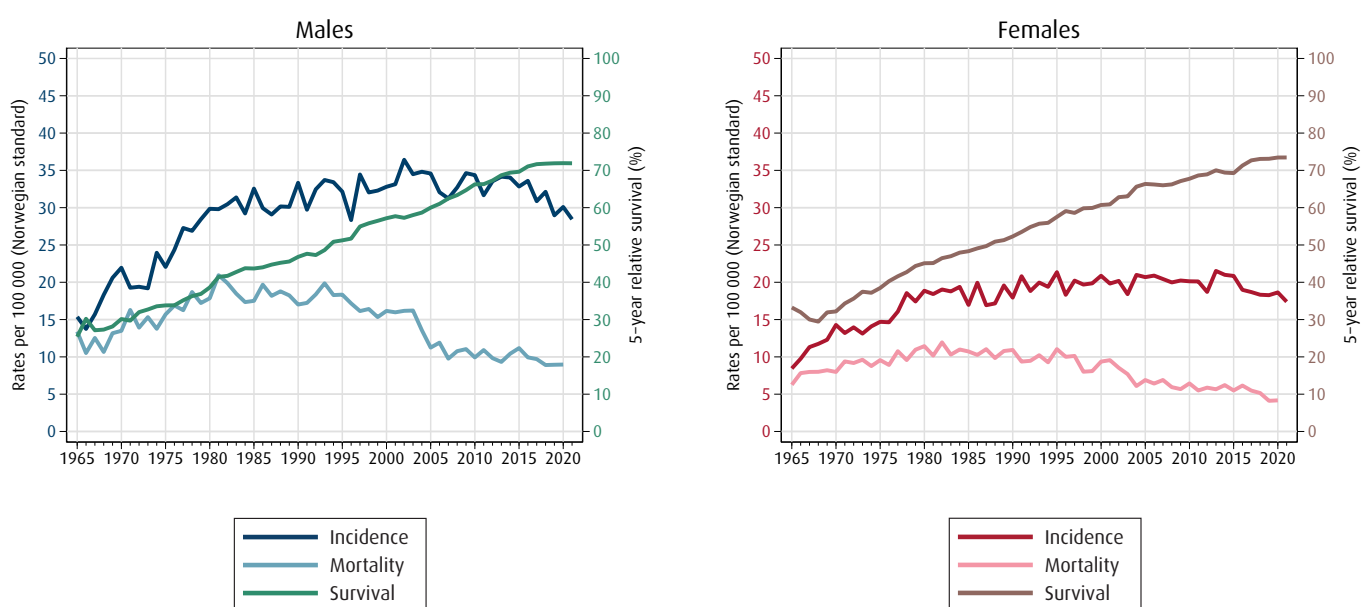
Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-D: Stomach (ICD-10 C16)****Figure 9.1-E: Colon (ICD-10 C18)****Figure 9.1-F: Rectum, rectosigmoid (ICD-10 C19-20)**

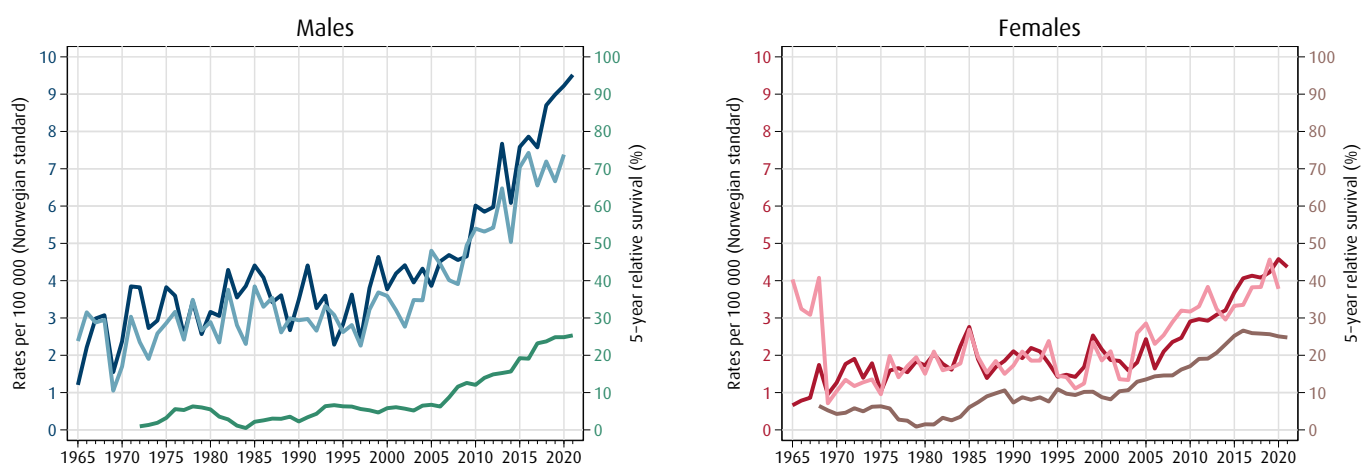
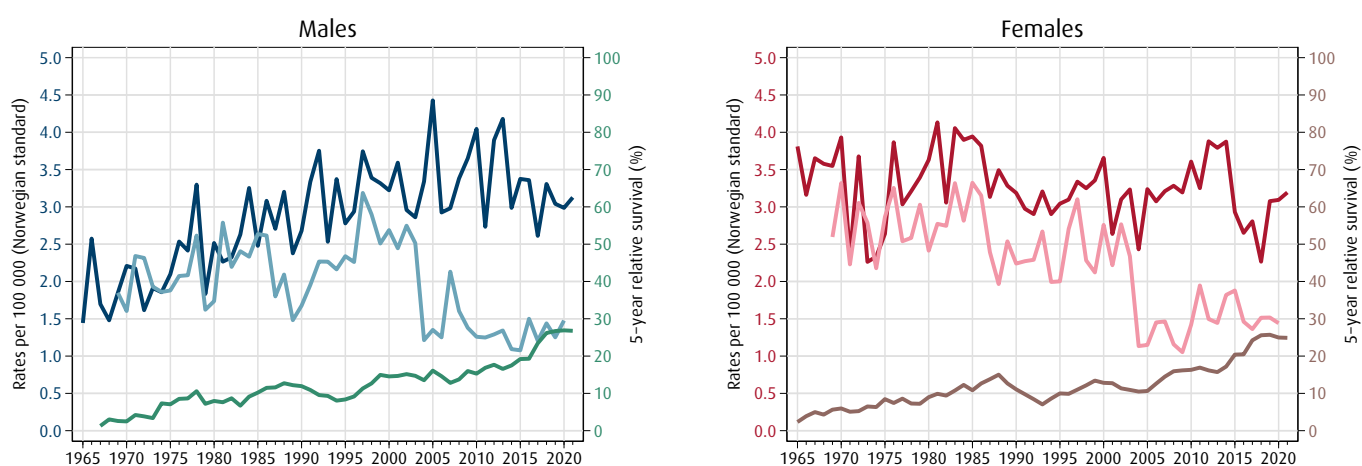
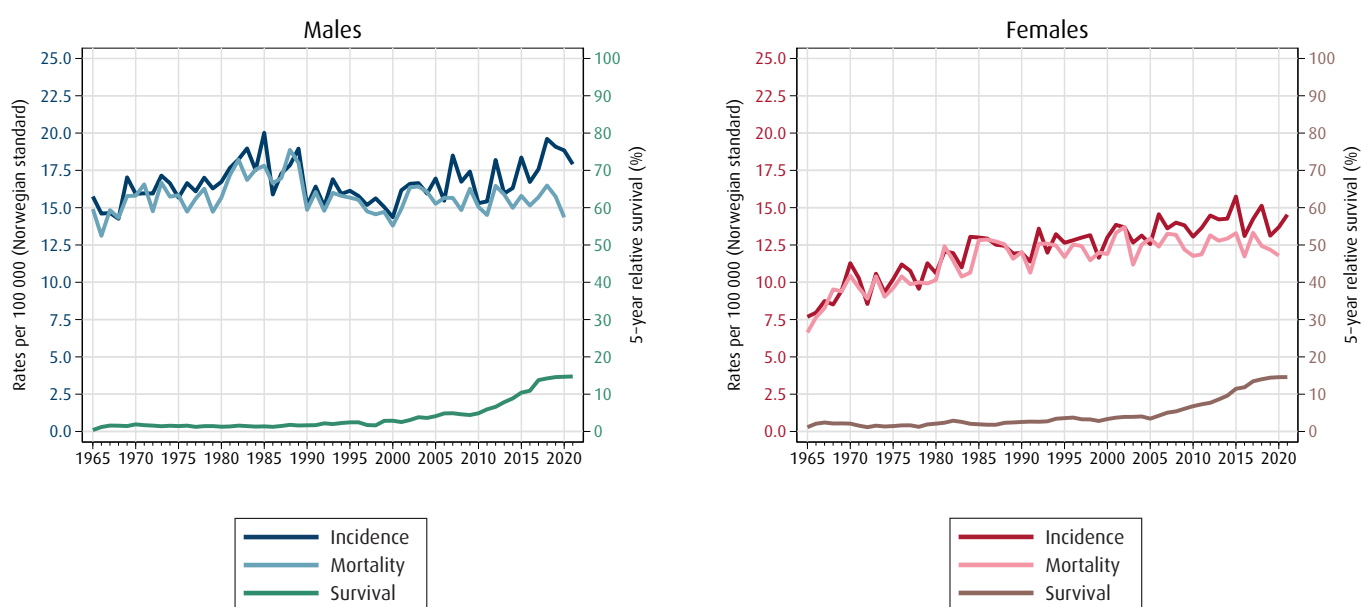
Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-G: Liver (ICD-10 C22)****Figure 9.1-H: Gallbladder, bile ducts (ICD-10 C23-24)****Figure 9.1-I: Pancreas (ICD-10 C25)**

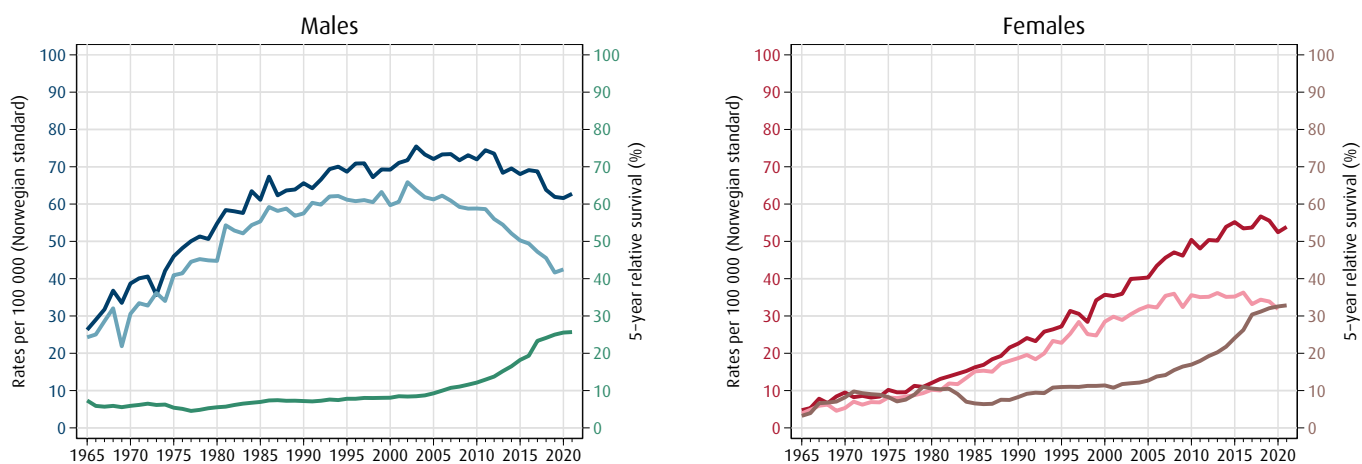
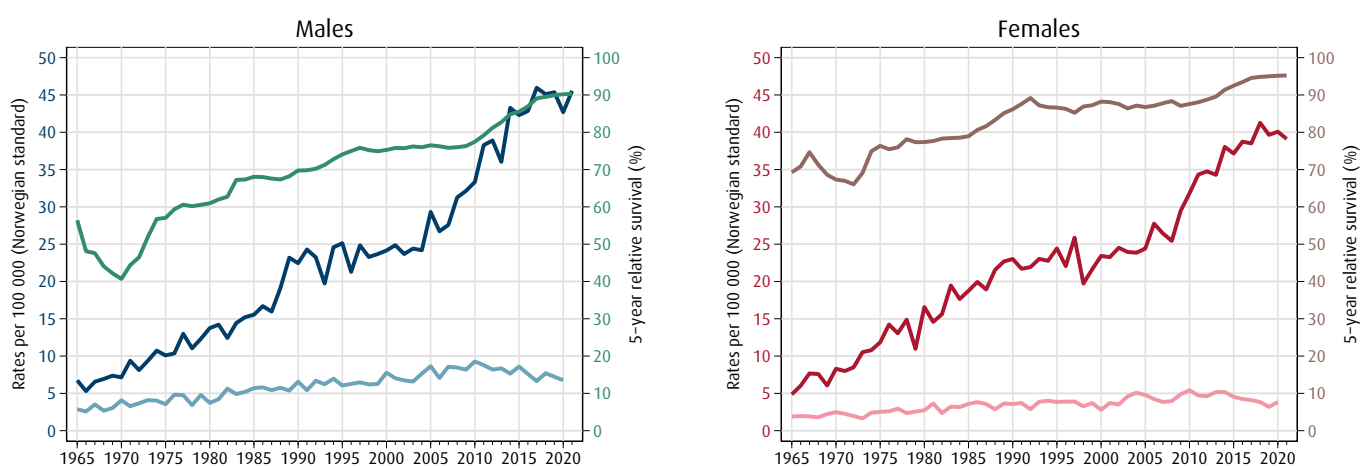
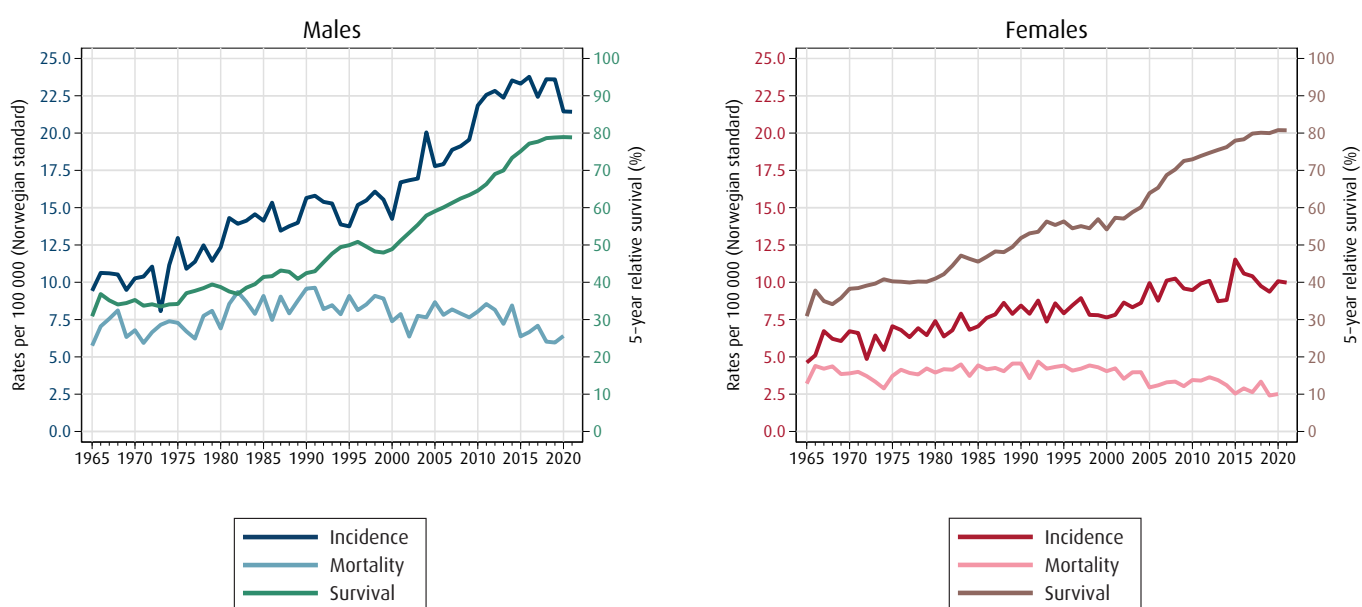
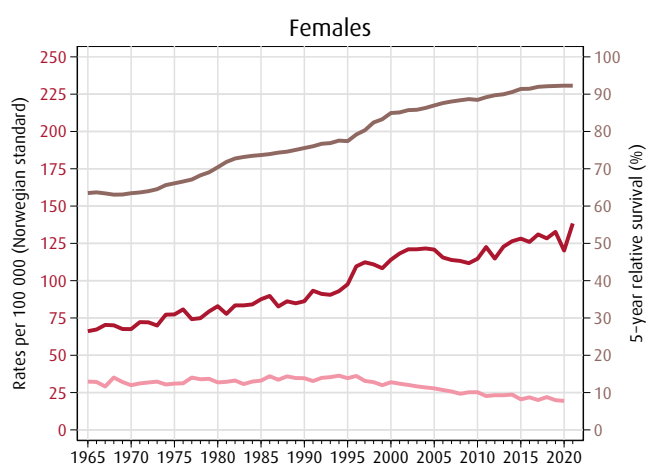
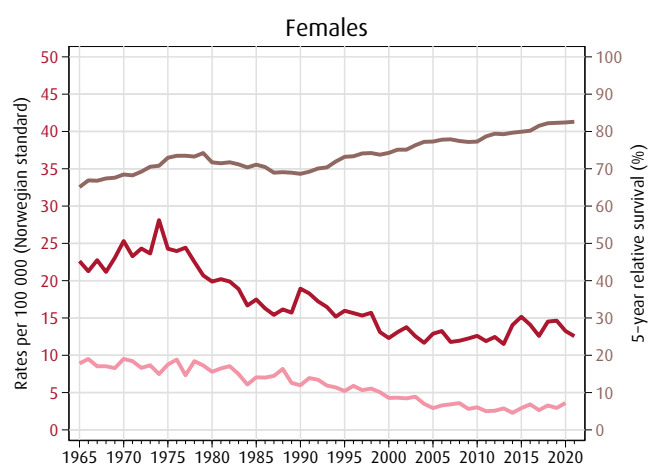
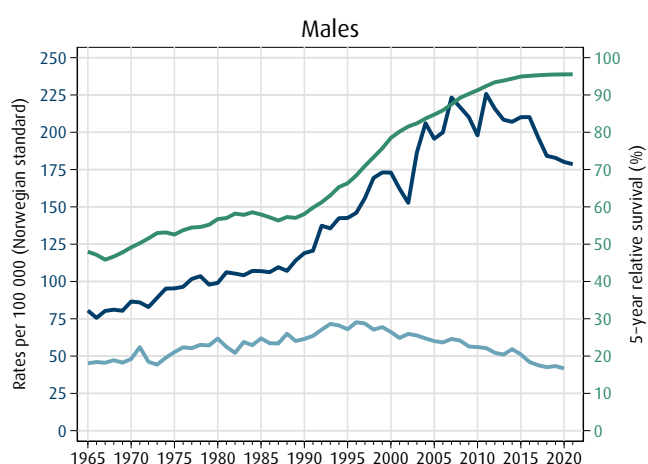
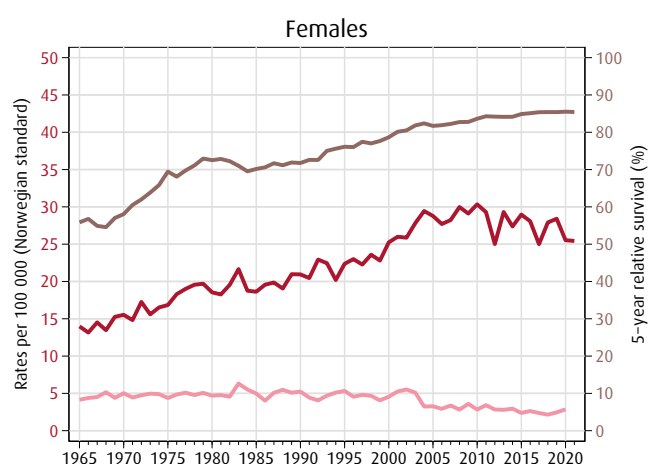
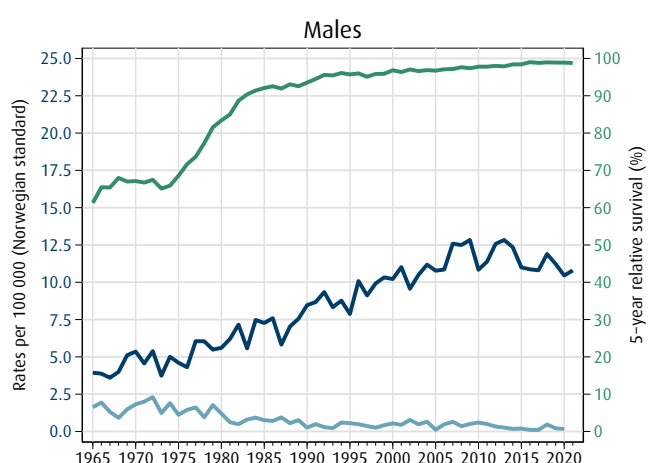
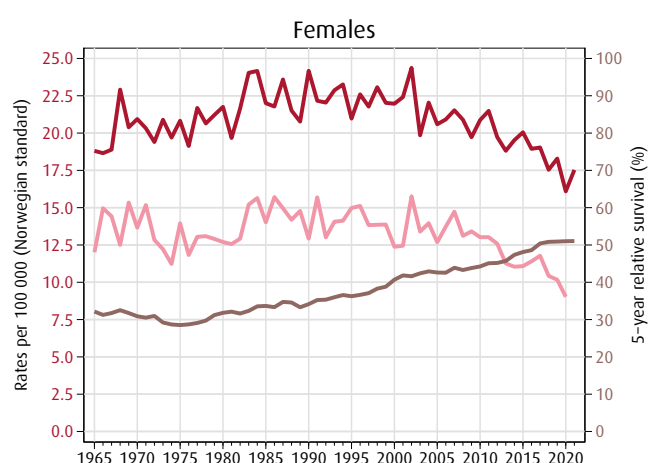
Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-J: Lung, trachea (ICD-10 C33-34)****Figure 9.1-K: Melanoma of the skin (ICD-10 C43)****Figure 9.1-L: Kidney (excl. renal pelvis) (ICD-10 C64)**

Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-M: Breast (ICD-10 C50)****Figure 9.1-N: Cervix uteri (ICD-10 C53)****Figure 9.1-O: Prostate (ICD-10 C61)****Figure 9.1-P: Corpus uteri (ICD-10 C54)****Figure 9.1-Q: Testis (ICD-10 C62)****Figure 9.1-R: Ovary etc. (ICD-10 C56, C57.0-4, C48.2)**

Incidence
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Incidence
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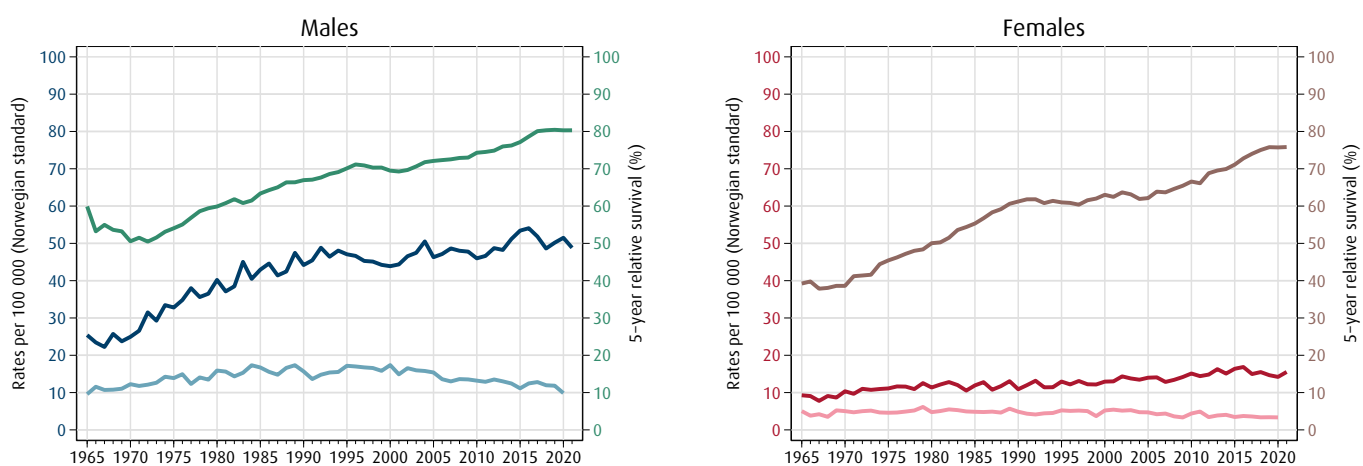
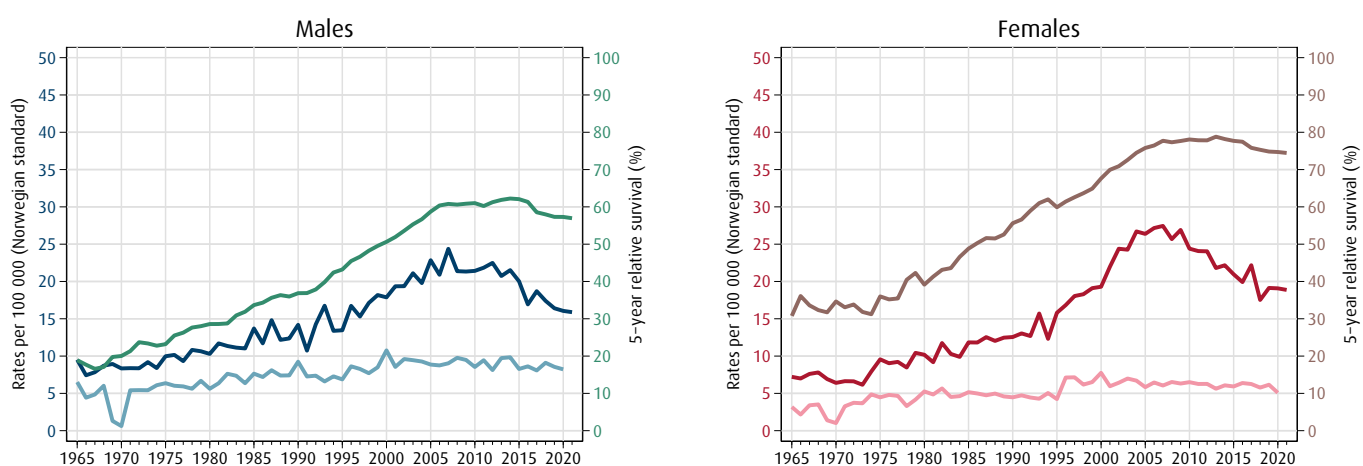
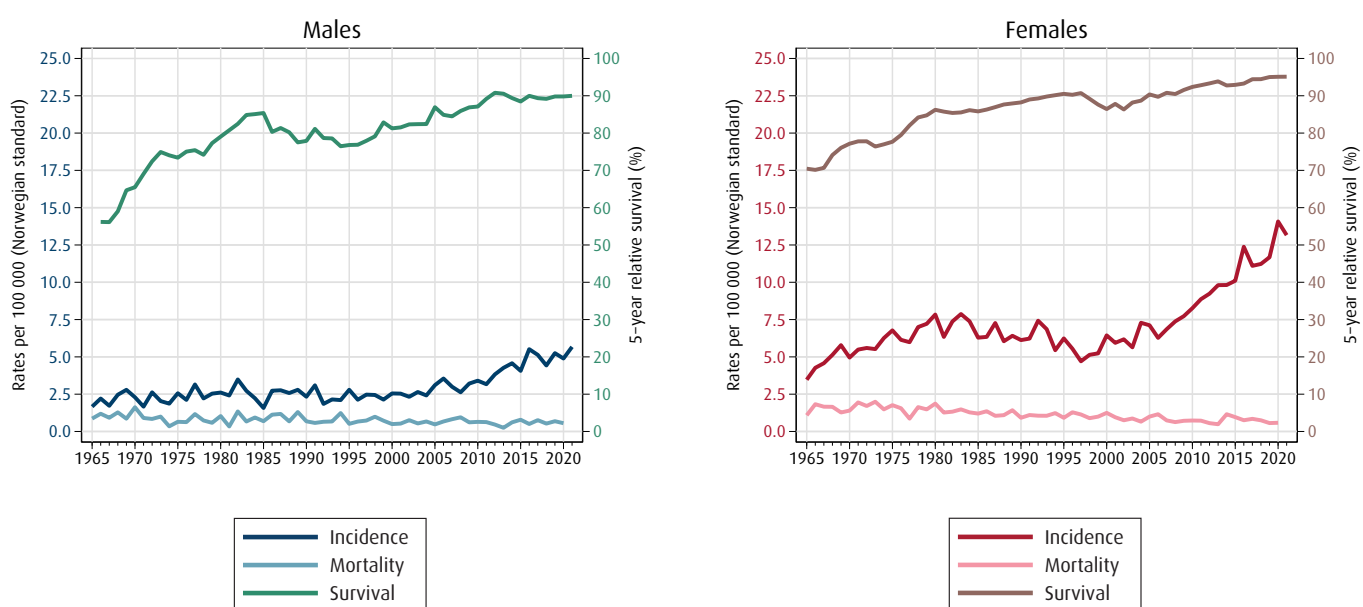
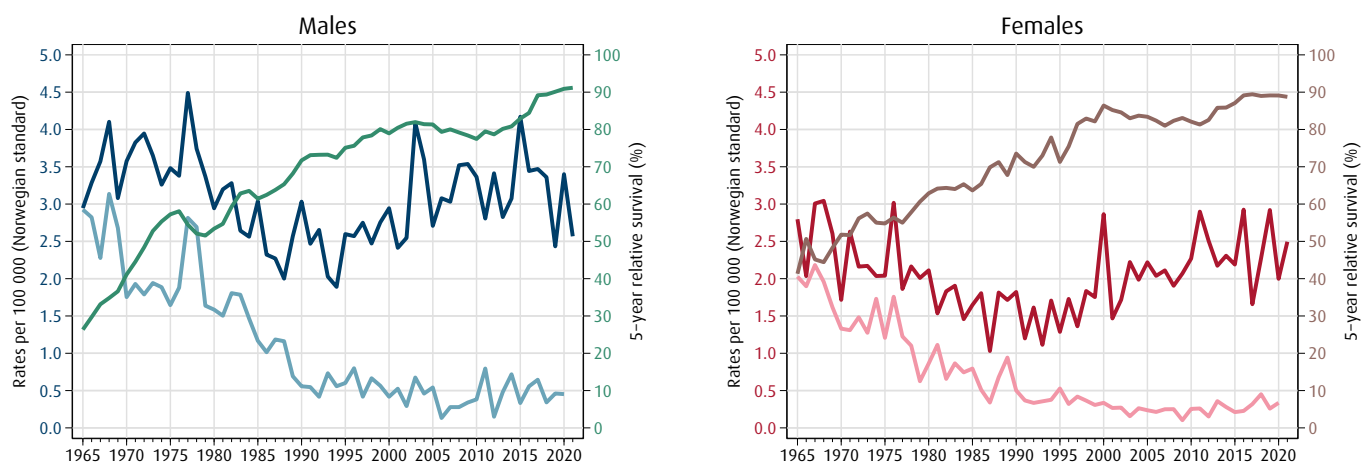
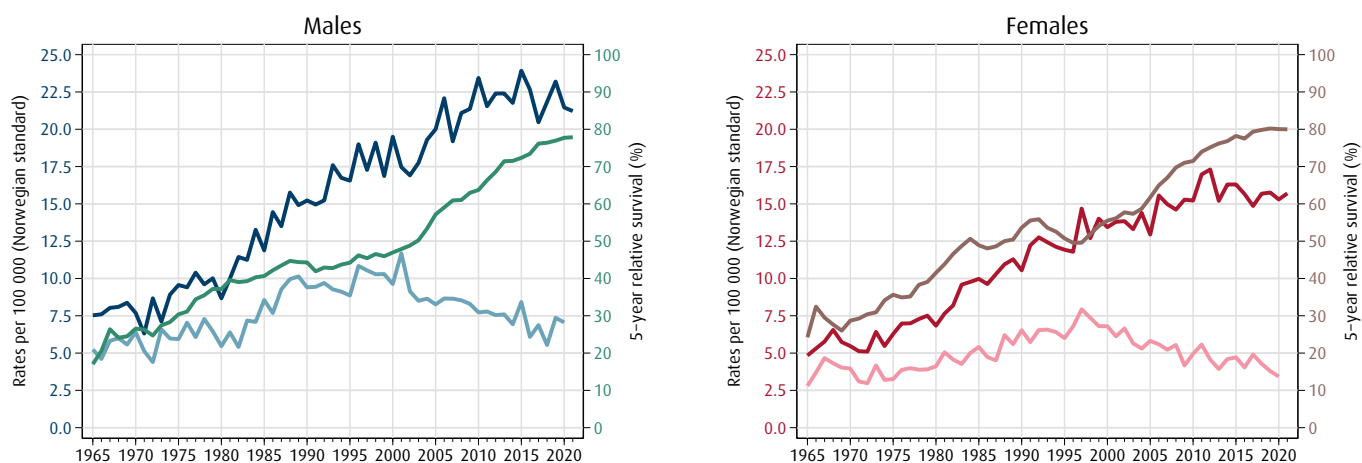
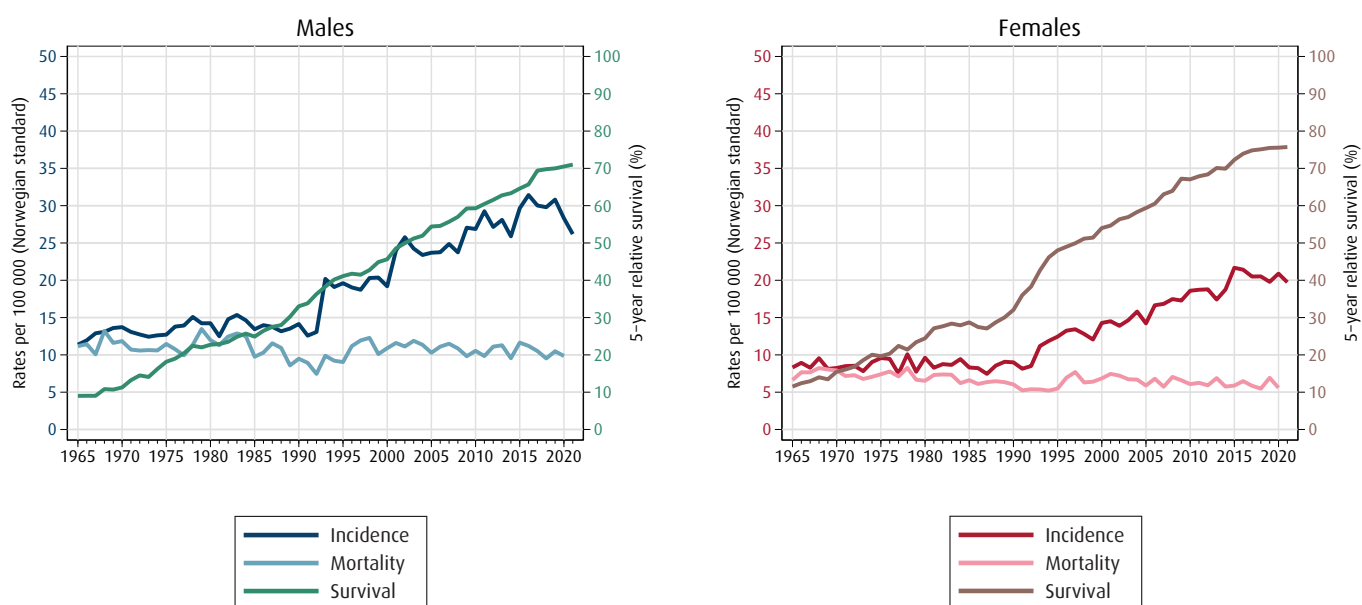
Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-S: Urinary tract (ICD-10 C65-68)****Figure 9.1-T: Central nervous system (ICD-10 C70-72)****Figure 9.1-U: Thyroid gland (ICD-10 C73)**

Figure 9.1: Trends in incidence and mortality rates and 5-year relative survival proportions**Figure 9.1-V: Hodgkin lymphoma (ICD-10 C81)****Figure 9.1-W: Non-Hodgkin lymphoma (ICD-10 C82-86, C96)****Figure 9.1-X: Leukaemia (ICD-10 C91-95)**

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Cancer in Norway 2021 Special issue

Cancer survival in Norway 1965–2021:
Extending standard reporting to improve
communication of survival statistics

Cancer in Norway 2021 Special issue

Guest editor:

Paul W Dickman

Editorial team:

B Aagnes¹, TML Andersson², PW Dickman², ALV Johansson,^{1,2} PC Lambert^{2,3}, TÅ Myklebust¹,
B Møller¹, Y Nilssen¹, MJ Rutherford^{3,4}

¹ Department of Registration, Cancer Registry of Norway, Oslo, Norway

² Department of Medical Epidemiology and Biostatistics, Karolinska Institutet, Stockholm, Sweden

³ Biostatistics Research Group, Department of Health Sciences, University of Leicester, UK

⁴ International Agency for Research on Cancer, Lyon, France

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Cancer in Norway 2021

Special issue

Cancer survival in Norway 1965–2021: Extending standard reporting
to improve communication of survival statistics

Contents

Measures of patient survival	S1
The role of survival analysis in cancer control	S1
Population-based measures of cancer burden	S1
Measures of patient survival	S3
Competing risks – crude and net survival	S3
Illustration of crude and net probabilities of death for men diagnosed with prostate cancer in Norway	S4
Reference-adjusted measure	S7
Conditional measures	S7
Expectation of life time and proportion of expected life time lost	S7
Frameworks for estimation: cause-specific and relative survival	S7
Estimation using parametric models	S8
Assumptions	S8
Introduction to figures	S10
Short introduction	S10
Statistical analyses	S10
Special Issue <i>versus</i> Cancer in Norway 2021	S11
Short description of figures	S12
Net survival 0–10 years	S12
Crude probabilities 0–10 years	S12
5-year crude probabilities by age and stage	S12
Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis	S12
Life expectancy by age and stage	S12
Proportion of life-years lost	S12
Conditional proportion of life-years lost by stage and years (0–5) since diagnosis	S12
Trends in incidence and mortality rates and 1- and 5-year net survival (%)	S12
Trends in reference-adjusted all-cause survival	S13
Trends in reference-adjusted crude probability of cancer death	S13
Trends in reference-adjusted life-years lost	S13
Trends in reference-adjusted life-years lost (%)	S13
Mouth, pharynx	S14
1.1 Net survival and crude probabilities	S14
1.2 Life expectancy and life-years lost	S14
1.3 Time trends	S14
Oesophagus	S18
2.1 Net survival and crude probabilities	S18
2.2 Life expectancy and life-years lost	S18
2.3 Time trends	S18
Stomach	S22
3.1 Net survival and crude probabilities	S22
3.2 Life expectancy and life-years lost	S22
3.3 Time trends	S22
Colon	S26
4.1 Net survival and crude probabilities	S26

4.2	Life expectancy and life-years lost	S26
4.3	Time trends	S26
Rectum		S30
5.1	Net survival and crude probabilities	S30
5.2	Life expectancy and life-years lost	S30
5.3	Time trends	S30
Liver		S34
6.1	Net survival and crude probabilities	S34
6.2	Life expectancy and life-years lost	S34
6.3	Time trends	S34
Gallbladder		S38
7.1	Net survival and crude probabilities	S38
7.2	Life expectancy and life-years lost	S38
7.3	Time trends	S38
Pancreas		S42
8.1	Net survival and crude probabilities	S42
8.2	Life expectancy and life-years lost	S42
8.3	Time trends	S42
Lung		S46
9.1	Net survival and crude probabilities	S46
9.2	Life expectancy and life-years lost	S46
9.3	Time trends	S46
Melanoma of the skin		S50
10.1	Net survival and crude probabilities	S50
10.2	Life expectancy and life-years lost	S50
10.3	Time trends	S50
Breast		S54
11.1	Net survival and crude probabilities	S54
11.2	Life expectancy and life-years lost	S54
11.3	Time trends	S54
Cervix uteri		S58
12.1	Net survival and crude probabilities	S58
12.2	Life expectancy and life-years lost	S58
12.3	Time trends	S58
Corpus uteri		S62
13.1	Net survival and crude probabilities	S62
13.2	Life expectancy and life-years lost	S62
13.3	Time trends	S62
Ovary		S66
14.1	Net survival and crude probabilities	S66
14.2	Life expectancy and life-years lost	S66
14.3	Time trends	S66
Prostate		S70
15.1	Net survival and crude probabilities	S70
15.2	Life expectancy and life-years lost	S70

15.3	Time trends	S70
Testis		S74
16.1	Net survival and crude probabilities	S74
16.2	Life expectancy and life-years lost	S74
16.3	Time trends	S74
Kidney		S78
17.1	Net survival and crude probabilities	S78
17.2	Life expectancy and life-years lost	S78
17.3	Time trends	S78
Urinary tract		S82
18.1	Net survival and crude probabilities	S82
18.2	Life expectancy and life-years lost	S82
18.3	Time trends	S82
Central nervous system		S86
19.1	Net survival and crude probabilities	S86
19.2	Life expectancy and life-years lost	S86
19.3	Time trends	S86
Thyroid gland		S90
20.1	Net survival and crude probabilities	S90
20.2	Life expectancy and life-years lost	S90
20.3	Time trends	S90
Hodgkin lymphoma		S94
21.1	Net survival and crude probabilities	S94
21.2	Life expectancy and life-years lost	S94
21.3	Time trends	S94
Non-Hodgkin lymphoma		S98
22.1	Net survival and crude probabilities	S98
22.2	Life expectancy and life-years lost	S98
22.3	Time trends	S98
Leukaemia		S102
23.1	Net survival and crude probabilities	S102
23.2	Life expectancy and life-years lost	S102
23.3	Time trends	S102

List of Figures

1	Rectum cancer: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males . . .	S3
2	Lung cancer: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males . . .	S3
3	From one state (alive) to either one single absorbing event (death), or to multiple competing events (competing risk)	S6
	A Only one possible event (cancer death)	S6
	B Several competing events (causes of death)	S6
4	Net survival (hypothetical world), and real world all-cause survival (yellow area) and crude survival (red and yellow area).	S6
5	Net probability of death (hypothetical world), and crude probabilities of death (real world) with competing causes of death.	S6
1.1	Mouth, pharynx: net and crude probabilities	S15
	A Net survival 0–10 years	S15
	B Crude probabilities 0–10 years	S15
	C 5-year crude probabilities by age and stage. Males	S15
	D 5-year crude probabilities by age and stage. Females	S15
	E Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males	S15
	F Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S15
1.2	Mouth, pharynx: life expectancy and life-years lost	S16
	A Life expectancy by age and stage. Males	S16
	B Life expectancy by age and stage. Females	S16
	C Proportion of life-years lost. Males	S16
	D Proportion of life-years lost. Females	S16
	E Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males	S16
	F Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S16
1.3	Mouth, pharynx: trends	S17
	A Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S17
	B Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S17
	C Trends in reference adjusted all-cause survival	S17
	D Trends in reference adjusted crude probability of cancer death	S17
	E Trends in reference adjusted life-years lost	S17
	F Trends in reference adjusted life-years lost (%)	S17
2.1	Oesophagus: net and crude probabilities	S19
	A Net survival 0–10 years	S19
	B Crude probabilities 0–10 years	S19
	C 5-year crude probabilities by age and stage. Males	S19
	D 5-year crude probabilities by age and stage. Females	S19
	E Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S19
	F Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females	S19
2.2	Oesophagus: life expectancy and life-years lost	S20
	A Life expectancy by age and stage. Males	S20
	B Life expectancy by age and stage. Females	S20
	C Proportion of life-years lost. Males	S20

	D	Proportion of life-years lost. Females	S20
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S20
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females	S20
2.3	Oesophagus: trends		S21
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S21
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S21
	C	Trends in reference adjusted all-cause survival	S21
	D	Trends in reference adjusted crude probability of cancer death	S21
	E	Trends in reference adjusted life-years lost	S21
	F	Trends in reference adjusted life-years lost (%)	S21
3.1	Stomach: net and crude probabilities		S23
	A	Net survival 0–10 years	S23
	B	Crude probabilities 0–10 years	S23
	C	5-year crude probabilities by age and stage. Males	S23
	D	5-year crude probabilities by age and stage. Females	S23
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Males	S23
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Females	S23
3.2	Stomach: life expectancy and life-years lost		S24
	A	Life expectancy by age and stage. Males	S24
	B	Life expectancy by age and stage. Females	S24
	C	Proportion of life-years lost. Males	S24
	D	Proportion of life-years lost. Females	S24
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Males	S24
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Females	S24
3.3	Stomach: trends		S25
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S25
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S25
	C	Trends in reference adjusted all-cause survival	S25
	D	Trends in reference adjusted crude probability of cancer death	S25
	E	Trends in reference adjusted life-years lost	S25
	F	Trends in reference adjusted life-years lost (%)	S25
4.1	Colon: net and crude probabilities		S27
	A	Net survival 0–10 years	S27
	B	Crude probabilities 0–10 years	S27
	C	5-year crude probabilities by age and stage. Males	S27
	D	5-year crude probabilities by age and stage. Females	S27
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males	S27
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females	S27
4.2	Colon: life expectancy and life-years lost		S28
	A	Life expectancy by age and stage. Males	S28
	B	Life expectancy by age and stage. Females	S28
	C	Proportion of life-years lost. Males	S28
	D	Proportion of life-years lost. Females	S28
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males	S28

	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females	S28
4.3	Colon: trends		S29
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S29
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S29
	C	Trends in reference adjusted all-cause survival	S29
	D	Trends in reference adjusted crude probability of cancer death	S29
	E	Trends in reference adjusted life-years lost	S29
	F	Trends in reference adjusted life-years lost (%)	S29
5.1	Rectum: net and crude probabilities		S31
	A	Net survival 0–10 years	S31
	B	Crude probabilities 0–10 years	S31
	C	5-year crude probabilities by age and stage. Males	S31
	D	5-year crude probabilities by age and stage. Females	S31
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S31
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S31
5.2	Rectum: life expectancy and life-years lost		S32
	A	Life expectancy by age and stage. Males	S32
	B	Life expectancy by age and stage. Females	S32
	C	Proportion of life-years lost. Males	S32
	D	Proportion of life-years lost. Females	S32
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S32
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S32
5.3	Rectum: trends		S33
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S33
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S33
	C	Trends in reference adjusted all-cause survival	S33
	D	Trends in reference adjusted crude probability of cancer death	S33
	E	Trends in reference adjusted life-years lost	S33
	F	Trends in reference adjusted life-years lost (%)	S33
6.1	Liver: net and crude probabilities		S35
	A	Net survival 0–10 years	S35
	B	Crude probabilities 0–10 years	S35
	C	5-year crude probabilities by age and stage. Males	S35
	D	5-year crude probabilities by age and stage. Females	S35
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S35
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S35
6.2	Liver: life expectancy and life-years lost		S36
	A	Life expectancy by age and stage. Males	S36
	B	Life expectancy by age and stage. Females	S36
	C	Proportion of life-years lost. Males	S36
	D	Proportion of life-years lost. Females	S36
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S36
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S36
6.3	Liver: trends		S37
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S37

	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S37
	C	Trends in reference adjusted all-cause survival	S37
	D	Trends in reference adjusted crude probability of cancer death	S37
	E	Trends in reference adjusted life-years lost	S37
	F	Trends in reference adjusted life-years lost (%)	S37
7.1		Gallbladder: net and crude probabilities	S39
	A	Net survival 0–10 years	S39
	B	Crude probabilities 0–10 years	S39
	C	5-year crude probabilities by age and stage. Males	S39
	D	5-year crude probabilities by age and stage. Females	S39
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S39
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S39
7.2		Gallbladder: life expectancy and life-years lost	S40
	A	Life expectancy by age and stage. Males	S40
	B	Life expectancy by age and stage. Females	S40
	C	Proportion of life-years lost. Males	S40
	D	Proportion of life-years lost. Females	S40
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S40
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S40
7.3		Gallbladder: trends	S41
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S41
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S41
	C	Trends in reference adjusted all-cause survival	S41
	D	Trends in reference adjusted crude probability of cancer death	S41
	E	Trends in reference adjusted life-years lost	S41
	F	Trends in reference adjusted life-years lost (%)	S41
8.1		Pancreas: net and crude probabilities	S43
	A	Net survival 0–10 years	S43
	B	Crude probabilities 0–10 years	S43
	C	5-year crude probabilities by age and stage. Males	S43
	D	5-year crude probabilities by age and stage. Females	S43
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S43
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S43
8.2		Pancreas: life expectancy and life-years lost	S44
	A	Life expectancy by age and stage. Males	S44
	B	Life expectancy by age and stage. Females	S44
	C	Proportion of life-years lost. Males	S44
	D	Proportion of life-years lost. Females	S44
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S44
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S44
8.3		Pancreas: trends	S45
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S45
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S45
	C	Trends in reference adjusted all-cause survival	S45
	D	Trends in reference adjusted crude probability of cancer death	S45
	E	Trends in reference adjusted life-years lost	S45

	F	Trends in reference adjusted life-years lost (%)	S45
9.1	Lung: net and crude probabilities		S47
	A	Net survival 0–10 years	S47
	B	Crude probabilities 0–10 years	S47
	C	5-year crude probabilities by age and stage. Males	S47
	D	5-year crude probabilities by age and stage. Females	S47
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S47
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S47
9.2	Lung: life expectancy and life-years lost		S48
	A	Life expectancy by age and stage. Males	S48
	B	Life expectancy by age and stage. Females	S48
	C	Proportion of life-years lost. Males	S48
	D	Proportion of life-years lost. Females	S48
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males	S48
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females	S48
9.3	Lung: trends		S49
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S49
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S49
	C	Trends in reference adjusted all-cause survival	S49
	D	Trends in reference adjusted crude probability of cancer death	S49
	E	Trends in reference adjusted life-years lost	S49
	F	Trends in reference adjusted life-years lost (%)	S49
10.1	Melanoma of the skin: net and crude probabilities		S51
	A	Net survival 0–10 years	S51
	B	Crude probabilities 0–10 years	S51
	C	5-year crude probabilities by age and stage. Males	S51
	D	5-year crude probabilities by age and stage. Females	S51
	E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Males	S51
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Females	S51
10.2	Melanoma of the skin: life expectancy and life-years lost		S52
	A	Life expectancy by age and stage. Males	S52
	B	Life expectancy by age and stage. Females	S52
	C	Proportion of life-years lost. Males	S52
	D	Proportion of life-years lost. Females	S52
	E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Males	S52
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Females	S52
10.3	Melanoma of the skin: trends		S53
	A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S53
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S53
	C	Trends in reference adjusted all-cause survival	S53
	D	Trends in reference adjusted crude probability of cancer death	S53
	E	Trends in reference adjusted life-years lost	S53
	F	Trends in reference adjusted life-years lost (%)	S53
11.1	Breast: net and crude probabilities		S55
	A	Net survival 0–10 years	S55
	B	Crude probabilities 0–10 years	S55

	D	5-year crude probabilities by age and stage. Females	S55
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Females	S55
11.2		Breast: life expectancy and life-years lost	S56
	B	Life expectancy by age and stage. Females	S56
	D	Proportion of life-years lost. Females	S56
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Females	S56
11.3		Breast: trends	S57
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S57
	C	Trends in reference adjusted all-cause survival	S57
	D	Trends in reference adjusted crude probability of cancer death	S57
	E	Trends in reference adjusted life-years lost	S57
	F	Trends in reference adjusted life-years lost (%)	S57
12.1		Cervix uteri: net and crude probabilities	S59
	A	Net survival 0–10 years	S59
	B	Crude probabilities 0–10 years	S59
	D	5-year crude probabilities by age and stage. Females	S59
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Females	S59
12.2		Cervix uteri: life expectancy and life-years lost	S60
	B	Life expectancy by age and stage. Females	S60
	D	Proportion of life-years lost. Females	S60
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Females	S60
12.3		Cervix uteri: trends	S61
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S61
	C	Trends in reference adjusted all-cause survival	S61
	D	Trends in reference adjusted crude probability of cancer death	S61
	E	Trends in reference adjusted life-years lost	S61
	F	Trends in reference adjusted life-years lost (%)	S61
13.1		Corpus uteri: net and crude probabilities	S63
	A	Net survival 0–10 years	S63
	B	Crude probabilities 0–10 years	S63
	D	5-year crude probabilities by age and stage. Females	S63
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Females	S63
13.2		Corpus uteri: life expectancy and life-years lost	S64
	B	Life expectancy by age and stage. Females	S64
	D	Proportion of life-years lost. Females	S64
	F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Females	S64
13.3		Corpus uteri: trends	S65
	B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S65
	C	Trends in reference adjusted all-cause survival	S65
	D	Trends in reference adjusted crude probability of cancer death	S65
	E	Trends in reference adjusted life-years lost	S65
	F	Trends in reference adjusted life-years lost (%)	S65
14.1		Ovary: net and crude probabilities	S67
	A	Net survival 0–10 years	S67
	B	Crude probabilities 0–10 years	S67
	D	5-year crude probabilities by age and stage. Females	S67
	F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S67

14.2	Ovary: life expectancy and life-years lost	S68
B	Life expectancy by age and stage. Females	S68
D	Proportion of life-years lost. Females	S68
F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S68
14.3	Ovary: trends	S69
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S69
C	Trends in reference adjusted all-cause survival	S69
D	Trends in reference adjusted crude probability of cancer death	S69
E	Trends in reference adjusted life-years lost	S69
F	Trends in reference adjusted life-years lost (%)	S69
15.1	Prostate: net and crude probabilities	S71
A	Net survival 0–10 years	S71
B	Crude probabilities 0–10 years	S71
C	5-year crude probabilities by age and stage. Males	S71
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S71
15.2	Prostate: life expectancy and life-years lost	S72
A	Life expectancy by age and stage. Males	S72
C	Proportion of life-years lost. Males	S72
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S72
15.3	Prostate: trends	S73
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S73
C	Trends in reference adjusted all-cause survival	S73
D	Trends in reference adjusted crude probability of cancer death	S73
E	Trends in reference adjusted life-years lost	S73
F	Trends in reference adjusted life-years lost (%)	S73
16.1	Testis: net and crude probabilities	S75
A	Net survival 0–10 years	S75
B	Crude probabilities 0–10 years	S75
C	5-year crude probabilities by age and stage. Males	S75
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Males	S75
16.2	Testis: life expectancy and life-years lost	S76
A	Life expectancy by age and stage. Males	S76
C	Proportion of life-years lost. Males	S76
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Males	S76
16.3	Testis: trends	S77
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S77
C	Trends in reference adjusted all-cause survival	S77
D	Trends in reference adjusted crude probability of cancer death	S77
E	Trends in reference adjusted life-years lost	S77
F	Trends in reference adjusted life-years lost (%)	S77
17.1	Kidney: net and crude probabilities	S79
A	Net survival 0–10 years	S79
B	Crude probabilities 0–10 years	S79
C	5-year crude probabilities by age and stage. Males	S79
D	5-year crude probabilities by age and stage. Females	S79
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males	S79
F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S79

17.2	Kidney: life expectancy and life-years lost	S80
A	Life expectancy by age and stage. Males	S80
B	Life expectancy by age and stage. Females	S80
C	Proportion of life-years lost. Males	S80
D	Proportion of life-years lost. Females	S80
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males	S80
F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females	S80
17.3	Kidney: trends	S81
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S81
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S81
C	Trends in reference adjusted all-cause survival	S81
D	Trends in reference adjusted crude probability of cancer death	S81
E	Trends in reference adjusted life-years lost	S81
F	Trends in reference adjusted life-years lost (%)	S81
18.1	Urinary tract: net and crude probabilities	S83
A	Net survival 0–10 years	S83
B	Crude probabilities 0–10 years	S83
C	5-year crude probabilities by age and stage. Males	S83
D	5-year crude probabilities by age and stage. Females	S83
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males	S83
F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females	S83
18.2	Urinary tract: life expectancy and life-years lost	S84
A	Life expectancy by age and stage. Males	S84
B	Life expectancy by age and stage. Females	S84
C	Proportion of life-years lost. Males	S84
D	Proportion of life-years lost. Females	S84
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males	S84
F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females	S84
18.3	Urinary tract: trends	S85
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S85
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S85
C	Trends in reference adjusted all-cause survival	S85
D	Trends in reference adjusted crude probability of cancer death	S85
E	Trends in reference adjusted life-years lost	S85
F	Trends in reference adjusted life-years lost (%)	S85
19.1	Central nervous system: net and crude probabilities	S87
A	Net survival 0–10 years	S87
B	Crude probabilities 0–10 years	S87
C	5-year crude probabilities by age and stage. Males	S87
D	5-year crude probabilities by age and stage. Females	S87
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Males	S87
F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Females	S87
19.2	Central nervous system: life expectancy and life-years lost	S88
A	Life expectancy by age and stage. Males	S88
B	Life expectancy by age and stage. Females	S88
C	Proportion of life-years lost. Males	S88

D	Proportion of life-years lost. Females	S88
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Males	S88
F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Females	S88
19.3	Central nervous system: trends	S89
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S89
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S89
C	Trends in reference adjusted all-cause survival	S89
D	Trends in reference adjusted crude probability of cancer death	S89
E	Trends in reference adjusted life-years lost	S89
F	Trends in reference adjusted life-years lost (%)	S89
20.1	Thyroid gland: net and crude probabilities	S91
A	Net survival 0–10 years	S91
B	Crude probabilities 0–10 years	S91
C	5-year crude probabilities by age and stage. Males	S91
D	5-year crude probabilities by age and stage. Females	S91
E	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Males	S91
F	Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Females	S91
20.2	Thyroid gland: life expectancy and life-years lost	S92
A	Life expectancy by age and stage. Males	S92
B	Life expectancy by age and stage. Females	S92
C	Proportion of life-years lost. Males	S92
D	Proportion of life-years lost. Females	S92
E	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Males	S92
F	Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Females	S92
20.3	Thyroid gland: trends	S93
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S93
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S93
C	Trends in reference adjusted all-cause survival	S93
D	Trends in reference adjusted crude probability of cancer death	S93
E	Trends in reference adjusted life-years lost	S93
F	Trends in reference adjusted life-years lost (%)	S93
21.1	Hodgkin lymphoma: net and crude probabilities	S95
A	Net survival 0–10 years	S95
B	Crude probabilities 0–10 years	S95
C	5-year crude probabilities by age. Males	S95
D	5-year crude probabilities by age. Females	S95
E	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Males	S95
F	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Females	S95
21.2	Hodgkin lymphoma: life expectancy and life-years lost	S96
A	Life expectancy by age. Males	S96
B	Life expectancy by age. Females	S96
C	Proportion of life-years lost. Males	S96
D	Proportion of life-years lost. Females	S96
E	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Males	S96

F	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Females	S96
21.3	Hodgkin lymphoma: trends	S97
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S97
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S97
C	Trends in reference adjusted all-cause survival	S97
D	Trends in reference adjusted crude probability of cancer death	S97
E	Trends in reference adjusted life-years lost	S97
F	Trends in reference adjusted life-years lost (%)	S97
22.1	Non-Hodgkin lymphoma: net and crude probabilities	S99
A	Net survival 0–10 years	S99
B	Crude probabilities 0–10 years	S99
C	5-year crude probabilities by age. Males	S99
D	5-year crude probabilities by age. Females	S99
E	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S99
F	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females	S99
22.2	Non-Hodgkin lymphoma: life expectancy and life-years lost	S100
A	Life expectancy by age. Males	S100
B	Life expectancy by age. Females	S100
C	Proportion of life-years lost. Males	S100
D	Proportion of life-years lost. Females	S100
E	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males	S100
F	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females	S100
22.3	Non-Hodgkin lymphoma: trends	S101
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S101
B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females	S101
C	Trends in reference adjusted all-cause survival	S101
D	Trends in reference adjusted crude probability of cancer death	S101
E	Trends in reference adjusted life-years lost	S101
F	Trends in reference adjusted life-years lost (%)	S101
23.1	Leukaemia: net and crude probabilities	S103
A	Net survival 0–10 years	S103
B	Crude probabilities 0–10 years	S103
C	5-year crude probabilities by age. Males	S103
D	5-year crude probabilities by age. Females	S103
E	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S103
F	Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S103
23.2	Leukaemia: life expectancy and life-years lost	S104
A	Life expectancy by age. Males	S104
B	Life expectancy by age. Females	S104
C	Proportion of life-years lost. Males	S104
D	Proportion of life-years lost. Females	S104
E	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males	S104
F	Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females	S104
23.3	Leukaemia: trends	S105
A	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males	S105

B	Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females . . .	S105
C	Trends in reference adjusted all-cause survival	S105
D	Trends in reference adjusted crude probability of cancer death	S105
E	Trends in reference adjusted life-years lost	S105
F	Trends in reference adjusted life-years lost (%)	S105

List of Tables

1	Specification of models used when analysing survival for recently diagnosed patients	S106
2	Specification of models used when analysing survival trends	S107

Measures of patient survival

This chapter provides the motivation for population-based studies (i.e., using data collected by population-based cancer registries) of cancer patient survival and an overview of the statistical methods used in population-based studies of cancer patient survival. An important message is that the different target audiences are best served by different measures, which is why a range of measures of patient survival are presented in this special issue.

The role of survival analysis in cancer control

Population-based cancer registries play a vital role in cancer control by providing population-based measures of cancer that both inform clinicians and patients and provide a basis for controlling the impact of cancer in the population. Cancer control activities include the prevention and treatment of cancer, and improvements in the survival and quality of life of cancer patients, by transferring knowledge obtained from research, surveillance and outcomes evaluation into policies and actions [1, pp. 185]. Each of the components of cancer control - primary prevention, screening, early diagnosis, treatment, rehabilitation, and palliative care - should be measured and evaluated and each requires a different measure. The focus of this report is on patient survival, but we also report trends in incidence and mortality since trends in survival can only be appropriately interpreted in the context of trends in incidence and mortality [2, 3].

Patient survival is also estimated in clinical trials, but the estimates of survival in clinical studies serve a very different purpose than estimates of survival from population-based registers. Many clinical survival studies aim to evaluate the effect of an intervention (including treatment) on patient survival. It is not essential that the patients under study be representative of any population or population group. It is, however, essential that the treatment groups are comparable in all aspects other than the intervention, which is best achieved by randomisation. Randomisation assures balance between the treatment groups with respect to known and unknown explanatory variables. Consequently, any major observed differences in the outcome may be attributed to a causal effect of the intervention. In clinical studies, patients are followed more closely and accurately with respect to clinical outcomes than in population-based survival studies. As such, information on cause of death, relapses, remissions, side effects, etc. is more readily available than in population-based studies and can be used to define study endpoints other than death.

The methods used in this report – described later in this section – are specifically tailored for register data, where information on cause of death is less reliable than in clinical studies and information on other clinical outcomes – such as progression, relapse, remission – is not available.

Population-based studies of patient survival, using data collected by population-based cancer registries, provide a measure of the effectiveness of the health care system in diagnosing and treating those cancers that arise in the population. Note that this includes the efforts of the health care system in promoting public awareness of cancer, recognising symptoms, and consulting a health professional when symptoms occur. Estimates of survival are also of interest for physicians and patients. The same measures of survival are, however, not optimal for all target audiences. In this report we present a range of different measures of patient survival targeted at different audiences. This chapter describes the motivation for these measures and how they should be interpreted.

We use the term ‘cancer patient survival’ (or ‘patient survival’) rather than ‘cancer survival’ to emphasise that it is the survival of the patient, and not the cancer, that is of interest and also that which is measured. The term ‘cancer patient survival’ also captures the fact that ‘survival’ provides a measure of mortality among patients diagnosed with cancer, in contrast to ‘mortality’ that provides a measure of cancer mortality in the entire population. This distinction is described in the next section.

Population-based measures of cancer burden

The three main population-based measures used in cancer control are incidence, mortality, and survival. Some authors have attempted to rank these in order of importance. We argue that attempting to rank the measures or search for a ‘single best measure’ is misguided; all three measures are valuable and none are fully interpretable without knowledge of the other two [2].

Incidence represents the rate at which individuals in the population are diagnosed with cancer. It is driven by changes in the prevalence of (or exposure to) risk factors along with the intensity and accuracy of diagnostic methods (including screening). Survival represents the rate at which patients with a cancer diagnosis die of that cancer. Survival is influenced by treatment effectiveness, but also the incidence. Because survival, in this context, is estimated based on cancer patients, changes in the characteristics of the patients and their tumors will affect survival. For example, improved diagnostic techniques may result in a shift toward detection at an earlier stage and of more indolent tumors and therefore improved survival. Changes in the definition of what is considered cancer of a particular type, or introduction of a screening program, will also potentially affect incidence, survival, and mortality.

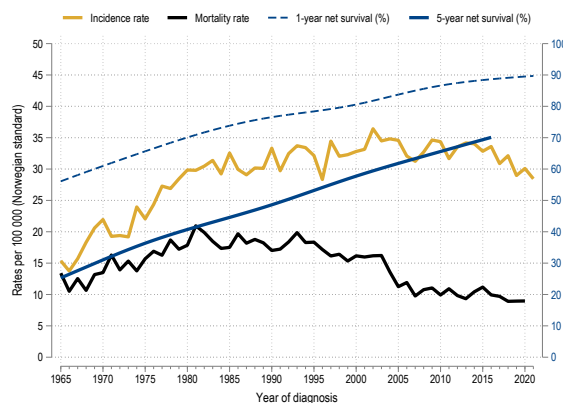
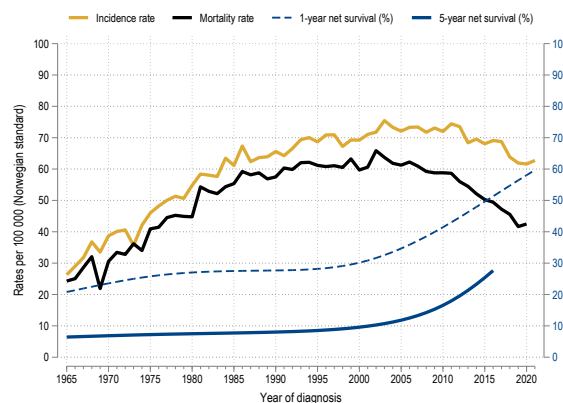
Mortality represents the rate at which individuals in the population die of cancer. It is evident that, to die of cancer, one must first develop cancer but mortality is typically estimated from death certificate data without any reference to incidence. That is, mortality for a particular cancer type is typically calculated by dividing the number of individuals registered as having died of that cancer by the number of individuals (technically, person-years) in the population. Incidence and mortality are therefore calculated in a similar fashion, events divided by person-time in the population, where the events are incident cases of cancer and deaths due to cancer for incidence and mortality respectively. When studying time trends in incidence and mortality it is important to recognise that, for a given year, incidence represents the incidence rate for patients diagnosed that year whereas mortality represents the mortality rate of individuals who are diagnosed over a range of years. The practical calculation of incidence and mortality are more complex – estimation is typically performed within subgroups defined by age and sex and standardisation employed – but the purpose of this section is to present an overview of concepts rather than technical detail.

Survival represents the proportion of patients diagnosed with cancer who survive a specified period of time. Although survival and mortality are related – since more patients surviving implies fewer individuals in the population are dying – the two measures are very different due to the different denominators and their relation is more complex. The denominators for incidence and mortality

are the entire population, whereas the denominator for survival is only patients with a cancer diagnosis. Mortality is affected by both factors that impact incidence and factors that impact survival. If, for example, incidence is decreasing over time while survival remains constant, mortality will decrease over time. The same reduction in mortality over time might also be observed if incidence were constant but survival were improving.

For illustration, incidence, mortality, and 5-year survival for males for two selected sites are shown in figures 2 (lung cancer) and 1 (rectal cancer). We see in figure 2 that lung cancer mortality among Norwegian males increased steadily from 1965 until around 2005. Survival remained relatively constant during this period; the increasing mortality was driven almost exclusively by an increasing incidence which, in turn, was driven by trends in smoking prevalence. At around 2005 we see a turning point after which incidence starts to decline, driven by the success of smoking cessation programs, so mortality also starts to decline. At this same point, we see improvements in survival which lead to further reductions in mortality. That is, up until 2005 the trends in mortality mirror the trends in incidence, but the improving survival seen after 2005 lead to mortality declining at a faster rate than incidence. We see in figure 1 that the incidence of rectal cancer among Norwegian males has increased from 1965 to 2020, although incidence has been close to constant during the last decade. Mortality rates increased during the first two decades, but continual improvements in survival, resulting from improvements in diagnosis and treatment, combined with stabilising incidence lead to a reduction in mortality rates from the mid 1990s.

We hope these examples illustrate our point that evaluating progress against cancer requires the simultaneous interpretation of trends in incidence, mortality, and survival. Patient survival provides a measure of the effectiveness of the health care system in diagnosing and treating cancer that can not be measured with incidence and mortality. Although survival is driven primarily by trends in diagnosis and treatment it is important to recognise that it measures more than just those aspects of care. Patient survival provides a measure of the effectiveness of the entire health care system in diagnosing and treating cancer including, for example, programs promoting public awareness of cancer.

Figure 1: Rectum cancer: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 2:** Lung cancer: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males

Measures of patient survival

Each of the three main population-based measures used in cancer control – incidence, mortality, survival – can be expressed as either the rate at which the respective event occurs (also called the intensity or hazard) or the probability at which it occurs. Rates and probabilities are mathematically related [4, 5], and we may present either (or both). It is, however, more common to present incidence and mortality as rates (i.e., using person-time as the denominator) and survival as a probability/proportion (using number of individuals as the denominator). We note that ‘mortality’ is the cancer mortality rate among the entire population, whereas ‘survival’ can also be thought of as (a transformation of) the cancer mortality rate among only those individuals with a cancer diagnosis. Although incidence is commonly reported as a rate, it is sometimes also reported as a proportion/probability. For example, we may see reports of the ‘lifetime risk of being diagnosed with breast cancer’ (where the denominator is the number of individuals alive at a certain age or time)—the quantity epidemiologists call the cumulative incidence or incidence proportion and where ‘lifetime’ may be defined as, for example, ‘up to age 75’.

It is important to recognise the distinction between rates and proportions. In epidemiology, ‘risk’ is defined as ‘the probability of an event during a specified period of time’ [4]. This is a probability, taking values between 0 and 1, or can be expressed as a percentage between 0 and 100. Rates, on the other hand, are measures of the change in one quantity per unit of another quantity; rates are calculated as the number of events divided by person-time and have no upper bound [5].

Competing risks – crude and net survival

When presenting the trends in figures 1 (rectal cancer) and 2 (lung cancer) we glossed over the precise measure used for patient survival, namely 5-year net survival. The technical definition of five-year net survival is the probability of surviving 5-years or more without dying of the specific cancer of interest in the hypothetical scenario where the cancer of interest is the only possible cause of death.

A competing risk is an event that either precludes the observation of the event of interest or modifies the chance that the event of interest occurs. If, for example, we are interested in estimating the proportion of women who will be diagnosed with breast cancer before age 75 then death is a competing risk. In a competing risk scenario, we can estimate two different types of probabilities: the real-world probability (called the crude probability) and the hypothetical world probability (called the net probability). We can choose to estimate either the real-world proportion of women who will be diagnosed with breast cancer before age 75 in the presence of competing risks of death (where death due to other causes precludes a diagnosis of breast cancer), or we can estimate the hypothetical proportion of women who will be diagnosed with breast cancer in the scenario where women cannot die of other causes before age 75 (i.e., under the assumption that competing risks are eliminated). The real-world estimate is more relevant for planning health services and cancer control activities, but the hypothetical estimate may be more relevant for comparing different populations, or temporal trends, to facilitate comparisons that are independent of mortality that is potentially different between groups.

If we are interested in the scientific, or etiological, question of ‘are women more likely to be diagnosed with breast cancer now compared to 50 years ago’ because

of, for example, changes in lifestyle then we would use a hypothetical world (net) measure. Women live longer now, compared to 50 years ago, so if incidence remained constant we would expect more women to be diagnosed with breast cancer. If our interest is in assessing the impact of changes in lifestyle on risk of breast cancer then we would estimate the net probability of being diagnosed with breast cancer up to age 75 (or some other selected age) in the hypothetical scenario where one cannot die. The actual research question is more complex due to the impact of screening, but we hope it illustrates the type of scenario where a ‘hypothetical world’ measure is warranted. If we were, on the other hand, interested in planning health services then we would want a real-world measure, the crude probability of being diagnosed with breast cancer. Competing risks must also be considered when estimating cancer patient survival. Patients can potentially die due to the cancer of interest or due to other, non-related causes. We can choose to estimate any, or all, of the following three measures of survival:

All-cause survival: the probability of surviving beyond a given time (*e.g.*, 5 years) without dying of any specific cause.

Net survival: the probability of surviving beyond a given time (*e.g.*, 5 years) without dying of the specific cancer of interest in the hypothetical scenario where the cancer of interest is the only possible cause of death because competing risks are assumed to be eliminated.

Crude survival: the probability of surviving beyond a given time (*e.g.*, 5 years) without dying of the specific cancer of interest in the real-world scenario where it is possible to die from other causes of death. That is, cause-specific survival in the presence of competing risks. In practice, we usually estimate the complement of crude survival – the crude probability of death – as described in the next section.

Hence, net survival is a hypothetical world probability and crude survival is a real-world probability. The term ‘crude’ is sometimes used to mean ‘unadjusted’; this is not what we mean here by crude survival. The terms crude and net come from the theory of competing risks [6]; it is unfortunate that crude is used in another context but net survival and crude survival, as defined above, are standard terms when studying the survival of cancer patients.

When studying the survival of cancer patients, we are usually interested in the probability of surviving without dying of cancer so our choice is between net and crude survival. It is important to emphasise that we may choose either or both measures; having competing risks does not mean one must do a ‘competing risks analysis’ (whatever

that means). The two measures – crude and net survival – measure different concepts and are useful for different research questions.

Net survival is the most commonly reported measure of population-based cancer patient survival; it provides an estimate of cancer patient survival that is independent of non-cancer mortality and therefore facilitates the comparison of patient survival over time without confounding by changes in non-cancer mortality. The hypothetical framework is not, however, optimal for healthcare professionals and patients who live in the real world. For this reason we present estimates of both net and crude survival in this report. Following is an illustration of the two measures, and how they are interpreted, for men with prostate cancer in Norway.

In summary, net measures are used when we wish to estimate the probability of a specific event in the hypothetical scenario where competing risks are eliminated. Net measures are appropriate for studying disease etiology, temporal trends or other comparisons (*e.g.*, by hospitals, regions, countries etc.) where mortality from other causes may differ across time or groups. Crude measures are used when we wish to quantify the probability of a specific event in the real world in the presence of competing risks. Crude measures are appropriate for risk communication between patients and clinicians, where the goal is to quantify the real-world probability of experiencing the event of interest in the presence of competing risks. Crude measures are optimal for resource allocation, that require estimates of disease-specific survival in a well-defined cohort that takes into account that not all patients will live long enough to experience the event of primary interest.

Illustration of crude and net probabilities of death for men diagnosed with prostate cancer in Norway

Figure 3–A illustrates the conceptual framework used when we estimate net probabilities. At diagnosis (time zero) all patients are alive and we estimate the proportion who, over time, die due to the cancer of interest. Deaths due to other causes are assumed to be eliminated so patients can be in only one of two states; alive or dead due to the cancer of interest. The left-hand panel in (Figure 4) shows an example of net survival estimated for Norwegian men diagnosed with prostate cancer at age 75 years or older. We estimate that, after 10 years follow-up, 30% of these men will have died of prostate cancer in a scenario where prostate cancer is the only possible cause of death.

Figure 3–B illustrates the conceptual framework used when we estimate crude probabilities. All patients are alive at diagnosis and we estimate the proportion of pa-

tients, over time, who die of either prostate cancer or other causes. The right-hand panel in figure 4 shows an example of crude survival estimated for Norwegian men diagnosed with prostate cancer at age 75 years or older. We previously (in the left-hand figure) estimated that 30 % of men would have died of prostate cancer within 10 years if competing risks were eliminated. We see that, in the real world, only 20 % of these men are estimated to die of prostate cancer within 10 years of diagnosis. The crude probability of death is lower because death due to other causes precludes many men from subsequently dying of prostate cancer.

Rather than presenting crude survival (as defined in the previous section), it is more common to present the crude probability of death due to cancer (1 minus crude survival) due to the awkward interpretation of crude survival. Figure 5 shows such graphs corresponding to those in 4. Crude probabilities of death are preferred because ‘dying of cancer’ is relatively well defined, whereas

‘not dying of cancer’ encompasses both being alive and dying of other causes. The crude probability of death due to cancer is also known to epidemiologists as the cumulative incidence of death due to cancer, but the terms crude and net are well established in the cancer patient survival literature so are used in this report.

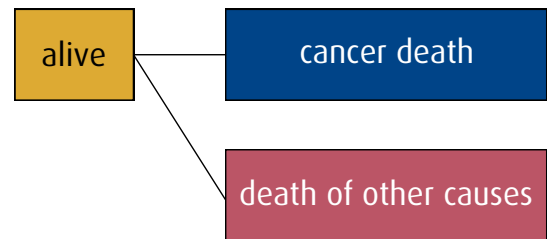
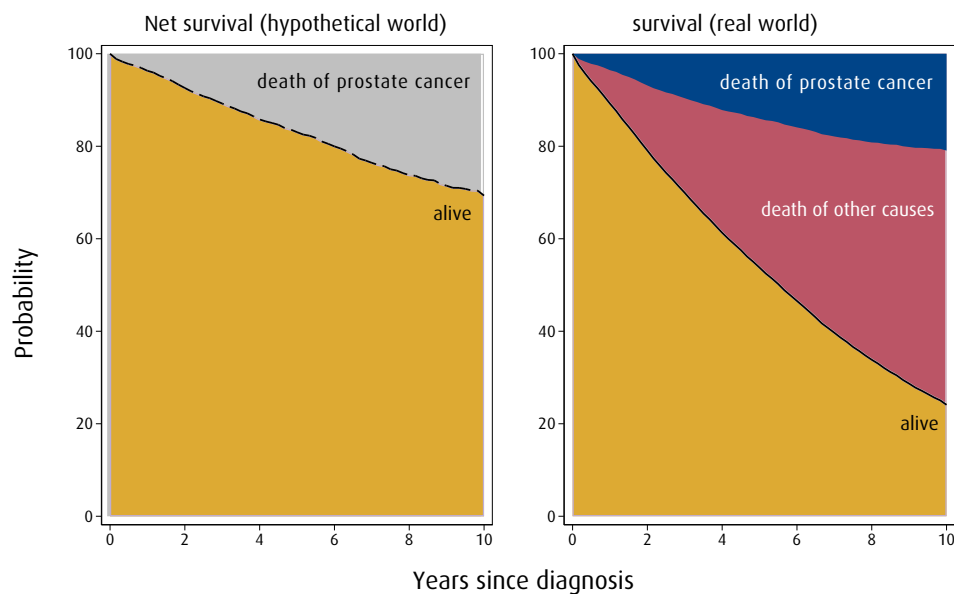
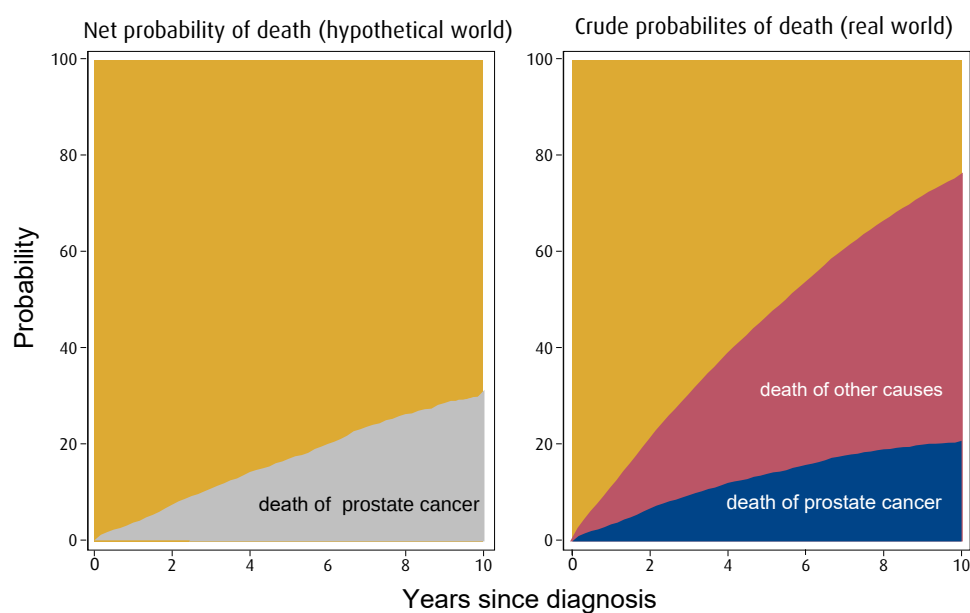
The crude probability of cancer death is the probability of dying of the cancer of interest before a specified time where it is possible to die from competing causes of death. The crude probability of death is perhaps more relevant in a clinical setting but is affected by both cancer and non-cancer mortality rates and therefore less relevant for comparisons between different groups or populations. Even if two groups of cancer patients have a similar cancer-specific mortality, the group with a higher non-cancer mortality will have a lower crude probability of death due to cancer because death due to other causes will ‘prevent’ them dying of cancer.

Figure 3: From one state (alive) to either one single absorbing event (death), or to multiple competing events (competing risk)

Figure 3-A: Only one possible event (cancer death)



Figure 3-B: Several competing events (causes of death)

**Figure 4:** Net survival (hypothetical world), and real world all-cause survival (yellow area) and crude survival (red and yellow area).**Figure 5:** Net probability of death (hypothetical world), and crude probabilities of death (real world) with competing causes of death.

Illustrations above are based on prostate cancer patients 75 year or older at diagnosis. For young patients, or cancer disease with very high mortality the difference between net and crude survival will be small due to little competing risk of dying from other causes.

Reference-adjusted measures

For all measures where mortality from causes other than cancer plays a role, we need to consider how to handle differences in other cause mortality when comparing groups of cancer patients. As an example, if we were interested in comparing all-cause survival between patients diagnosed with colon cancer in 1960 and 2020, we must take into account that mortality from other causes has changed markedly over the period. Hence, only comparing all-cause survival as it is, will reflect changes both in colon cancer mortality and other cause mortality. If we were interested in measuring differences in all-cause survival that are caused by differences in colon cancer mortality rates we need to fix the level of other cause mortality so that it is the same in both groups. We call this reference-adjustment since we fix the other cause mortality to be equal to a chosen reference level [7]. In theory one can choose any reference, but the most natural for our example would be to use the other cause mortality in 1960 or in 2020, as this ensures that the overall survival in one of the groups can be interpreted as the actual all-cause survival experienced by that group.

Conditional measures

For many cancer sites, the future survival depends on how long you have lived since the date of diagnosis. Often, mortality is high during the first weeks/months after diagnosis, and declines thereafter. This is particularly true for patients diagnosed with more advanced stages. Thus, providing updated estimates for patients surviving a given time after diagnosis is important. This is called conditional measures, since we are conditioning on the time survived, *e.g.*, the number of years survived, since diagnosis.

Expectation of life time and proportion of expected life time lost

Crude probabilities of death, or survival, provide a measure of cancer patient survival within a fixed time period (*e.g.*, 5 years) after diagnosis or, with conditional estimates, for an additional fixed period given one has already survived an initial period following diagnosis. Expectation of life, and related measures such as the proportion of expected life time lost, provide an alternative approach to presenting estimates of cancer patient survival that have the advantage of being interpretable across the entire remaining life span as well as being interpretable in the real world. In studies of cancer patient survival, life expectancy is typically estimated from the date of cancer diagnosis until death (irrespective of cause of death) and gives a prediction of the average number of life years that remain for patients after they have been diagnosed

with cancer. Contrasting the remaining life expectancy amongst cancer patients to that in the general population gives an estimate of the loss in life expectancy due to cancer and proportion of expected life time lost. These are interpreted as the number of life years, or proportion of expected life years, a cancer patient is expected to lose, on average, due to the cancer diagnosis.

The advantage of these measures, compared to probabilities, is that they are interpretable across the entire life span rather than within a specific time period. This advantage is also the greatest challenge; we cannot follow recently diagnosed patients across the entire life span so these estimates are based on statistical extrapolation and prediction. It has been shown, however, that survival of cancer patients can be extrapolated with reasonable precision by partitioning the all-cause survival into two components, the expected survival and the net survival, and extrapolating these functions independently [8, 9].

Frameworks for estimation: cause-specific and relative survival

So far we have discussed the conceptual measures of net and crude survival, but not how they are estimated. Estimation can be performed in one of two frameworks, and within each framework there are a number of different estimators (the mathematical rules for calculating the estimates). The two frameworks, that may be used for estimating both net and crude survival, are the cause-specific framework and the relative survival framework. In the cause-specific framework, each death must be classified as either (a) death due to cancer, or (b) something other than cancer. This classification is typically made based on routinely recorded information in cause of death registers or medical records. In the statistical analysis, cancer deaths are denoted as events and deaths due to any other causes are treated as censored observations and standard methods (*e.g.*, Kaplan–Meier) can be applied.

The relative survival framework provides an alternative to the cause-specific survival framework that does not require cause of death information. The relative survival framework is most commonly used in population-based studies of patient survival, including in this report. Several estimation methods for net survival in a relative survival framework exist, a method that was commonly used in the past was to calculate the ratio between the observed all-cause survival amongst the cancer patients, and the expected survival in a comparable group in the general population (usually obtained from population life tables). This is the estimator known as relative survival. If, for example, the one-year relative survival ratio is 1.0, the survival proportion in the group of cancer patients coincides with that in the general population,

suggesting that there is no excess mortality associated with the cancer during the first year of follow-up. A relative survival ratio lower than 1.0 means that cancer patients have inferior survival compared to the general population, and we typically assume that the survival deficit is due to excess mortality from the cancer. As a consequence, the excess mortality thus captures both the direct and indirect mortality associated with the cancer. The mortality that is directly related to the cancer includes all causes of death that would typically be classified as death due to cancer on the death certificate. Indirect mortality due to cancer encompasses death due to treatment toxicity, suicides and late effects such as cardiovascular disease, second malignancies or infections. These are events that are unlikely to be classified as cancer deaths on the death certificate and would not therefore be captured in a cause-specific analysis. As cause of death information is not always readily available or reliable, relative survival has become the preferred approach for obtaining estimates of cancer patient survival in population-based investigations, as well as by cancer registries worldwide.

The terminology (measures, frameworks, estimators) can be confusing, but it is important to understand the distinctions. Relative survival (observed survival divided by expected survival) is an estimator within the relative survival framework (the framework where population life tables are used to capture non-cancer mortality rather than death certificates). That is, relative survival is the name of both a framework and a specific estimator within that framework. In this report we use a relative survival framework, but we do not use relative survival as the estimator. Relative survival is a non-parametric estimator and was used in early Cancer in Norway publications. In 2010 a new non-parametric estimator, with better statistical properties, was presented [10] and this so-called Pohar Perme estimator is now used in the Cancer in Norway publications. The Pohar Perme estimator provides estimates of net survival using a relative survival framework (i.e., it makes use of population life tables) but it is not relative survival (the estimator).

Estimation using parametric models

The estimates of patient survival presented in this report are made within a relative survival framework, but are estimated using a flexible parametric statistical model [11] rather than non-parametrically. Statistical models are a powerful tool to estimate a range of useful measures – including life expectancy, loss in life expectancy, and reference adjusted measures – but application of statistical models requires additional assumptions (i.e., the chosen models provide a good fit to the data). Several authors have shown that flexible parametric models are reas-

onably robust to the choice of modelling assumptions with Syriopoulou and colleagues [12] providing one of the most extensive studies. The paper by Syriopoulou and colleagues [12] also provides an introduction to the use of flexible parametric models for estimating net survival. As is recommended with any statistical analysis, we conducted extensive sensitivity analyses of modelling assumptions that included comparison of the model-based estimates to non-parametric estimates.

Assumptions

Statistical analysis typically involves making assumptions, and an appropriate statistical analysis includes a statement on the assumptions that have been made and an evaluation of their appropriateness. The assumptions made in the analyses presented in this report can be classified into two areas; assumptions inherent in the estimation framework and assumptions associated with the modelling approach.

Each of the two frameworks for estimating net survival requires specific assumptions. The cause-specific framework requires accurate classification of cause of death, whereas the relative survival framework requires appropriate estimation of the expected survival, stratified by age, sex, and calendar year, in the absence of cancer. We use national life tables to estimate expected survival. This requires two assumptions: (a) that mortality due to the specific cancer constitutes a negligible proportion of total mortality since we are using the entire population to represent a population without the specific cancer; and (b) that the cancer patients would experience the same mortality as the general population if they were not diagnosed with cancer. In most scenarios, the use of national life tables results in a negligible bias, although it can result in a bias in net survival for common cancers among the elderly, and an even larger bias in net survival for all cancers combined because they account for a substantial proportion of all deaths in the general population.

For smoking-related cancers, using national life tables may not be appropriate. If, for example, individuals with lung cancer, predominantly caused by smoking, had not developed this malignancy, we would expect them to have higher mortality than the general population because smoking increases the risk of numerous lethal diseases, including several other sites of cancer as well as cardiovascular and pulmonary diseases. One study showed that, despite the concerns with using relative survival for lung cancer, the resulting bias was negligible due to the high fatality of lung cancer [13] and another found no evidence of a bias due to ignoring the effect of smoking for bladder cancer [14].

Although smoking serves as an obvious example of how the assumptions are violated, using the relative survival framework is most problematic for early-stage screen-detected cancers. For example, white males aged 65 years and older, diagnosed with localized/regional prostate cancer in the United States, had relative survival of 104 % and cause-specific survival of 95 % [15]. The corresponding figures for black males were 101 % and 93 %. The men with prostate cancer experienced better survival

than the age–sex–year–race-matched general population because they were presumably more health conscious (and healthier) than the corresponding general population. Cause-specific survival, on the other hand, is likely a slight underestimate of net survival because there is evidence from many populations that cancer is over-reported as a cause of death among elderly individuals with a cancer diagnosis [16].

Introduction to figures

Short introduction

In this report, we present sets of figures with different survival measures for 23 cancer sites. Below you will find a short description of the methods, highlighting differences compared with the standard Cancer in Norway report, followed by short descriptions of the graphs.

For each cancer site, you will also find a one-page description of the results. For most cancer sites differences in survival may be related to differences in factors like treatment, diagnostics and genetics. We do not go into details on such explanations, as this is too comprehensive for this report.

Statistical analyses

The relative survival framework is frequently used for analyses of cancer registry data. Rather than using causes of death obtained from the death certificates, the relative survival framework uses expected mortality rates to estimate *excess mortality*, meaning that we get the mortality in excess of that expected in a similar group of people in the general population without the cancer disease in question. Expected mortality rates come from life tables, which provide the probability that a person of a given sex and age in a given year survives the coming year. Life tables may be stratified by additional variables, such as socioeconomic status, smoking or county of residence. In this report, we use national life tables stratified by sex, age (1-year intervals) and calendar year (1-year intervals).

A relative survival function may be estimated with models, or by non-parametric methods that make no assumptions about the characteristics of the sample. In this report we use flexible parametric survival models which use splines to model the baseline cumulative excess mortality [11]. Such models are useful for modeling interaction effects between covariates and follow-up time, also referred to as time-dependent effects. We used two sets of models with different aims. One aim was to provide up-to-date estimates that are relevant for recently diagnosed patients, and another aim was to estimate trends over time (1965–2021).

For the first aim, we used models that included age at diagnosis (using restricted cubic splines), sex and stage at diagnosis as covariates. If data allowed, we also included

interaction effects between age and stage as well as time-dependent effects of sex, age and stage. We automated model selection by specifying a list of 22 different models, starting with the most complicated model, as just described, and gradually simplifying model specification by removing interaction effects and/or reducing degrees of freedom for spline basis functions for age, the baseline hazard and time-dependent effects. The chosen model was the first model that converged. All models were estimated separately for each cancer site, using a five-year period window (2017–2021) with maximum 15 years follow-up after diagnosis. Using this so-called period approach [17] imply that all patients contribute only their survival experience during the chosen window. The method has been shown to be useful for providing up-to-date survival estimates [18]. See Table (1) for an overview of the model specifications for each cancer site.

For the second aim, we used models that included sex, age at diagnosis (using restricted cubic splines) and year of diagnosis (using restricted cubic splines) as covariates. If data allowed, we also included interaction effects between age and calendar year as well as time-dependent effects of all covariates. Stage was not included in these models, as changes in stage distribution over time may occur as a natural consequence of development in cancer diagnostics. One exception was for cancer of the central nervous system (CNS), where the distribution of stage has changed due to less complete reporting of benign tumours to the registry. Thus, stage (malignant/non-malignant) was included as a covariate for CNS in the trend analyses. We automated model selection by specifying a list of 9 different models, starting with the most complicated model, as just described, and gradually simplifying model specification by removing interaction effects and/or reducing degrees of freedom for spline basis functions for age, year, baseline hazard and time-dependent effects. The chosen model was the first model that converged. Models were estimated separately for each cancer site. See Table (2) for an overview of the model specifications for each cancer site.

When we estimated time trends, we age-standardised estimates for each year to the age-distribution of patients diagnosed in 2017–2021. This was done to eliminate any effects of change in age distribution over time. For measures that depend on other cause mortality we also have to take into account that the probability of dying from other causes may change over time, and thus affect

the probability of dying from cancer. In this report, we accounted for this competing risk situation by forcing mortality from other causes to be constant over time and equal to the mortality of other causes during the most recent year (2021). Measures that are estimated by this method are called *reference-adjusted measures*. We present trends in reference-adjusted all-cause survival, crude probabilities of death from cancer, as well as absolute numbers and proportions of life-years lost.

Net survival is the survival in a hypothetical world where it is impossible to die from other causes. Net survival is a useful measure to make fair comparisons of cancer survival across time, between countries, or between geographical regions with varying mortality from other causes. With net survival, only the excess mortality related to the cancer diagnosis is estimated, and differences in mortality from other causes are disregarded. Net survival is, however, less useful for communicating prognosis, as death from other causes may play an important role in the real world, especially for elderly patients. Alternative measures such as all-cause survival, crude probabilities of death from cancer and death from other causes, expected remaining life-years, or life-years lost may be better alternatives. After fitting relative survival models, all these quantities can be predicted from the models. As prognosis typically differs by age and stage, and potentially also by sex, we present some results stratified by these factors. Results for all ages combined are age-standardised to the age distribution of patients diagnosed during 2017–2021. Furthermore, prognosis might depend on time since diagnosis. We therefore also include results stratified by stage and years since diagnosis.

All analyses were conducted with the statistical software Stata 17 [19]. Excess mortality regression models were estimated using `stpm2` [20], and estimates of various measures were predicted from the models using `standsurv` [21].

Special Issue *versus* Cancer in Norway 2021 (CIN)

Estimates of net survival are non-parametric in CIN, but based on fitting relative survival models in this report. The differences between these approaches are particularly evident when we compare trends in net survival. The model-based trends are smooth, whereas the non-parametric trends are jagged.

When we use life tables to obtain expected mortality rates, a key assumption is that the life table is correct in the sense that the expected mortality rates reflect the mortality that a cohort of cancer patients would have had if they were cancer free. For most cancer sites, we assume that this assumption is fulfilled when we take

into account age, sex and calendar year. However, we know that the assumption does not hold for lung cancer and prostate cancer. The risk of lung cancer is closely related to individual smoking history. Since smoking is also strongly related to mortality of other causes, the use of a standard life tables will likely underestimate the probability of dying from other causes and thus overestimate the probability of dying from lung cancer. If we had information on smoking habits for lung cancer patients, and a life table stratified by smoking habits, we could solve this problem. Since this information was not available, we calibrated the mortality rates by multiplying the survival probabilities in the standard life table with a constant factor of 0.968. This factor was chosen so that the five-year non-parametric net survival matched the five-year cause-specific survival for the most recently diagnosed lung cancer patients. Five-year net survival was estimated using the Pohar-Perme estimator [22] implemented in the user-written Stata program `stnet` [23]. In CIN, the standard life table was used when estimating net survival for lung cancer.

For prostate cancer, the challenge was related to PSA-testing. We expect that the use of PSA-testing is related to socioeconomic status, so expect more low-risk prostate cancer to be diagnosed in men with higher socioeconomic status. As higher socioeconomic status also is related to lower mortality of other causes, we expect that the use of a standard life table would lead to an overestimation of the probability of dying from other causes, and, correspondingly, an underestimation of the probability of dying from the cancer itself. If we had information on socioeconomic status of patients and in life tables, we could potentially solve the problem. As for smoking habits, this information was not available to us, so we calibrated the mortality rates by multiplying the survival probabilities in the standard life table by a constant factor of 1.0035. This factor was chosen so that the average net survival for patients with localised prostate cancer across the five first years after diagnosis was 100 %. Using the standard life table, net survival was constantly higher than 100 % during the first five years after diagnosis for this patient group. The calibrated life table was used only for localised prostate cancer. For regional and distant prostate cancer, we used the standard life table.

Cancer of the pancreas (ICD10-C25) registered in the Cancer Registry, and reported in CIN, exists with different histological subgroups, such as pancreatic ductal adenocarcinoma (PDAC) or pancreatic neuroendocrine neoplasms (PNET/NEN) originating in pancreas. The proportion of NEN has increased over time and comprised 7% of the total number of pancreatic cancers registered during 2017–2021. Patients with NEN in pancreas have a much better prognosis compared to patients

with PDAC, and we therefore have removed NENs from the survival analyses in this report. We follow the definition of pancreatic cancer used in the *clinical registry for pancreatic cancer*.

Information on stage is missing for some patients, and the proportion with unknown stage varies across cancer sites and calendar years. For this report, we completed stage information by using multiple imputation. The imputation models were estimated separately for each cancer site using multinomial logistic regressions

with age at diagnosis, sex, calendar period of diagnosis (5-year periods), death from any cause (yes/no) and the Nelson-Aalen estimate of cumulative hazard as co-variables. In CIN, estimates are presented separately for unknown stage.

In this report we use slightly different labels for cancer sites, i.e., 'Lung' rather than 'Lung, trachea' used in CIN. The inclusion criteria are, however, identical, except for pancreatic cancer as described above.

Short description of the following figures for each cancer sites

Net survival 0–10 years

Net survival is a concept which can be interpreted as the probability of surviving in the hypothetical situation where the cancer disease is the only possible cause of death. This measure is useful for comparing populations of cancer patients with different risk of dying from other causes than the cancer disease. Figure #.1.A shows net survival up to ten years after diagnosis (averaged over the patient group).

Crude probabilities 0–10 years

In real life cancer patients may die of other causes than the cancer disease. *Crude probabilities* of death refer to this competing risk situation. Figure #.1.B shows the estimated probabilities of being alive, dying from the cancer disease, and dying from other causes, up to ten years after diagnosis (averaged over the patient group). This figure describe survival in the presence of competing risks. The yellow area is the all-cause survival, while the red and yellow area together is the crude survival.

5-year crude probabilities by age and stage. (Males/Females)

Cancer survival varies with age and extent of disease. Figures #.1.C and D show the estimated probabilities of being alive, dying from the cancer disease, and dying from other causes, five years after diagnosis for each combination of age, stage and sex (averaged over the patient group).

Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis for median aged patients. (Males/Females)

Typically, the most frail patients die early and patients surviving for some time will have a better prognosis. Figures #.1.E and F show five-year probabilities of being alive, dying from the cancer disease, and dying from other causes, conditioned on being alive at 0–5 years after diagnosis. These estimates are for the median aged patient for both sexes combined. Typically, the probability of dying from the cancer will decrease, and the probability of dying from other causes will increase, with increasing time since diagnosis.

Life expectancy by age and stage. Males/Females

Figures #.2.A/B show expected remaining life-years and life-years lost due to the cancer disease by age-group and stage, for males and females.

Proportion of life-years lost. Males/Females

Figures #.2.C/D show proportion (%) of life-years lost due to the cancer disease by age-group and stage, for males and females.

Conditional proportion of life-years lost by stage and years (0–5) since diagnosis for median aged patients. Males/Females

Figures #.2.E/F show the proportion (%) of life-years lost due to the cancer disease by stage, conditioned on being alive at 0–5 years after diagnosis, for males and females.

Trends in incidence and mortality rates and 1- and 5-year net survival (%). (Males/Females)

Figures #.3-A/B depict time trends in incidence, mortality and survival for the period 1965–2021, for males and

females. The survival estimates are 1-year net survival (blue/red dashed lines) and 5-year net survival (blue/red solid lines). Both are probabilities, and the levels are shown in the right axis (0–100 %). The net survival estimates are age standardised using the age distribution of the cancer patients in 2017–2021 for each cancer site, and sex, separately. The other two measures shown are age standardised incidence (yellow solid line) and mortality (black solid line). Both incidence and mortality are expressed as rates *per* 100 000 person-years using the age distribution of the Norwegian population (both sexes combined) in 2014 as standard population. The level of the rates is shown in the left axis. The net survival estimates are model-based, hence they are smoother, in contrast to the estimates of incidence and mortality, which are not smoothed in order to illustrate some of the fluctuation in those measures, especially for cancer sites with few cases. The five year net survival estimates are not shown for the last five years to avoid presenting estimates which are based on model extrapolations, and not governed by real data, as these data are not yet available.

Trends in reference-adjusted all-cause survival

Reference adjusted all-cause survival is an estimate of the survival where one can die of the cancer disease or competing causes of death, but competing causes death are adjusted to a common standard. This measure is useful for surveillance of progress in cancer treatment, and for comparing populations with varying degree of non-cancer mortality. We forced mortality from other causes to be constant over time, and equal to mortality from other causes in the most recent year (2021). Estimates were age standardised using the age distribution of the cancer patients in 2017–2021 for each cancer site, and sex, separately.

Trends in reference-adjusted crude probability of cancer death

Crude probability of cancer death is the probability of dying from the cancer disease in the presence of com-

peting risks of death. The figures show trends in probabilities of dying from the cancer disease in the presence of competing risks of death, while adjusting the competing causes of death to a common standard, here equal to the competing cause mortality in the most recent year (2021). Estimates were age standardised using the age distribution of the cancer patients in 2017–2021 for each cancer site, and sex, separately.

Trends in reference-adjusted life-years lost

The figure show estimates of life-years lost due to cancer, fixing other cause mortality to the 2021-level.

The figure shows estimated life-years lost due to cancer, while adjusting other cause mortality to the 2021-level. Expected remaining life-years can be estimated as the area under a survival curve. For a comparable general population without cancer, expected remaining life-years can be calculated from mortality rates in population life tables. For the cancer cohort, the expected remaining life-years can be found by combining relative survival with expected survival obtained from life tables. The number of life-years lost due to cancer is the difference between the expected remaining life-years for the comparable cancer free population and the expected remaining life-years for the cancer patients. As mortality from other causes plays an important role when estimating life-years lost, we need to adjust for changes in mortality from other causes. This is done by forcing mortality from other causes to be constant over time. Estimates were age standardised using the age distribution of the cancer patients in 2017–2021 for each cancer site, and sex, separately.

Trends in reference-adjusted life-years lost (%)

The figure shows estimated relative loss in life-years due to cancer, while adjusting mortality from other causes to the 2021-level. Estimates were age standardised using the age distribution of the cancer patients in 2017–2021 for each cancer site, and sex, separately.

Mouth, pharynx

1.1 Net survival and crude probabilities

Cancers of the mouth and pharynx includes cancers of the lip (ICD10-C00), oral cavity (ICD10-C02-06), salivary glands (ICD10-C07-C08), oropharynx (ICD10-C09-10), nasopharynx (ICD10-C11) and hypopharynx (ICD10-C12-C13), with cancers of the lip, tongue and oropharynx as the largest groups.

Net survival for patients with mouth/pharynx cancer declines the first years after diagnosis with a five year net survival estimate of 72 %. After five years the net survival continues to decline without reaching a plateau, with a ten year net survival equal to 61.2 % for both sexes combined (Figure 1.1-A). Women have a slightly higher net survival compared to men.

The probability of surviving 5 years after diagnosis is 65 % (Figure 1.1-B). The probability of dying from mouth/pharynx cancer within five years is 26.9 % and the additional probability of dying from other causes is 8.1 %. In comparison to net survival, the crude probability of dying from cancer is slightly lower since patients may also die from other causes.

Crude probabilities of mouth/pharynx cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 1.1-D and 1.1-C). However, the probability of dying from mouth/pharynx cancer also, to some extent, depends on age with poorer survival in the oldest age groups. In women with localised cancer, the five year crude probability of death due to mouth/pharynx cancer is 15 % at ages 80-89, while the corresponding probability is 3.5 % at ages 0-49. Among patients with distant metastases at diagnosis, the probability of cancer death is 87.5 % in the ages 80-89 and 48.6 % at ages 0-49.

Having survived mouth/pharynx cancer for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years if diagnosed with localised or regional stage (Figures 1.1-F and 1.1-E). If diagnosed with distant stage, the future five year survival are greatly impacted by the number of years survived since diagnosis. For a median aged, female mouth/pharynx cancer patient with distant metastases at the time of diagnosis, the five year risk of dying from mouth/pharynx cancer is 87.8 %. If surviving five years from diagnosis the future five year risk of dying from mouth/pharynx cancer is reduced to 45.1 %. The

longer a patient survives the more similar future survival becomes across stages.

1.2 Life expectancy and life-years lost

The differences in prognosis across stages of mouth/pharynx cancer leads to differences in life-years lost. Patients with localised mouth/pharynx cancer lose few of their remaining life-years, whereas patients with distant mouth/pharynx cancer lose many life-years (Figures 1.2-B and 1.2-A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportions of life-years lost are similar across ages for localised and regional mouth/pharynx cancer, but increasing with age for distant mouth/pharynx cancer (Figures 1.2-D and 1.2-C). These plots also shows the large difference in prognosis across stages, with patients with distant mouth/pharynx cancer losing a much larger proportion of their remaining lifetime compared to regional and localised mouth/pharynx cancer.

The proportion of life-years lost decreases only slightly with the number of years survived for all stages (Figures 1.2-F and 1.2-E). The proportion does not approach zero for any stages, meaning that the cancer diagnosis continues to influence expected remaining lifetime despite surviving several years after diagnosis.

1.3 Time trends

Net survival of mouth/pharynx cancer has been stable over time, with a slight tendency to increase in the last two decades (Figures 1.3-B and 1.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from mouth/pharynx cancer has declined over the past two decades (Figures 1.3-C and 1.3-D). This has marginally affected life-years lost, with both the number and proportion of life-years lost slightly declining recent years (Figures 1.3-E and 1.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 9.3 years in 1965 and expected to be 7 years in 2016. Correspondingly, the proportion of life-years lost due to mouth/pharynx cancer has decreased, for women, from 43.5 % in 1965 to an expected 32.8 % in 2016, when averaging across all ages and stages at diagnosis.

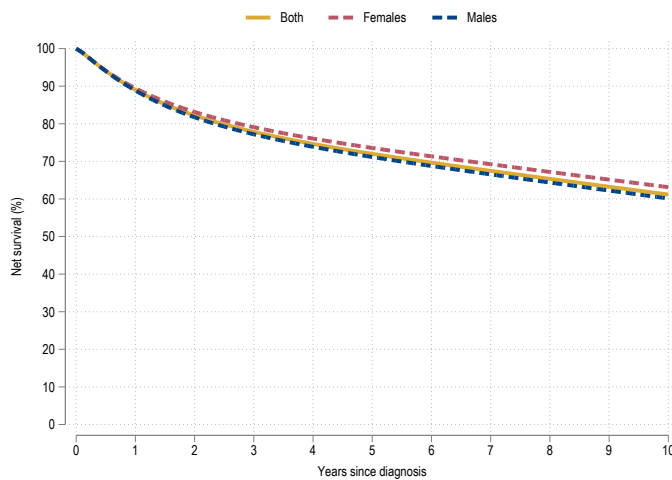
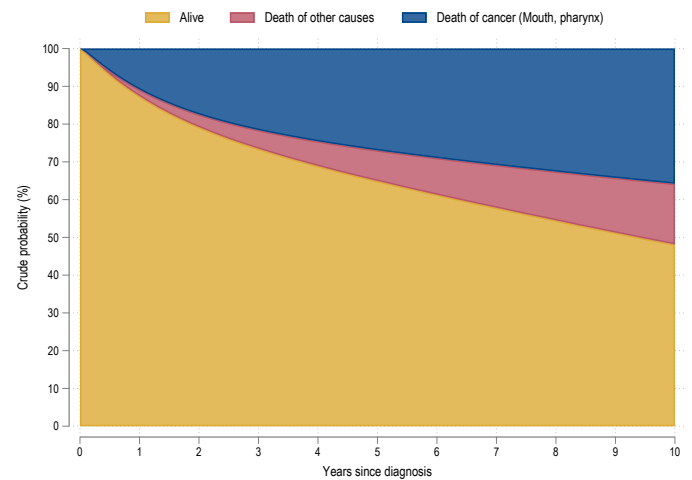
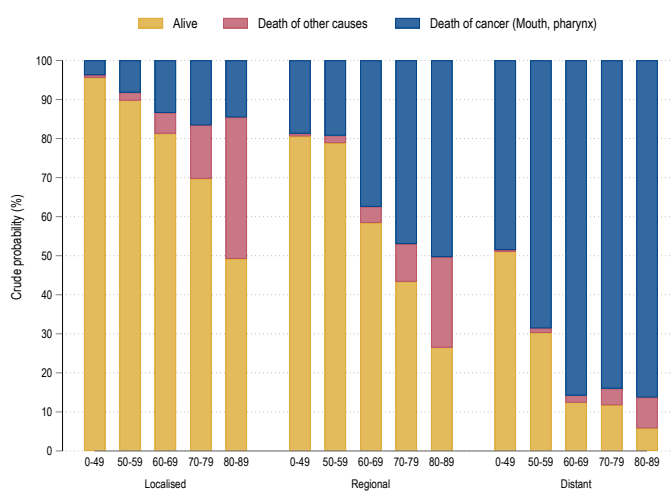
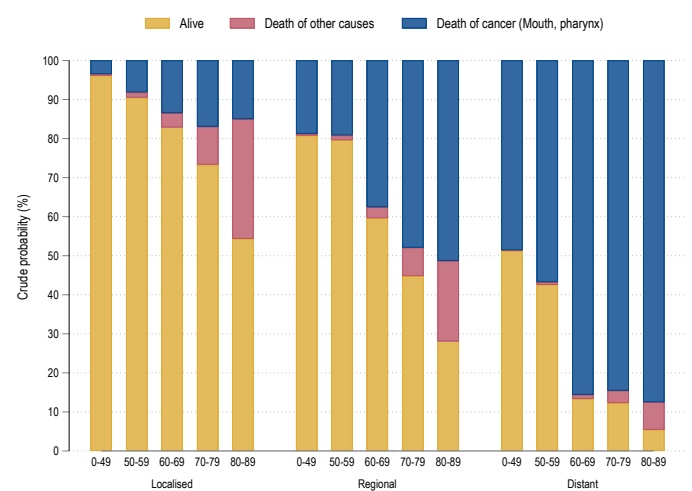
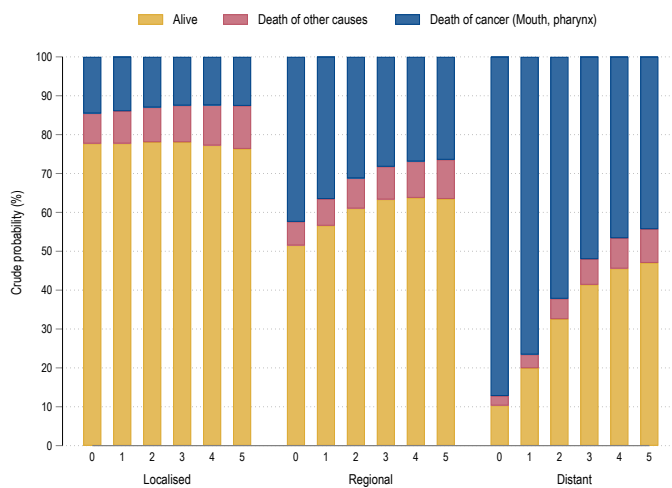
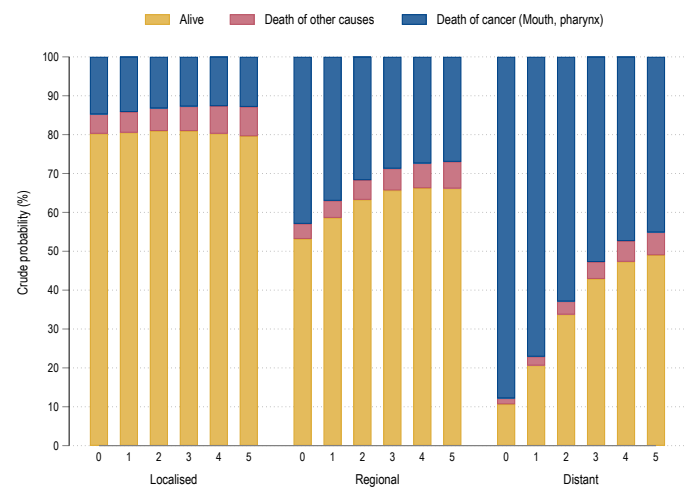
Figure 1.1: Mouth, pharynx: net and crude probabilities**Figure 1.1-A:** Net survival 0–10 years**Figure 1.1-B:** Crude probabilities 0–10 years**Figure 1.1-C:** 5-year crude probabilities by age and stage. Males**Figure 1.1-D:** 5-year crude probabilities by age and stage. Females**Figure 1.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males**Figure 1.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

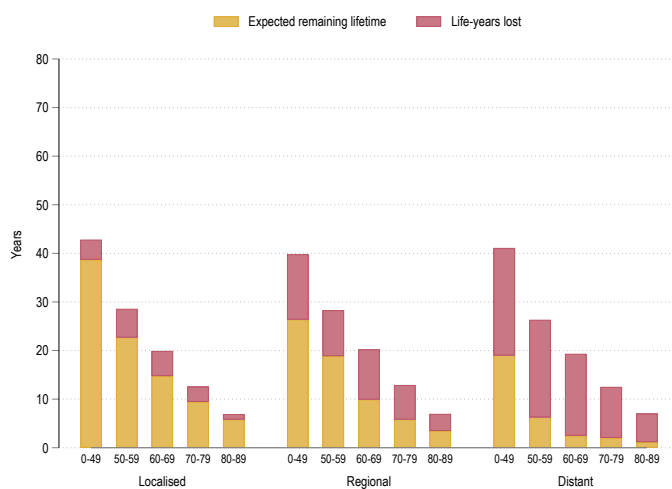
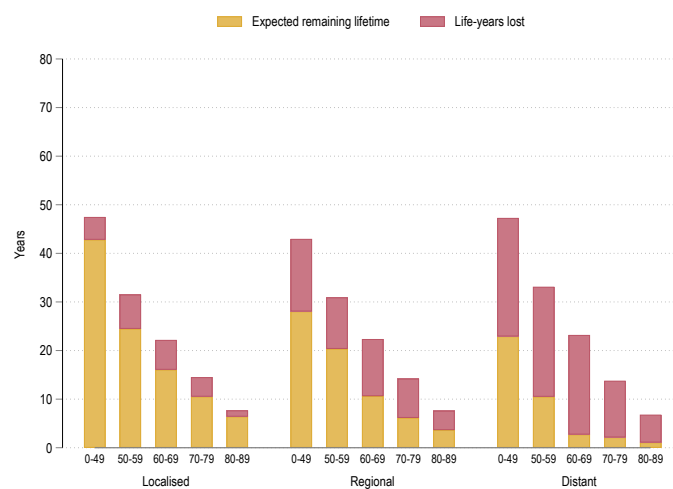
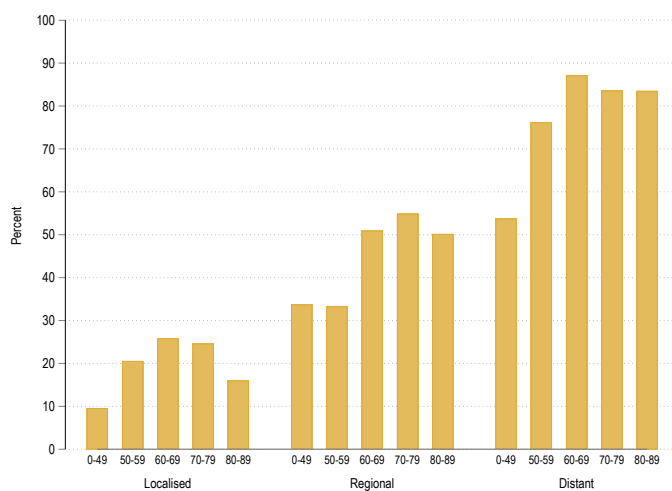
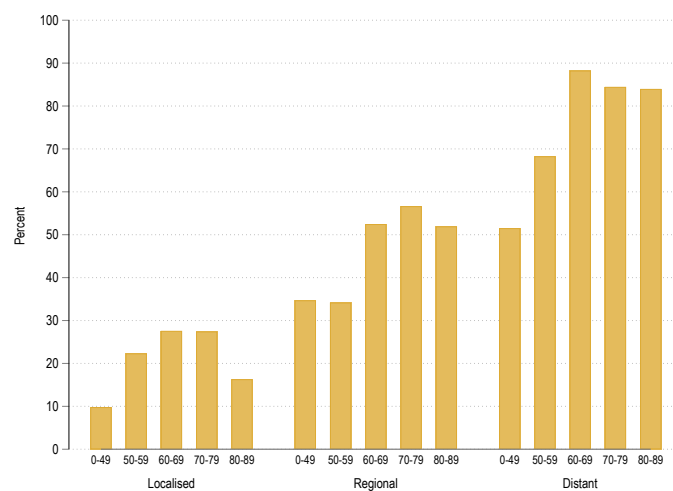
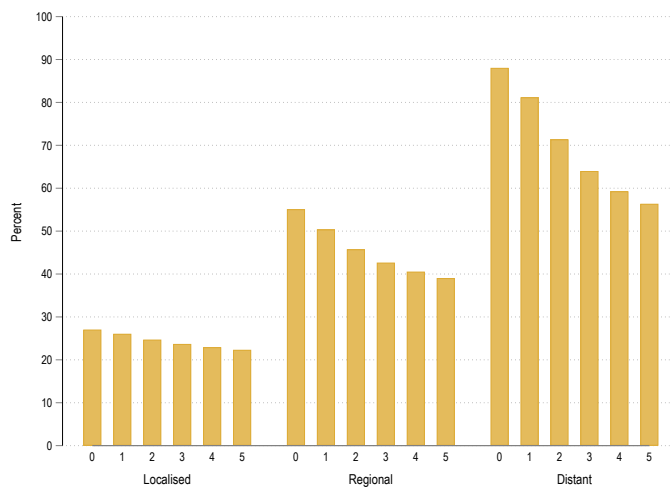
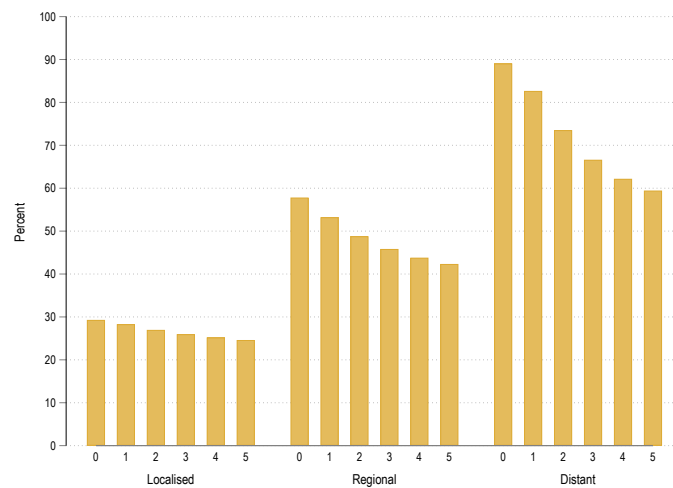
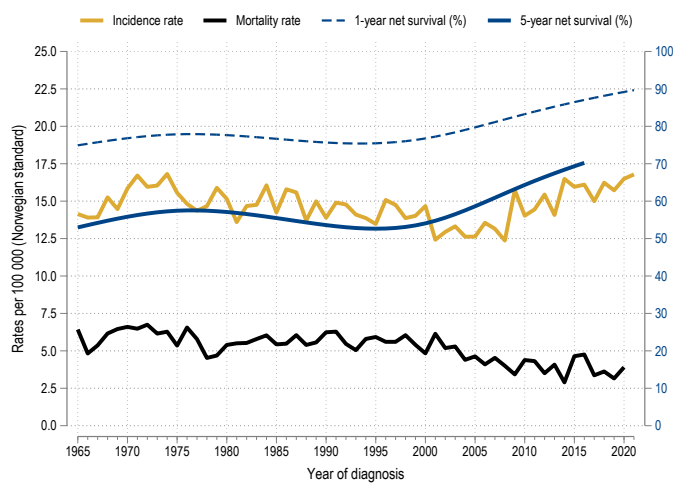
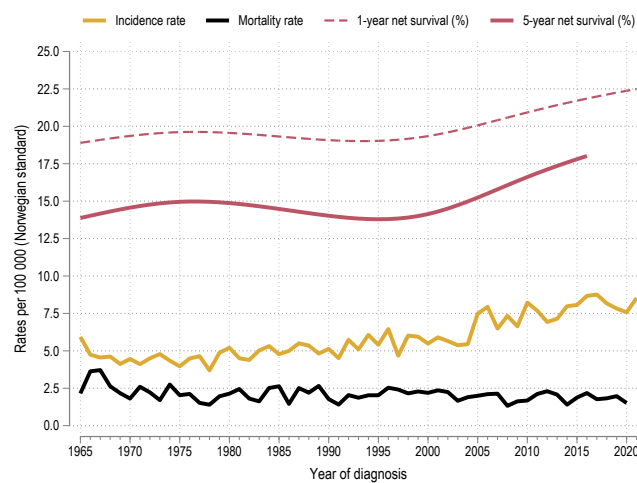
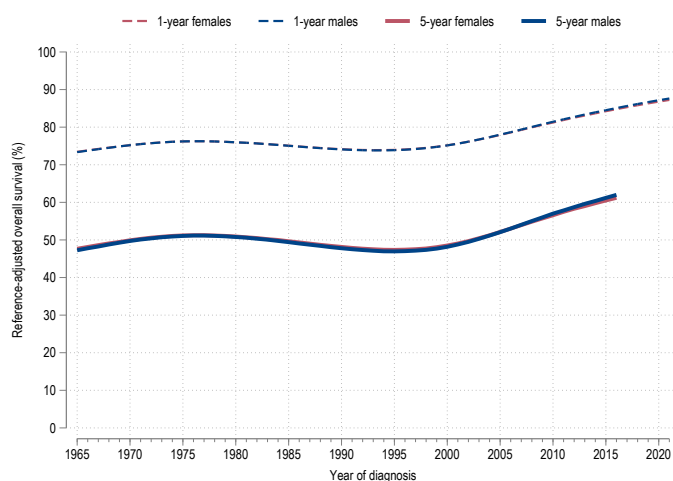
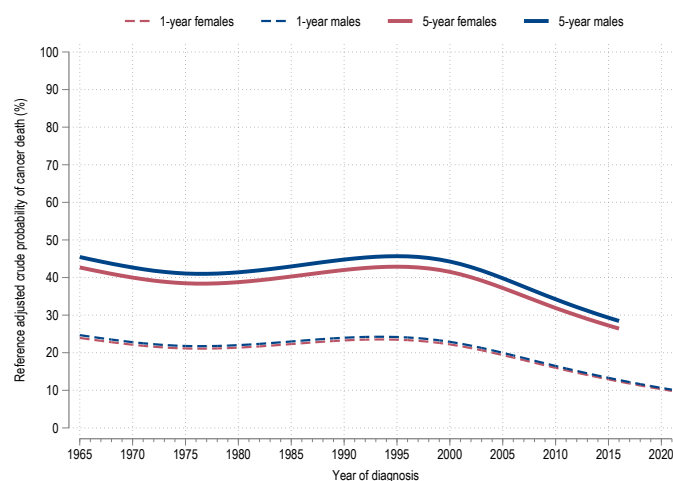
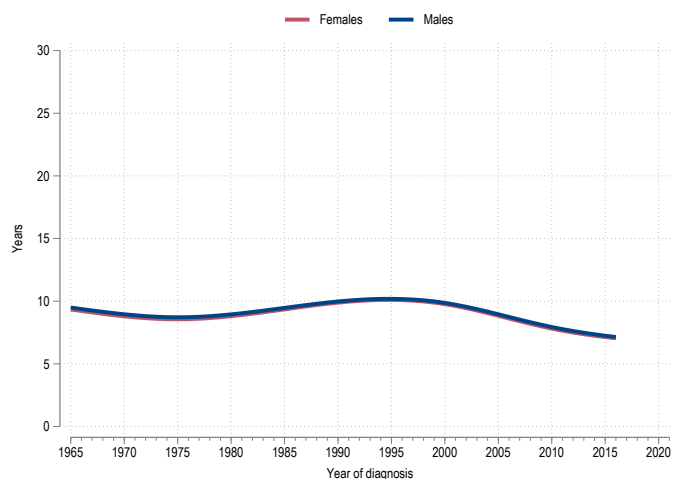
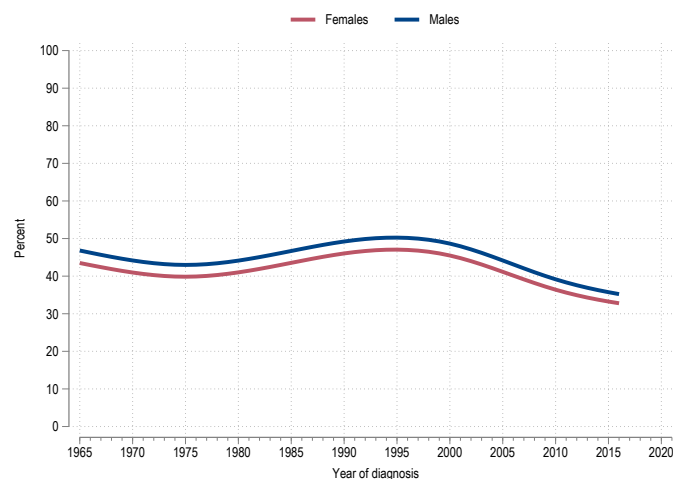
Figure 1.2: Mouth, pharynx: life expectancy and life-years lost**Figure 1.2-A:** Life expectancy by age and stage. Males**Figure 1.2-B:** Life expectancy by age and stage. Females**Figure 1.2-C:** Proportion of life-years lost. Males**Figure 1.2-D:** Proportion of life-years lost. Females**Figure 1.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males**Figure 1.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

Figure 1.3: Mouth, pharynx: trends**Figure 1.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 1.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 1.3-C:** Trends in reference adjusted all-cause survival**Figure 1.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 1.3-E:** Trends in reference adjusted life-years lost**Figure 1.3-F:** Trends in reference adjusted life-years lost (%)

Oesophagus

2.1 Net survival and crude probabilities

Net survival among oesophageal cancer patients declines sharply the first years after diagnosis, and the five year net survival estimate equals 23.3 %. After five years the net survival levels off, with a tendency of reaching a plateau, with ten year net survival equal to 18.8 % for both sexes combined (Figure 2.1-A). Women have a higher net survival compared to men.

The probability of surviving five years is 21 % (Figure 2.1-B). This is quite similar to the net survival estimate, reflecting the fact that most oesophageal cancer patients dying the first five years after diagnosis are dying from their cancer.

Crude probabilities of oesophageal cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 2.1-D and 2.1-C). The probability of dying from localised and regional oesophageal cancer also depends on age with poorer survival in the oldest patients. In women with localised cancer, the five year crude probability of death due to oesophageal cancer is 57.2 % at ages 80-89, while the corresponding probability is 27.1 % at ages 0-49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is very high, the age gradient is small.

Having survived oesophageal cancer for one, two or up to five years after diagnosis, has a considerable impact on your survival the coming five years (Figures 2.1-F and 2.1-E). This is true for all stages, and the longer time since diagnosis, the more similar future survival is across stages. When interpreting these results, one should bear in mind that very few patients with distant oesophageal cancer will survive up to five years after diagnosis.

2.2 Life expectancy and life-years lost

The high risk of oesophageal cancer death leads to a considerable loss in life-years in all age groups and for all stages, with larger losses if diagnosed with more advanced stage (Figures 2.2-B and 2.2-A). The proportion of life-years lost due to cancer increases with age for patients diagnosed with localised or regional cancer, whereas there are no such age gradient for distant oesophageal cancer (Figures 2.2-D and 2.2-C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 2.2-F and 2.2-E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a non-negligible risk of dying from oesophageal cancer.

2.3 Time trends

Net survival of oesophageal cancer was stable at a low level for many years, but increased in the last two decades (Figures 2.3-B and 2.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from esophageal cancer has declined over the past two decades (Figures 2.3-C and 2.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining the most recent years (Figures 2.3-E and 2.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 15.8 years in 1965 and expected to be 12.4 years in 2016. Correspondingly, the proportion of life-years lost due to oesophageal cancer has decreased from 92.2 % in 1965 to an expected 72.2 % in 2016, when averaging across all ages and stage at diagnosis.

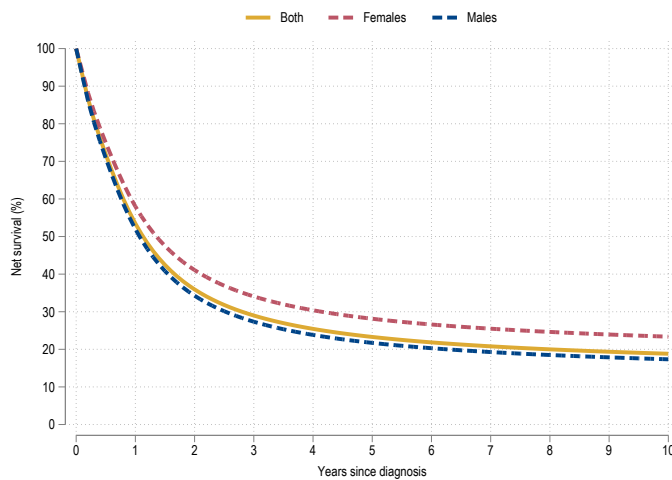
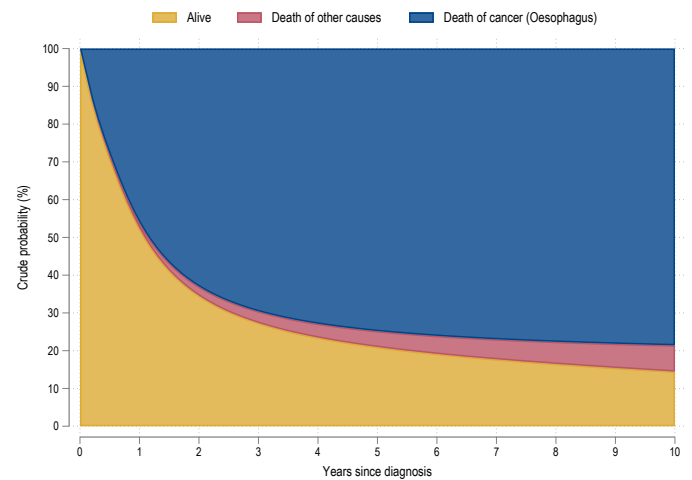
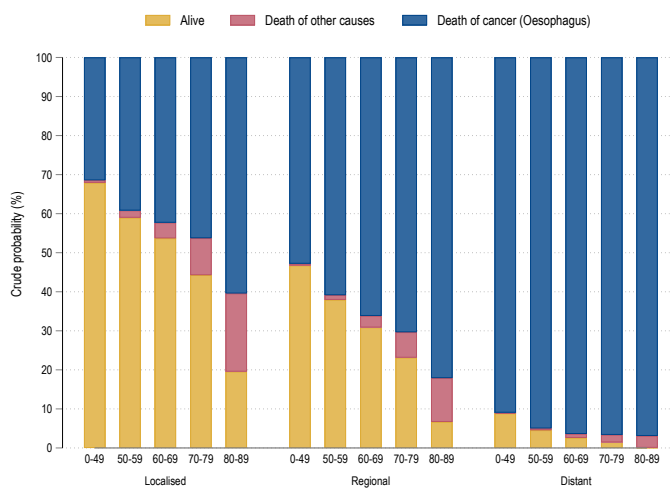
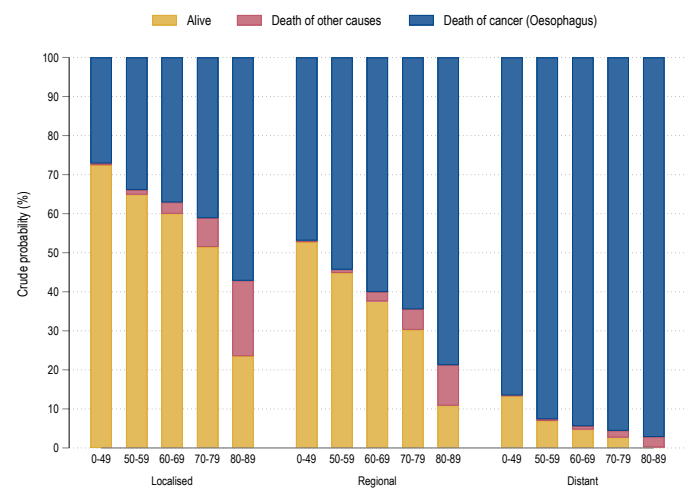
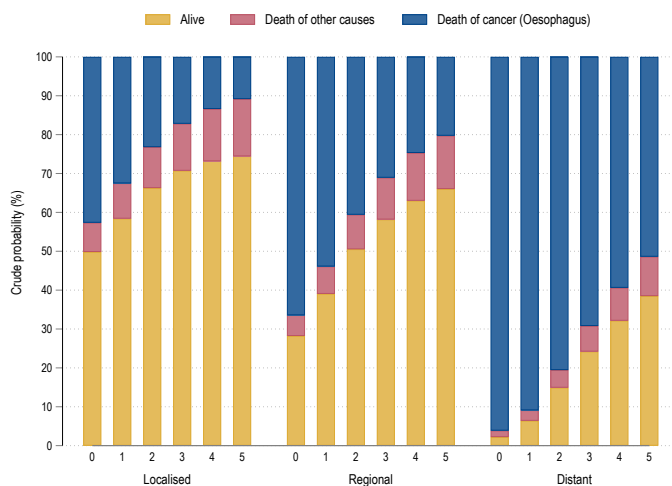
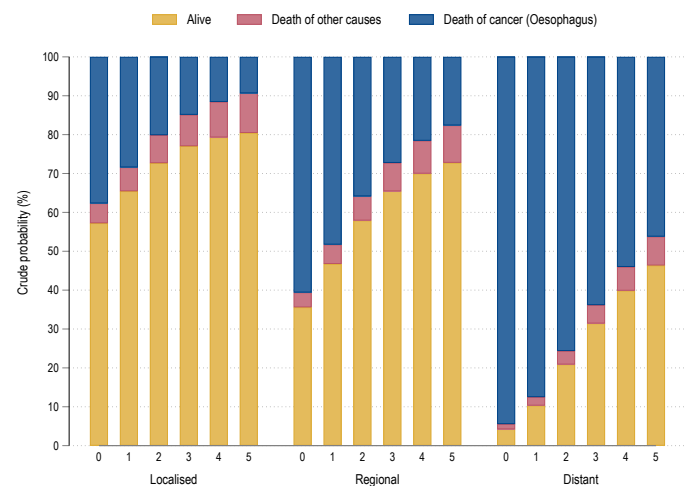
Figure 2.1: Oesophagus: net and crude probabilities**Figure 2.1-A: Net survival 0–10 years****Figure 2.1-B: Crude probabilities 0–10 years****Figure 2.1-C: 5-year crude probabilities by age and stage. Males****Figure 2.1-D: 5-year crude probabilities by age and stage. Females****Figure 2.1-E: Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males****Figure 2.1-F: Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females**

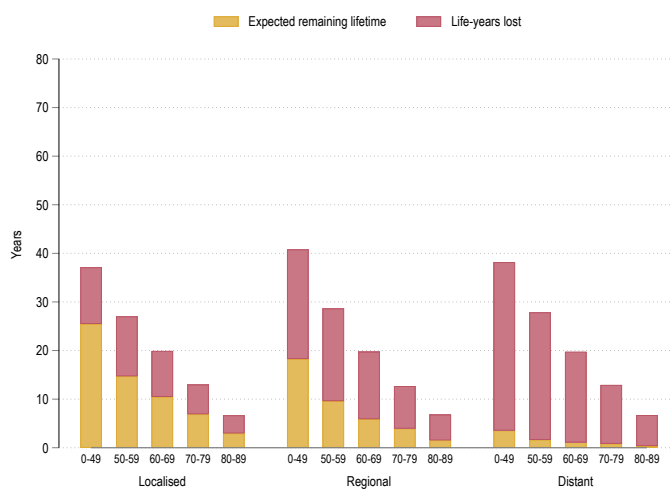
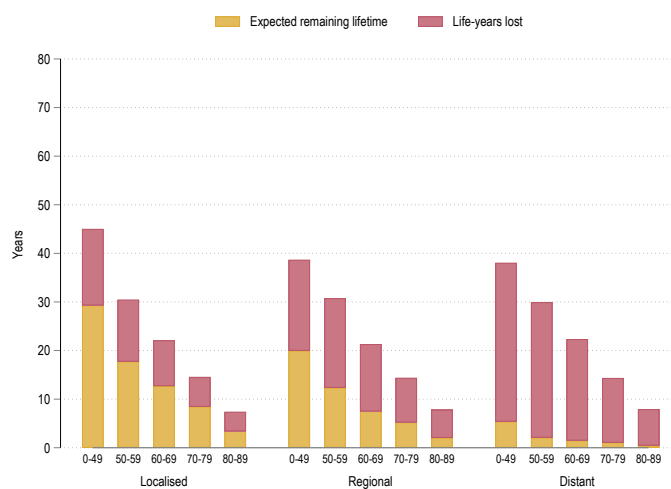
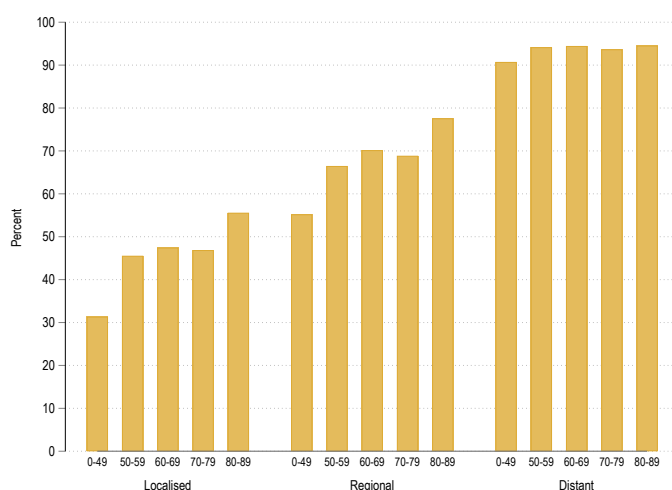
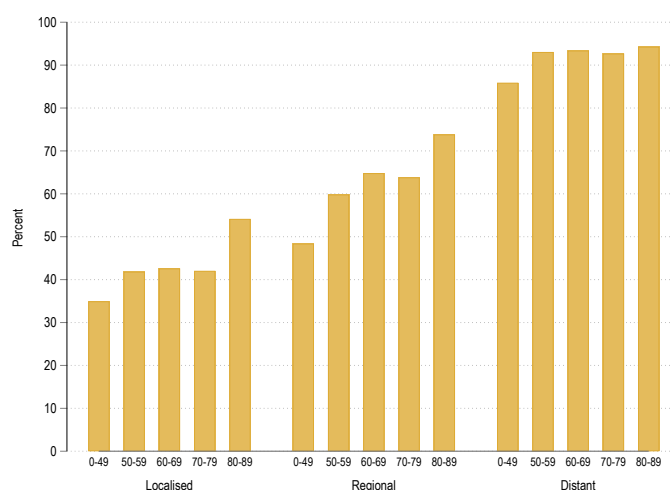
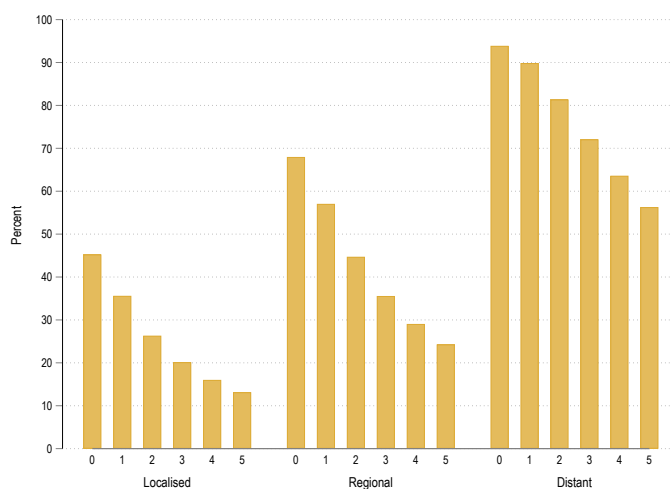
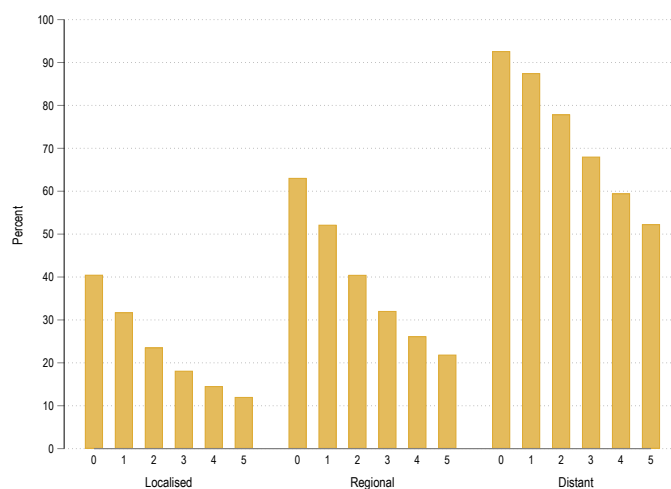
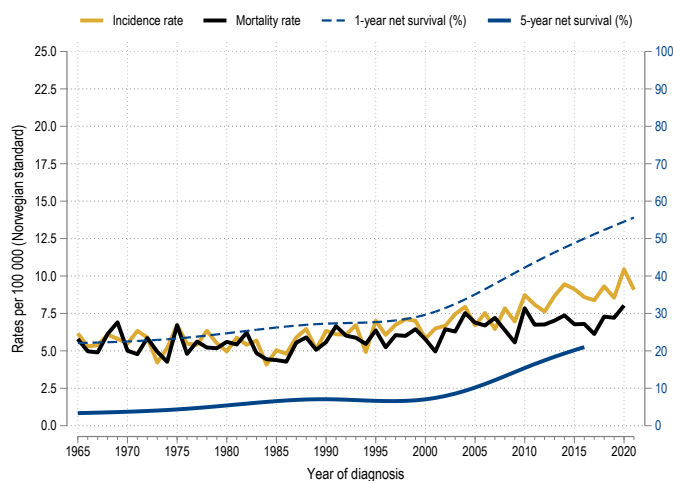
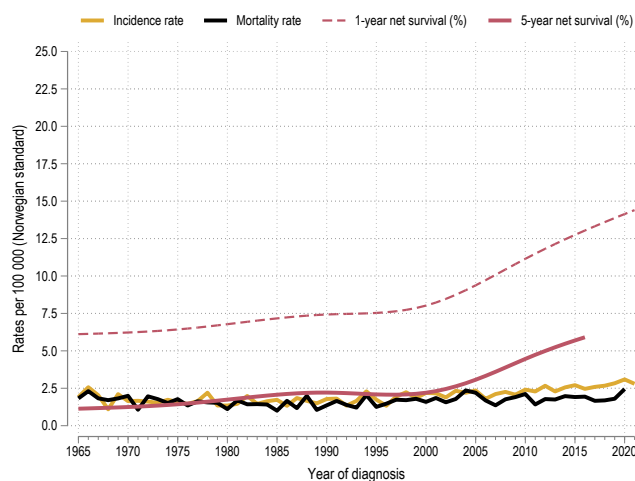
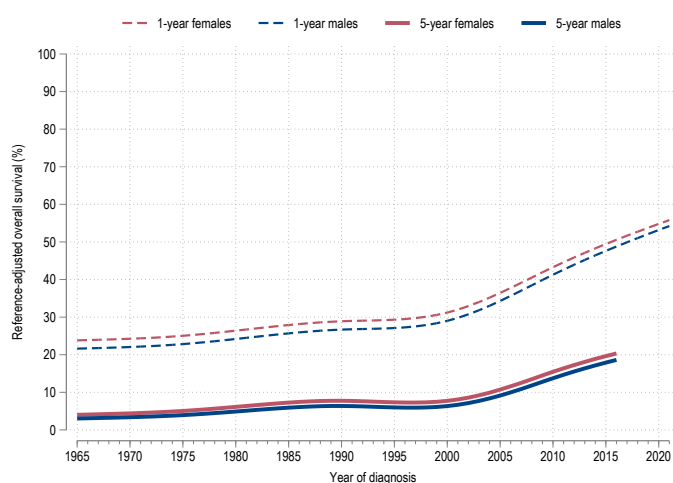
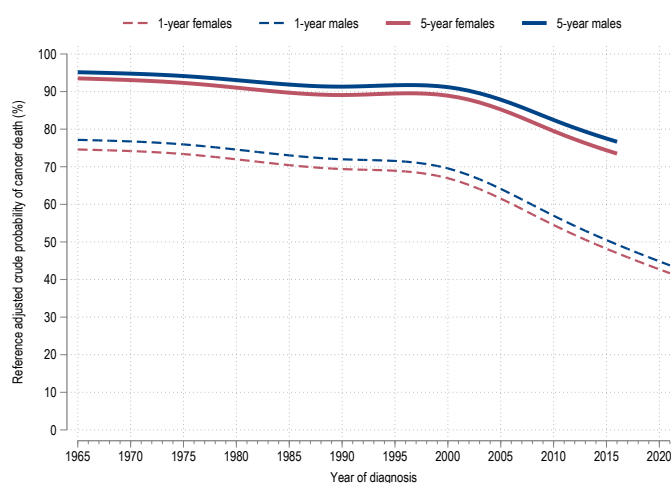
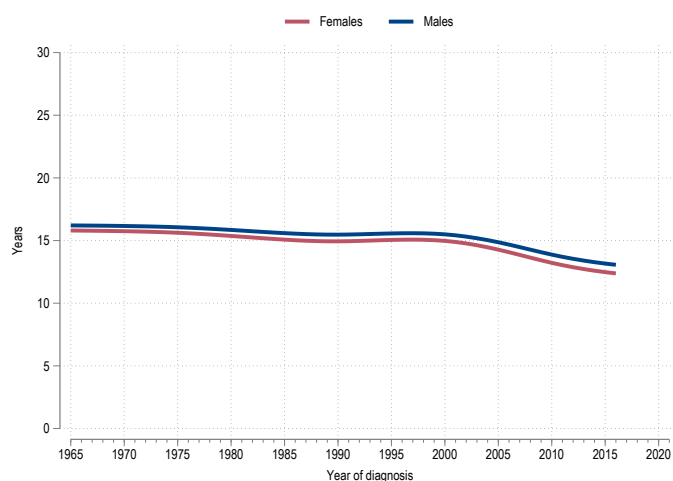
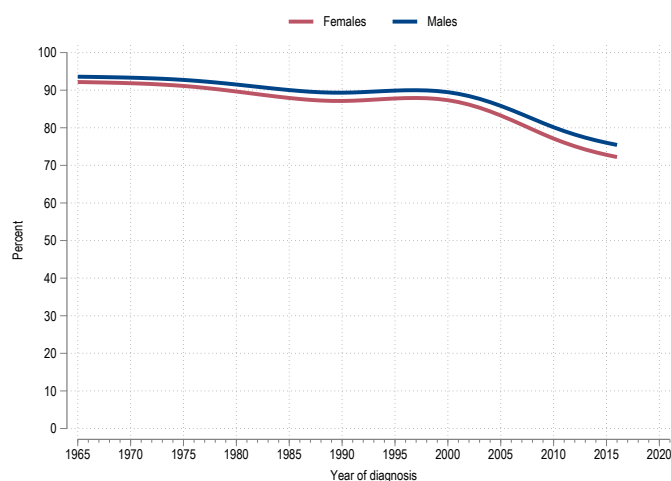
Figure 2.2: Oesophagus: life expectancy and life-years lost**Figure 2.2-A: Life expectancy by age and stage. Males****Figure 2.2-B: Life expectancy by age and stage. Females****Figure 2.2-C: Proportion of life-years lost. Males****Figure 2.2-D: Proportion of life-years lost. Females****Figure 2.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males****Figure 2.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females**

Figure 2.3: Oesophagus: trends**Figure 2.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 2.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 2.3-C: Trends in reference adjusted all-cause survival****Figure 2.3-D: Trends in reference adjusted crude probability of cancer death****Figure 2.3-E: Trends in reference adjusted life-years lost****Figure 2.3-F: Trends in reference adjusted life-years lost (%)**

Stomach

3.1 Net survival and crude probabilities

Net survival among stomach cancer patients declines sharply the first three years after diagnosis, and the five year net survival estimate equals 30.5 %. After five years the net survival levels off, with a tendency of reaching a plateau, and the ten year net survival equals 24.7 % for both sexes combined (Figure 3.1–A). There are only small differences between sexes.

The probability of surviving five years is 26.8 % (Figure 3.1–B). This is quite similar to the net survival estimate, reflecting the fact that most stomach cancer patients dying the first five years after diagnosis are dying from their cancer.

Crude probabilities of stomach cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 3.1–D and 3.1–C). However, the probability of dying from localised and regional stomach cancer also depends on age with poorer survival in the oldest patients. In women with localised cancer, the five year crude probability of death due to stomach cancer is 38.3 % at ages 80–89, while the corresponding probability is 5 % at ages 0–49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is very high, the age gradient is small.

Having survived a localised stomach cancer for one, two or up to five years after diagnosis, has a considerable impact on your survival the coming five years (Figures 3.1–F and 3.1–E). The same is true for regional and distant stage, but one should bear in mind that very few patients will survive up to five years when diagnosed with distant stomach cancer.

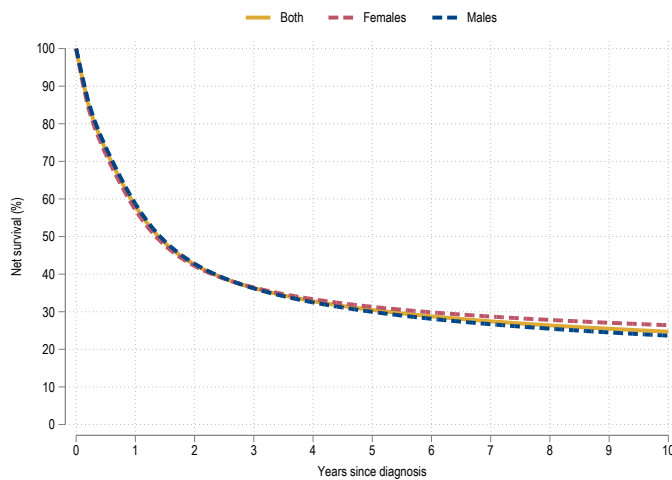
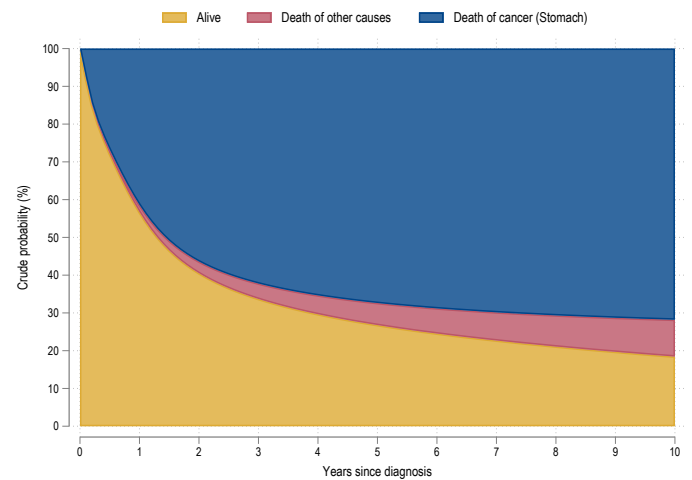
3.2 Life expectancy and life-years lost

The high risk of stomach cancer death leads to a considerable loss in life-years in all age groups and for all stages, with larger losses if diagnosed with an advanced stage (Figures 3.2–B and 3.2–A). The proportion of life-years lost due to cancer is increasing with age for localised stomach cancer. For more advanced stages these proportions are generally high for all ages (Figures 3.2–D and 3.2–C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 3.2–F and 3.2–E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a considerable risk of dying from stomach cancer. This is especially true for regional and distant stomach cancer.

3.3 Time trends

Net survival of stomach cancer has increased steadily for both sexes (Figures 3.3–B and 3.3–A). Correspondingly, all-cause survival has increased and the crude probability of dying from stomach cancer has declined (Figures 3.3–C and 3.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time. As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 16.9 years in 1965 and expected to be 13.3 years in 2016 (Figure 3.3–E). Correspondingly, the proportion (Figure 3.3–F) of life-years lost due to stomach cancer has decreased from 85.5 % in 1965 to an expected 67.3 % in 2016, when averaging across all ages and stage at diagnosis.

Figure 3.1: Stomach: net and crude probabilities**Figure 3.1-A:** Net survival 0–10 years**Figure 3.1-B:** Crude probabilities 0–10 years

Stomach

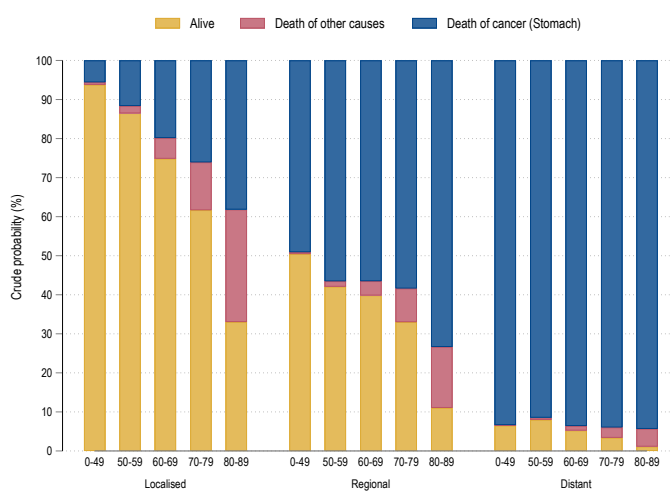
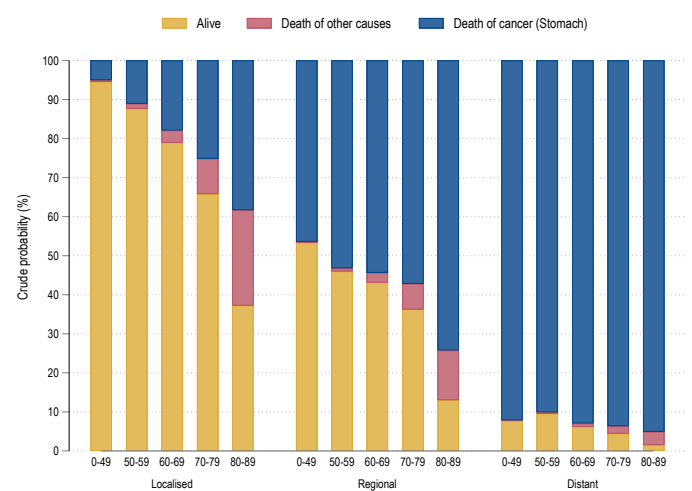
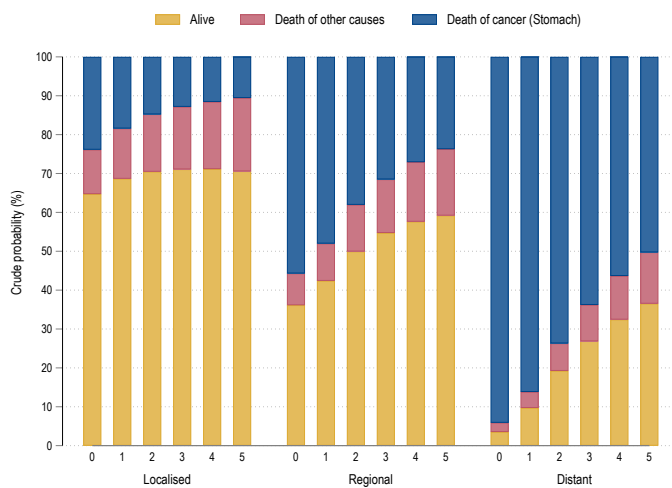
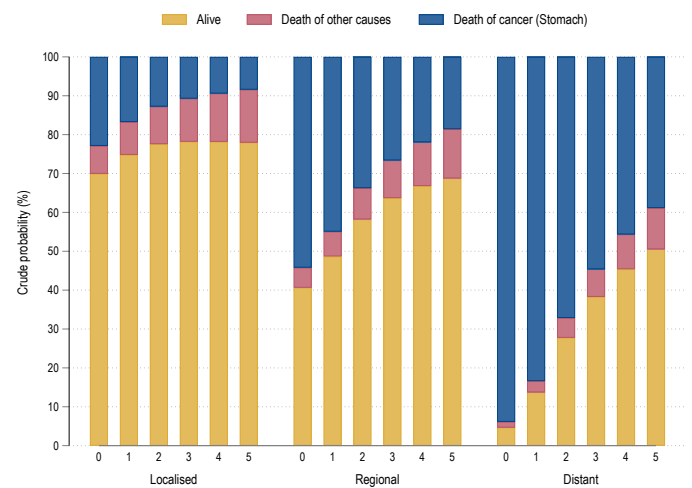
Figure 3.1-C: 5-year crude probabilities by age and stage. Males**Figure 3.1-D:** 5-year crude probabilities by age and stage. Females**Figure 3.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Males**Figure 3.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Females

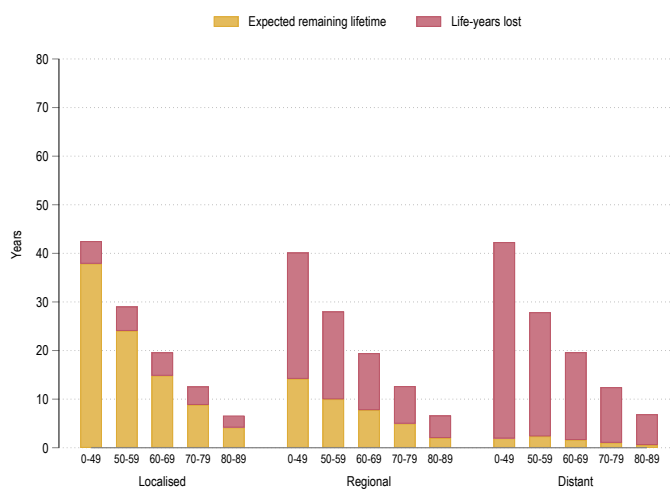
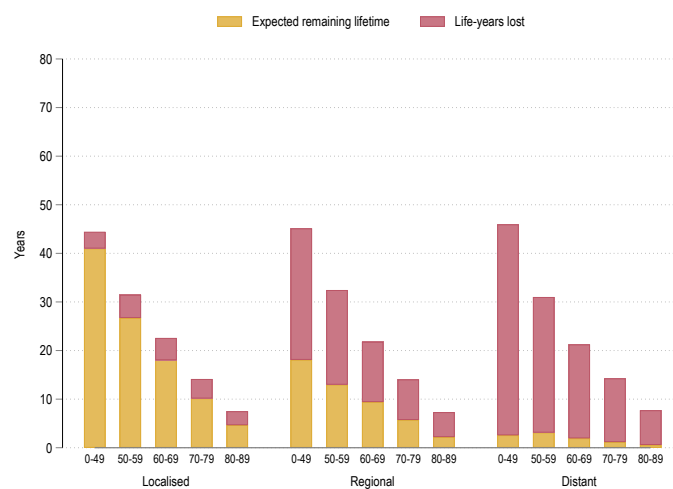
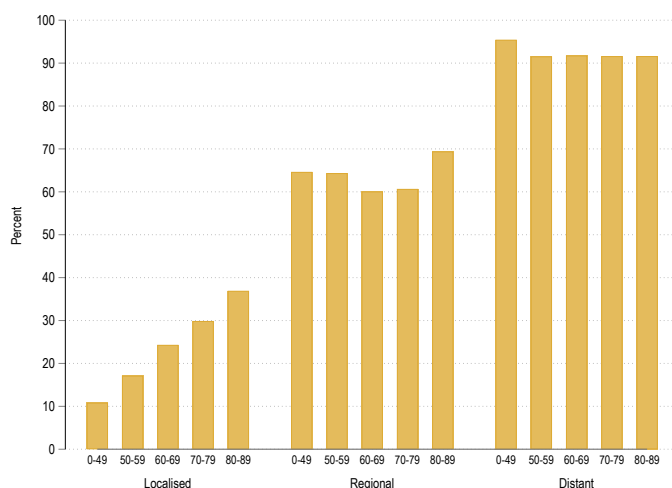
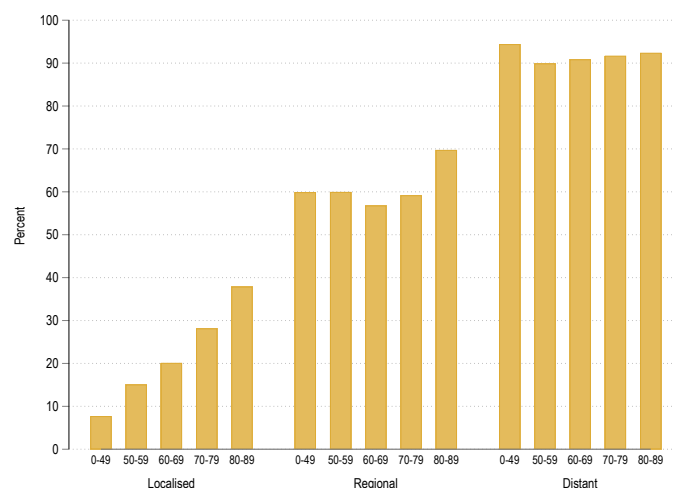
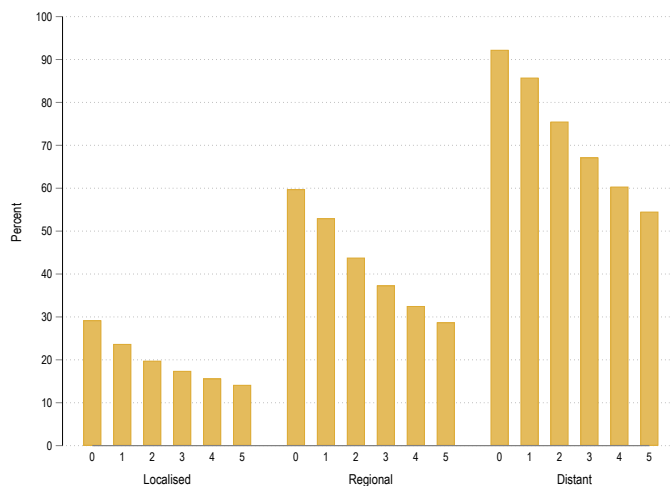
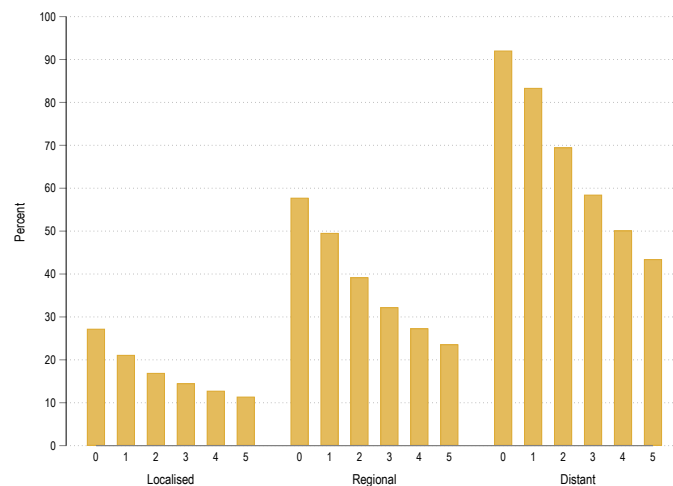
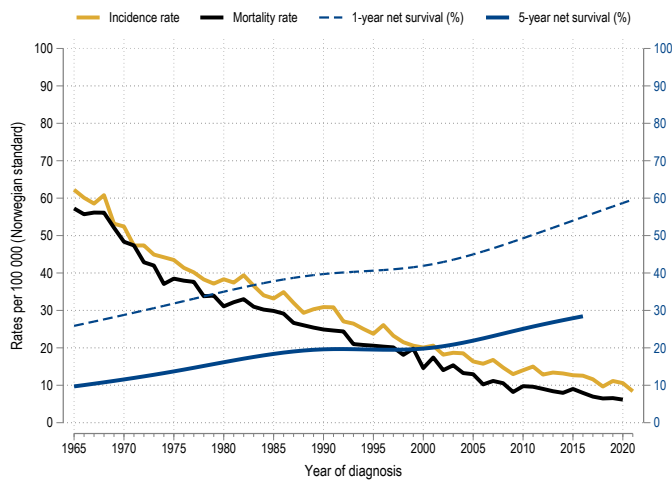
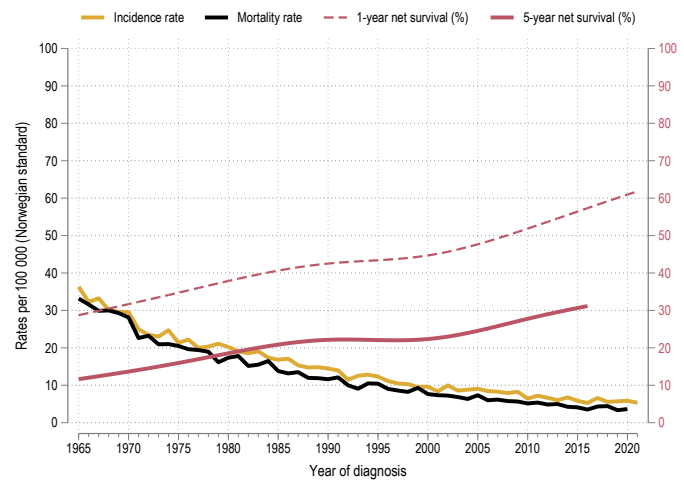
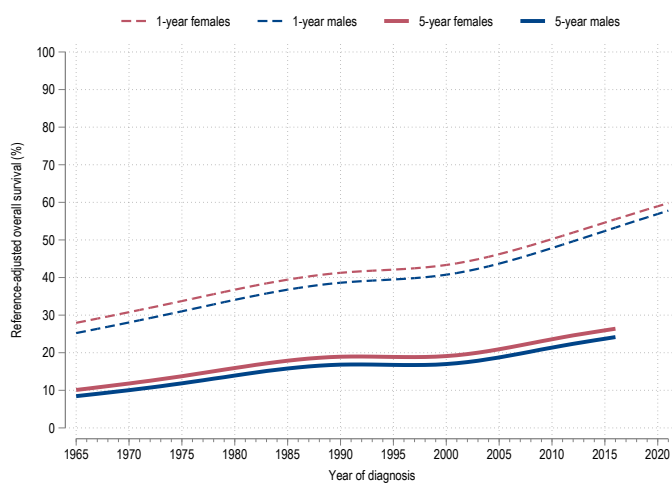
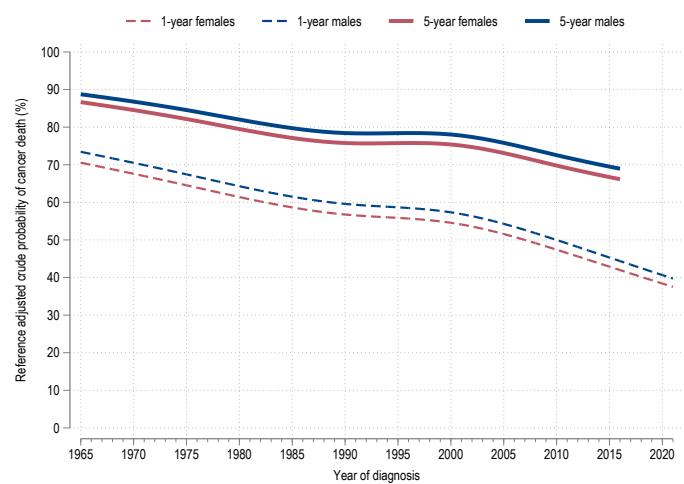
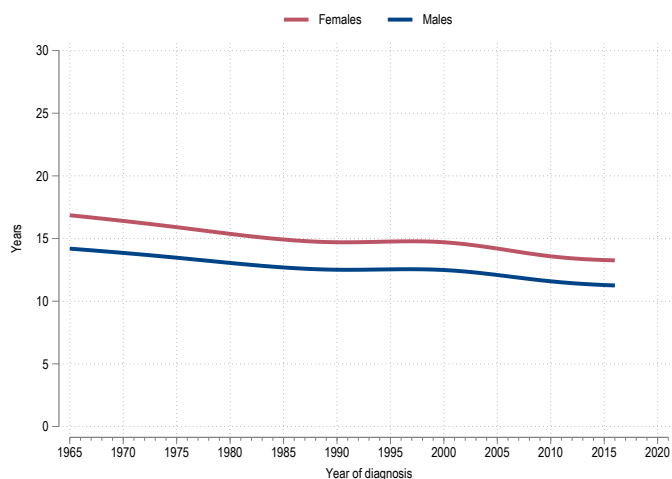
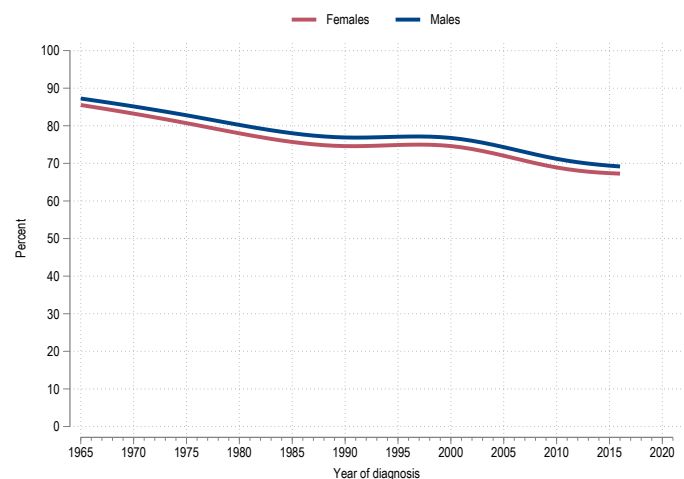
Figure 3.2: Stomach: life expectancy and life-years lost**Figure 3.2-A:** Life expectancy by age and stage. Males**Figure 3.2-B:** Life expectancy by age and stage. Females**Figure 3.2-C:** Proportion of life-years lost. Males**Figure 3.2-D:** Proportion of life-years lost. Females**Figure 3.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Males**Figure 3.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 72 years at diagnosis (median age). Females

Figure 3.3: Stomach: trends**Figure 3.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 3.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 3.3-C: Trends in reference adjusted all-cause survival****Figure 3.3-D: Trends in reference adjusted crude probability of cancer death****Figure 3.3-E: Trends in reference adjusted life-years lost****Figure 3.3-F: Trends in reference adjusted life-years lost (%)**

Colon

4.1 Net survival and crude probabilities

Net survival among colon cancer patients declines the first years after diagnosis with a five year net survival estimate of 69.3 %. After five years the net survival levels off, reaching a plateau, with ten year net survival equal to 64.3 % for both sexes combined (Figure 4.1–A). There are only small differences between sexes, with women having a marginally higher net survival the first ten years after diagnosis compared to men.

The probability of surviving five years after diagnosis is 58.8 % (Figure 4.1–B). The probability of dying from colon cancer within five years is 29.5 % and the additional probability of dying from other causes is 11.7 %. In comparison to net survival, the crude probability of dying from cancer is markedly lower since patients may also die from other causes.

Crude probabilities of colon cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 4.1–D and 4.1–C). However, the probability of dying from colon cancer also, to some extent, depends on age with poorer survival in the oldest age groups. In women with localised cancer, the five year crude probability of death due to colon cancer is 8.1 % at ages 80–89, while the corresponding probability is 1.5 % at ages 0–49 (Figure 4.1–D). Among patients with distant metastases at diagnosis, where the risk of dying from colon cancer is higher, the age gradient is larger.

Having survived a localised colon cancer for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 4.1–F and 4.1–E). However, if distant metastases were present at the time of diagnosis the prognosis will strongly depend on how long you have survived since diagnosis. For a median aged female colon cancer patient with distant metastases at the time of diagnosis, the five year risk of dying from colon cancer is 80.3 %. If surviving five years from diagnosis the future five year risk of dying from colon cancer is reduced to 29.3 %. The longer a patient survives the more similar future survival becomes across stages.

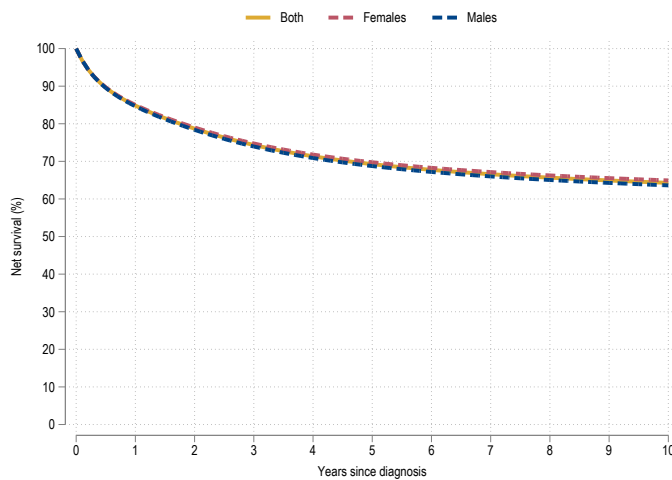
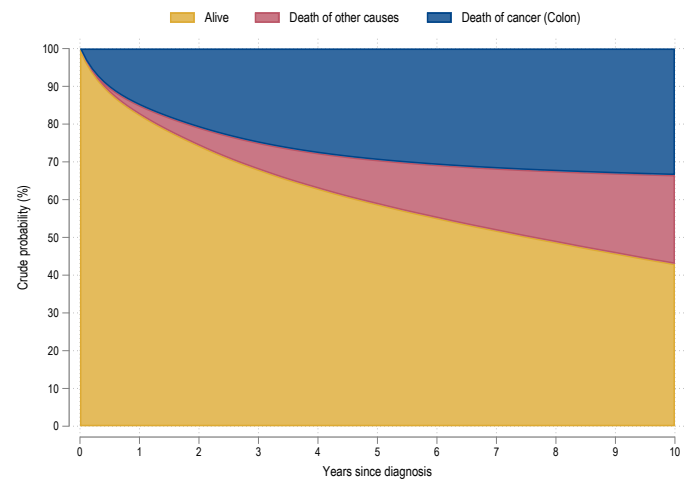
4.2 Life expectancy and life-years lost

The differences in prognosis across stages of colon cancer leads to differences in life-years lost. Patients with localised colon cancer lose few of their remaining life-years, whereas patients with distant colon cancer lose many life-years (Figures 4.2–B and 4.2–A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportion of life-years lost are similar across ages for localised and regional colon cancer, but increasing with age for distant colon cancer (Figures 4.2–D and 4.2–C). These plots also shows the large difference in prognosis across stages, with patients with distant colon cancer losing a much larger proportion of their remaining lifetime compared to regional and localised colon cancer.

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 4.2–F and 4.2–E). For localised colon cancer this proportion approaches zero for a median aged patient. For distant colon cancer the proportion declines a lot, for a median aged women from 79.5 % at diagnosis to 31 % having survived five years after diagnosis.

4.3 Time trends

Net survival of colon cancer has increased steadily over time for both sexes (Figures 4.3–B and 4.3–A). Correspondingly, the all-cause survival has increased and the crude probability of dying from colon cancer has declined (Figures 4.3–C and 4.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time. As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 11.6 years in 1965 and expected to be 5.7 years in 2016 (Figure 4.3–E). Correspondingly, the proportion of life-years lost due to colon cancer has decreased from 65.9 % in 1965 to an expected 32.5 % in 2016, when averaging across all ages and stage at diagnosis (Figure 4.3–F).

Figure 4.1: Colon: net and crude probabilities**Figure 4.1-A:** Net survival 0–10 years**Figure 4.1-B:** Crude probabilities 0–10 years

Colon

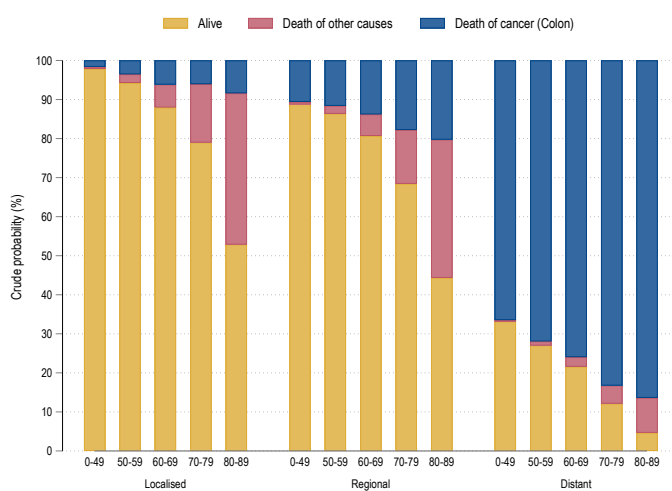
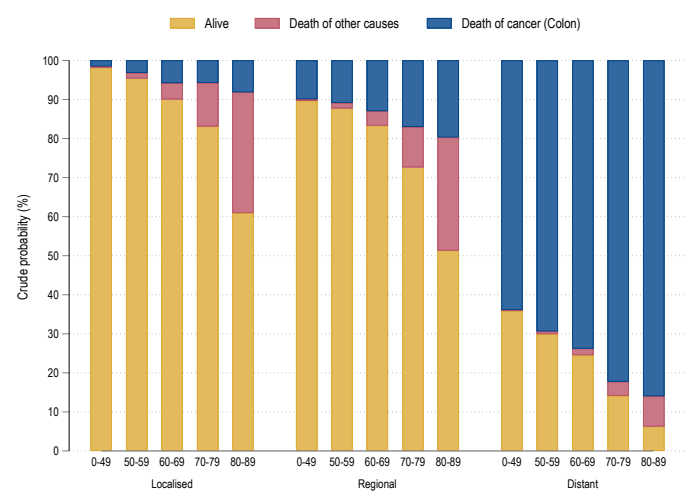
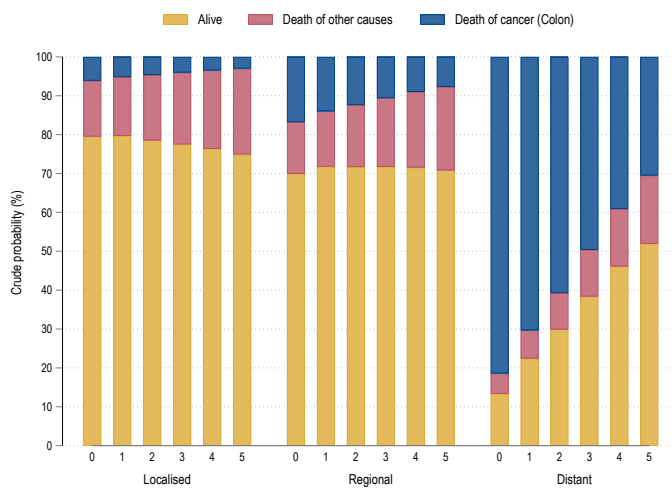
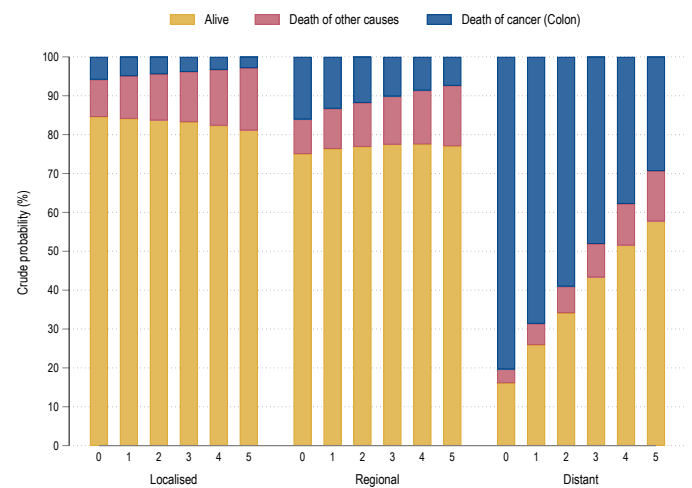
Figure 4.1-C: 5-year crude probabilities by age and stage. Males**Figure 4.1-D:** 5-year crude probabilities by age and stage. Females**Figure 4.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males**Figure 4.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females

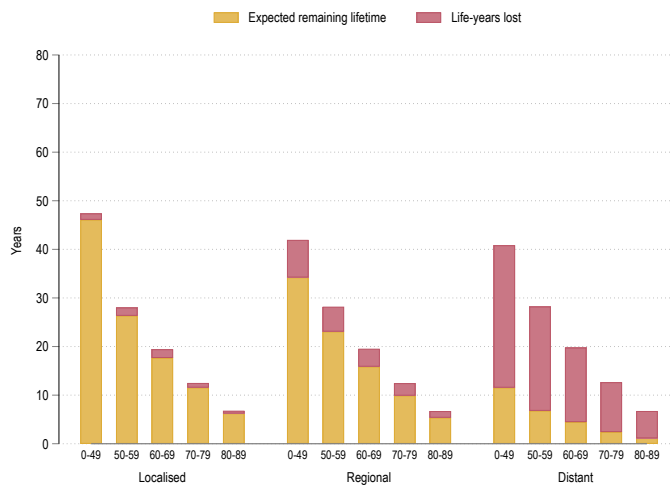
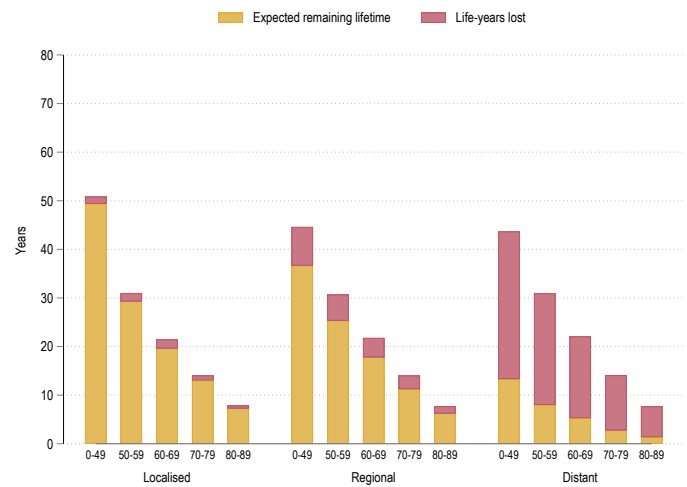
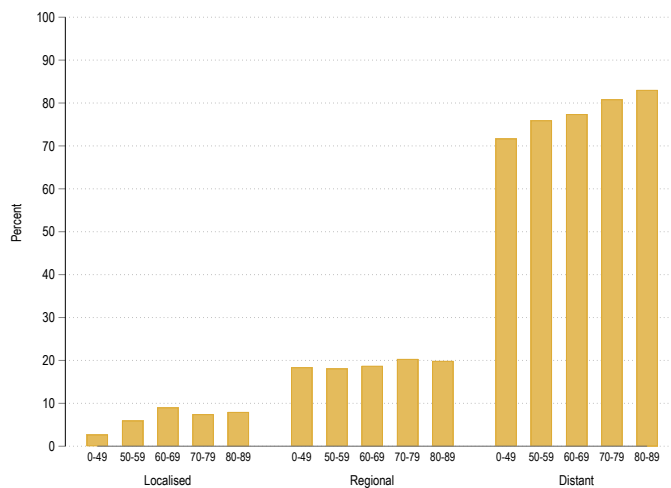
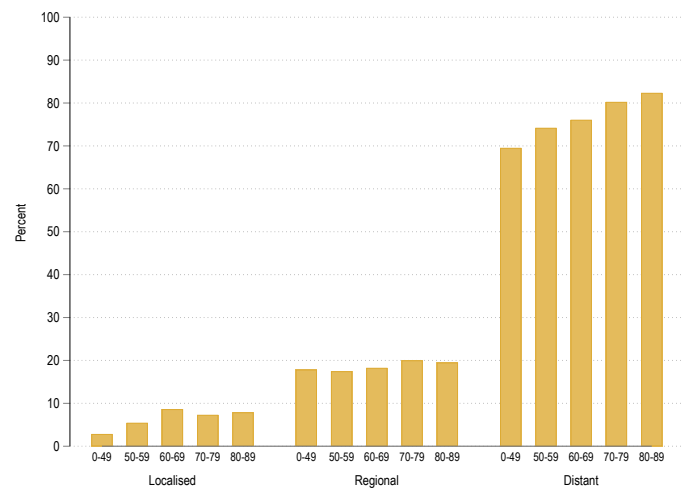
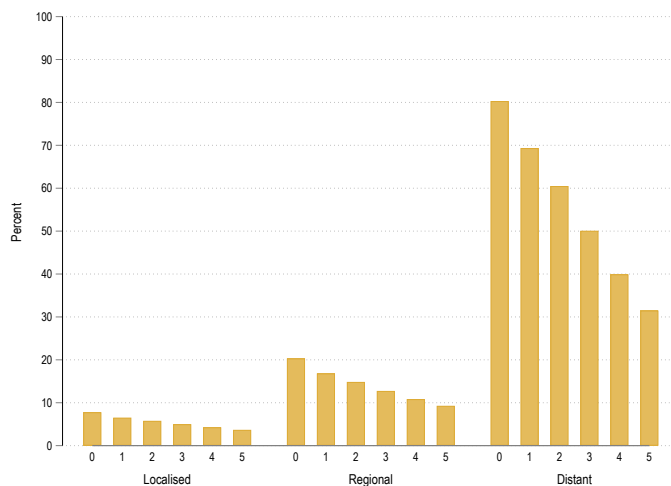
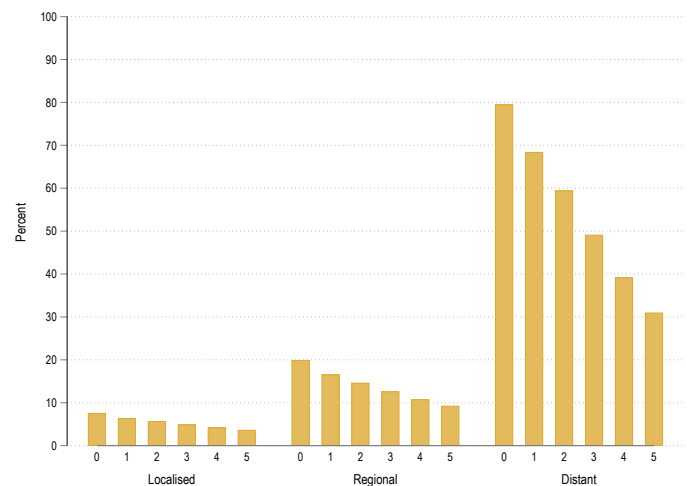
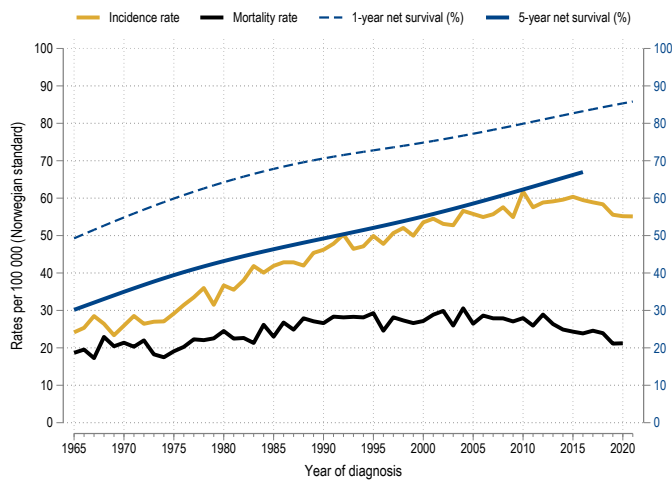
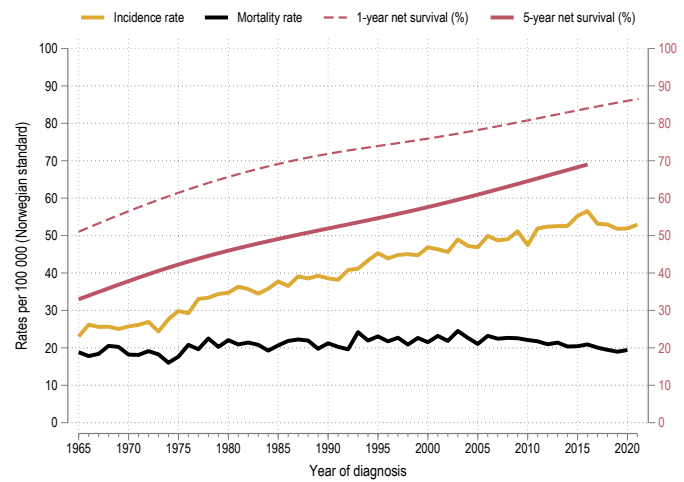
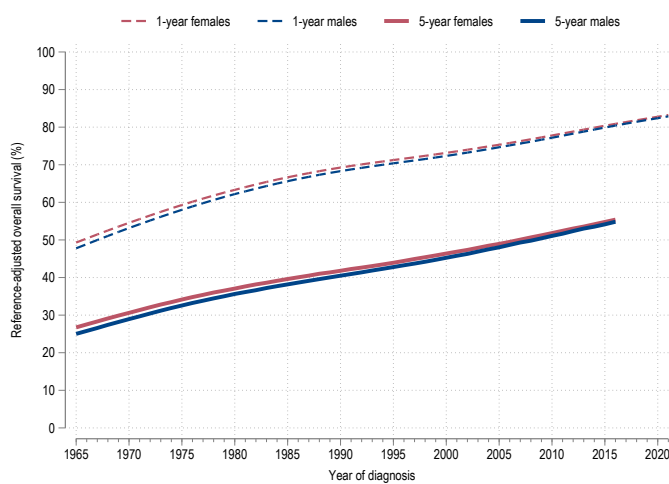
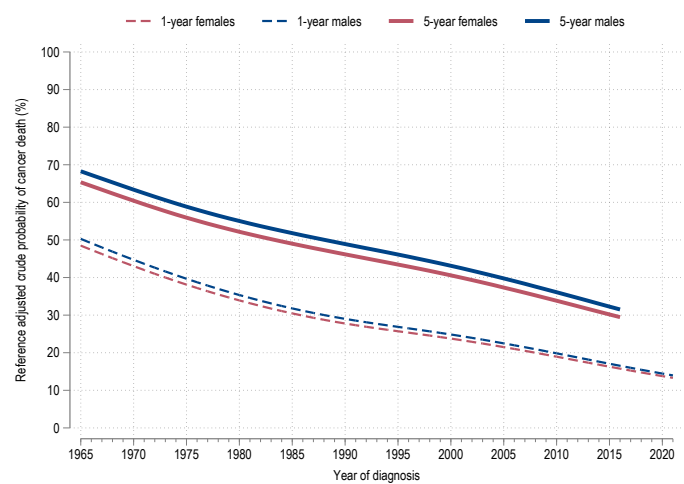
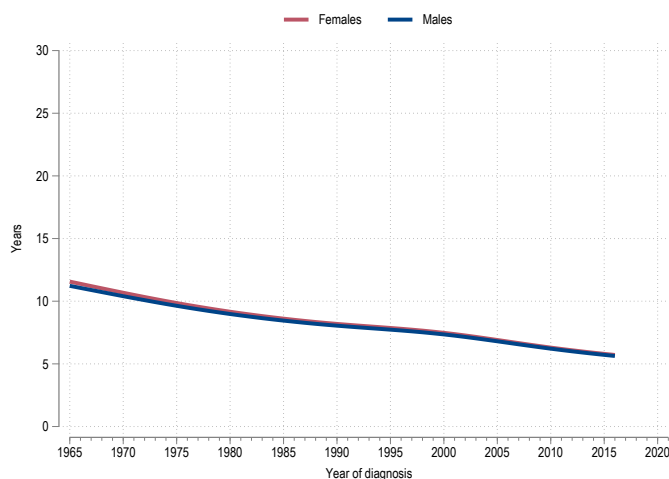
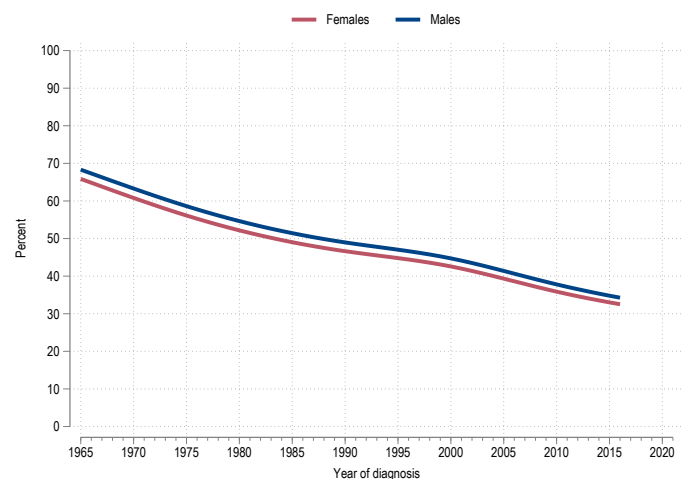
Figure 4.2: Colon: life expectancy and life-years lost**Figure 4.2-A: Life expectancy by age and stage. Males****Figure 4.2-B: Life expectancy by age and stage. Females****Figure 4.2-C: Proportion of life-years lost. Males****Figure 4.2-D: Proportion of life-years lost. Females****Figure 4.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males****Figure 4.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females**

Figure 4.3: Colon: trends**Figure 4.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 4.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 4.3-C:** Trends in reference adjusted all-cause survival**Figure 4.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 4.3-E:** Trends in reference adjusted life-years lost**Figure 4.3-F:** Trends in reference adjusted life-years lost (%)

Rectum

5.1 Net survival and crude probabilities

Although cancers of the rectosigmoid (ICD10-C19) make up approximately 10% of these cancers we will refer to the group as a whole as rectum cancers. Net survival among rectum cancer patients declines the first years after diagnosis with a five year net survival estimate of 71.8%. After five years the net survival declines somewhat with a tendency to level off, with ten year net survival equal to 64.8% for both sexes combined (Figure 5.1-A). There are almost no differences between sexes.

The probability of surviving five years after diagnosis is 63.6% (Figure 5.1-B). The probability of dying from rectum cancer within five years is 26.8% and the additional probability of dying from other causes is 9.6%. In comparison to net survival, the crude probability of dying from cancer is somewhat lower since patients may also die from other causes.

Crude probabilities of rectum cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 5.1-D and 5.1-C). However, the probability of dying from rectum cancer also, to some extent, depends on age with poorer survival in the oldest age groups. In women with localised cancer, the five year crude probability of death due to rectum cancer is 9% at ages 80–89, while the corresponding probability is 3.1% at ages 0–49. In contrast, the five year crude probability of death from rectum cancer, if diagnosed with distant metastases is 84.8% for the oldest women, and 61.5% for the youngest women.

Having survived a localised rectum cancer for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 5.1-F and 5.1-E). However, if distant metastases were present at the time of diagnosis the prognosis will strongly depend on how long you have survived since diagnosis. For a median aged, female rectum cancer patient with distant metastases at the time of diagnosis, the five year risk of dying from rectum cancer is 74%. If surviving five years from diagnosis the future five year risk of dying from rectum cancer is reduced to 32.8%. The longer a patient survives the more similar future

survival becomes across stages, but still patients with distant metastases fare considerably worse compared to localised and regional stage.

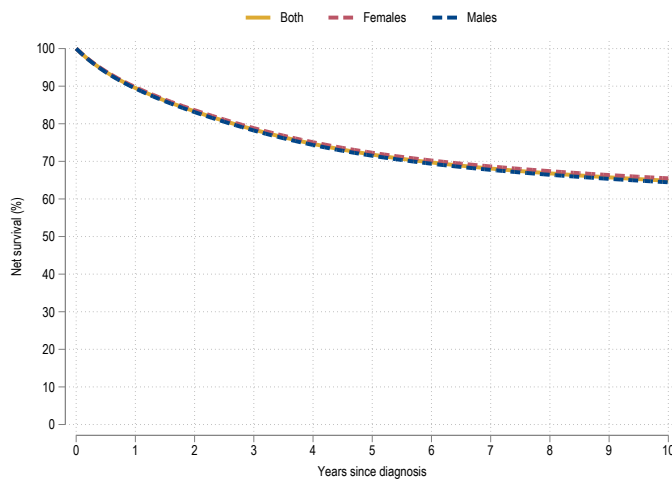
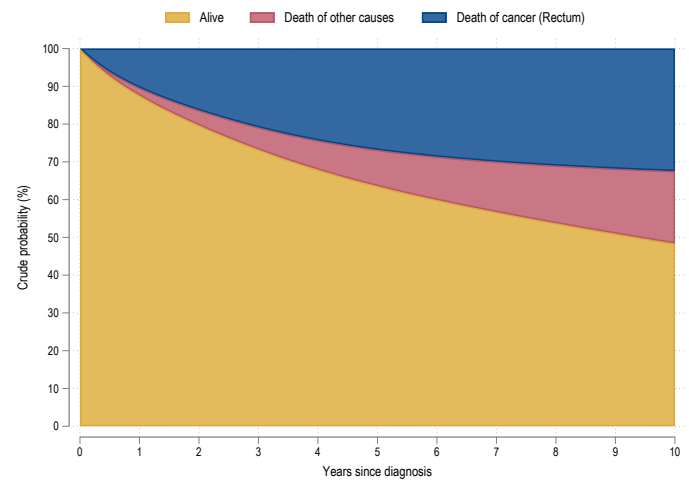
5.2 Life expectancy and life-years lost

The differences in prognosis across stages of rectum cancer leads to differences in life-years lost. Patients with localised rectum cancer lose few of their remaining life-years, whereas patients with distant rectum cancer lose many life-years (Figures 5.2-B and 5.2-A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportions of life-years lost are similar across ages for each stage (Figures 5.2-D and 5.2-C). These plots also shows the large difference in prognosis across stages, with patients with distant rectum cancer losing a much larger proportion of their remaining lifetime compared to regional and localised rectum cancer.

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 5.2-F and 5.2-E). For localised rectum cancer this proportion approaches zero for a median aged patient. For distant rectum cancer the proportion declines a lot, for a median aged women from 75.8% at diagnosis to 37% having survived five years after diagnosis.

5.3 Time trends

Net survival of rectal cancer has increased steadily over time for both sexes (Figures 5.3-B and 5.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from rectum cancer has declined (Figures 5.3-C and 5.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 5.3-E and 5.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 13.8 years in 1965 and expected to be 5.4 years in 2016. Correspondingly, the proportion of life-years lost due to rectum cancer has decreased from 68.2% in 1965 to an expected 26.8% in 2016, when averaging across all ages and stage at diagnosis.

Figure 5.1: Rectum: net and crude probabilities**Figure 5.1-A:** Net survival 0–10 years**Figure 5.1-B:** Crude probabilities 0–10 years

Rectum

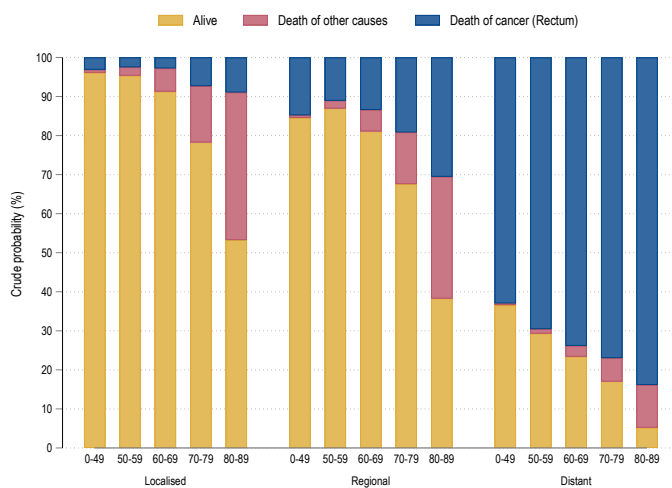
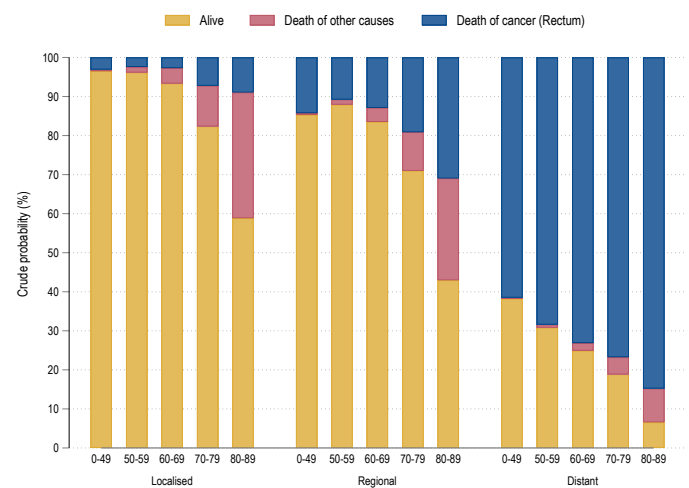
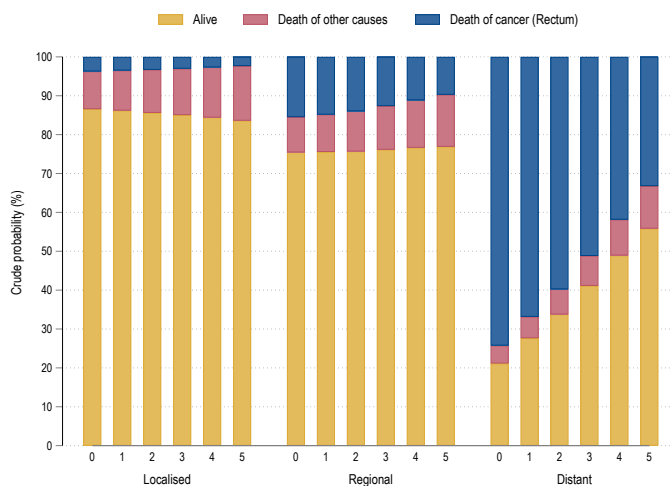
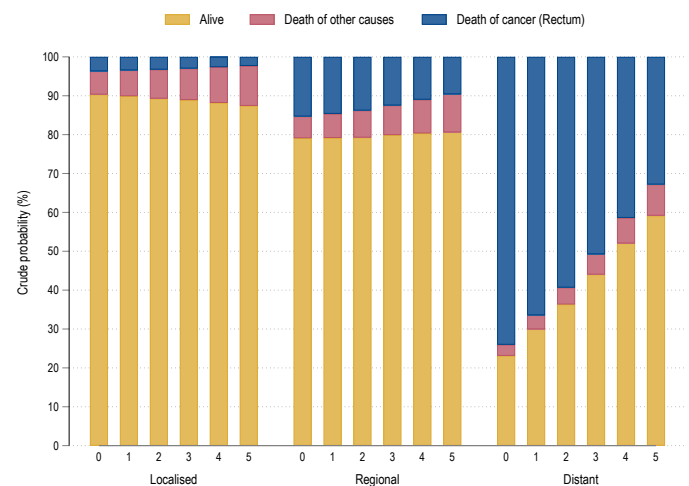
Figure 5.1-C: 5-year crude probabilities by age and stage. Males**Figure 5.1-D:** 5-year crude probabilities by age and stage. Females**Figure 5.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 5.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

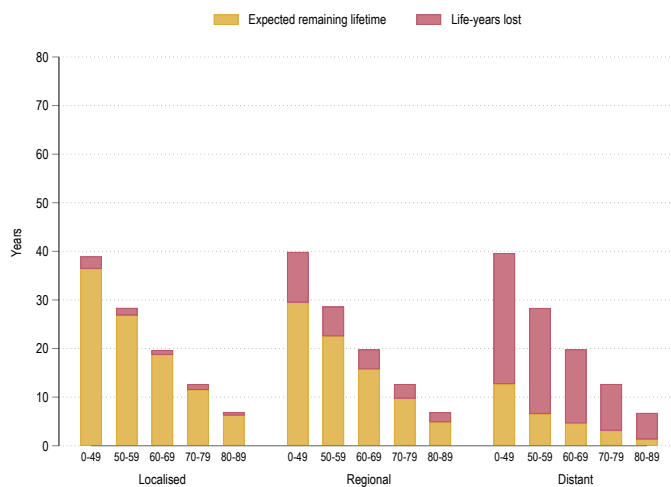
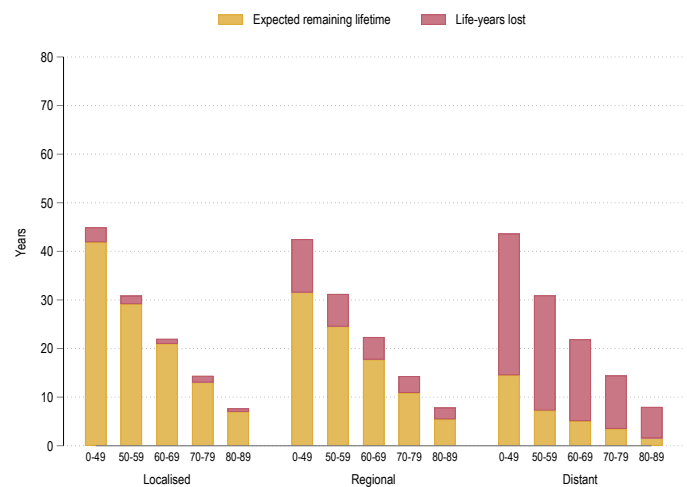
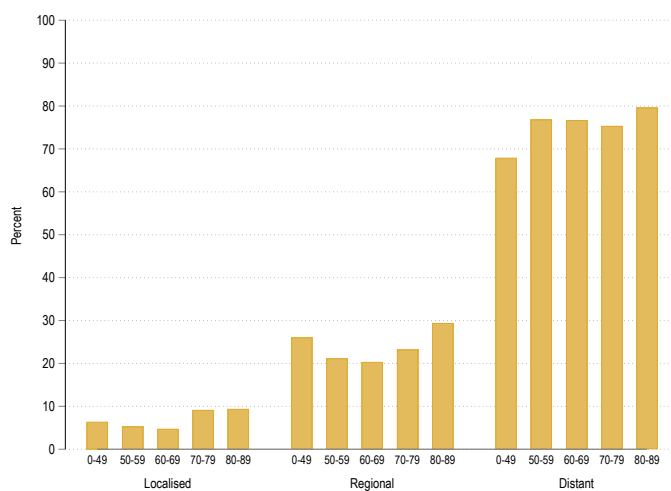
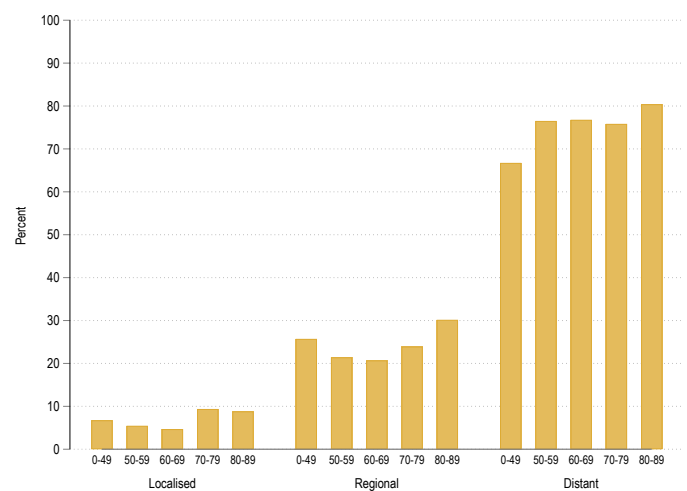
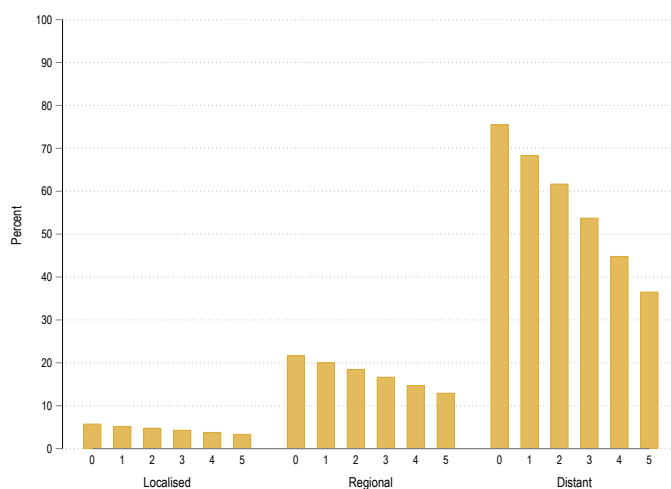
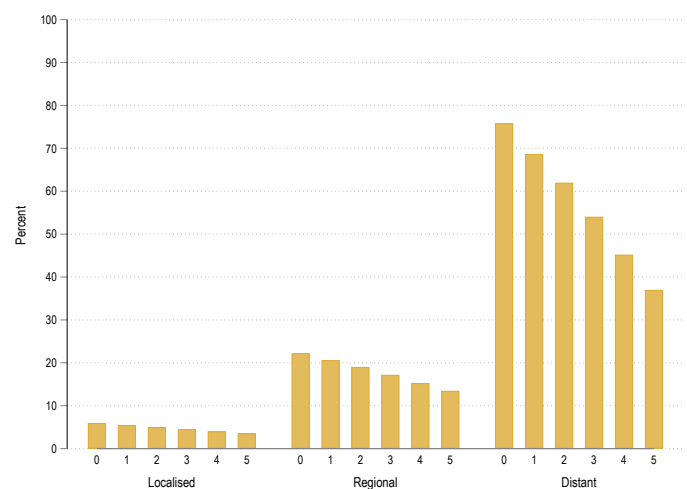
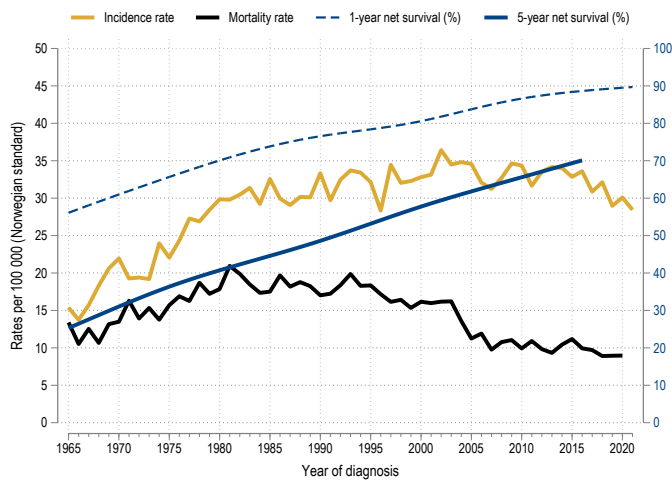
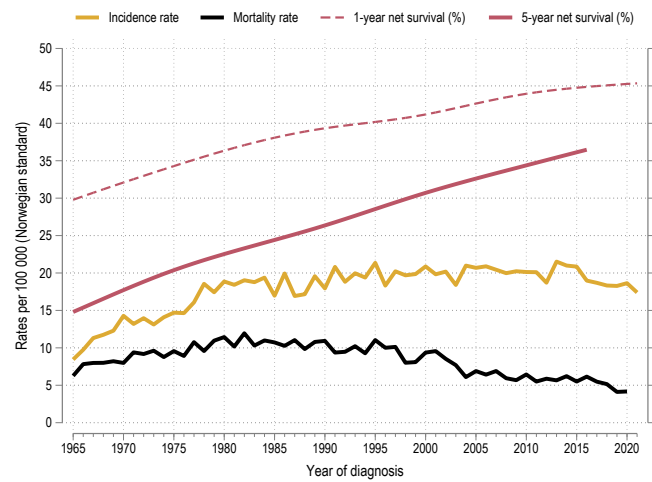
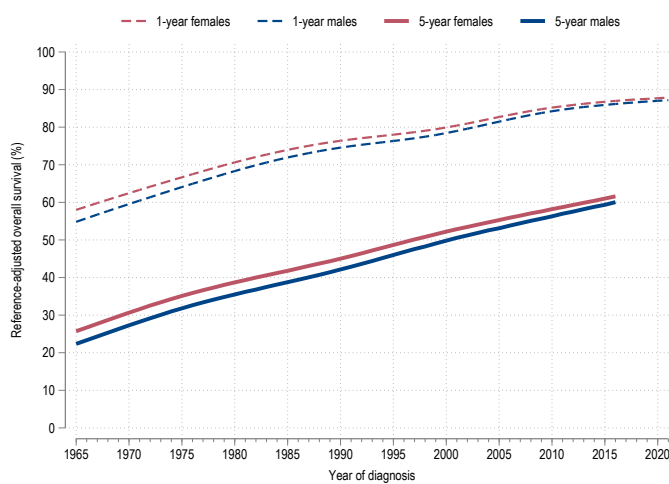
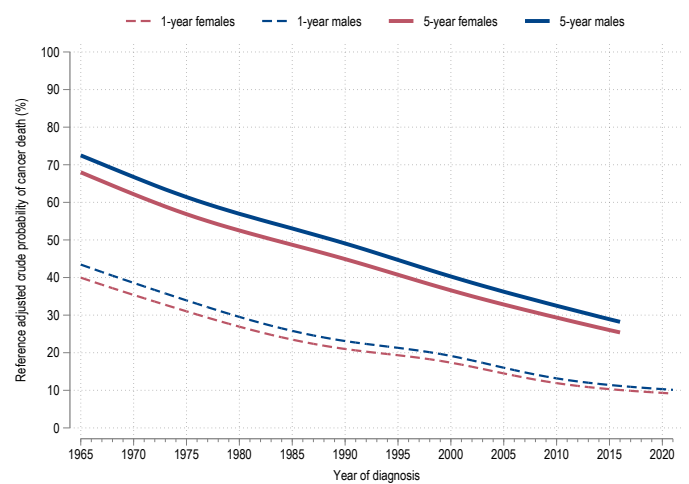
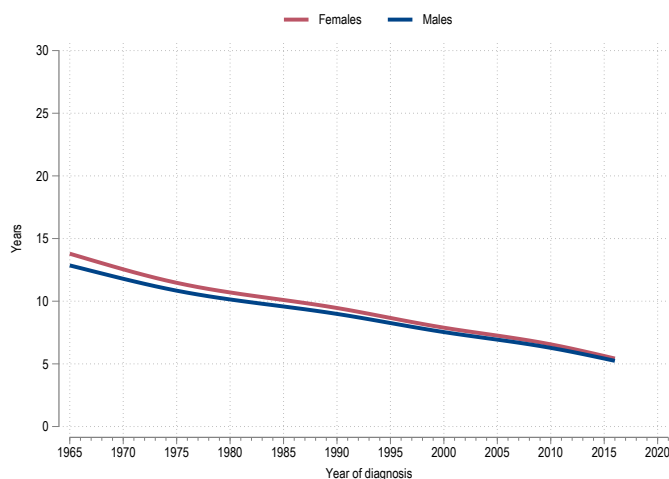
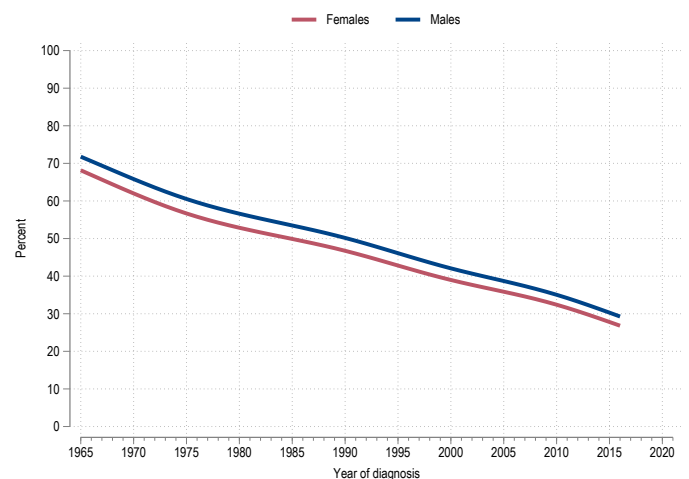
Figure 5.2: Rectum: life expectancy and life-years lost**Figure 5.2-A:** Life expectancy by age and stage. Males**Figure 5.2-B:** Life expectancy by age and stage. Females**Figure 5.2-C:** Proportion of life-years lost. Males**Figure 5.2-D:** Proportion of life-years lost. Females**Figure 5.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 5.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

Figure 5.3: Rectum: trends**Figure 5.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 5.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 5.3-C: Trends in reference adjusted all-cause survival****Figure 5.3-D: Trends in reference adjusted crude probability of cancer death****Figure 5.3-E: Trends in reference adjusted life-years lost****Figure 5.3-F: Trends in reference adjusted life-years lost (%)**

Liver

6.1 Net survival and crude probabilities

Net survival among liver cancer patients declines sharply the first years after diagnosis, and the five year net survival estimate equals 24.5 %. After five years the net survival levels off, without reaching a plateau, with ten year net survival equal to 17.7 % for both sexes combined (Figure 6.1-A). There are virtually no differences between sexes.

The probability of surviving five years is 22.1 % (Figure 6.1-B). This is quite similar to the net survival estimate, reflecting the fact that most liver cancer patients dying the first five years after diagnosis are dying from their cancer.

Crude probabilities of liver cancer death depend on stage at diagnosis, while death due to other causes increases with age (Figures 6.1-D and 6.1-C). The probability of dying from localised and regional liver cancer also depends on age with slightly poorer survival in the oldest patients. In women with localised cancer, the five year crude probability of death due to liver cancer is 56.7 % at ages 80–89, while the corresponding probability is 35.2 % at ages 0–49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is very high, the age gradient is small.

Having survived a localised liver cancer for one, two or up to five years after diagnosis, has a considerable impact on your survival the coming five years (Figures 6.1-F and 6.1-E). The same is true for regional and distant cancer, but one should bear in mind that very few patients will survive up to five years when diagnosed with more advanced stages.

6.2 Life expectancy and life-years lost

The high risk of liver cancer death leads to a considerable loss in life-years in all age groups and for all stages, with larger losses if diagnosed with an advanced stage (Figures 6.2-B and 6.2-A). The proportion of life-years lost due to cancer only marginally varies between age groups, but increases with stage (Figures 6.2-D and 6.2-C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 6.2-F and 6.2-E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a considerable risk of dying from liver cancer. For regional and distant liver cancer the proportion remains at a high level, also after surviving five years, still keeping in mind that very few survive up to five years for these stages.

6.3 Time trends

Net survival of liver cancer has increased from a low level, especially the last two decades (Figures 6.3-B and 6.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from liver cancer has declined over the past two decades (Figures 6.3-C and 6.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining the most recent years (Figures 6.3-E and 6.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 20.2 years in 1965 and expected to be 15.6 years in 2016. Correspondingly, the proportion of life-years lost due to liver cancer has decreased from 96.4 % in 1965 to an expected 74.3 % in 2016, when averaging across all ages and stage at diagnosis.

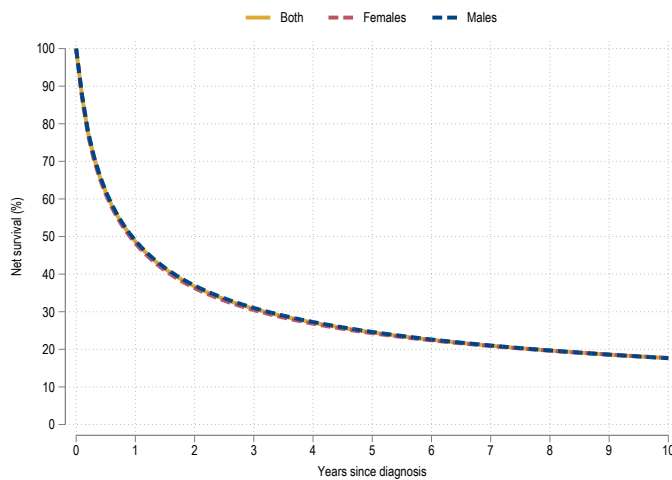
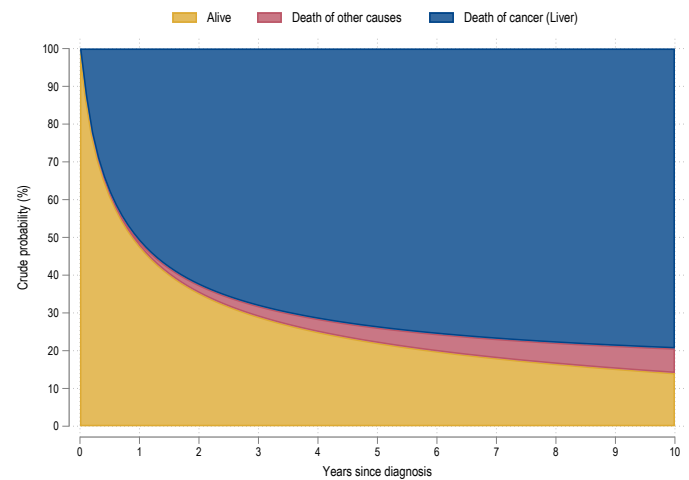
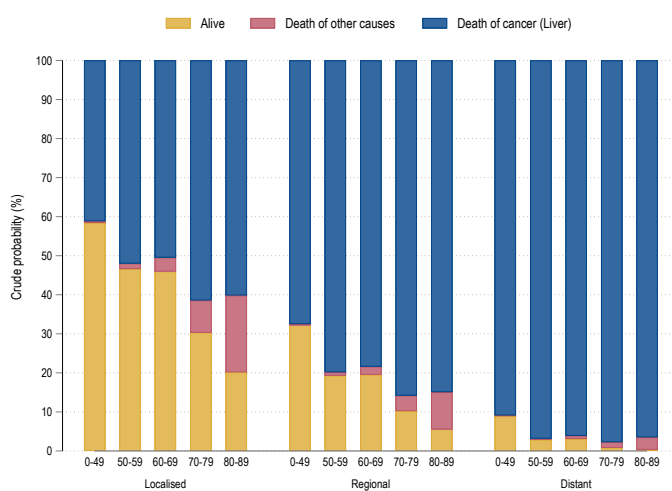
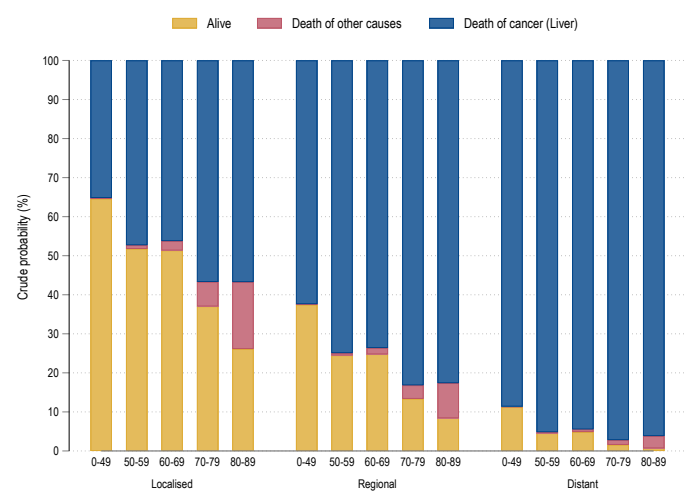
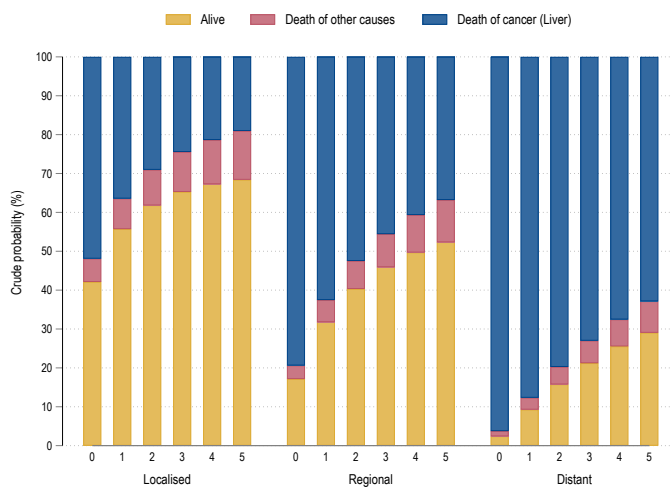
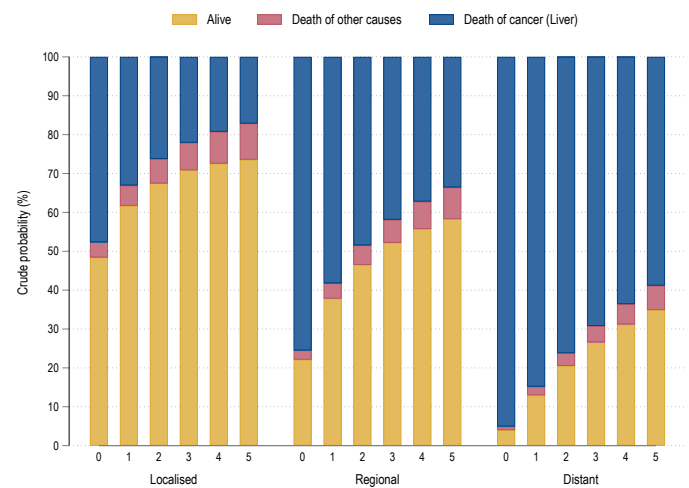
Figure 6.1: Liver: net and crude probabilities**Figure 6.1-A:** Net survival 0–10 years**Figure 6.1-B:** Crude probabilities 0–10 years**Figure 6.1-C:** 5-year crude probabilities by age and stage. Males**Figure 6.1-D:** 5-year crude probabilities by age and stage. Females**Figure 6.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 6.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

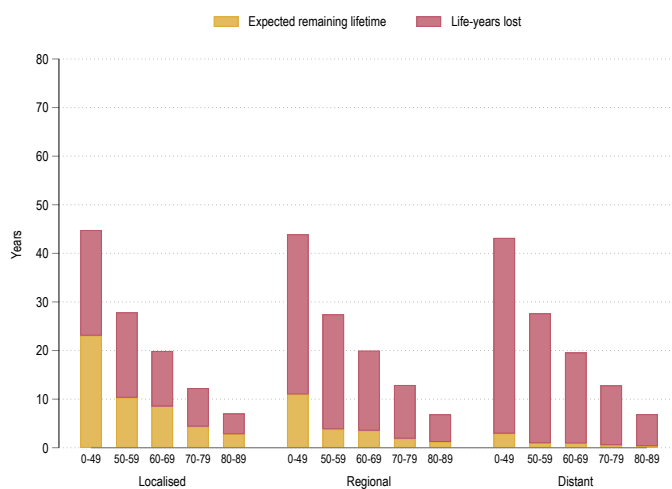
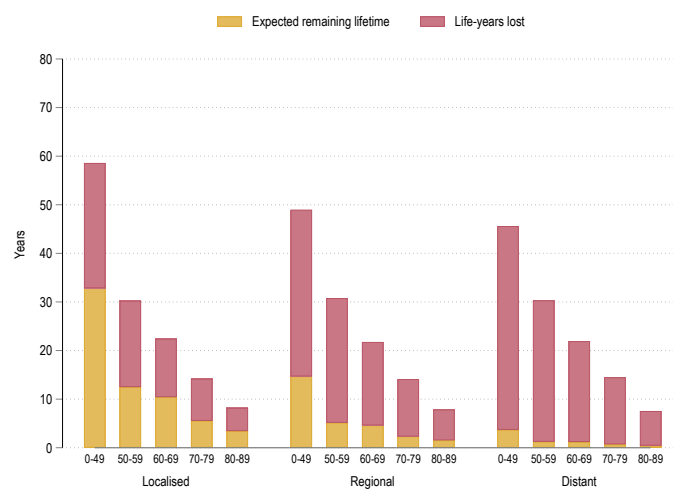
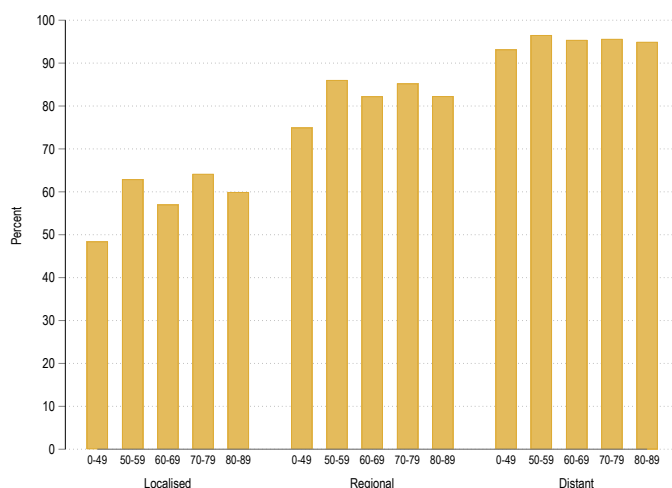
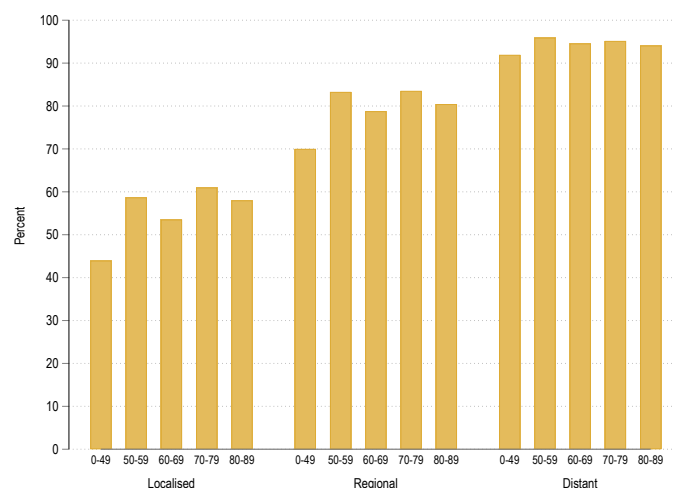
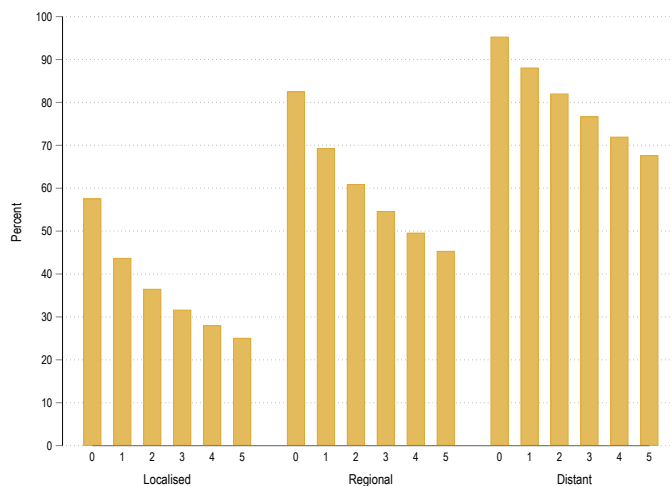
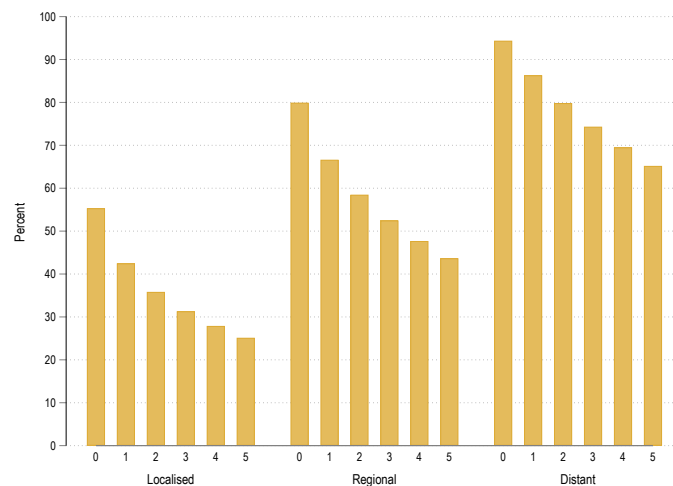
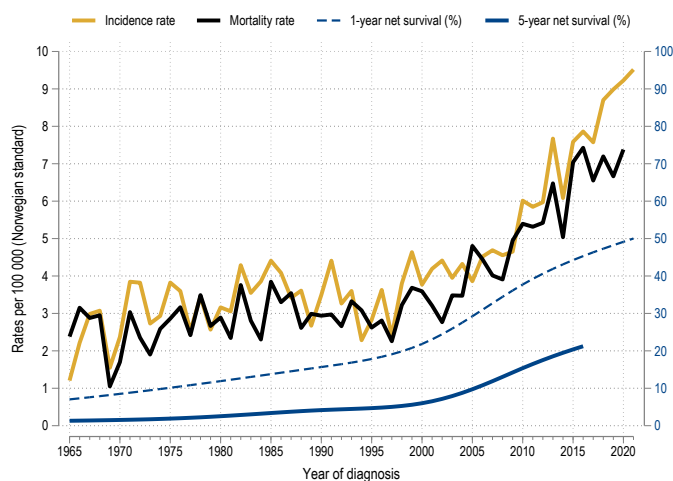
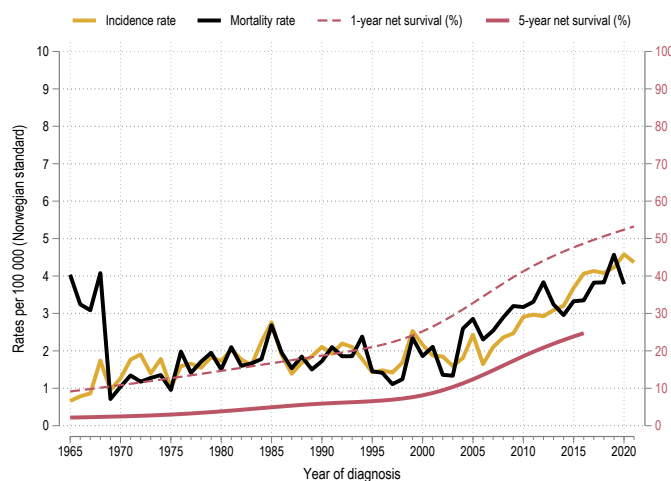
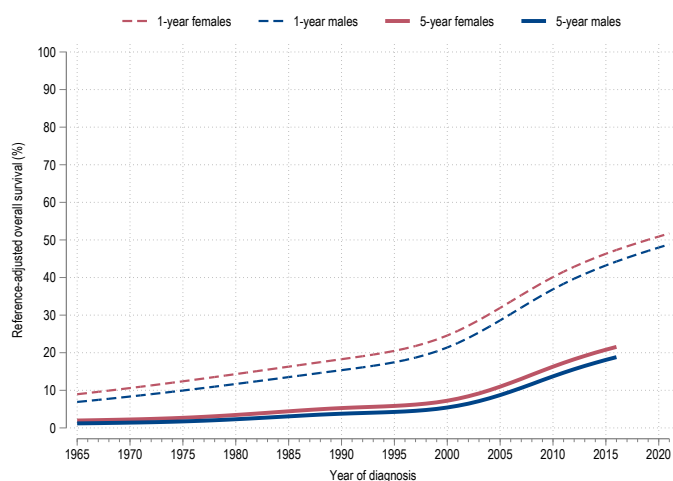
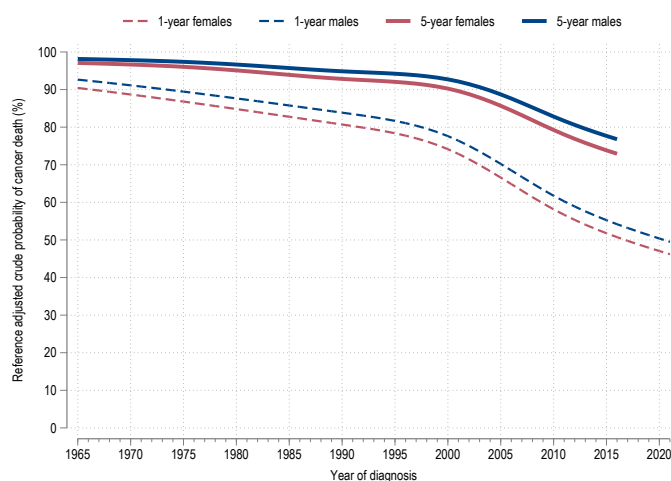
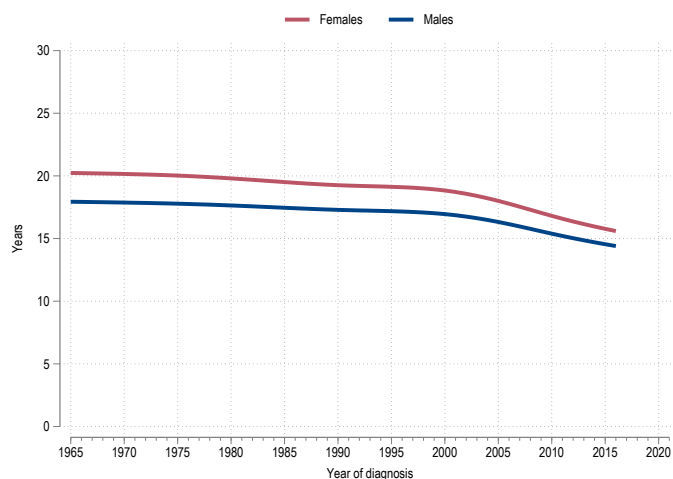
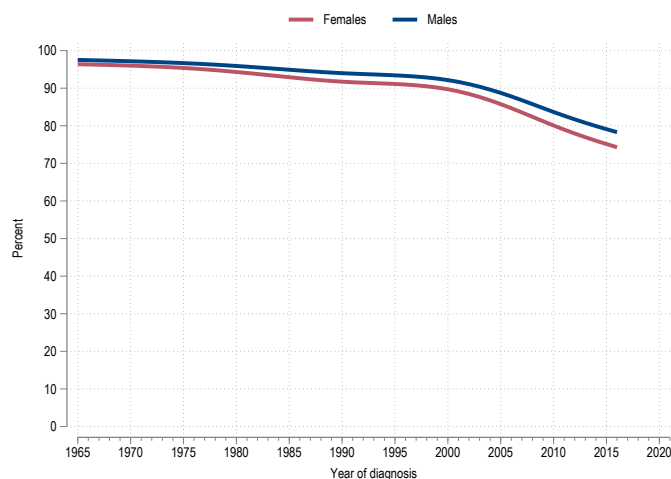
Figure 6.2: Liver: life expectancy and life-years lost**Figure 6.2-A:** Life expectancy by age and stage. Males**Figure 6.2-B:** Life expectancy by age and stage. Females**Figure 6.2-C:** Proportion of life-years lost. Males**Figure 6.2-D:** Proportion of life-years lost. Females**Figure 6.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 6.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

Figure 6.3: Liver: trends**Figure 6.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 6.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 6.3-C:** Trends in reference adjusted all-cause survival**Figure 6.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 6.3-E:** Trends in reference adjusted life-years lost**Figure 6.3-F:** Trends in reference adjusted life-years lost (%)

Gallbladder

7.1 Net survival and crude probabilities

Net survival among gallbladder cancer patients declines sharply the first years after diagnosis, and the five year net survival estimate equals 25.8 %. After five years the net survival levels off, reaching a plateau and the ten year net survival equals 21.1 % for both sexes combined (Figure 7.1-A). There are virtually no differences between sexes.

The probability of surviving five years is 23.2 % (Figure 7.1-B). This is quite similar to the net survival estimate, reflecting the fact that most gallbladder cancer patients dying the first five years after diagnosis are dying from their cancer.

Crude probabilities of gallbladder cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 7.1-D and 7.1-C). However, the probability of dying from localised and regional gallbladder cancer also depends on age with poorer survival in the oldest patients. In women with localised cancer, the five year crude probability of death due to gallbladder cancer is 47.9 % at ages 80–89, while the corresponding probability is 21.7 % at ages 0–49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is very high, the age gradient is small.

Having survived a localised gallbladder cancer for one, two or up to five years after diagnosis, has a considerable impact on your survival the coming five years (Figures 7.1-F and 7.1-E). The same is true for regional and distant cancer, but one should bear in mind that very few patients will survive up to five years when diagnosed with more advanced stages.

7.2 Life expectancy and life-years lost

The high risk of gallbladder cancer death leads to a considerable loss in life-years in all age groups and for all stages, with larger losses if diagnosed with an advanced stage (Figures 7.2-B and 7.2-A). The proportion of life-years lost due to cancer is increasing with

age for localised gallbladder cancer. For more advanced stages these proportions are generally high for all ages (Figures 7.2-D and 7.2-C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 7.2-F and 7.2-E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a considerable risk of dying from gallbladder cancer. For regional and distant gallbladder cancer the proportion remains at a high level, also after surviving five years, still keeping in mind that very few survives up to five years for these stages.

7.3 Time trends

Net survival of gallbladder cancer has been stable on a low level for both sexes. In the more recent years there are signs of increased short-term survival, but less so when looking at longer term survival (Figures 7.3-B and 7.3-A). This reflects the fact that many gallbladder cancer patients are diagnosed with advanced stage, where curative treatment options are scarce. The rise in short-term survival is likely a result of more use of palliative chemotherapy. Correspondingly, the all-cause survival has been stable at a very low level, with some signs of an increase the more recent years, particularly for short-term survival (Figure 7.3-C). The crude probability of dying from gallbladder cancer has been stable at a high level with some signs of declining the most recent years (Figure 7.3-D). Looking at the number and proportion of life-years lost, these have remained stable over time, illustrating the limited improvement in prognosis for this patient group (Figures 7.3-E and 7.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 17.4 years in 1965 and expected to be 14.1 years in 2016. Correspondingly, the proportion of life-years lost due to gallbladder cancer has decreased from 94.9 % in 1965 to an expected 76.7 % in 2016, when averaging across all ages and stages at diagnosis.

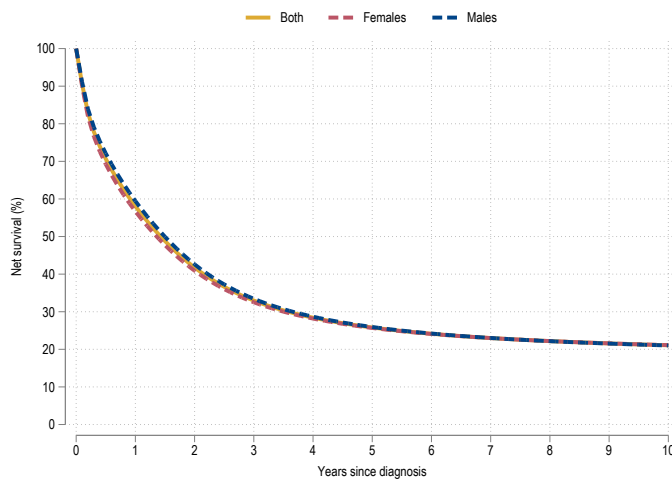
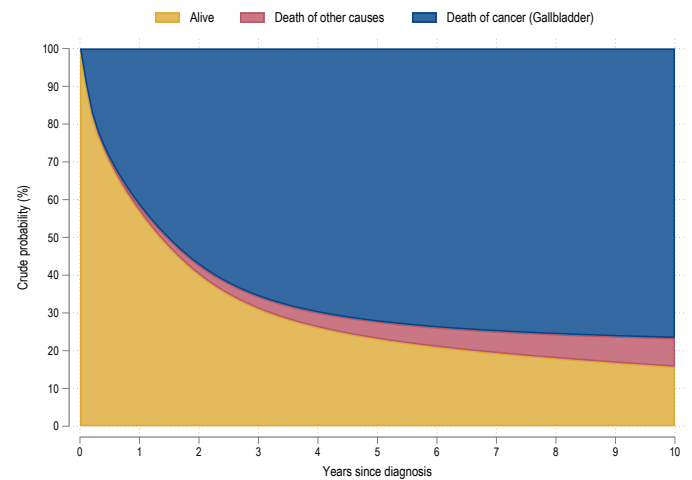
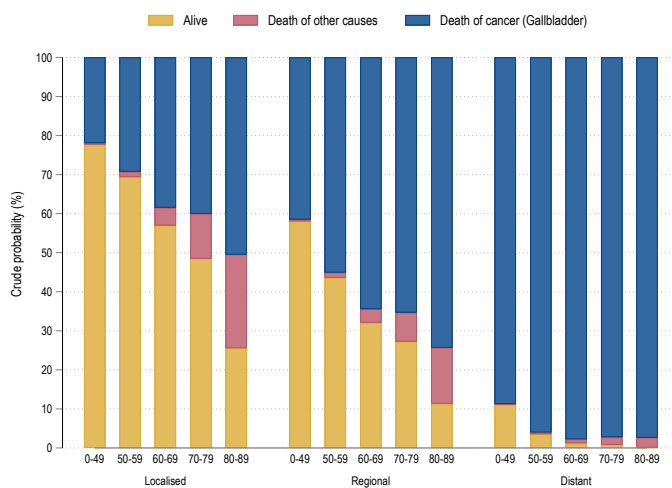
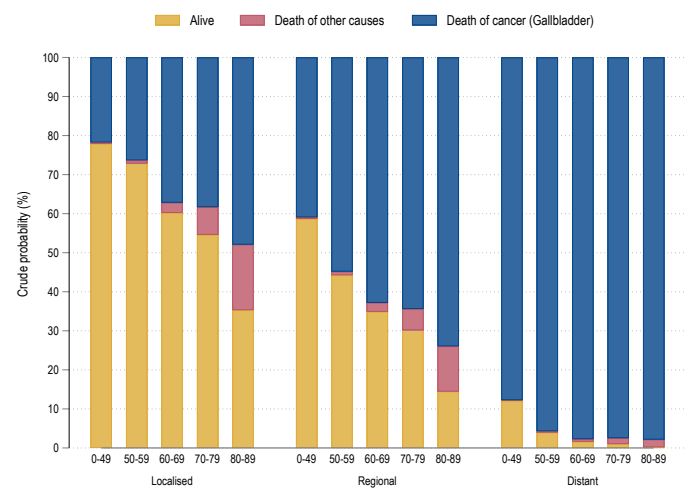
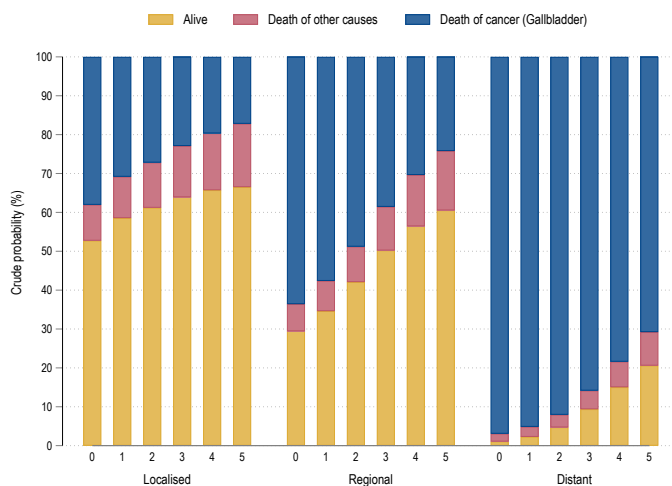
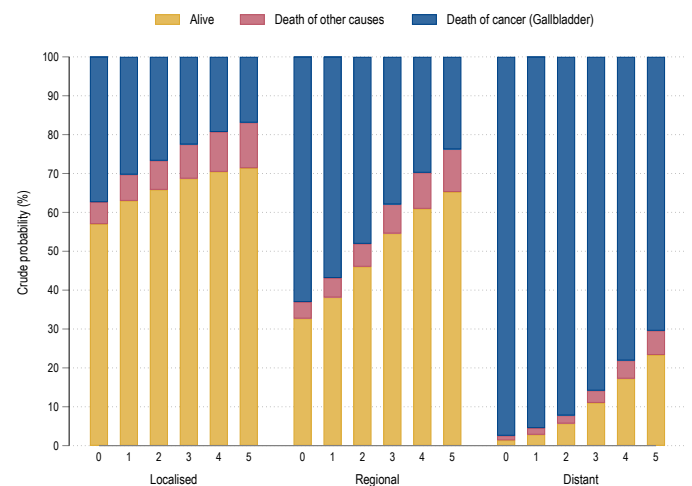
Figure 7.1: Gallbladder: net and crude probabilities**Figure 7.1-A:** Net survival 0–10 years**Figure 7.1-B:** Crude probabilities 0–10 years**Figure 7.1-C:** 5-year crude probabilities by age and stage. Males**Figure 7.1-D:** 5-year crude probabilities by age and stage. Females**Figure 7.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 7.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

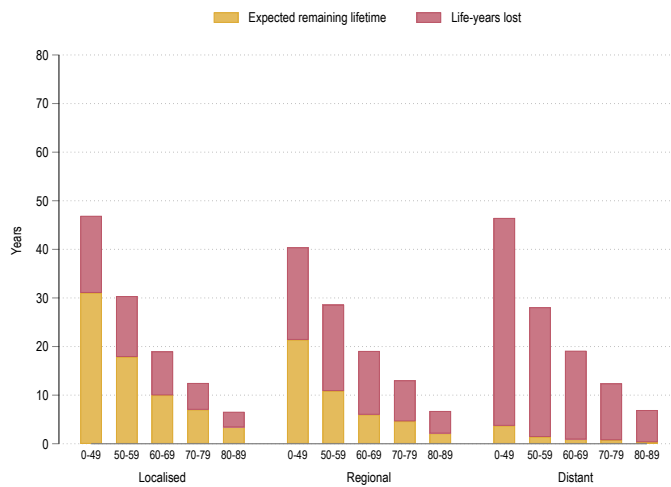
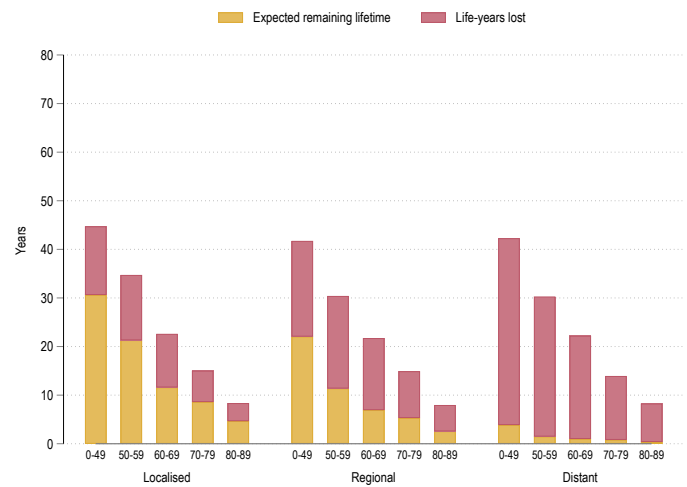
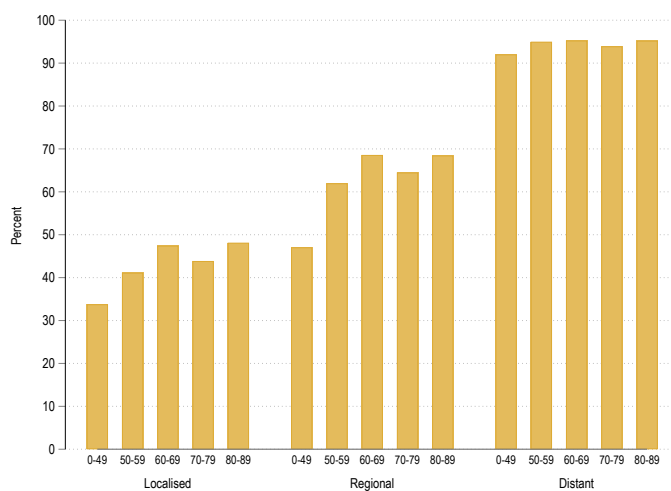
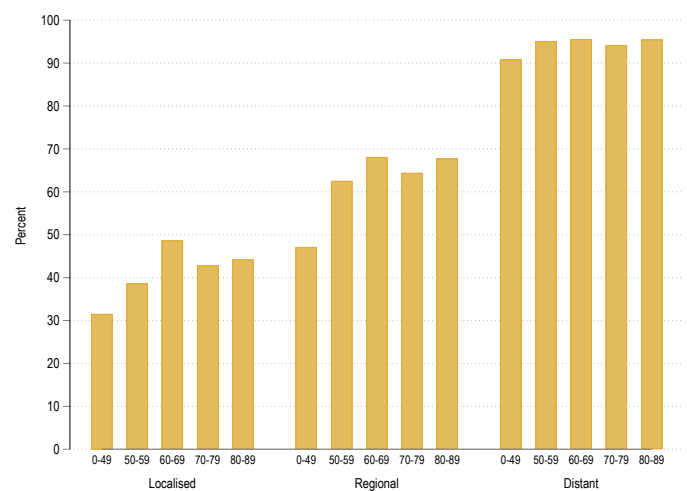
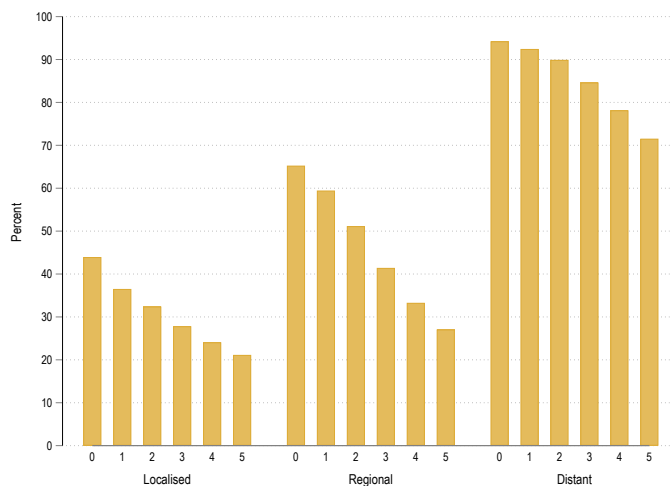
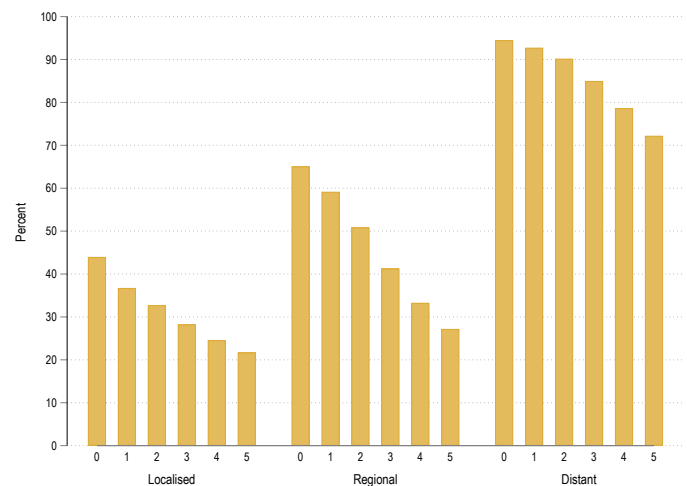
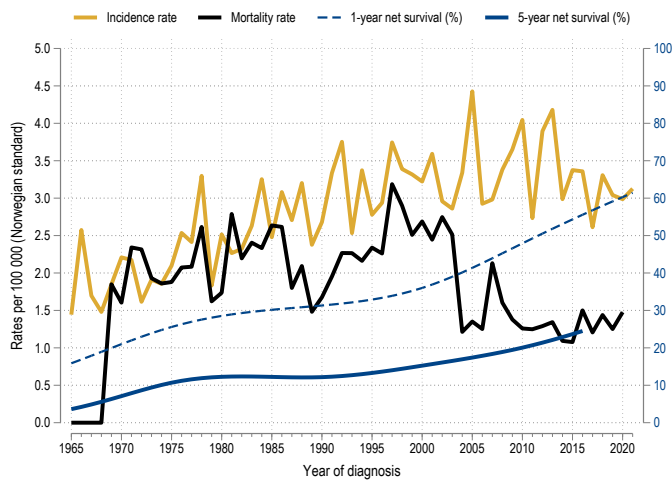
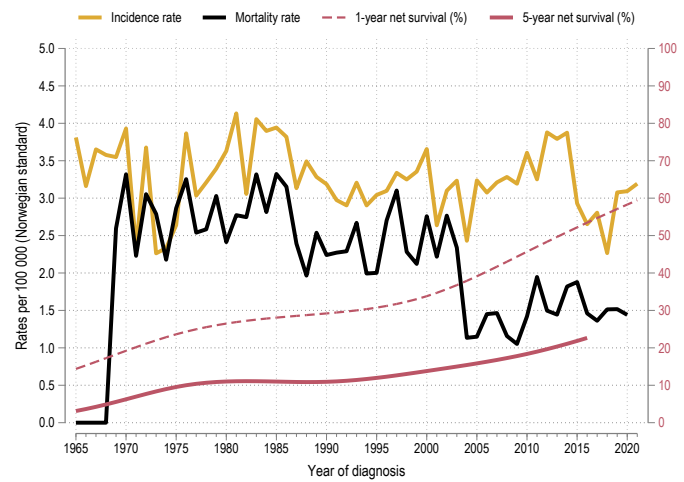
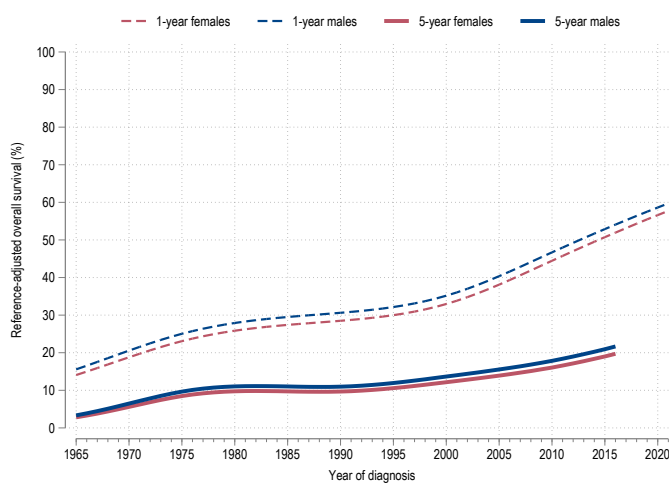
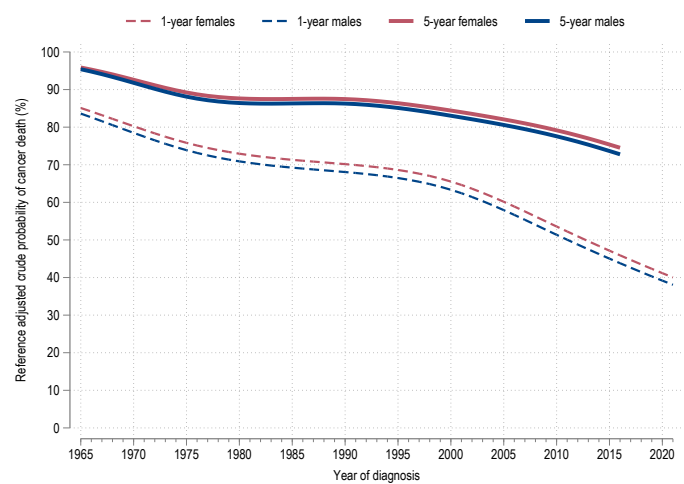
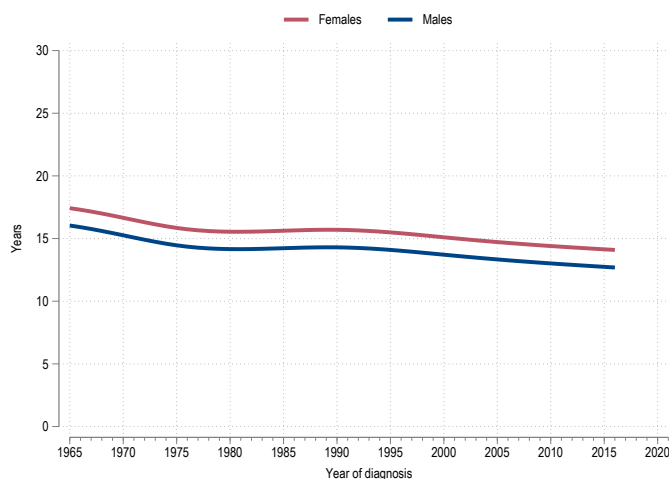
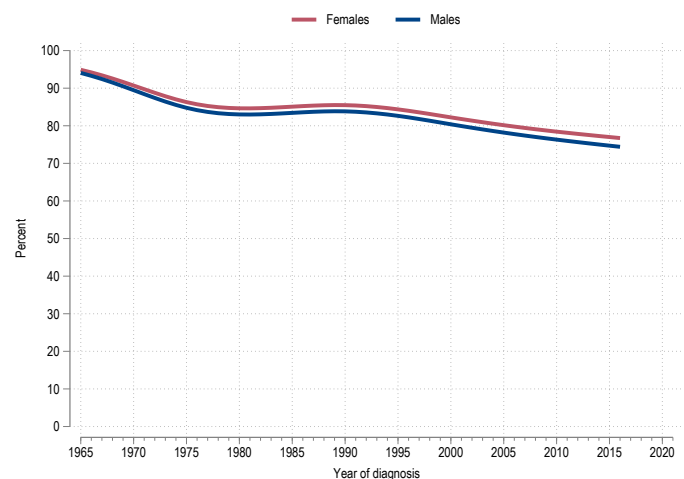
Figure 7.2: Gallbladder: life expectancy and life-years lost**Figure 7.2-A:** Life expectancy by age and stage. Males**Figure 7.2-B:** Life expectancy by age and stage. Females**Figure 7.2-C:** Proportion of life-years lost. Males**Figure 7.2-D:** Proportion of life-years lost. Females**Figure 7.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 7.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

Figure 7.3: Gallbladder: trends**Figure 7.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 7.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 7.3-C:** Trends in reference adjusted all-cause survival**Figure 7.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 7.3-E:** Trends in reference adjusted life-years lost**Figure 7.3-F:** Trends in reference adjusted life-years lost (%)

Pancreas

8.1 Net survival and crude probabilities

Cancer in the pancreatic organ includes pancreatic ductal adenocarcinoma (PDAC) and neuroendocrine neoplasms (NEN/NET). The latter constitutes around 6–7 % of the total number of cases the last five-year period. In this report, NENs are excluded from the analyses as they are a very different group of cancers.

Net survival among pancreatic cancer patients declines sharply the first three years after diagnosis, and the five year net survival estimate equals 8 %. After five years the net survival levels off, reaching a plateau and the ten year net survival equals 5.1 % for both sexes combined (Figure 8.1–A). There are virtually no differences between sexes.

The probability of surviving five years is 7.3 % (Figure 8.1–B). This is quite similar to the net survival estimate, reflecting the fact that most pancreatic cancer patients dying the first five years after diagnosis are dying from their cancer.

Crude probabilities of pancreatic cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 8.1–D and 8.1–C). However, the probability of dying from localised and regional pancreatic cancer also depends on age with poorer survival in the oldest patients. In women with localised cancer, the five year crude probability of death due to pancreatic cancer is 88 % at ages 80–89, while the corresponding probability is 43 % at ages 0–49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is very high, the age gradient is small.

Having survived a localised pancreatic cancer for one, two or up to five years after diagnosis, has a considerable impact on your survival the coming five years (Figures 8.1–F and 8.1–E). The same is true for regional and distant cancer, but one should bear in mind that very few patients will survive up to five years when diagnosed with more advanced stages.

8.2 Life expectancy and life-years lost

The high risk of pancreatic cancer death leads to a considerable loss in life-years in all age groups and for

all stages, with larger losses if diagnosed with an advanced stage (Figures 8.2–B and 8.2–A). The proportion of life-years lost due to cancer is increasing with age for localised pancreatic cancer. For more advanced stages these proportions are generally high for all ages (Figures 8.2–D and 8.2–C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 8.2–F and 8.2–E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a considerable risk of dying from pancreatic cancer. For regional and distant pancreatic cancer the proportion remains at a high level, also after surviving five years, still keeping in mind that very few survives up to five years for these stages.

8.3 Time trends

Net survival of pancreatic cancer has been stable on a low level for both sexes. In the more recent years there are signs of increased short-term survival, but less so when looking at longer term survival (Figures 8.3–B and 8.3–A). This reflects the fact that many pancreatic cancer patients are diagnosed with advanced stage, where curative treatment options are scarce. The rise in short-term survival is likely a result of more use of palliative chemotherapy. Correspondingly, the all-cause survival has been stable at a very low level, with some signs of an increase in short-term survival (Figure 8.3–C). The five-year crude probability of dying from pancreatic cancer has been stable at a high level (Figure 8.3–D). Looking at the number and proportion of life-years lost, these have remained stable over time, illustrating the limited improvement in prognosis for this patient group (Figures 8.3–E and 8.3–F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 16.9 years in 1965 and expected to be 16.2 years in 2016. Correspondingly, the proportion of life-years lost due to pancreatic cancer has decreased from 95.3 % in 1965 to an expected 91.1 % in 2016, when averaging across all ages and stages at diagnosis.

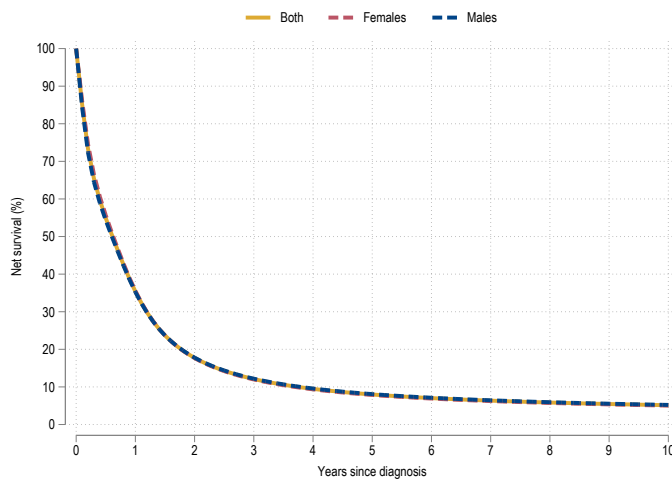
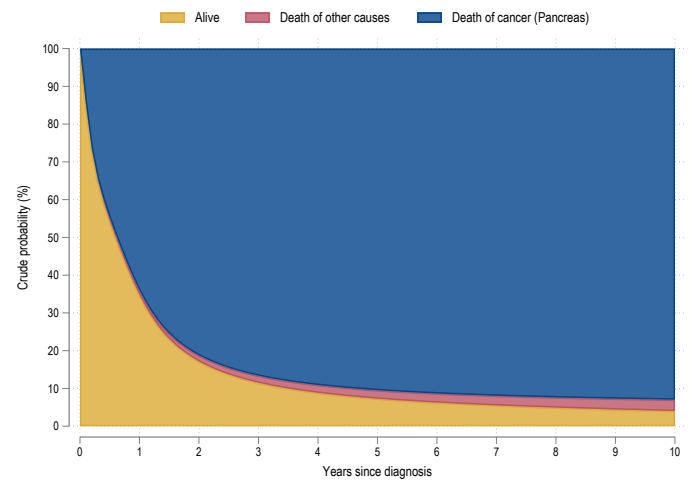
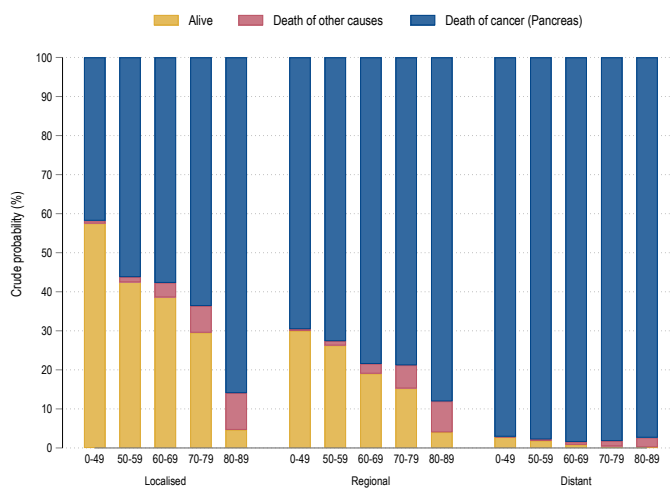
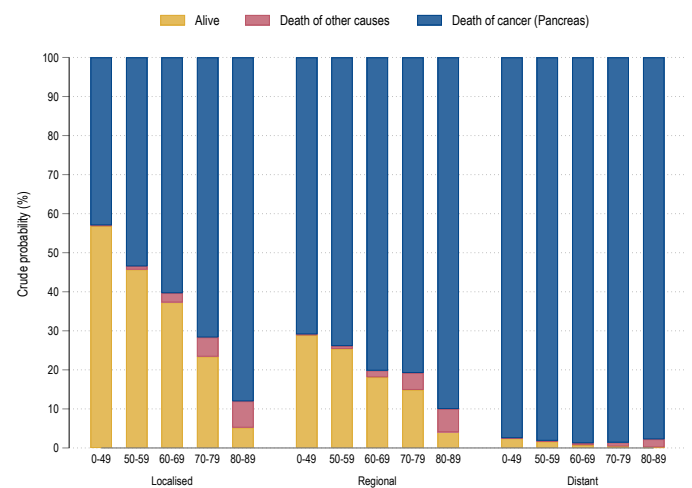
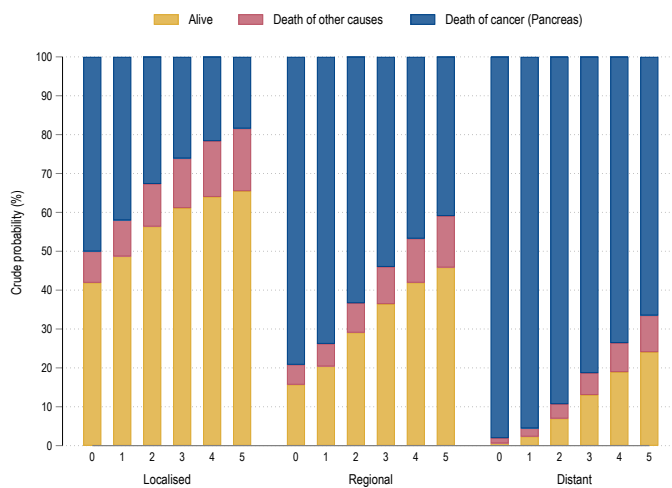
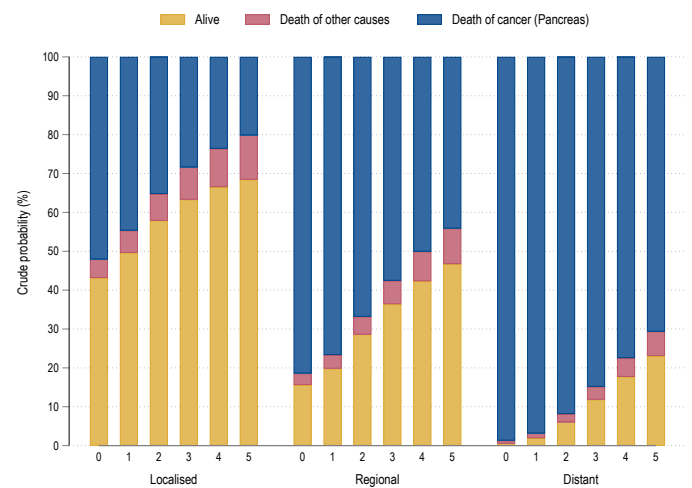
Figure 8.1: Pancreas: net and crude probabilities**Figure 8.1-A:** Net survival 0–10 years**Figure 8.1-B:** Crude probabilities 0–10 years**Figure 8.1-C:** 5-year crude probabilities by age and stage. Males**Figure 8.1-D:** 5-year crude probabilities by age and stage. Females**Figure 8.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 8.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

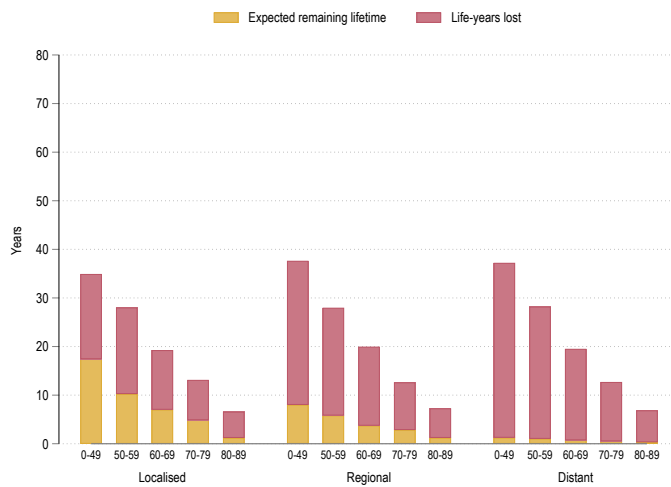
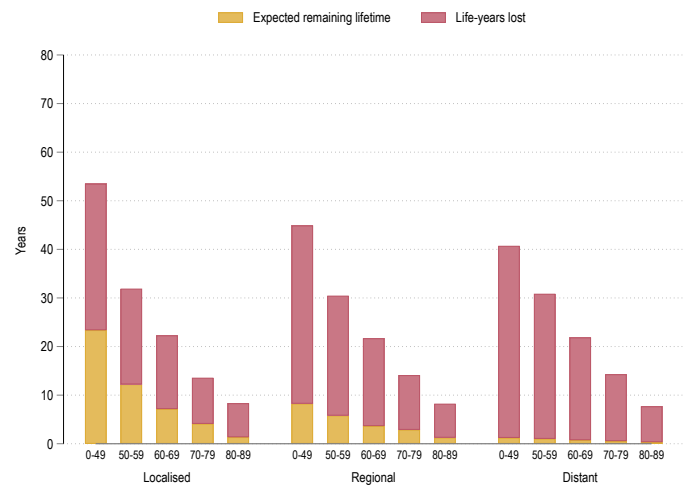
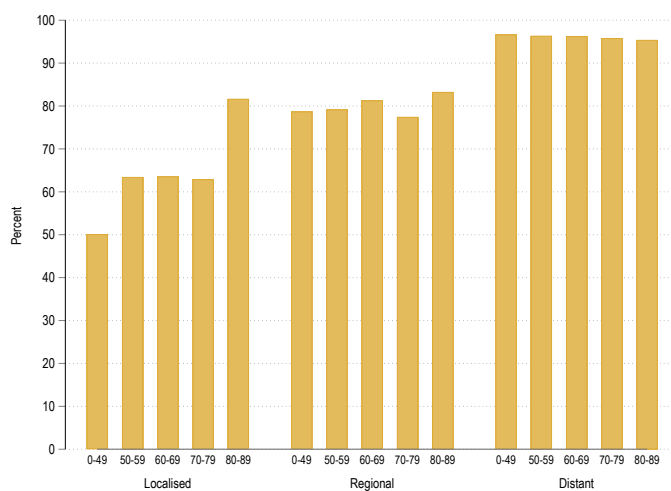
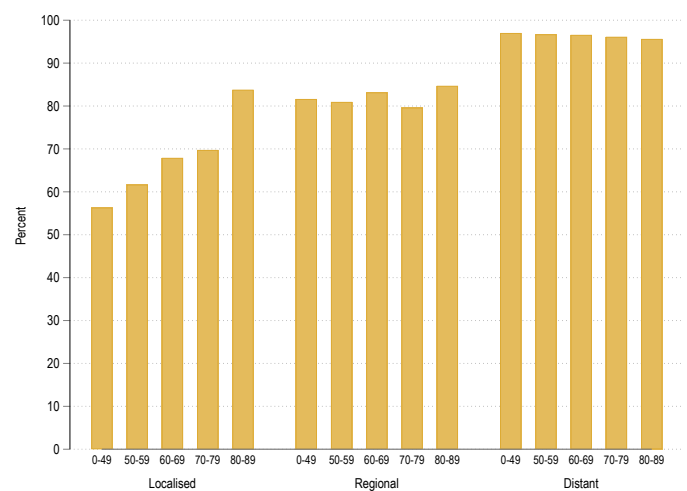
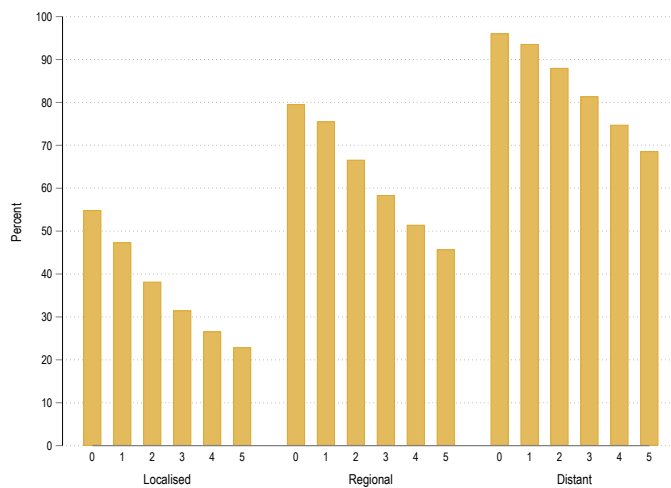
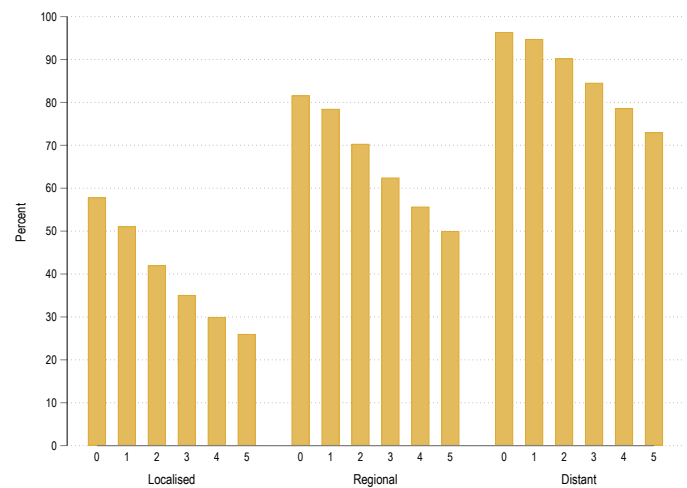
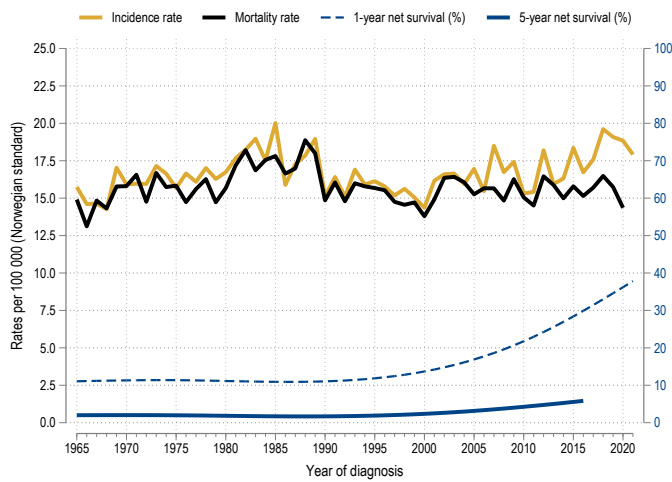
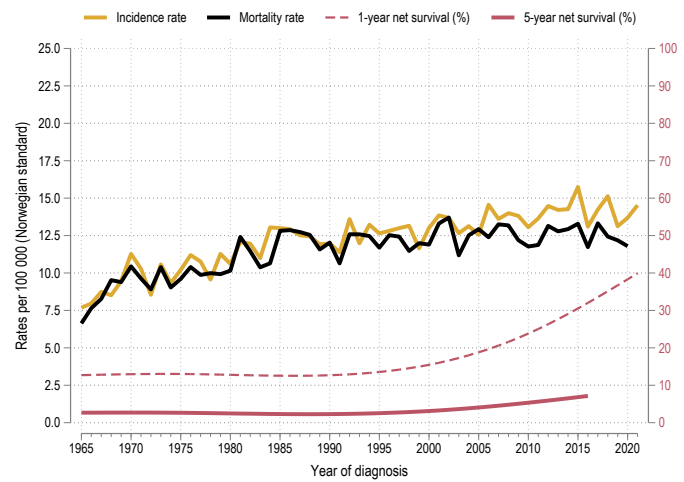
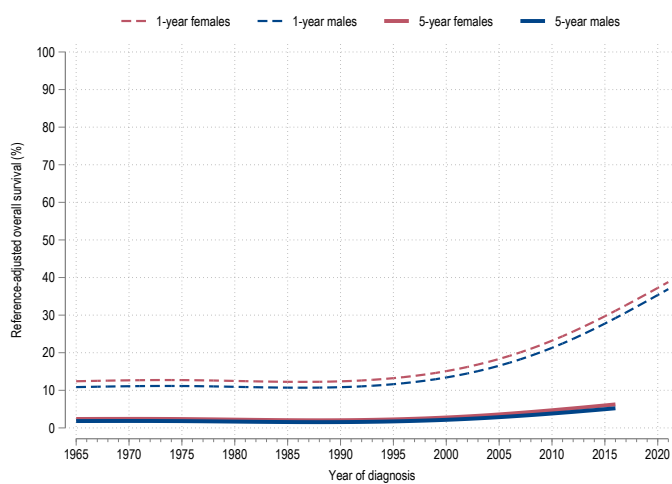
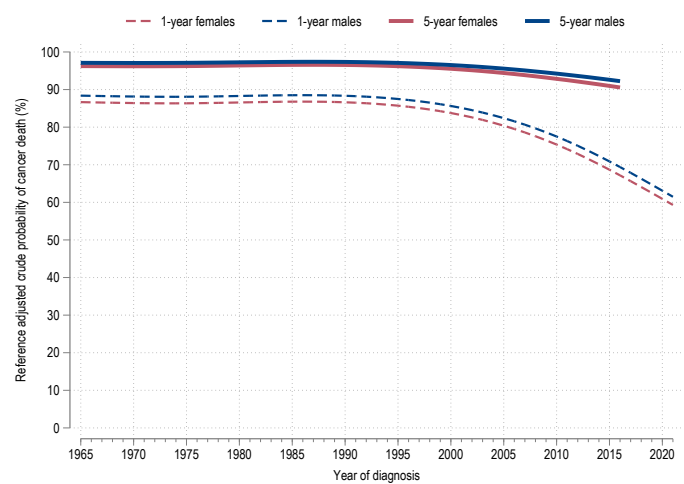
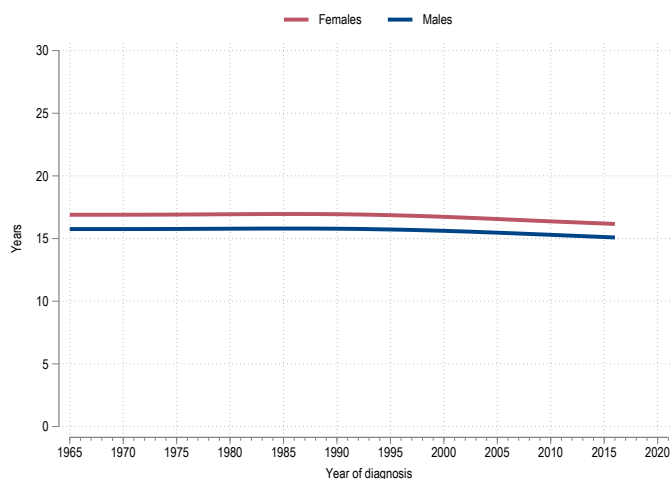
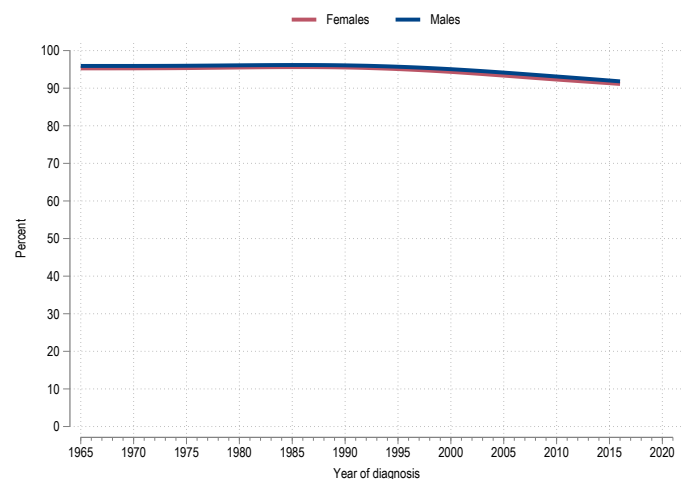
Figure 8.2: Pancreas: life expectancy and life-years lost**Figure 8.2-A:** Life expectancy by age and stage. Males**Figure 8.2-B:** Life expectancy by age and stage. Females**Figure 8.2-C:** Proportion of life-years lost. Males**Figure 8.2-D:** Proportion of life-years lost. Females**Figure 8.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 8.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

Figure 8.3: Pancreas: trends**Figure 8.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 8.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 8.3-C:** Trends in reference adjusted all-cause survival**Figure 8.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 8.3-E:** Trends in reference adjusted life-years lost**Figure 8.3-F:** Trends in reference adjusted life-years lost (%)

Lung

9.1 Net survival and crude probabilities

Net survival among lung cancer patients declines steadily the first years after diagnosis and then levels off without reaching a plateau (Figure 9.1-A). At five years since diagnosis, the net survival is 33.4% (both sexes combined), while at ten years it is 25.2%. Women have a somewhat better survival than men throughout the first ten years after diagnosis.

The probability of surviving five years is 25.2% (Figure 9.1-B). This is quite similar to the net survival estimate, reflecting the fact that most lung cancer patients dying the first five years after diagnosis are dying from their lung cancer.

Crude probabilities of lung cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 9.1-D and 9.1-C). However, the probability of dying from lung cancer also depends on age with poorer survival in the oldest patients. Among patients with localised cancer, old age is associated with much poorer survival compared to younger patients. In women with localised cancer, the five year crude probability of death due to lung cancer is 30.6% at ages 80–89, while the corresponding probability is 0.1% at ages 0–49. In contrast, among patients with distant metastases at diagnosis, where the risk of death due to cancer is higher, the age gradient is smaller.

Having survived a localised lung cancer for one, two or up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 9.1-F and 9.1-E). However, if regional or distant metastases were present at time of diagnosis it will strongly influence the future five-year survival conditioning on surviving one, two or up to five years. The longer a patient survives the better future survival and the more similar future survival across stages. When interpreting these results it is important to remember that only very few

patients with distant lung cancer will survive one or more years after diagnosis.

9.2 Life expectancy and life-years lost

The high risk of lung cancer death leads to a loss in life-years in all age groups, with larger losses if diagnosed with an advanced stage (Figures 9.2-B and 9.2-A). The proportion of remaining life-years that are lost due to cancer is therefore particularly high in patients with regional and distant lung cancer (Figures 9.2-D and 9.2-C).

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 9.2-F and 9.2-E). However, this proportion does not approach zero for any of the stages, reflecting the fact that a median aged patient surviving five years after diagnosis, still have a considerable risk of dying from lung cancer. For distant lung cancer the proportion declines but remains at a fairly high level also after surviving five years.

9.3 Time trends

Net survival of lung cancer has increased, in particular over the past two decades, for both sexes (Figures 9.3-B and 9.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from lung cancer has declined (Figures 9.3-C and 9.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 9.3-E and 9.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 10.8 years in 1965 and expected to be 7.8 years in 2016. Correspondingly, the proportion of life-years lost due to lung cancer has decreased from 85.9% in 1965 to an expected 62.6% in 2016, when averaging across all ages and stage at diagnosis.

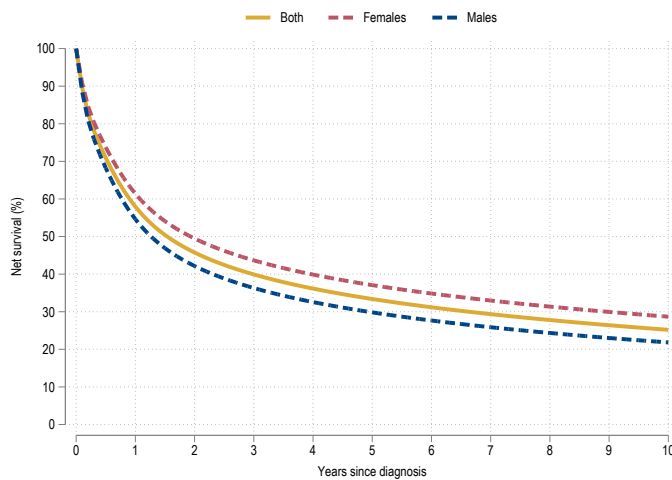
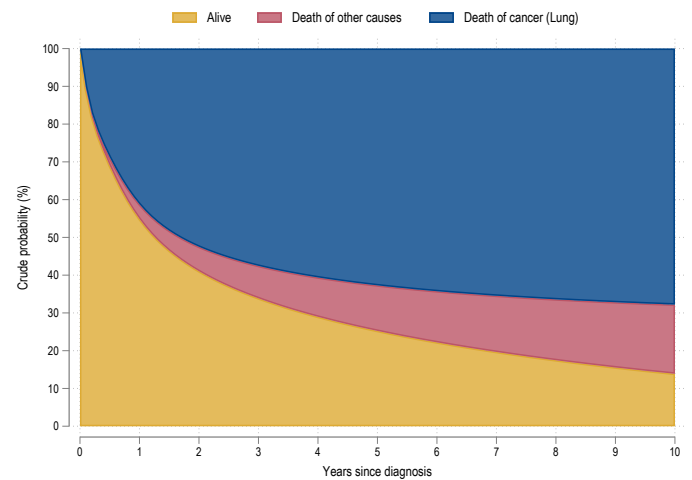
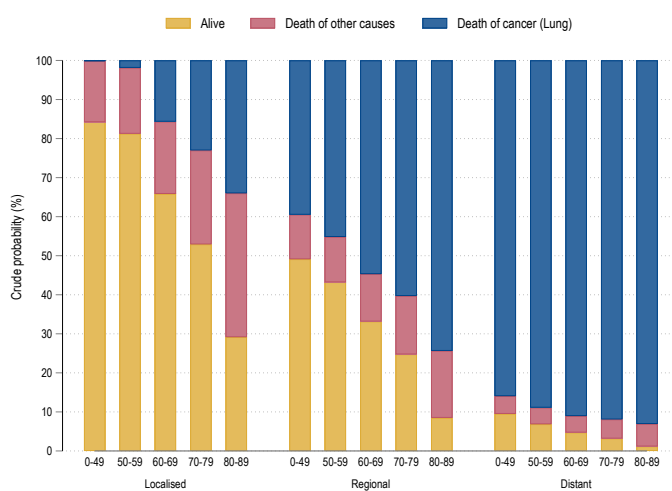
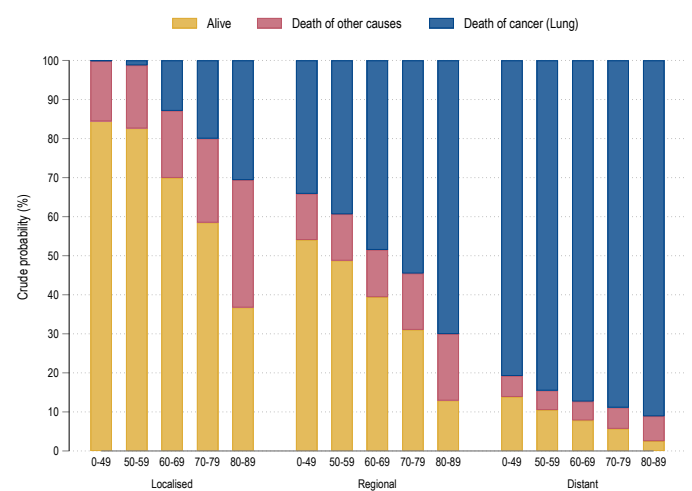
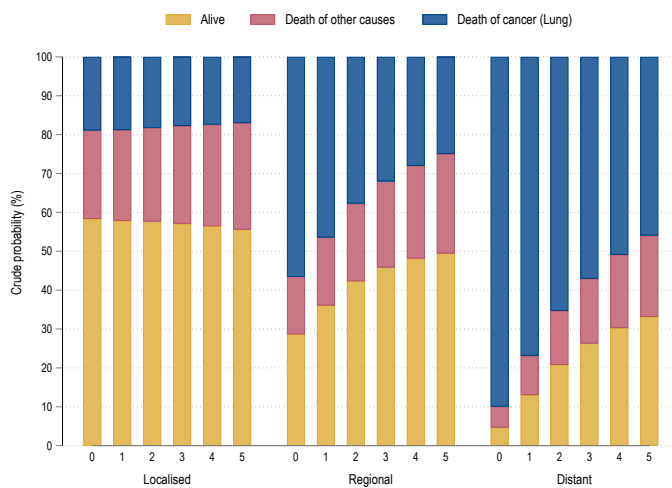
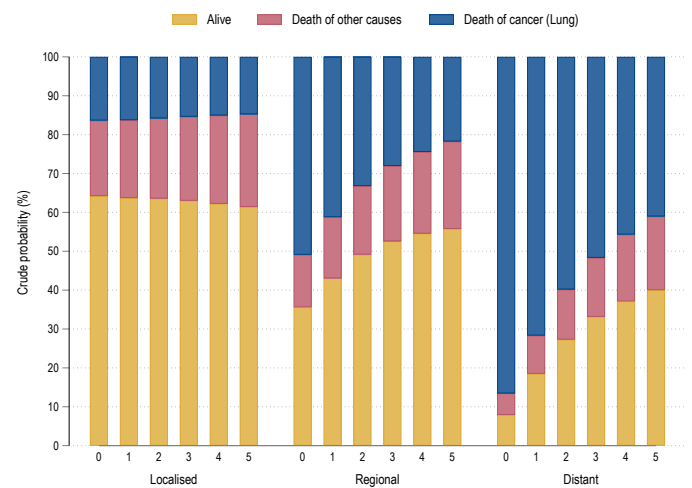
Figure 9.1: Lung: net and crude probabilities**Figure 9.1-A:** Net survival 0–10 years**Figure 9.1-B:** Crude probabilities 0–10 years**Figure 9.1-C:** 5-year crude probabilities by age and stage. Males**Figure 9.1-D:** 5-year crude probabilities by age and stage. Females**Figure 9.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 9.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

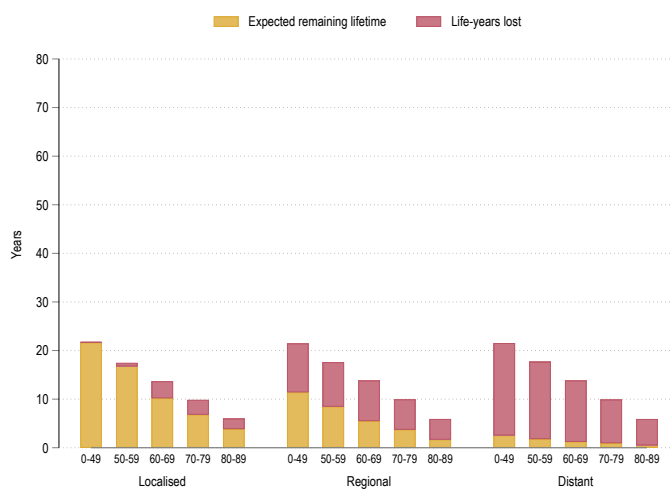
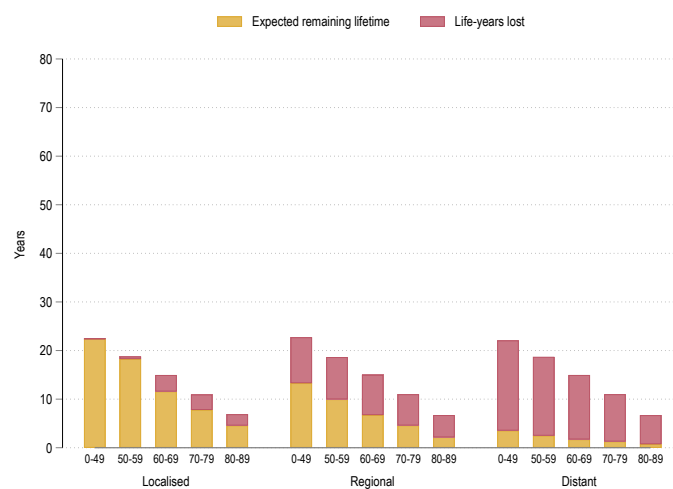
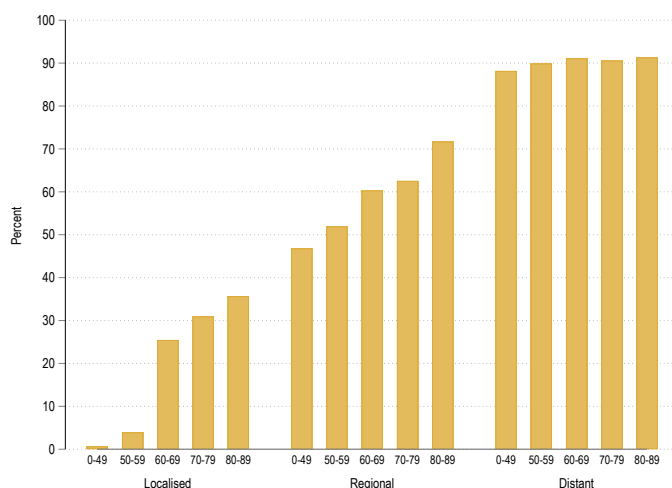
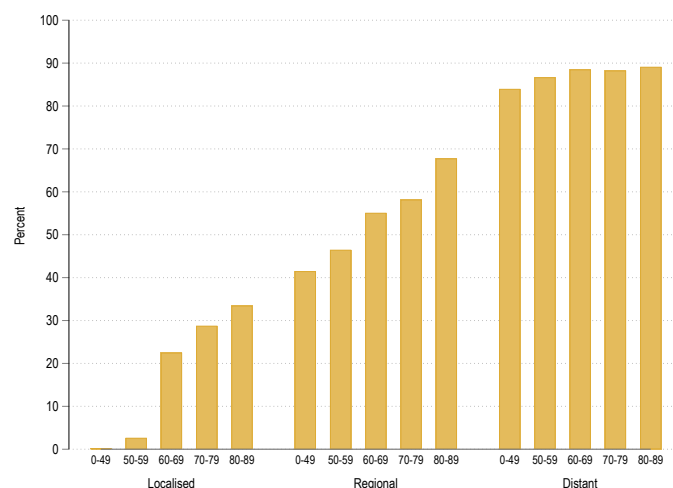
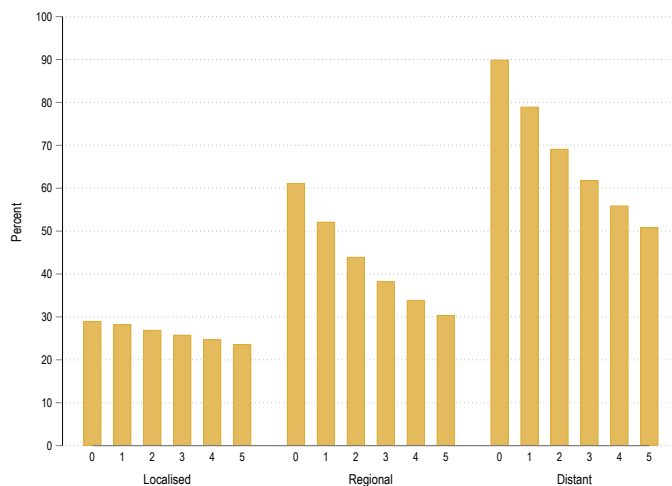
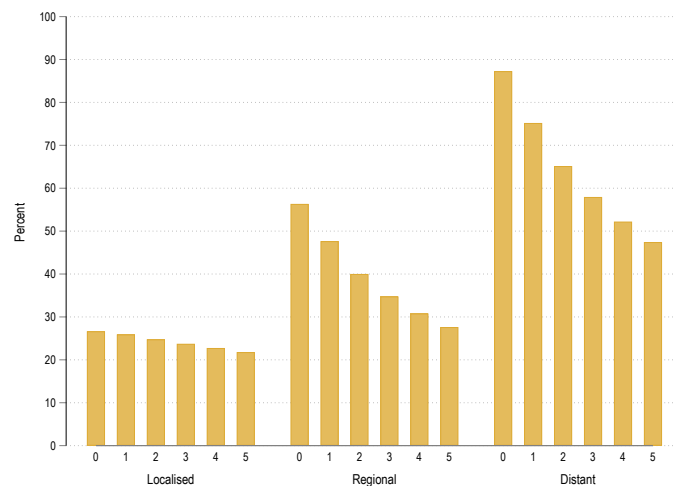
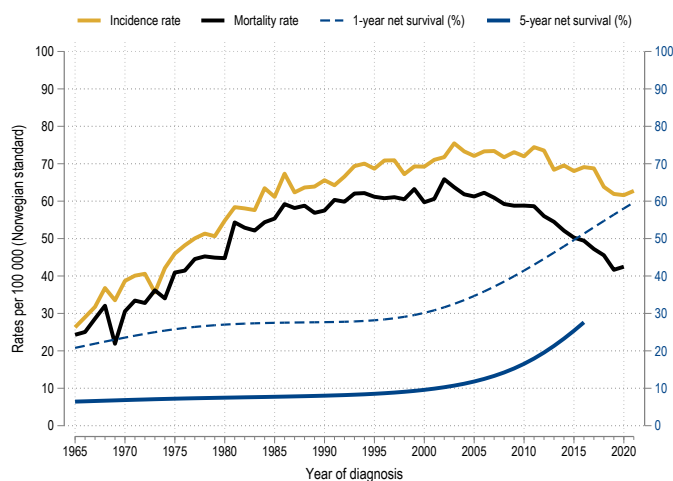
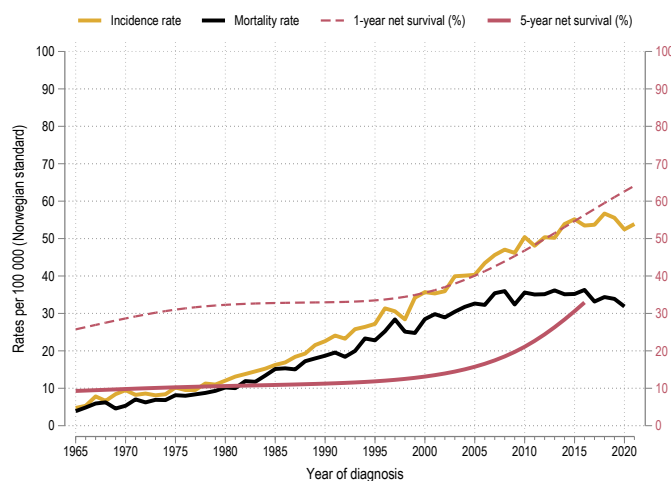
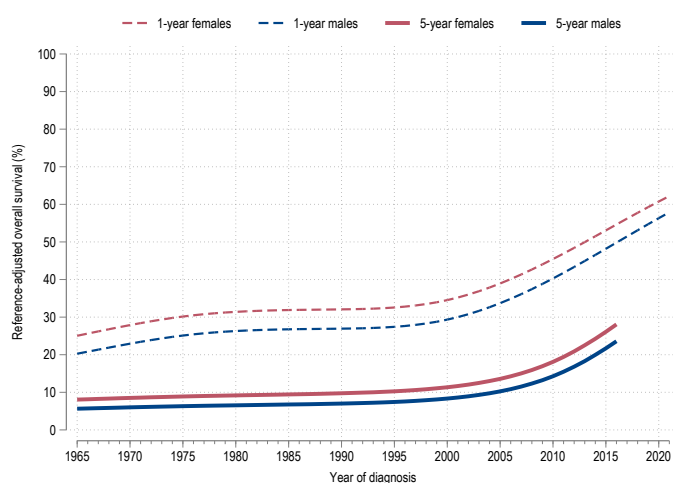
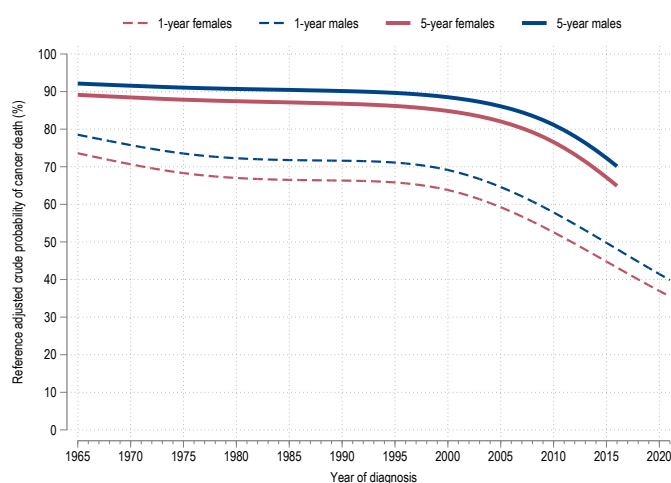
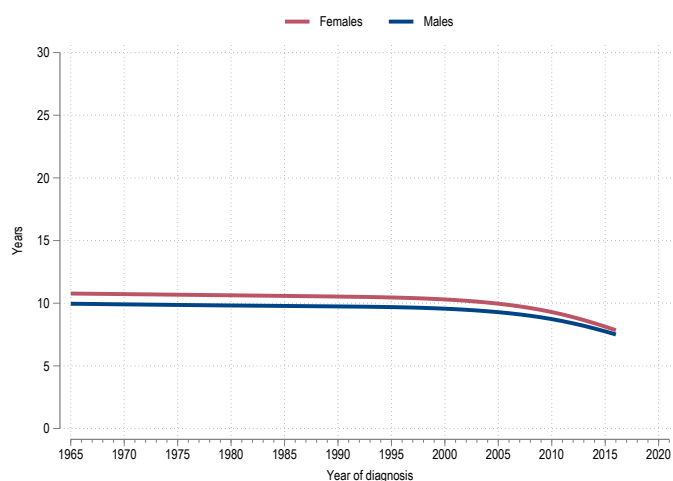
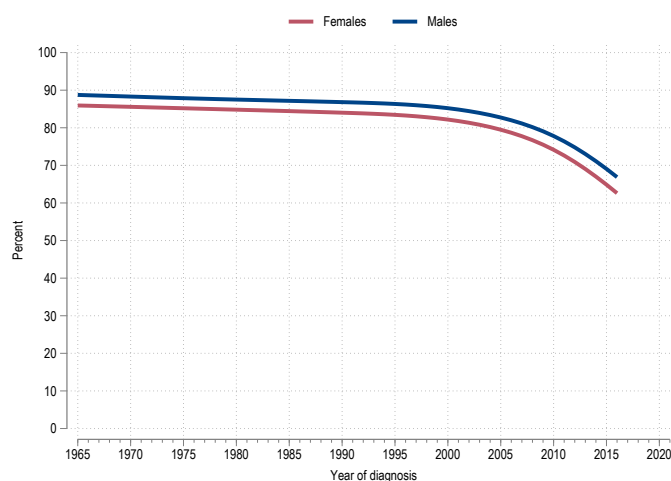
Figure 9.2: Lung: life expectancy and life-years lost**Figure 9.2-A:** Life expectancy by age and stage. Males**Figure 9.2-B:** Life expectancy by age and stage. Females**Figure 9.2-C:** Proportion of life-years lost. Males**Figure 9.2-D:** Proportion of life-years lost. Females**Figure 9.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Males**Figure 9.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 71 years at diagnosis (median age). Females

Figure 9.3: Lung: trends**Figure 9.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 9.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 9.3-C: Trends in reference adjusted all-cause survival****Figure 9.3-D: Trends in reference adjusted crude probability of cancer death****Figure 9.3-E: Trends in reference adjusted life-years lost****Figure 9.3-F: Trends in reference adjusted life-years lost (%)**

Melanoma of the skin

10.1 Net survival and crude probabilities

Net survival among patients with malignant melanoma declines the first years after diagnosis with a five year net survival estimate of 92.1 %. After five years the net survival levels off, with a tendency of reaching a plateau, with ten year net survival equal to 92.1 % for both sexes combined (Figure 10.1-A). There are significant differences between sexes, with women having a higher net survival the first ten years after diagnosis compared to men.

The probability of surviving five years after diagnosis is 82.7 % (Figure 10.1-B). The probability of dying from malignant melanoma within five years is 7.4 % and the additional probability of dying from other causes is 9.9 %. In comparison to net survival, the crude probability of dying from cancer is markedly lower since patients may also die from other causes.

Crude probabilities of malignant melanoma death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 10.1-D and 10.1-C). However, the probability of dying from melanoma also, to some extent, depends on age, with poorer survival in the oldest age groups. In women with localised cancer, the five year crude probability of death due to malignant melanoma is 4.5 % at ages 80–89, while the corresponding probability is 1.6 % at ages 0–49. Among patients with distant metastases at diagnosis, where the risk of dying from cancer is higher, the age gradient is smaller, likely affected by differences in risk of dying from other causes.

Having survived a localised malignant melanoma for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 10.1-F and 10.1-E). However, if distant metastases were present at the time of diagnosis the prognosis will depend on how long you have survived since diagnosis. The largest improvement in prognosis comes from surviving the first two years. As an example, a median aged women with distant metastases at the time of diagnosis, face a five year risk of dying from cancer of 43 %. If surviving five years from diagnosis the future five year risk of dying from melanoma is reduced to

15.2 %. Despite surviving several years after diagnosis, differences in prognosis across stages pertains.

10.2 Life expectancy and life-years lost

The differences in prognosis across stages of malignant melanoma leads to differences in life-years lost. Patients with localised melanoma lose few of their remaining life-years, whereas patients with distant melanoma lose many life-years (Figures 10.2-B and 10.2-A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportion of life-years lost are similar across ages for all stages (Figures 10.2-D and 10.2-C). These plots also shows the large difference in prognosis across stages, with patients with distant melanoma losing a much larger proportion of their remaining lifetime compared to regional and localised stage melanoma.

The proportion of life-years lost decreases with the number of years survived, for all stages (Figures 10.2-F and 10.2-E). For localised melanoma this proportion approaches zero for a median aged patient. For distant melanoma the proportion declines a lot, for a median aged women from 50.6 % at diagnosis to 22.4 % having survived five years after diagnosis.

10.3 Time trends

Net survival of malignant melanoma has increased over time for both sexes, particularly over the past two decades (Figures 10.3-B and 10.3-A). Correspondingly, the all-cause survival has increased and the crude probability of dying from malignant melanoma has declined (Figures 10.3-C and 10.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 10.3-E and 10.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 8.1 years in 1965 and expected to be 1.4 years in 2016. Correspondingly, the proportion of life-years lost due to malignant melanoma has decreased from 31.9 % in 1965 to an expected 5.6 % in 2016, when averaging across all ages and stages at diagnosis.

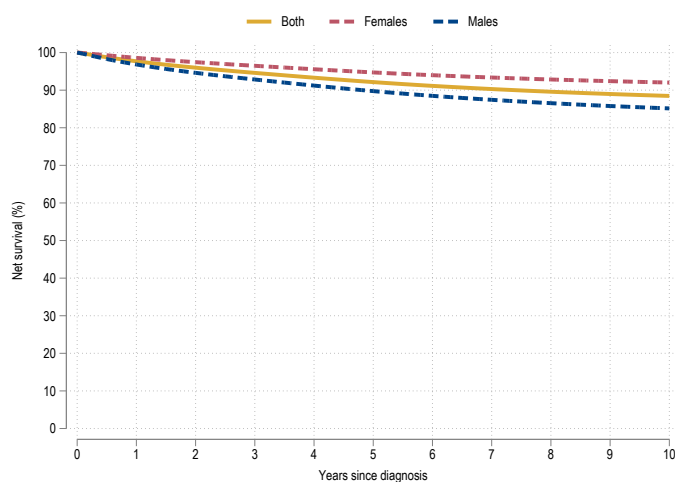
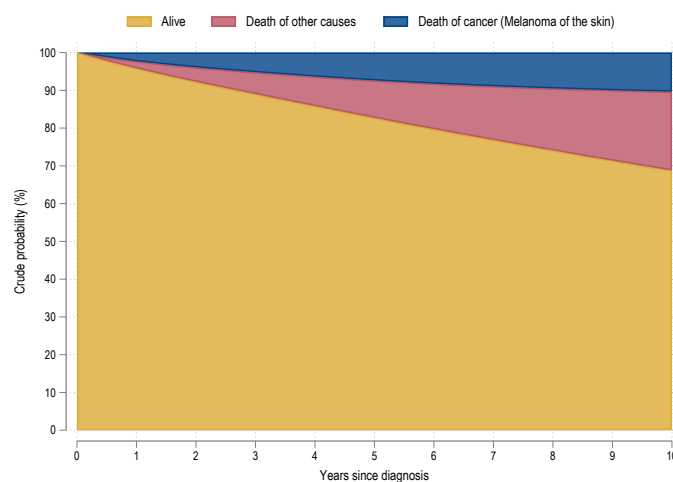
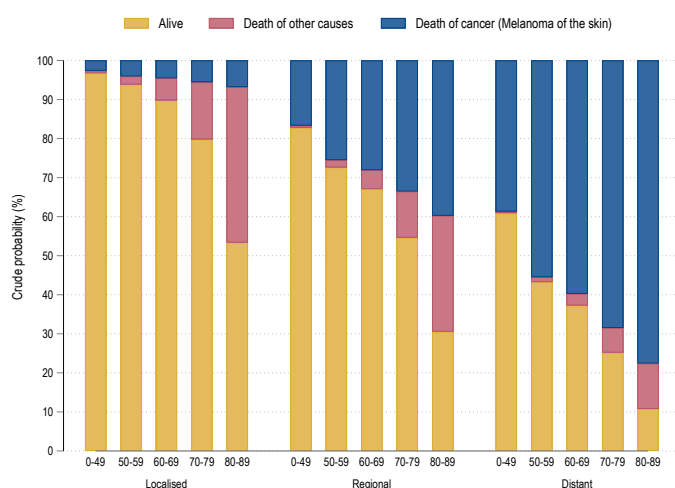
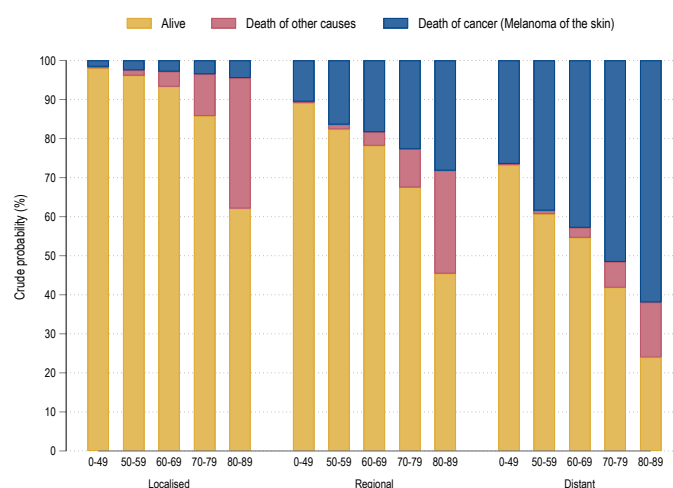
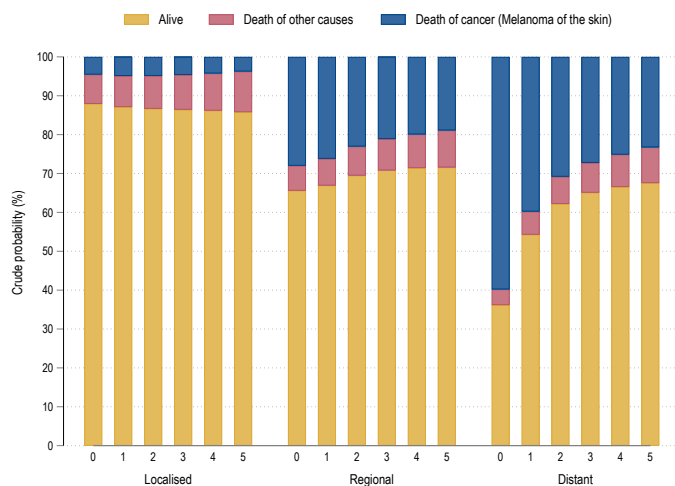
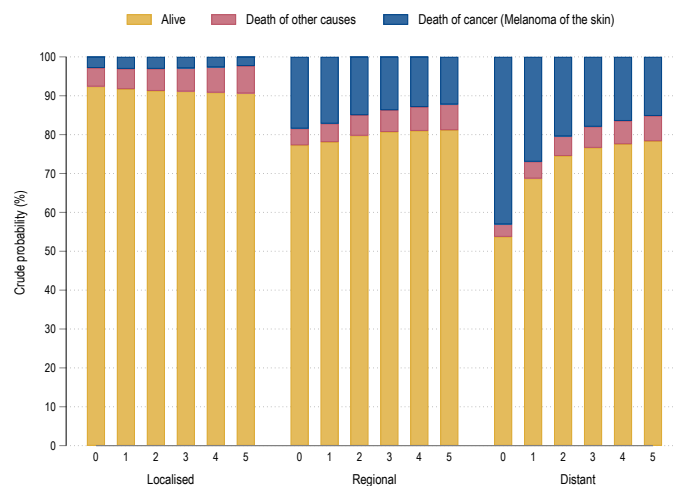
Figure 10.1: Melanoma of the skin: net and crude probabilities**Figure 10.1-A:** Net survival 0–10 years**Figure 10.1-B:** Crude probabilities 0–10 years**Figure 10.1-C:** 5-year crude probabilities by age and stage. Males**Figure 10.1-D:** 5-year crude probabilities by age and stage. Females**Figure 10.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Males**Figure 10.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Females

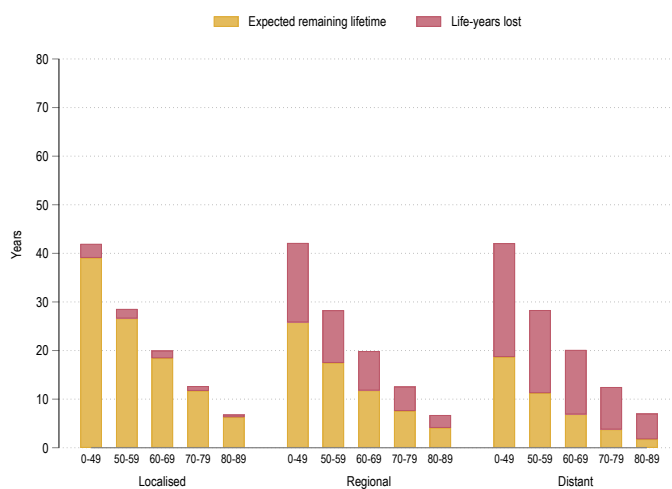
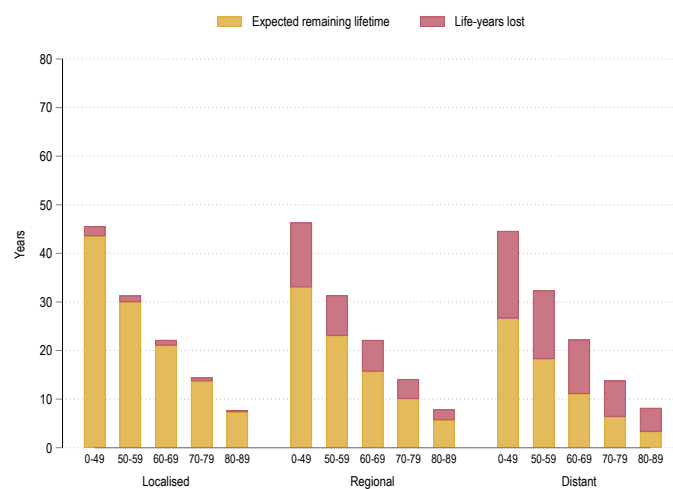
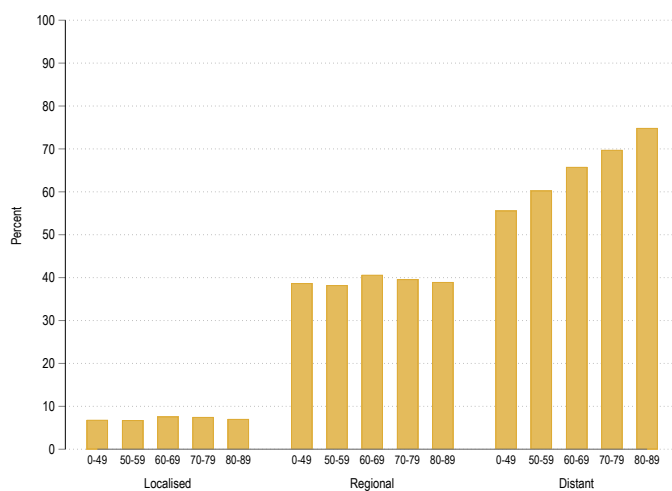
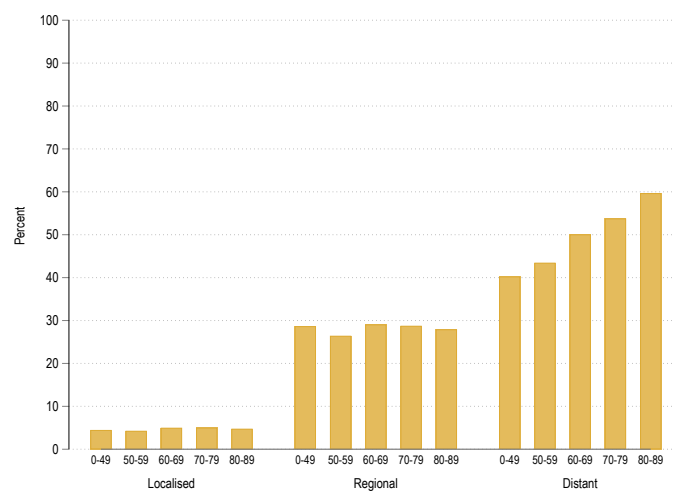
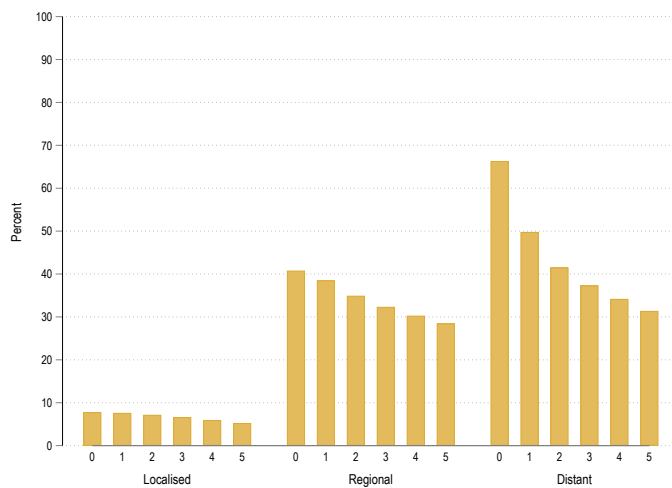
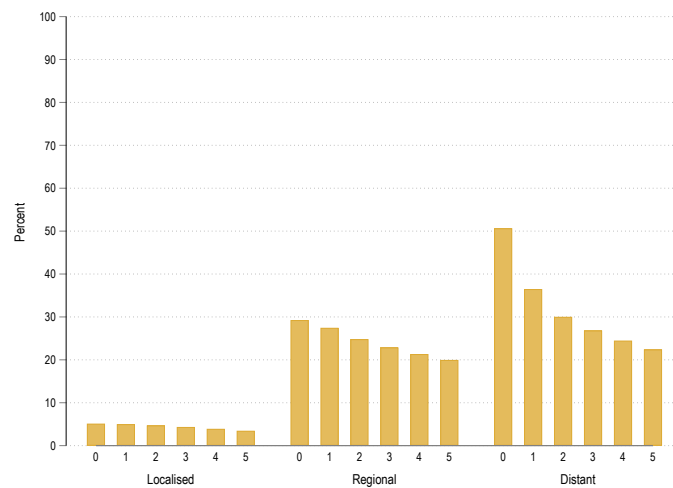
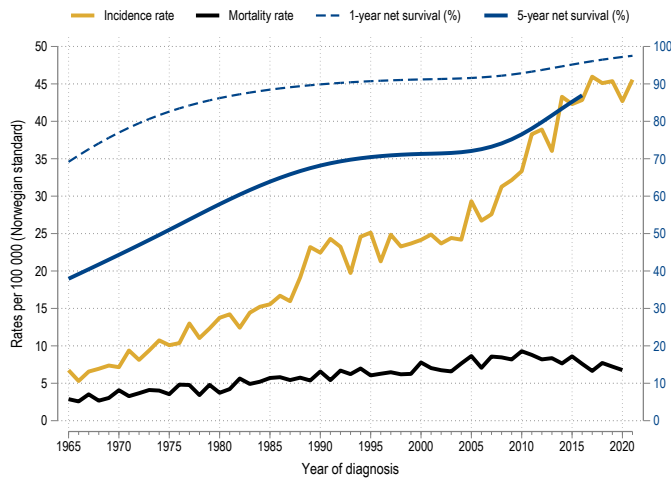
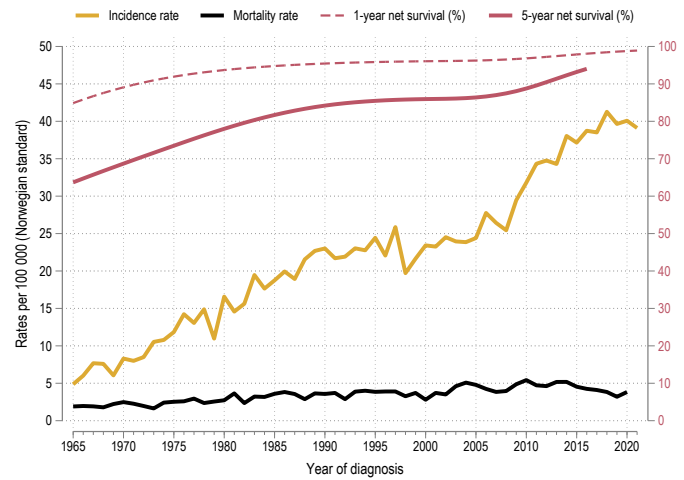
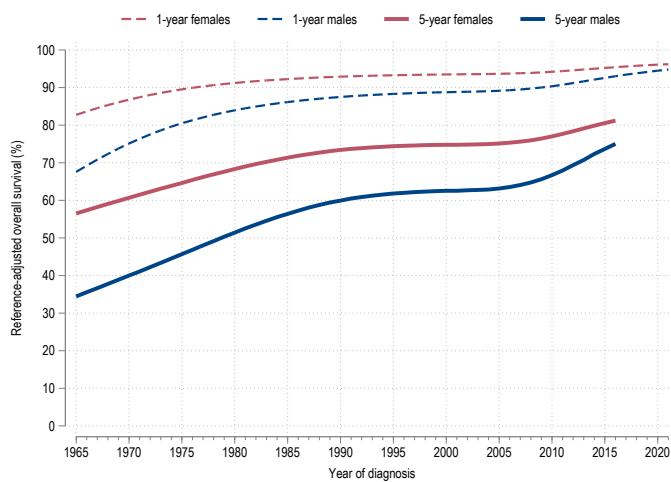
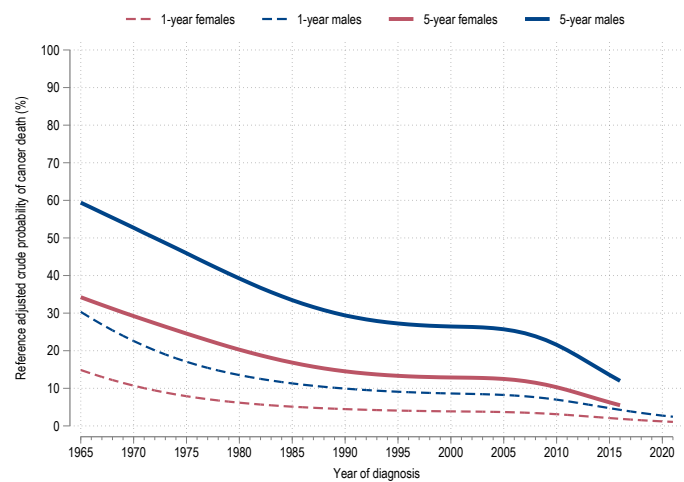
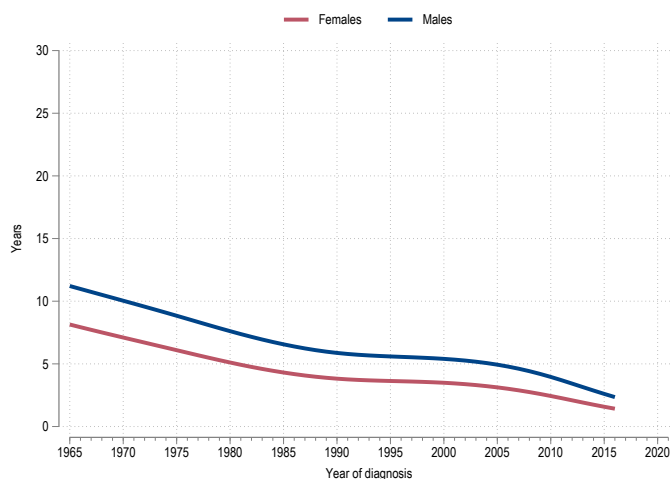
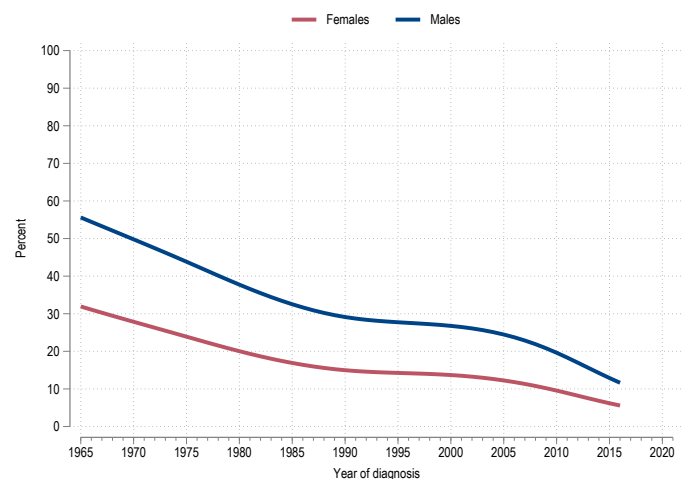
Figure 10.2: Melanoma of the skin: life expectancy and life-years lost**Figure 10.2-A:** Life expectancy by age and stage. Males**Figure 10.2-B:** Life expectancy by age and stage. Females**Figure 10.2-C:** Proportion of life-years lost. Males**Figure 10.2-D:** Proportion of life-years lost. Females**Figure 10.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Males**Figure 10.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 66 years at diagnosis (median age). Females

Figure 10.3: Melanoma of the skin: trends**Figure 10.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 10.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 10.3-C: Trends in reference adjusted all-cause survival****Figure 10.3-D: Trends in reference adjusted crude probability of cancer death****Figure 10.3-E: Trends in reference adjusted life-years lost****Figure 10.3-F: Trends in reference adjusted life-years lost (%)**

Breast

11.1 Net survival and crude probabilities

Net survival among breast cancer patients steadily declines after diagnosis with a five year net survival estimate of 91.7 %. After five years the net survival continue to decline, without reaching a plateau, with ten year net survival equal to 85.6 % (Figure 11.1–A). This reflect a rather good prognosis for many breast cancer patients, but also illustrates that some of these patients dies from their cancer, or of causes indirectly related to the cancer a long time after diagnosis.

The probability of surviving five years after diagnosis is 86 % (Figure 11.1–B). The probability of dying from breast cancer within five years is 7.9 % and the additional probability of dying from other causes is 6.1 %. In comparison to net survival, the crude probability of surviving after breast cancer is only marginally lower, reflecting that a substantial proportion of these patients are younger and therefore at low risk of dying from other causes.

Crude probabilities of breast cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figure 11.1–D). For stage I breast cancer, the five year crude probability of death due to cancer is 0.6 % at ages 60–69, while the corresponding probability is 63.1 % for stage IV breast cancer (Figure 11.1–D). There is also a clear age pattern, where older patients are at a higher risk of dying from breast cancer, especially for more advanced stages.

The probability of dying from breast cancer is only marginally influenced by the number of years survived since diagnosis (Figure 11.1–F). For a median aged, stage I breast cancer patient, the probability of dying from breast cancer within five years after diagnosis is 0.5 %. If surviving five years after diagnosis, the future five-year risk of dying from breast cancer is 1.3 %. In comparison, the probability of dying from stage IV breast cancer within five years after diagnosis is 60.5 %. If surviving five years from diagnosis the future five year risk of dying from breast cancer is 46.1 %.

11.2 Life expectancy and life-years lost

The differences in prognosis across stages of breast cancer leads to differences in life-years lost. Except for the

youngest age group, women with stage I breast cancer generally lose few of their remaining life-years, whereas women with stage IV breast cancer lose many life-years (Figure 11.2–B). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. However, the proportion of life-years lost are varying across age groups. Except for stage IV, the youngest women are losing a larger proportion of their remaining lifetime for all stages, possibly reflecting different patterns in aggressiveness across ages (Figure 11.2–D). These plots also shows the large difference in prognosis across stages, with women with stage IV breast cancer losing a much larger proportion of their remaining lifetime compared to less advanced stages.

The proportion of life-years lost is quite similar across number of years survived for stage I and II breast cancer. For more advanced stages, this proportion declines with number of years survived since diagnosis (Figure 11.2–F). A median aged patient with stage IV breast cancer is expected to lose 74.9 % of their remaining lifetime at the time of diagnosis. If surviving five years after diagnosis this proportion declines to 58.9 %.

11.3 Time trends

Net survival of breast cancer has increased over time, and in particular the last two decades (Figure 11.3–B). These improvements must be seen in light of the gradual introduction of organized screening, leading to a large increase in incidence of lower stage breast cancer. In addition, continuous improvement in treatment have occurred, particularly during over the past two decades. Correspondingly, all-cause survival has increased and the crude probability of dying from breast cancer has declined (Figures 11.3–C and 11.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 11.3–E and 11.3–F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 12.5 years in 1965 and expected to be 3.1 years in 2016. Correspondingly, the proportion of life-years lost due to breast cancer has declined from 48.4 % in 1965 to an expected 12.2 % in 2016, when averaging across all ages and stages at diagnosis.

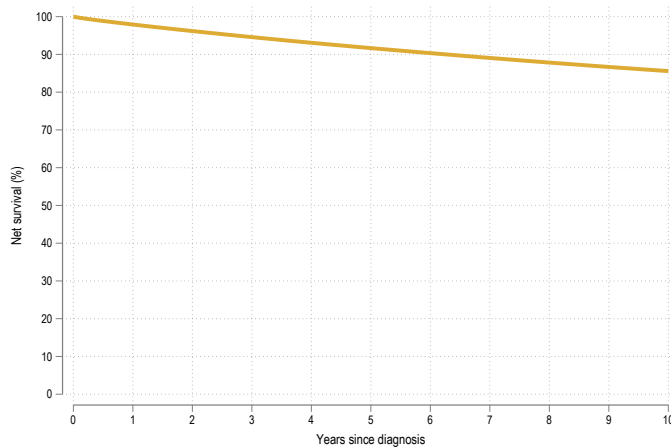
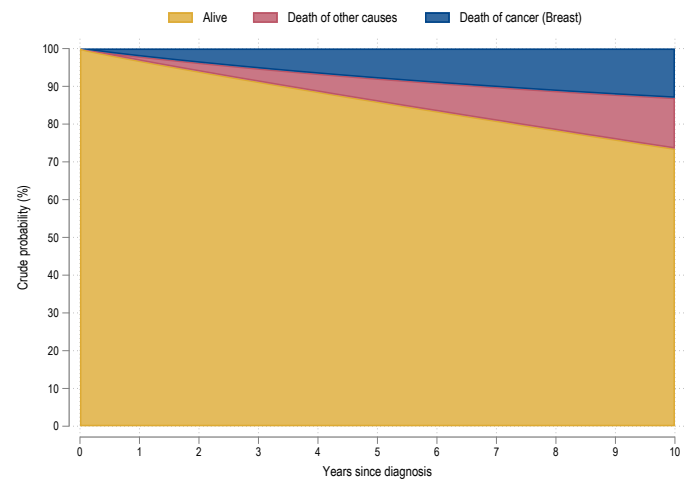
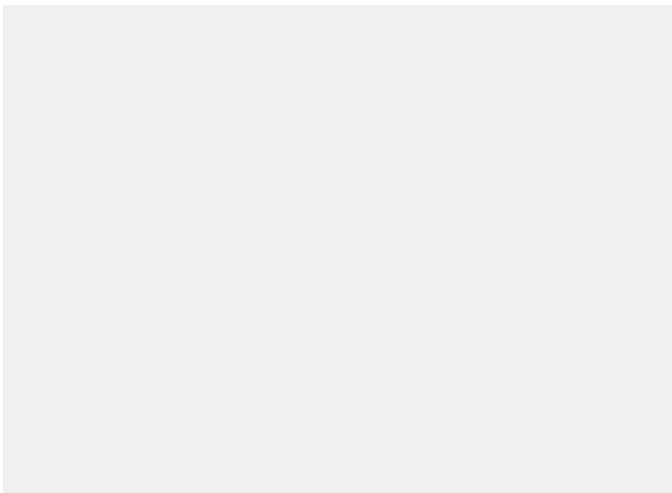
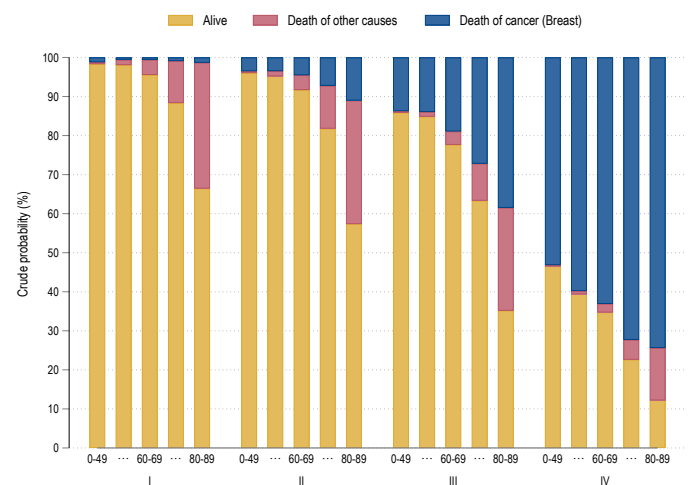
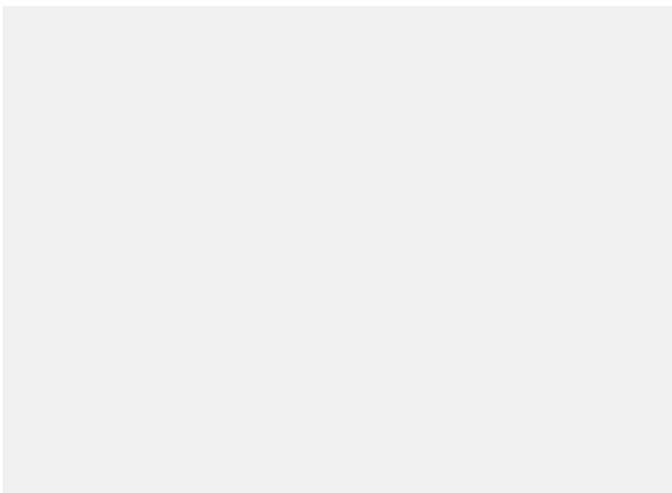
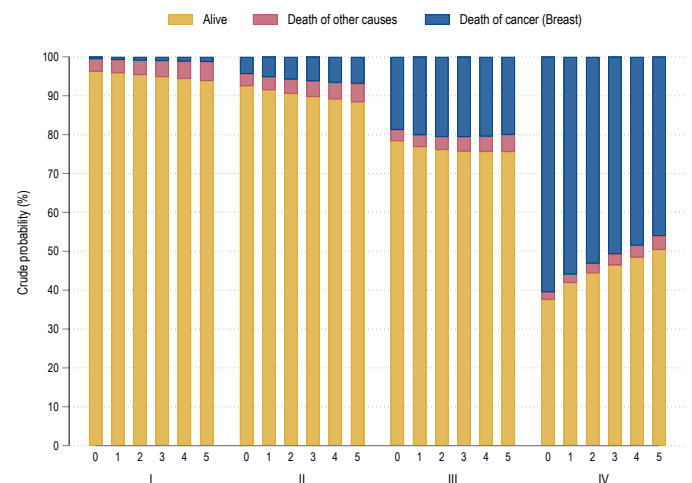
Figure 11.1: Breast: net and crude probabilities**Figure 11.1-A:** Net survival 0–10 years**Figure 11.1-B:** Crude probabilities 0–10 years**Figure 11.1-C:** 5-year crude probabilities by age and stage. Males**Figure 11.1-D:** 5-year crude probabilities by age and stage. Females**Figure 11.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Males**Figure 11.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Females

Figure 11.2: Breast: life expectancy and life-years lost

Figure 11.2-A: Life expectancy by age and stage. Males

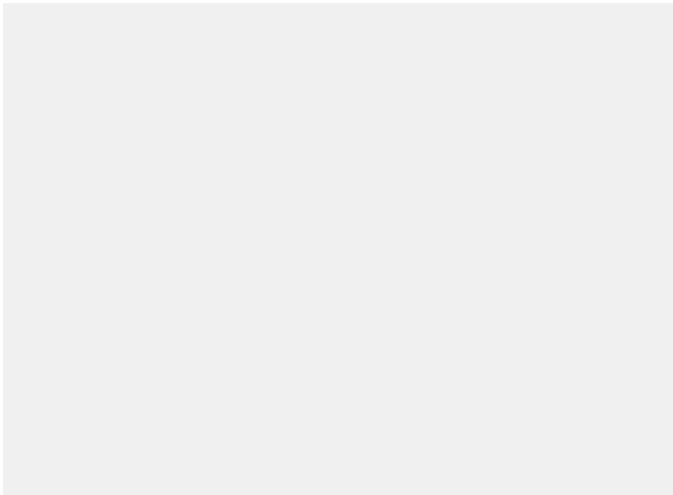


Figure 11.2-B: Life expectancy by age and stage. Females

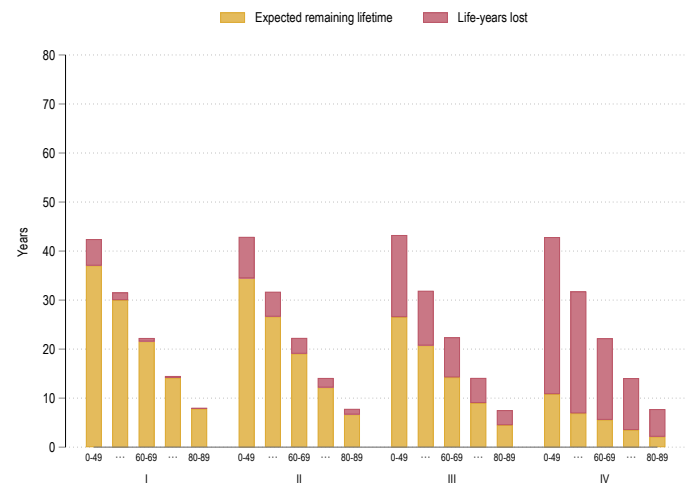


Figure 11.2-C: Proportion of life-years lost. Males

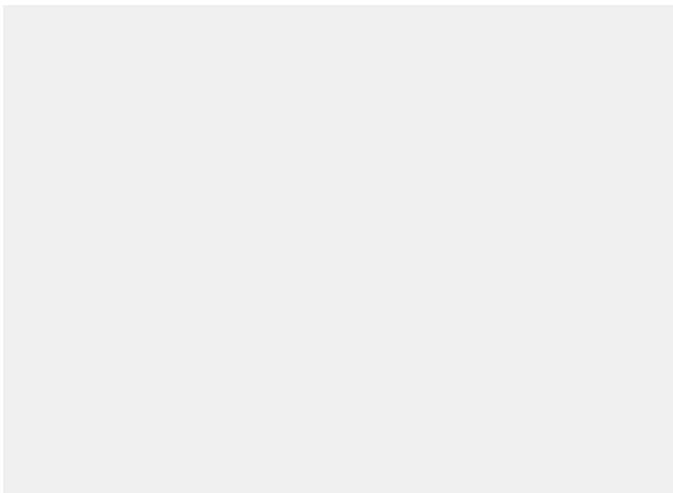


Figure 11.2-D: Proportion of life-years lost. Females

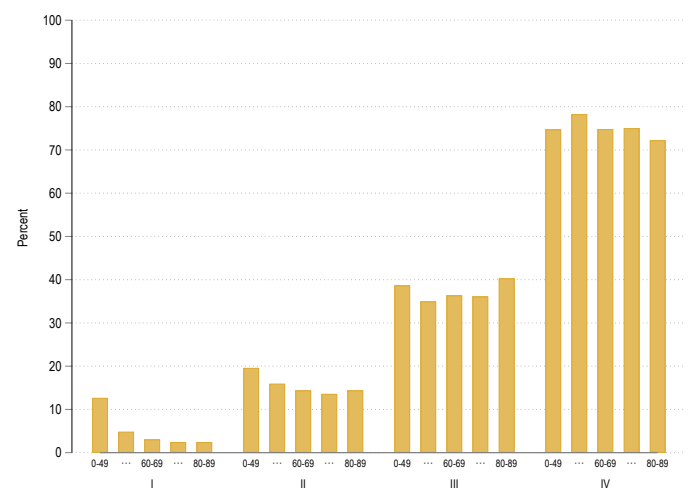


Figure 11.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Males

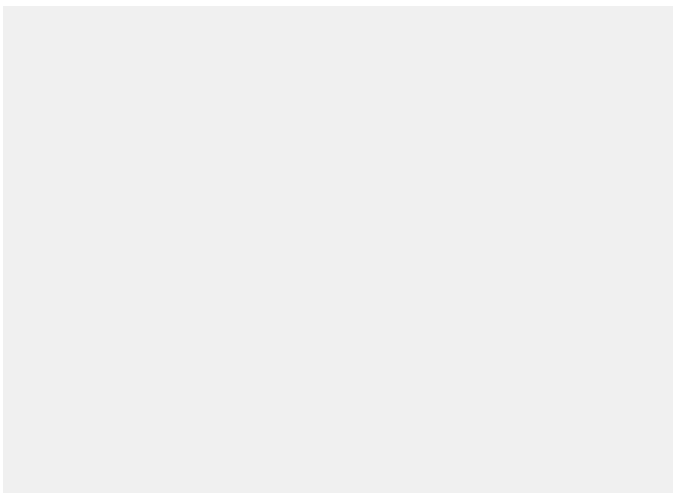


Figure 11.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 62 years at diagnosis (median age). Females

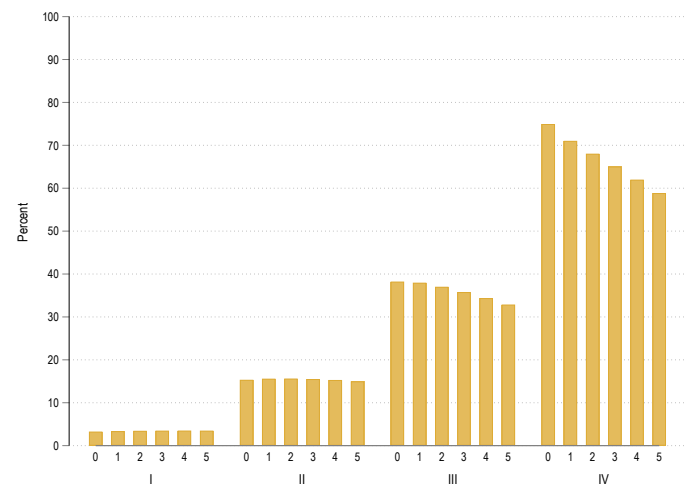


Figure 11.3: Breast: trends

Figure 11.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males

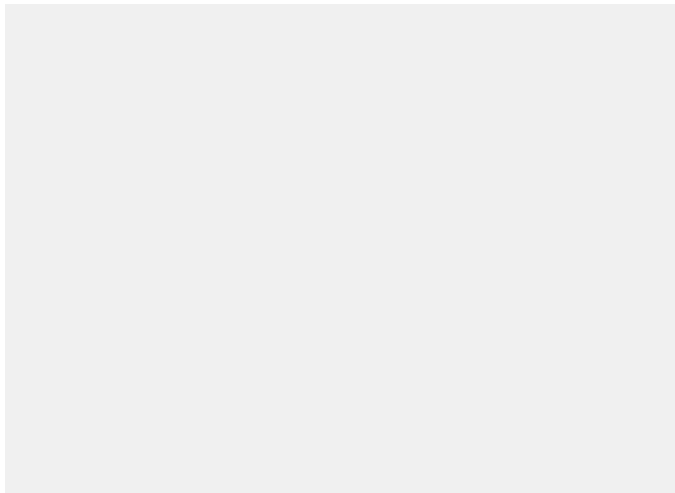


Figure 11.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females

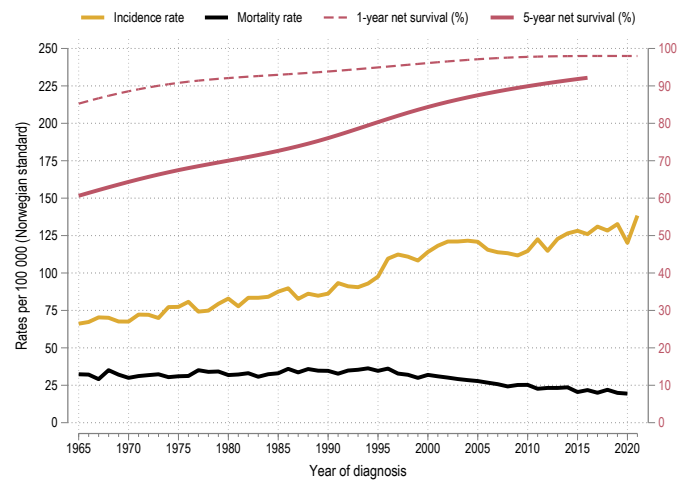


Figure 11.3-C: Trends in reference adjusted all-cause survival

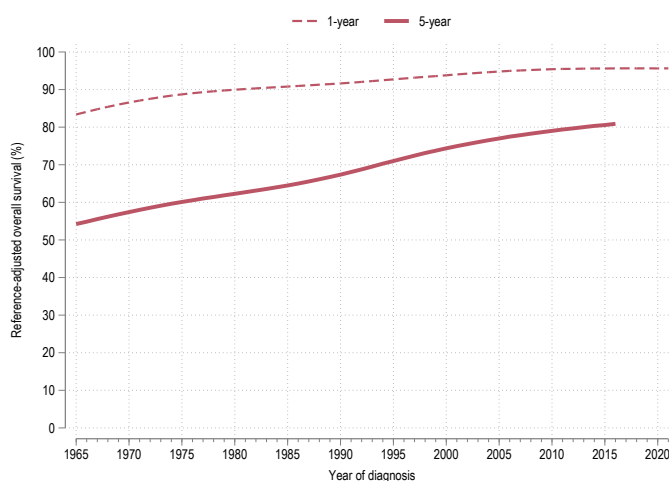
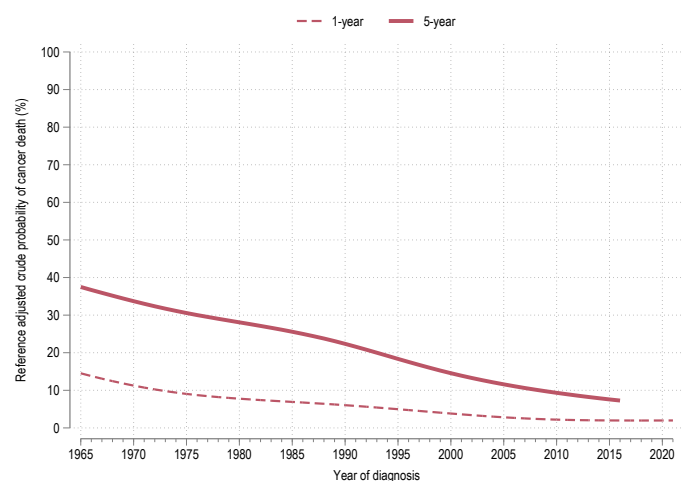


Figure 11.3-D: Trends in reference adjusted crude probability of cancer death



Breast

Figure 11.3-E: Trends in reference adjusted life-years lost

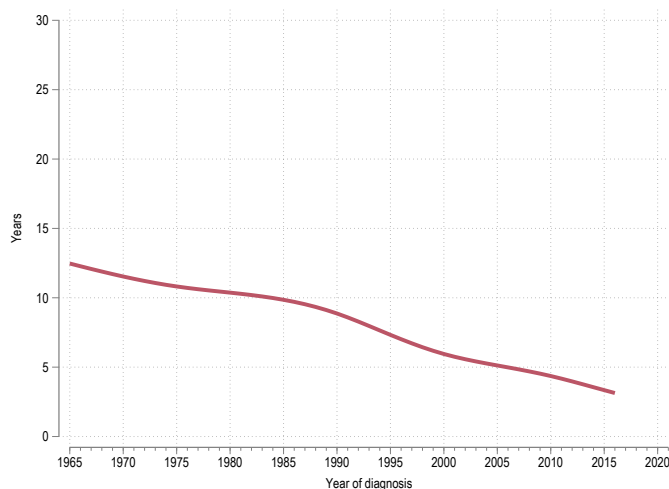
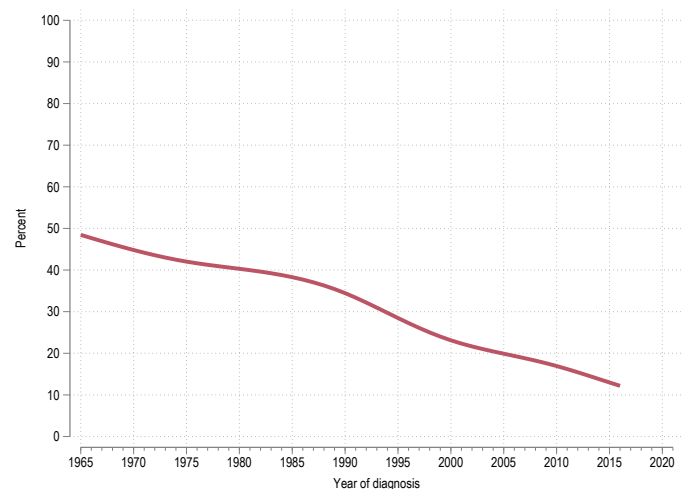


Figure 11.3-F: Trends in reference adjusted life-years lost (%)



Cervix uteri

12.1 Net survival and crude probabilities

Net survival among cervical cancer patients declines somewhat after diagnosis with a five year net survival estimate of 82 %. After five years the decline levels off, but without reaching a plateau, with ten year net survival equal to 77.5 % (Figure 12.1-A). This reflect a rather good prognosis for many cervical cancer patients, related to many patients being diagnosed at an early stage where the disease is possible to treat curative.

The probability of surviving five years after diagnosis is 80.1 % (Figure 12.1-B). The probability of dying from cervical cancer within five years is 17.7 % and the additional probability of dying from other causes is 2.2 %. In comparison to net survival, the crude probability of surviving after cervical cancer is only marginally lower, reflecting that a substantial proportion of these patients are younger and therefore at low risk of dying from other causes.

Crude probabilities of cervical cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figure 12.1-D). For stage I cervical cancer, the five year crude probability of death due to cancer is 4 % at ages 45–54, while the corresponding probability is 76.9 % for stage IV cervical cancer (Figure 12.1-D). There is also a clear age pattern, where older patients are at a higher risk of dying from cervical cancer, especially for more advanced stages.

The probability of dying from cervical cancer is influenced by the number of years survived since diagnosis (Figure 12.1-F). For a median aged patient with stage I cervical cancer the future five year survival after surviving one, two and up to five years after diagnosis is generally high. For more advanced stages the future five year survival increases with number of years survived. For a median aged stage IV cervical cancer patient, the probability of dying from cervical cancer within five years after diagnosis is 80.6 %. If surviving five years after diagnosis, the future five year survival is 39.7 %.

12.2 Life expectancy and life-years lost

The differences in prognosis across stages of cervical cancer leads to differences in life-years lost. Women with

stage I cervical cancer generally lose few of their remaining life-years, whereas women with stage IV cervical cancer lose many life-years (Figure 12.2-B). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportion of life-years lost increases slightly with age (Figure 12.2-D). These plots also shows the large difference in prognosis across stages, with women with more advanced cervical cancer losing a much larger proportion of their remaining lifetime compared to less advanced stages.

The proportion of life-years lost is affected by the number of years survived for all cervical cancer stages (Figure 12.2-F). For a median aged patient with stage I cervical cancer this proportion approaches zero. For more advanced stages this proportion stays well above zero also after surviving the first five years. A median aged patient with stage IV cervical cancer is expected to lose 88 % of her remaining lifetime at the time of diagnosis. If surviving five years after diagnosis this proportion declines to 60.9 %.

12.3 Time trends

Net survival of cervical cancer has been quite high throughout time, but has also increased, in particular the last three decades (Figure 12.3-B). Organized screening for the age group 25–69 years old was introduced in 1995. The relationship between a national cervical cancer screening program and national survival statistics are, however, not straightforward [24].

Correspondingly, the all-cause survival has increased and the crude probability of dying from cervical cancer has declined (Figures 12.3-C and 12.3-D). This has also, to some extent, affected life-years lost, with both the number and proportion of life-years lost declining somewhat over time (Figures 12.3-E and 12.3-F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 12 years in 1965 and expected to be 8.5 years in 2016. Correspondingly, the proportion of life-years lost due to cervical cancer has declined from 31.7 % in 1965 to an expected 22.5 % in 2016, when averaging across all ages and stages at diagnosis.

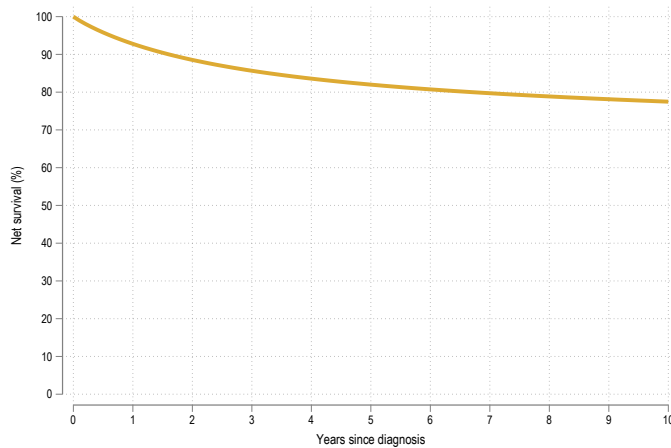
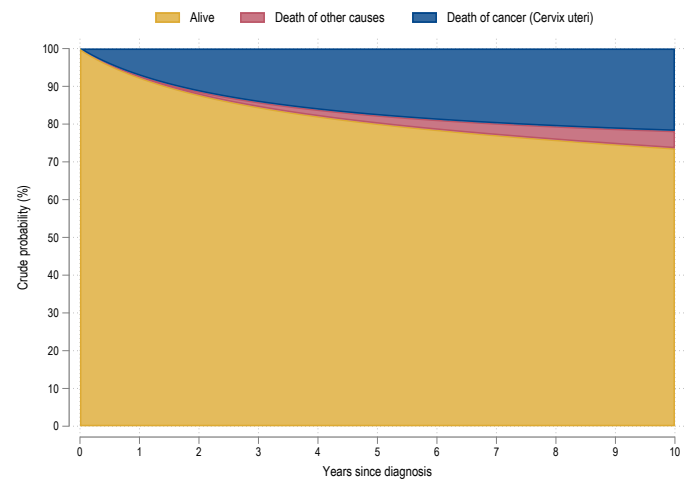
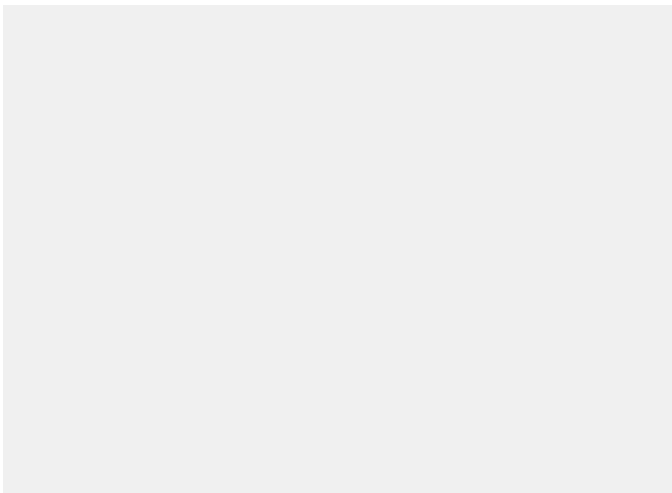
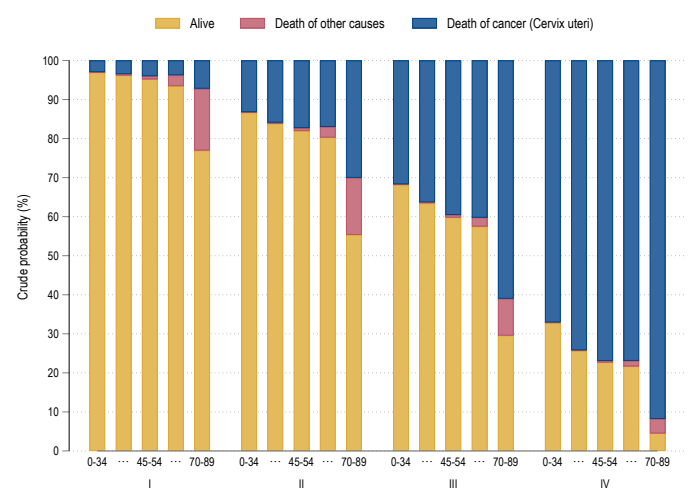
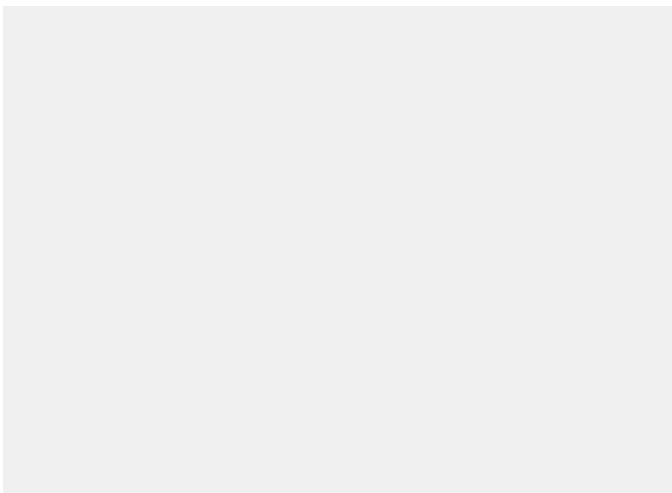
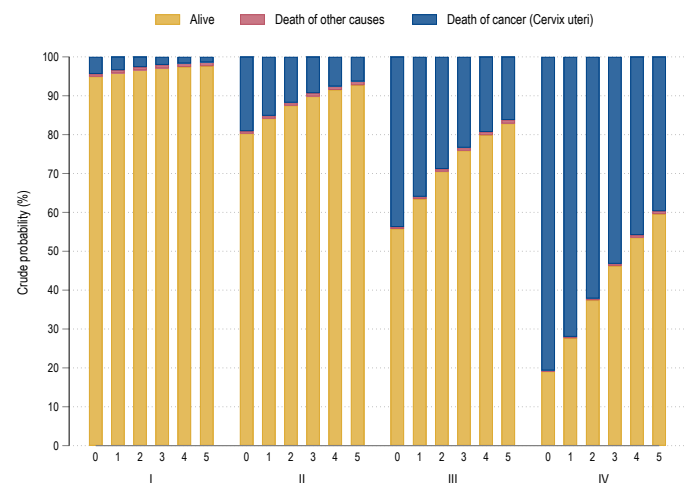
Figure 12.1: Cervix uteri: net and crude probabilities**Figure 12.1-A:** Net survival 0–10 years**Figure 12.1-B:** Crude probabilities 0–10 years**Figure 12.1-C:** 5-year crude probabilities by age and stage. Males**Figure 12.1-D:** 5-year crude probabilities by age and stage. Females**Figure 12.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Males**Figure 12.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Females

Figure 12.2: Cervix uteri: life expectancy and life-years lost

Figure 12.2-A: Life expectancy by age and stage. Males

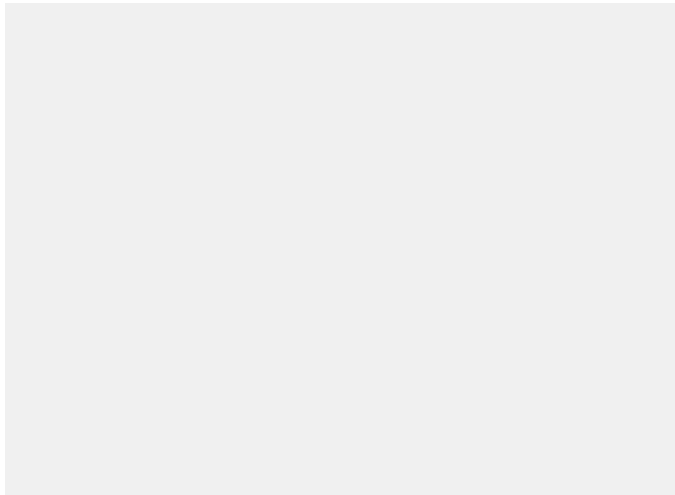


Figure 12.2-B: Life expectancy by age and stage. Females

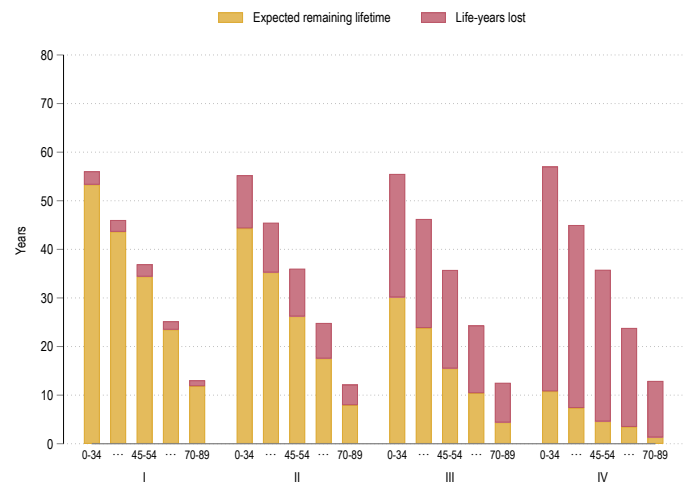


Figure 12.2-C: Proportion of life-years lost. Males

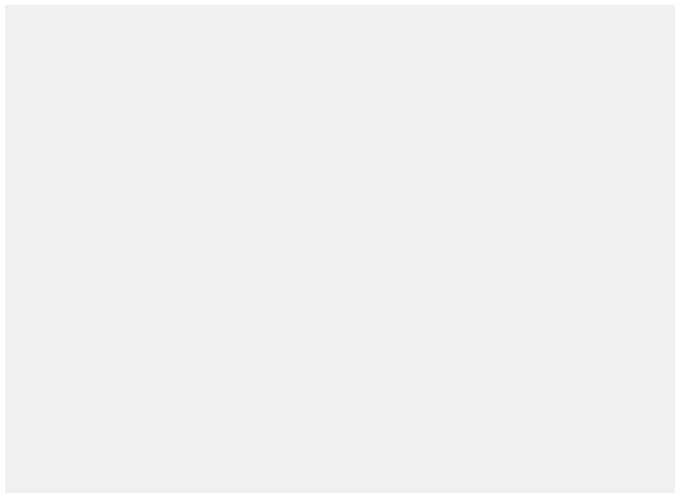


Figure 12.2-D: Proportion of life-years lost. Females

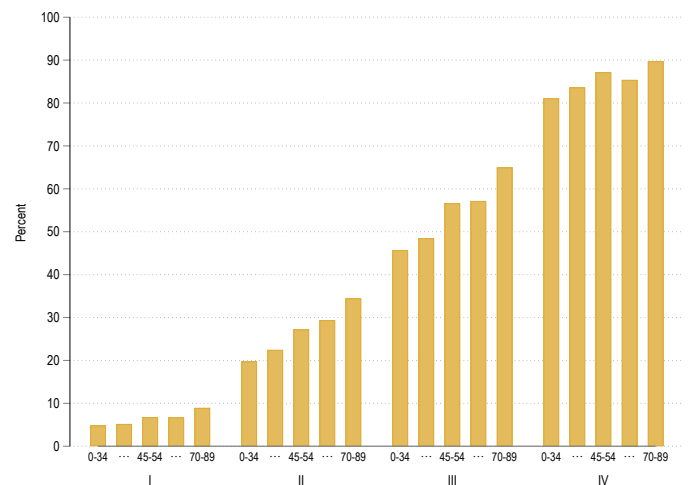


Figure 12.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Males

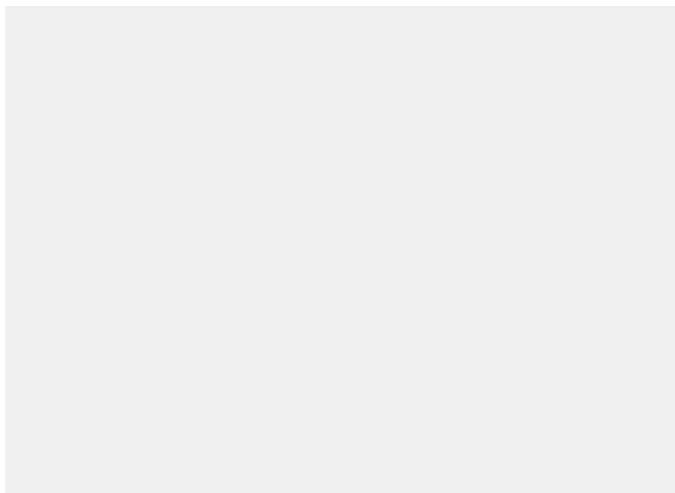


Figure 12.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 46 years at diagnosis (median age). Females

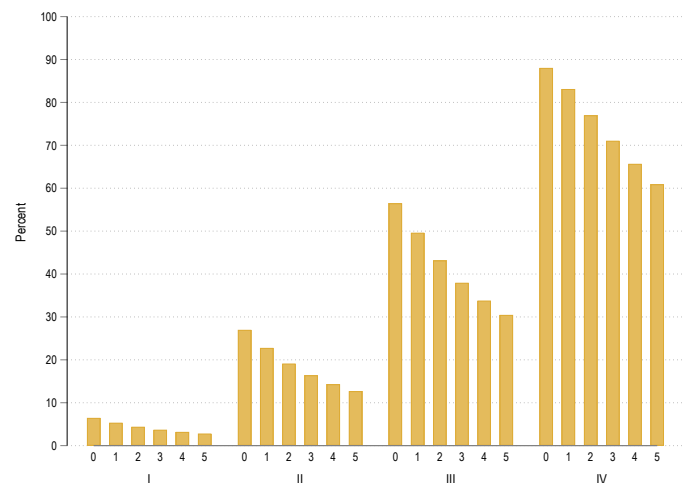


Figure 12.3: Cervix uteri: trends

Figure 12.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males

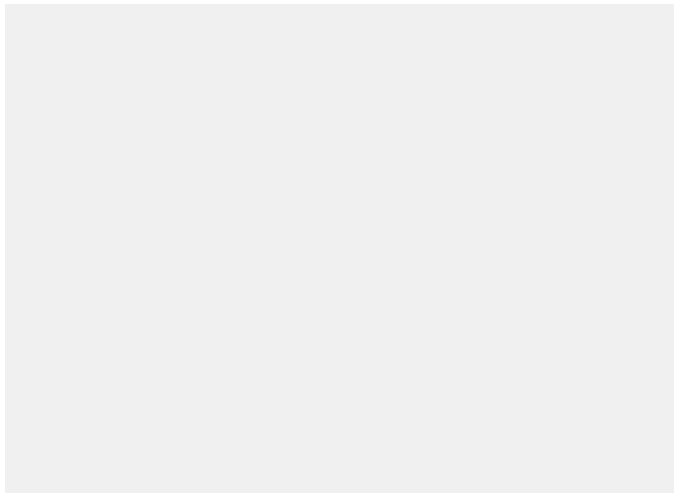


Figure 12.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females

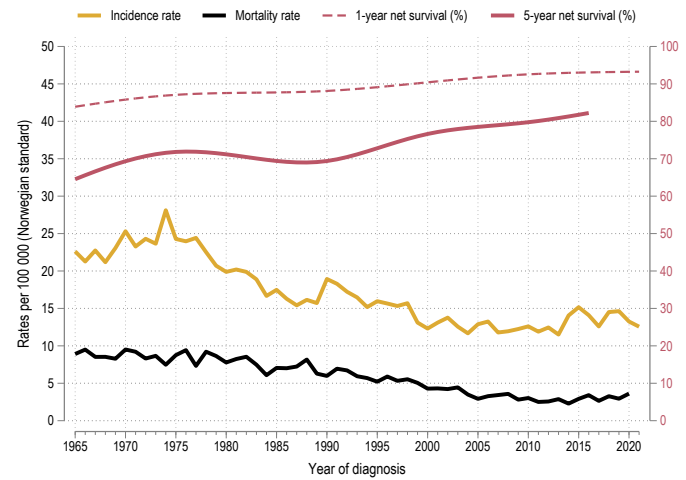


Figure 12.3-C: Trends in reference adjusted all-cause survival

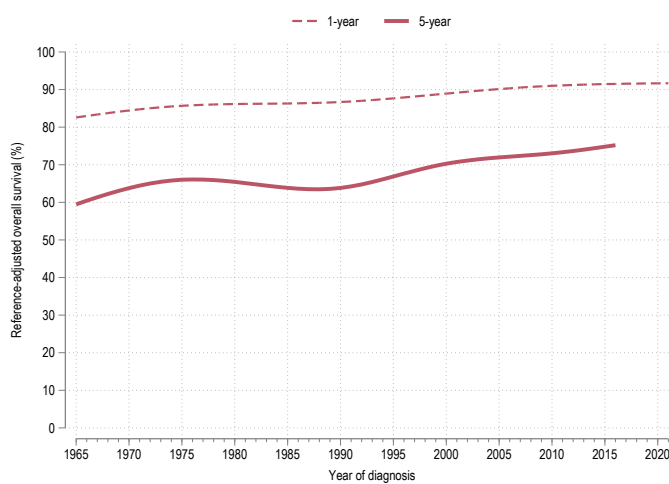
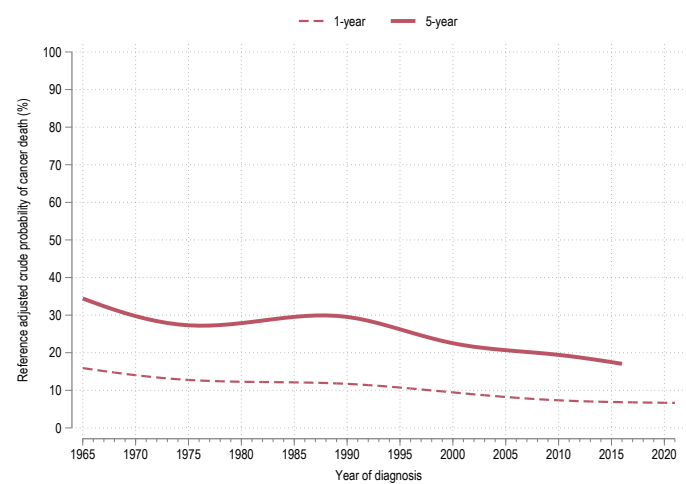


Figure 12.3-D: Trends in reference adjusted crude probability of cancer death



Cervix uteri

Figure 12.3-E: Trends in reference adjusted life-years lost

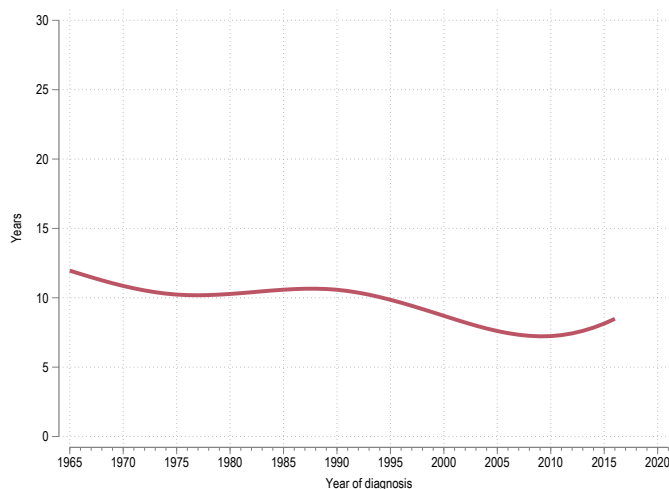
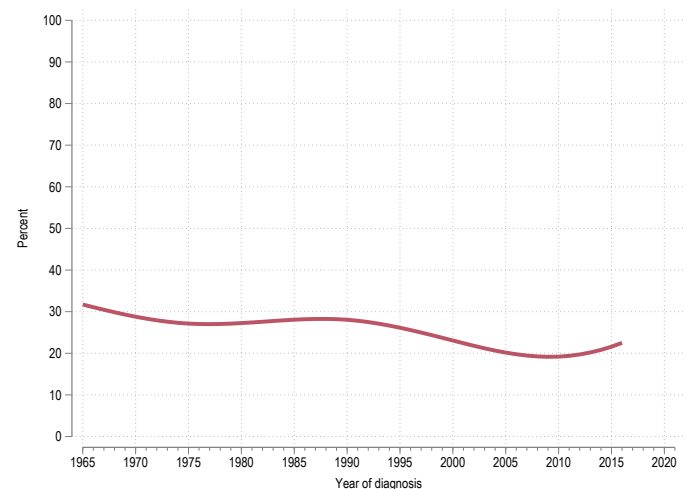


Figure 12.3-F: Trends in reference adjusted life-years lost (%)



Corpus uteri

13.1 Net survival and crude probabilities

Net survival among patients with corpus uteri cancer declines somewhat the first years after diagnosis with a five year net survival estimate of 85.7 %. After five years the net survival seems to reach a plateau, with ten year net survival equal to 83.7 % (Figure 13.1-A). This reflects a rather good prognosis for many corpus uteri cancer patients, and also illustrates that many of these patients may be hoping to live a long time after the cancer diagnosis and potentially be cured.

The probability of surviving five years after diagnosis is 78 % (Figure 13.1-B). The probability of dying from corpus uteri cancer within five years is 13.7 % and the additional probability of dying from other causes is 8.3 %. In comparison to net survival, the crude probability of surviving after corpus uteri cancer is somewhat lower, reflecting that a substantial proportion of these patients are older and therefore at risk of dying from other causes.

Crude probabilities of corpus uteri cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figure 13.1-D). For localised corpus uteri cancer, the five year crude probability of death due to cancer is 3.7 % at ages 60–69, while the corresponding probability is 54.4 % for distant corpus uteri cancer (Figure 13.1-D). There is also a clear age pattern, where older patients are at a higher risk of dying from breast cancer, especially for more advanced stages.

Having survived a localised corpus uteri cancer for one, two or up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figure 13.1-F). However, if regional or distant metastases were present at time of diagnosis it will strongly influence the future five-year survival conditioning on surviving one, two or up to five years. The longer a patient survives the better future survival and the more similar future survival across stages.

13.2 Life expectancy and life-years lost

The differences in prognosis across stages of corpus uteri cancer leads to differences in life-years lost. Women with localised corpus uteri cancer generally lose few of their remaining life-years, whereas women with distant corpus uteri cancer lose many life-years (Figure 13.2-B). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. However, the proportion of life-years lost are varying across age groups for more advanced stages, with older women losing a larger proportion of their remaining lifetime (Figure 13.2-D). These plots also show the large difference in prognosis across stages, with women with distant corpus uteri cancer losing a much larger proportion of their remaining lifetime compared to localised stage.

The proportion of life-years lost decreases with the number of years survived, for all stages (Figure 13.2-F). For localised corpus uteri cancer this proportion approaches zero for a median aged patient. For distant corpus uteri cancer the proportion declines substantially, from 62.1 % at diagnosis to 23.7 % having survived five years after diagnosis.

13.3 Time trends

Net survival of corpus uteri cancer has increased over time and been stable at a high level the most recent years (Figure 13.3-B). Correspondingly, all-cause survival has increased and the crude probability of dying from corpus uteri cancer has declined (Figures 13.3-C and 13.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 13.3-E and 13.3-F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 9.3 years in 1965 and expected to be 2.8 years in 2016. Correspondingly, the proportion of life-years lost due to corpus uteri cancer has declined from 44.6 % in 1965 to an expected 13.2 % in 2016, when averaging across all ages and stages at diagnosis.

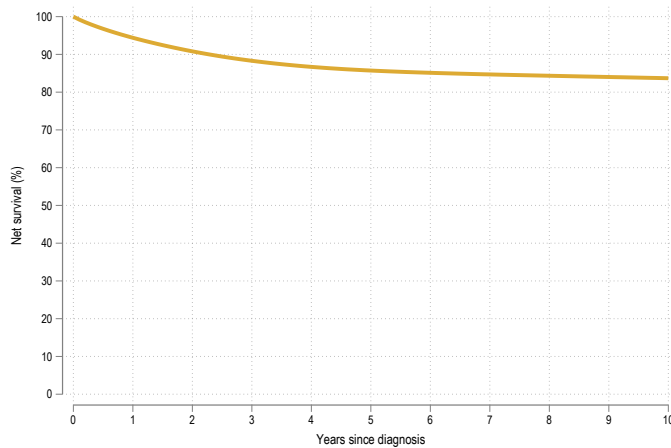
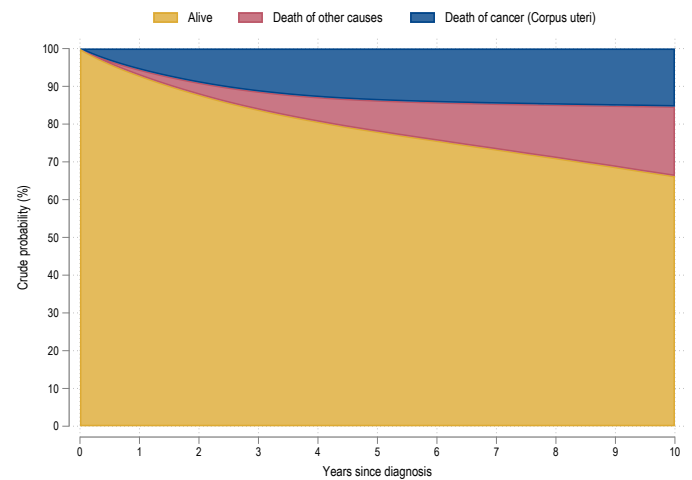
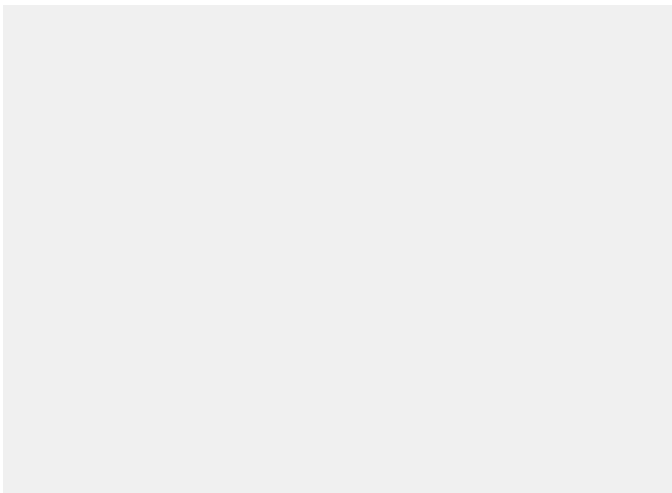
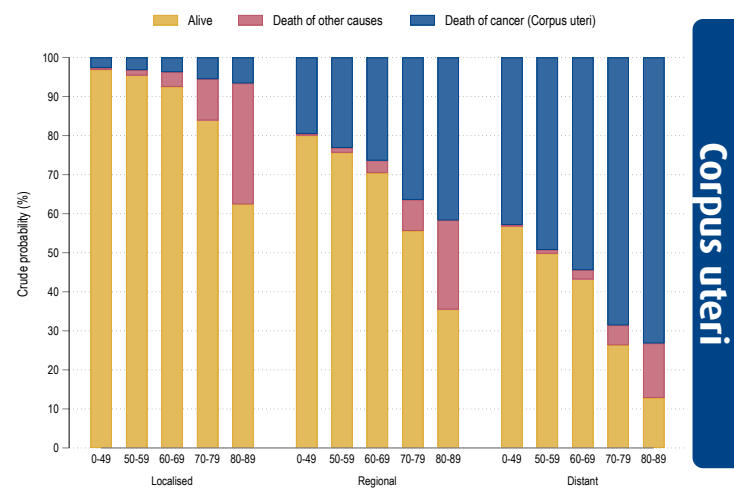
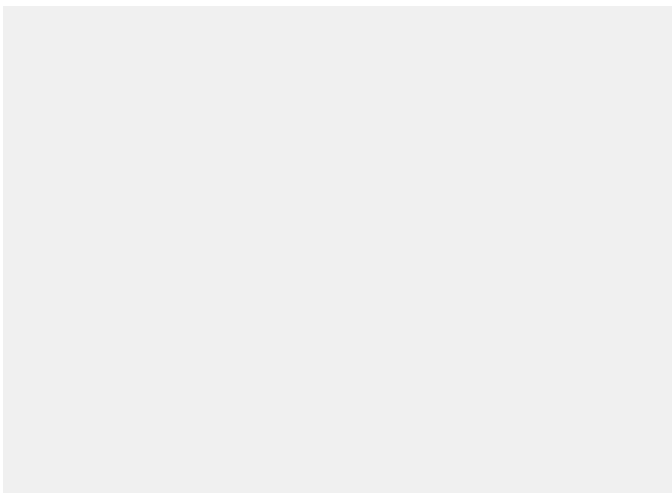
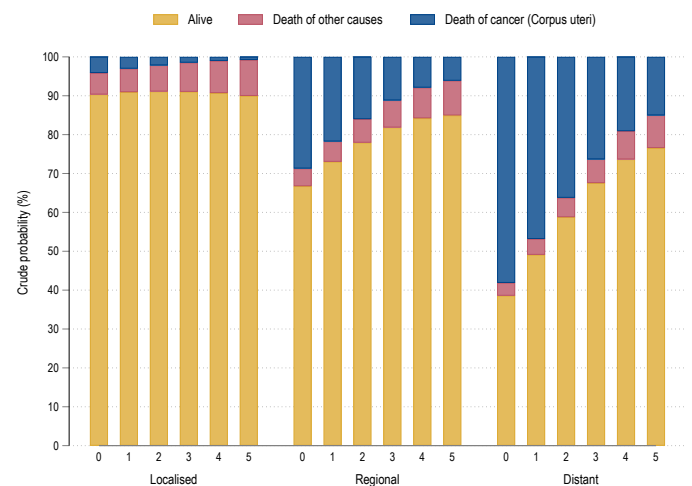
Figure 13.1: Corpus uteri: net and crude probabilities**Figure 13.1-A:** Net survival 0–10 years**Figure 13.1-B:** Crude probabilities 0–10 years**Figure 13.1-C:** 5-year crude probabilities by age and stage. Males**Figure 13.1-D:** 5-year crude probabilities by age and stage. Females**Figure 13.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Males**Figure 13.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Females

Figure 13.2: Corpus uteri: life expectancy and life-years lost

Figure 13.2-A: Life expectancy by age and stage. Males

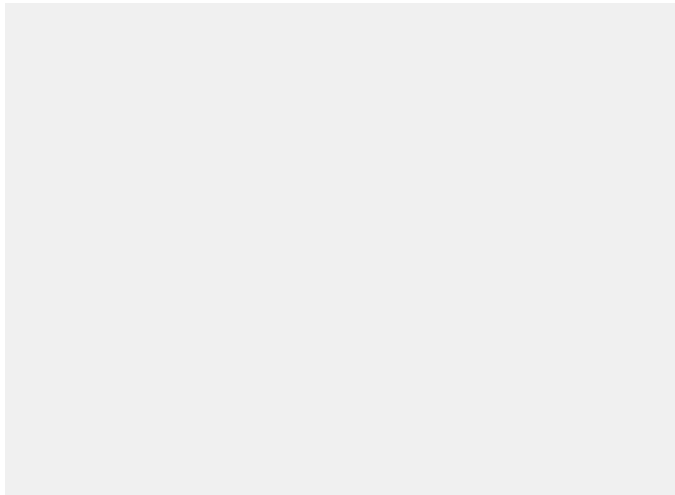


Figure 13.2-B: Life expectancy by age and stage. Females

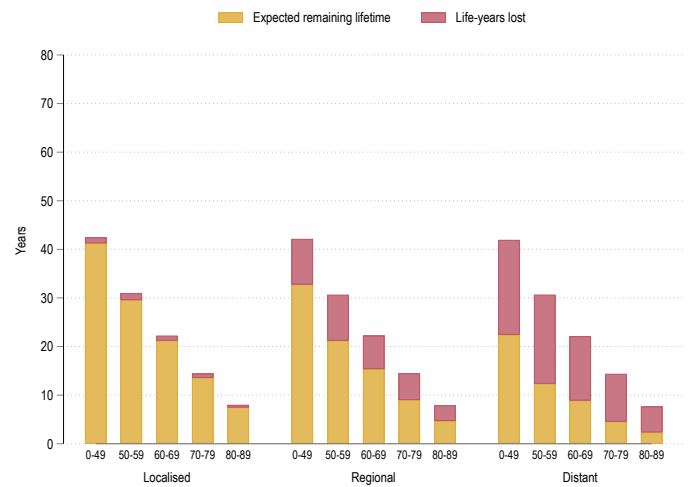


Figure 13.2-C: Proportion of life-years lost. Males

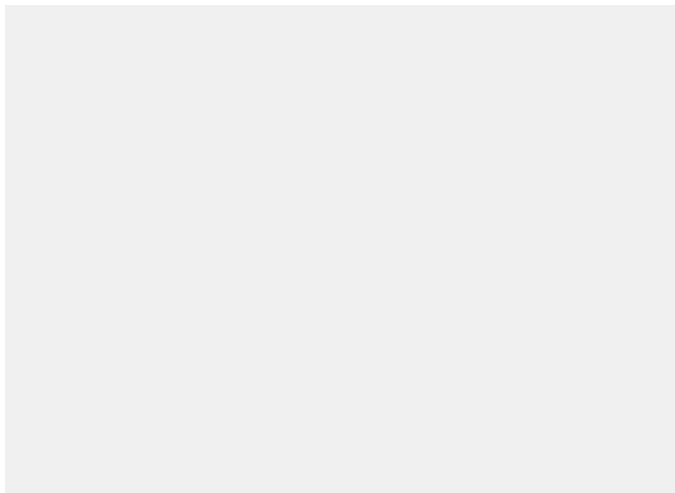


Figure 13.2-D: Proportion of life-years lost. Females

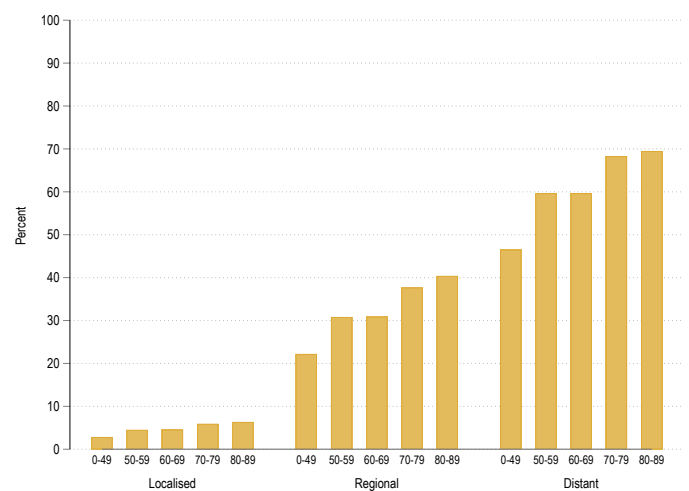


Figure 13.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Males

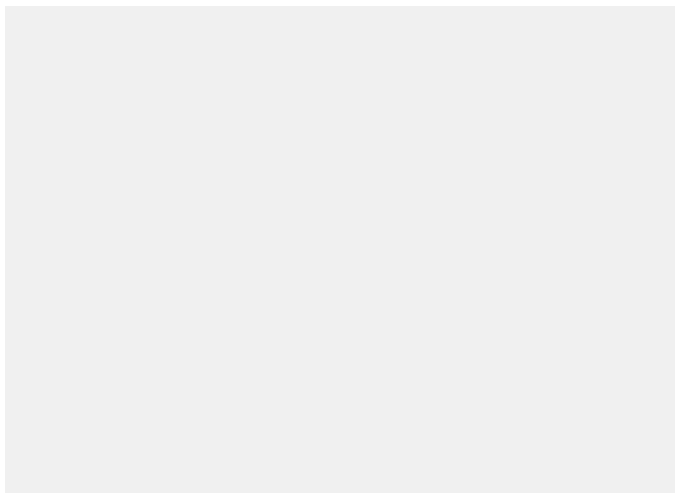


Figure 13.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 68 years at diagnosis (median age). Females

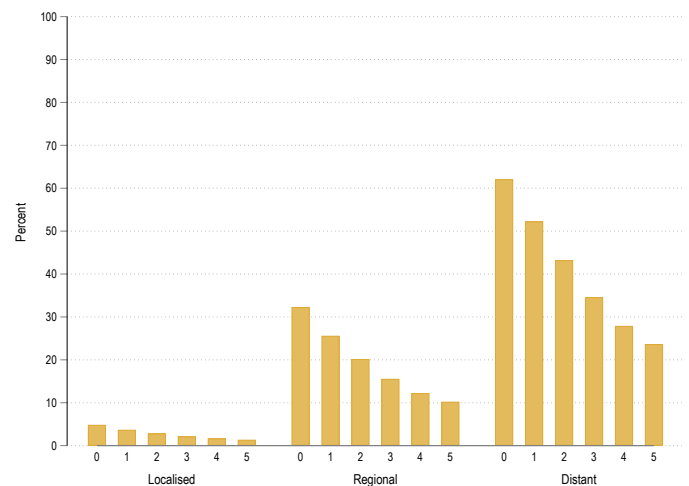


Figure 13.3: Corpus uteri: trends

Figure 13.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males

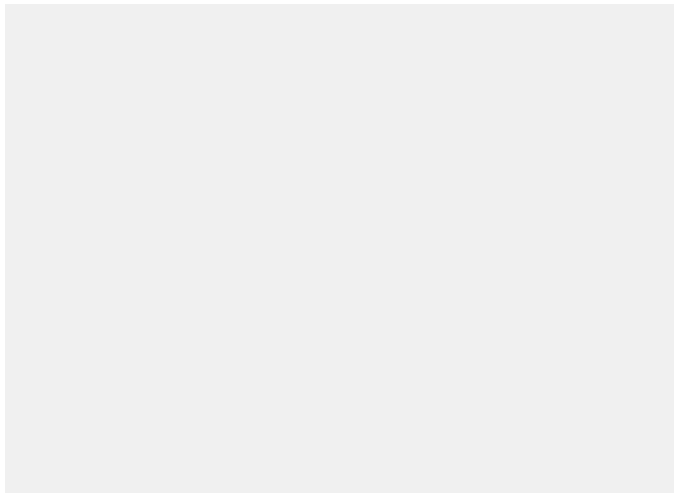


Figure 13.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females

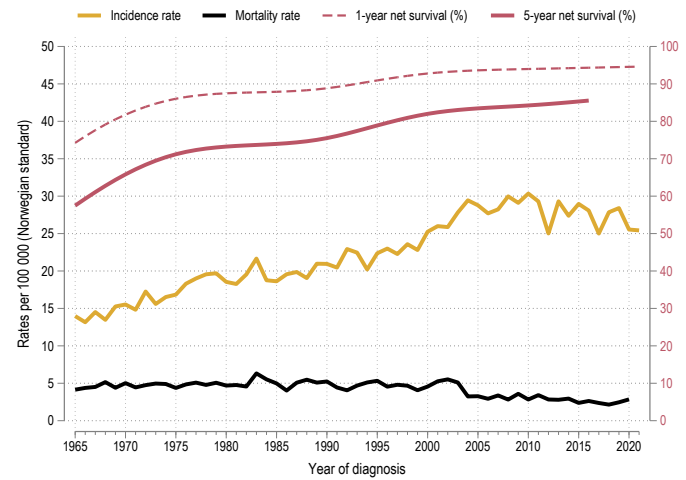


Figure 13.3-C: Trends in reference adjusted all-cause survival

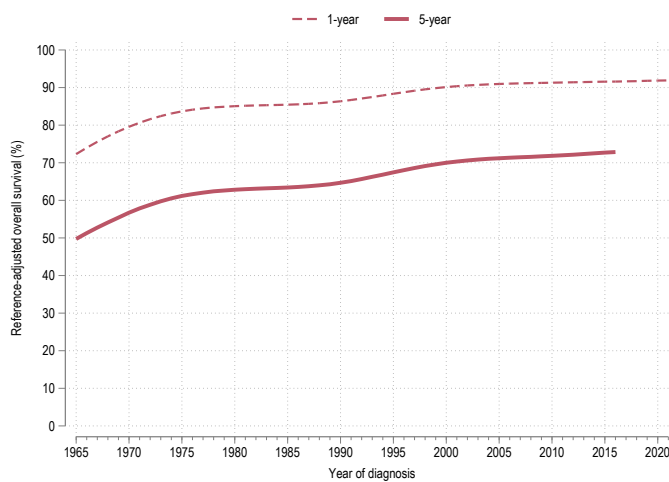
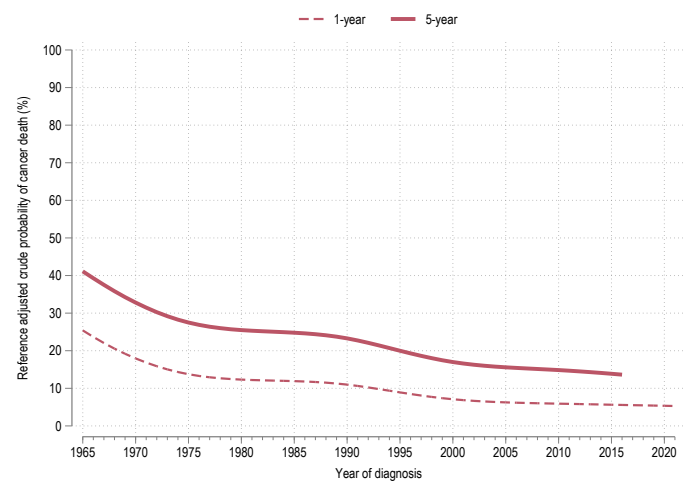


Figure 13.3-D: Trends in reference adjusted crude probability of cancer death



Corpus uteri

Figure 13.3-E: Trends in reference adjusted life-years lost

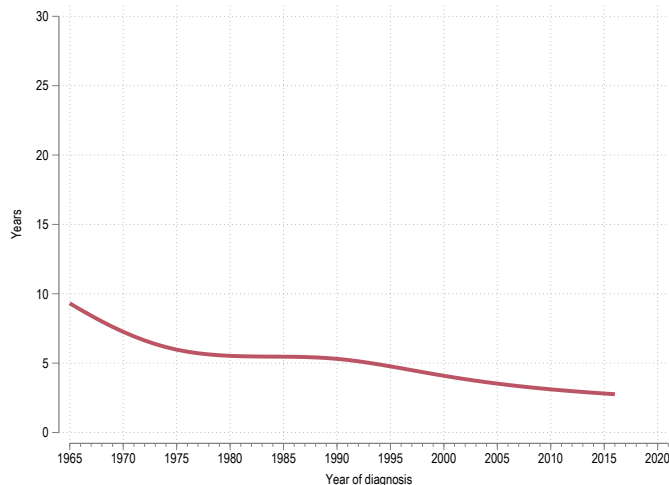
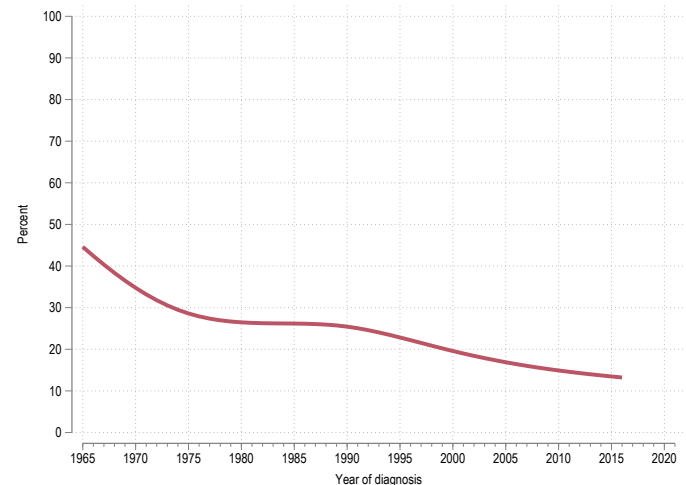


Figure 13.3-F: Trends in reference adjusted life-years lost (%)



Ovary

14.1 Net survival and crude probabilities

Net survival among ovarian cancer patients declines quite sharply after diagnosis with a five year net survival estimate of 50.3 %. After five years the net survival levels off with a tendency to reach a plateau, with a ten year net survival equal to 39.9 % (Figure 14.1-A). This reflect a rather poor prognosis for many ovarian cancer patients, with a large proportion of patients being diagnosed with distant metastases at diagnosis.

The probability of surviving five years after diagnosis is 47.2 % (Figure 14.1-B). The probability of dying from ovarian cancer within five years is 48.1 % and the additional probability of dying from other causes is 4.7 %. In comparison to net survival, the crude probability of surviving after ovarian cancer is only marginally lower, reflecting both a rather high risk of cancer death and also that a substantial proportion of these patients are younger and therefore at low risk of dying from other causes.

Crude probabilities of ovarian cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figure 14.1-D). For localised ovarian cancer, the five year crude probability of death due to cancer is 5.8 % at ages 60–69, while the corresponding probability is 62 % for distant ovarian cancer (Figure 14.1-D). Except for localised cancer, there is a clear age pattern, where older patients are at a higher risk of dying from their cancer.

The probability of dying from ovarian cancer is only marginally influenced by the number of years survived since diagnosis (Figure 14.1-F). For a median aged patient with localised ovarian cancer, the probability of dying from cancer within five years after diagnosis is 5.6 %, and the same five year risk is 4.3 % if surviving five years after diagnosis. In comparison, the probability of dying from distant ovarian cancer within five years after diagnosis is 61.5 %. If surviving five years from diagnosis the future five year risk of dying from cancer is reduced to 37.9 %.

14.2 Life expectancy and life-years lost

The differences in prognosis across stages of breast cancer leads to differences in life-years lost. Women with localised ovarian cancer generally lose few of their remaining life-years, whereas women distant ovarian cancer lose many life-years (Figure 14.2-B). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. However, When looking at the proportion of life-years lost the effect of age is less clear (Figure 14.2-D). These plots also shows the large difference in prognosis across stages, with women with localised cancer losing a much smaller proportion of their remaining lifetime compared to more advanced stages.

The proportion of life-years lost is slowly declining with the number of years survived for all stages (Figure 14.2-F). A median aged patient with distant ovarian cancer is expected to lose 69 % of her remaining lifetime at the time of diagnosis. If surviving five years after diagnosis this proportion declines to 45.1 %.

14.3 Time trends

Net survival of ovarian cancer has increased over time and in particular over the past two decades (Figure 14.3-B). Correspondingly, all-cause survival has increased and the crude probability of dying from ovarian cancer has declined (Figures 14.3-C and 14.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 14.3-E and 14.3-F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 14.4 years in 1965 and expected to be 14.3 years in 2016. Correspondingly, the proportion of life-years lost due to ovarian cancer has declined from 64.1 % in 1965 to an expected 63.5 % in 2016, when averaging across all ages and stages at diagnosis.

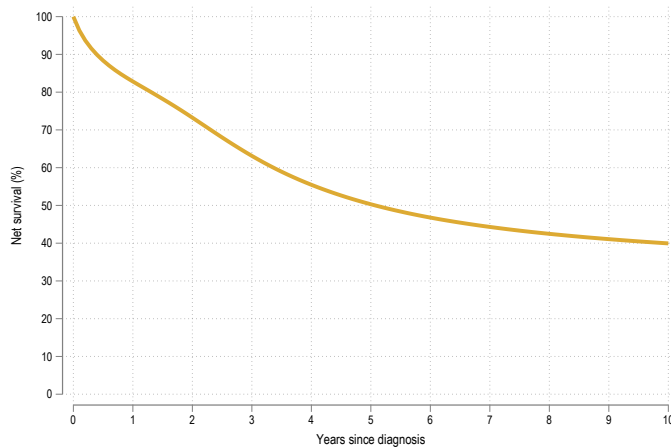
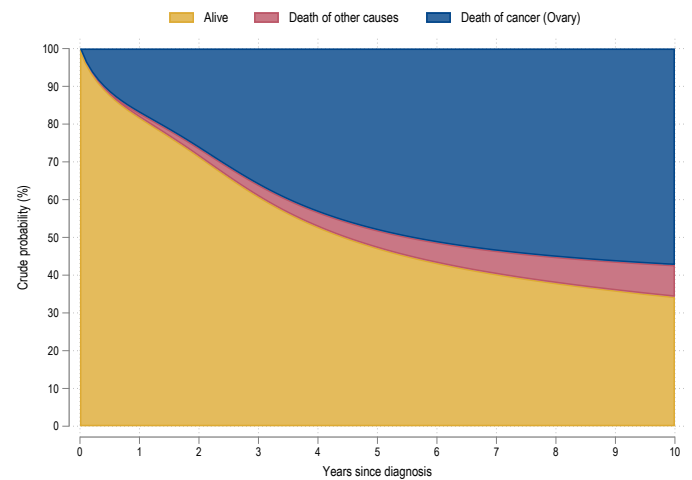
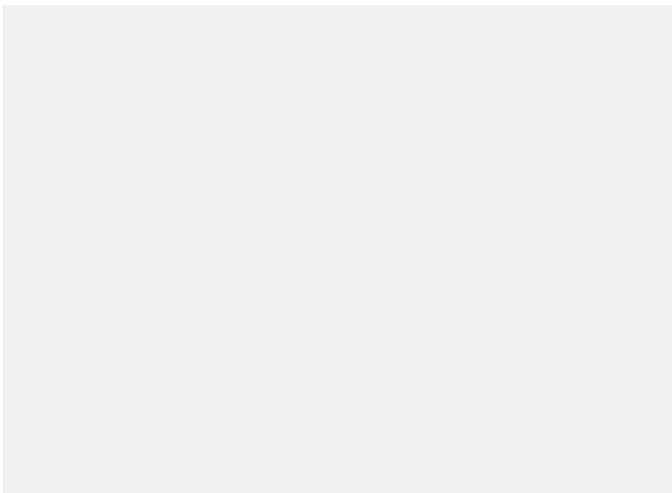
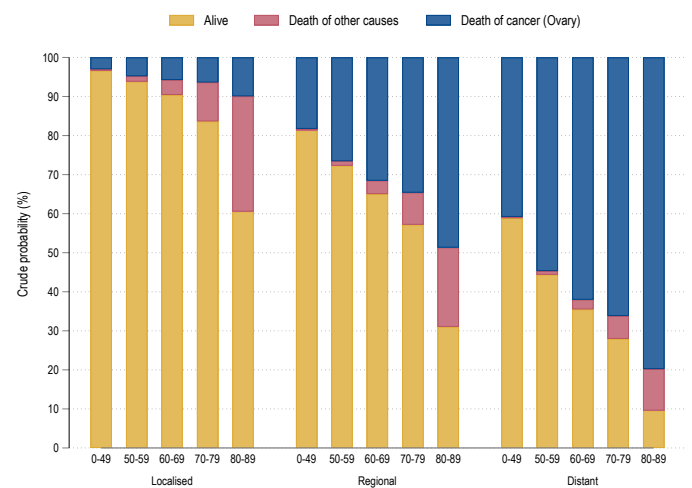
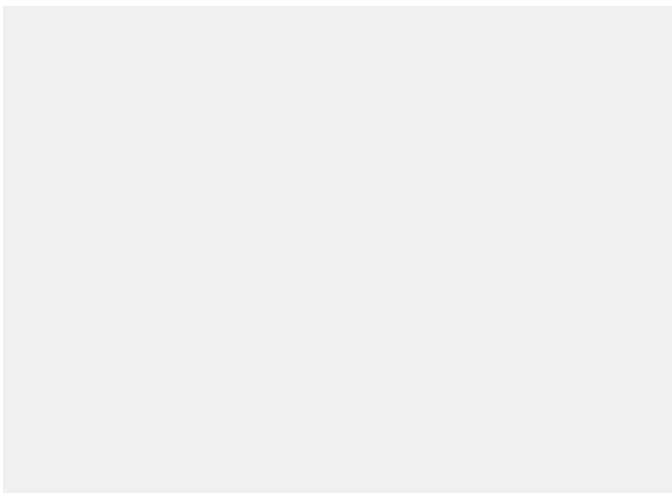
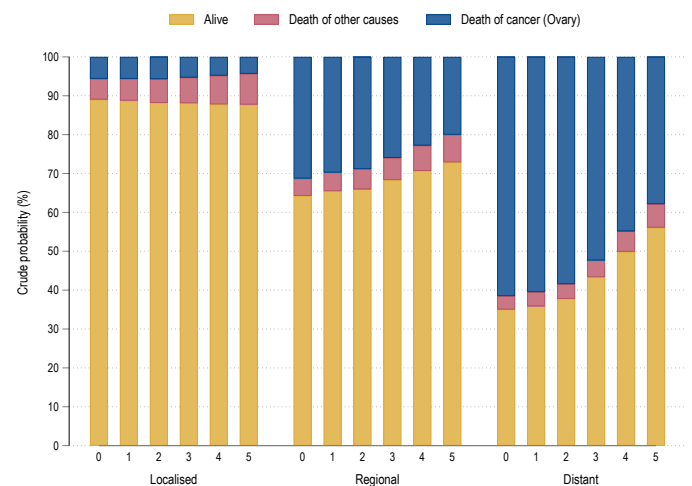
Figure 14.1: Ovary: net and crude probabilities**Figure 14.1-A:** Net survival 0–10 years**Figure 14.1-B:** Crude probabilities 0–10 years**Figure 14.1-C:** 5-year crude probabilities by age and stage. Males**Figure 14.1-D:** 5-year crude probabilities by age and stage. Females**Figure 14.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males**Figure 14.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

Figure 14.2: Ovary: life expectancy and life-years lost

Figure 14.2-A: Life expectancy by age and stage. Males

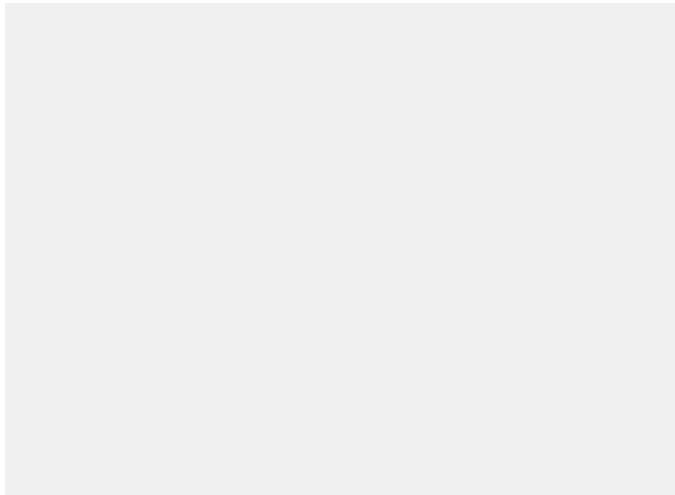


Figure 14.2-B: Life expectancy by age and stage. Females

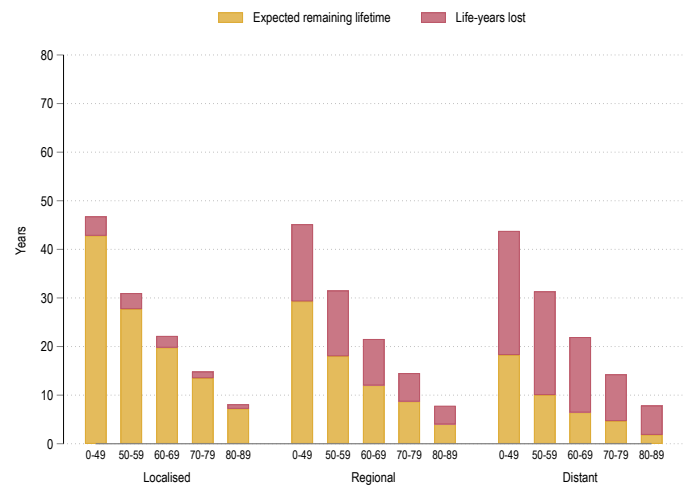


Figure 14.2-C: Proportion of life-years lost. Males

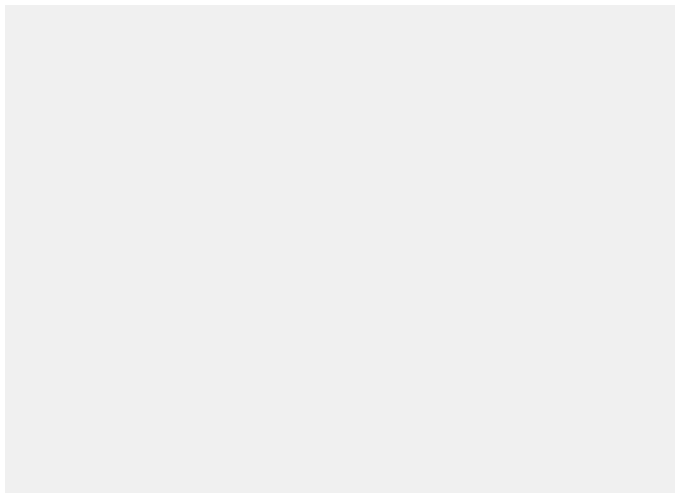


Figure 14.2-D: Proportion of life-years lost. Females

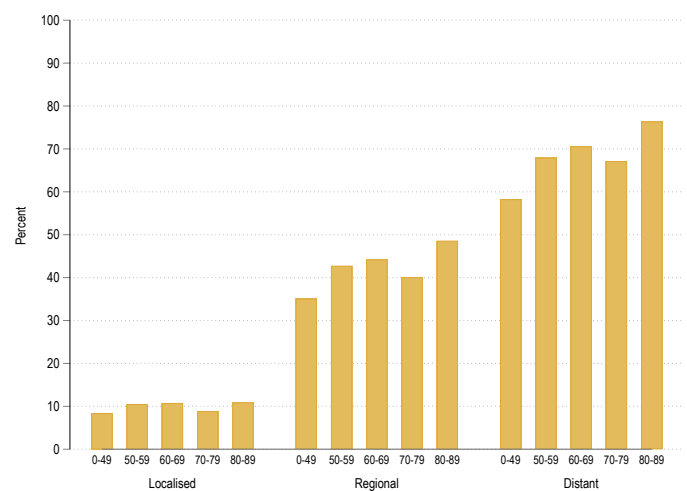


Figure 14.2-E: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males

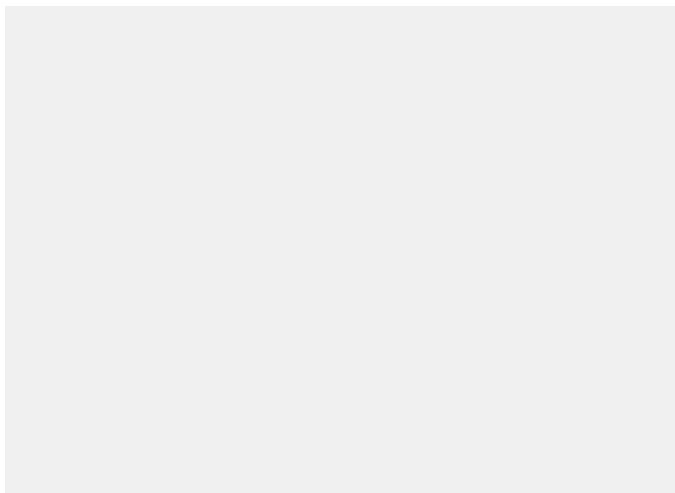


Figure 14.2-F: Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

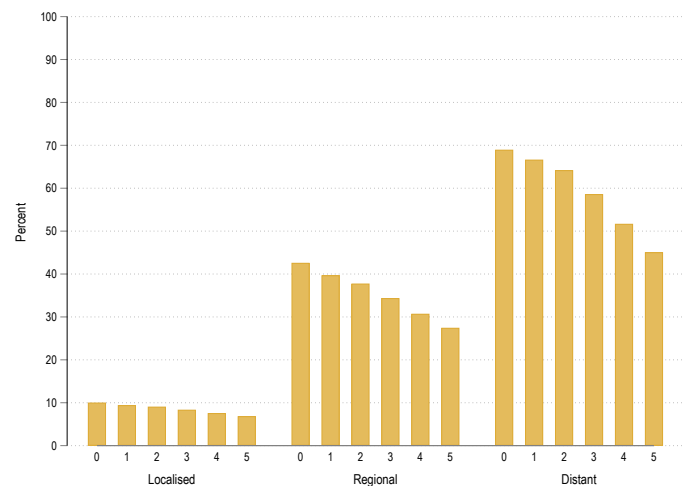


Figure 14.3: Ovary: trends

Figure 14.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males

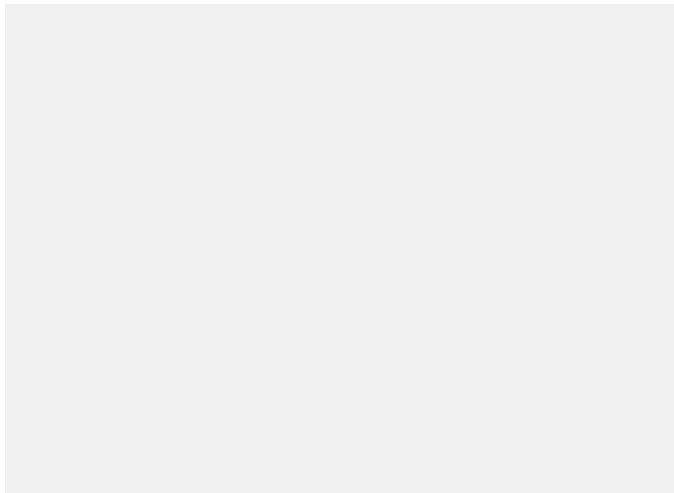


Figure 14.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females

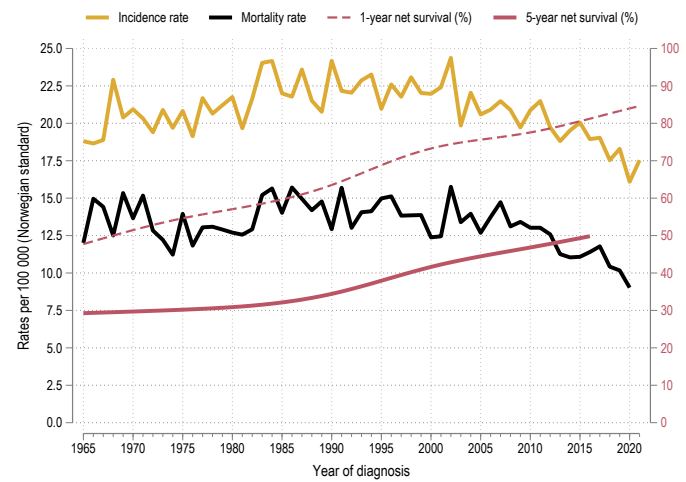


Figure 14.3-C: Trends in reference adjusted all-cause survival

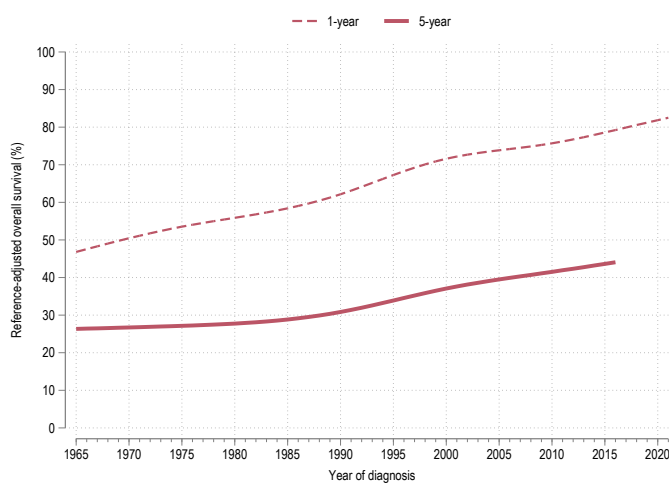
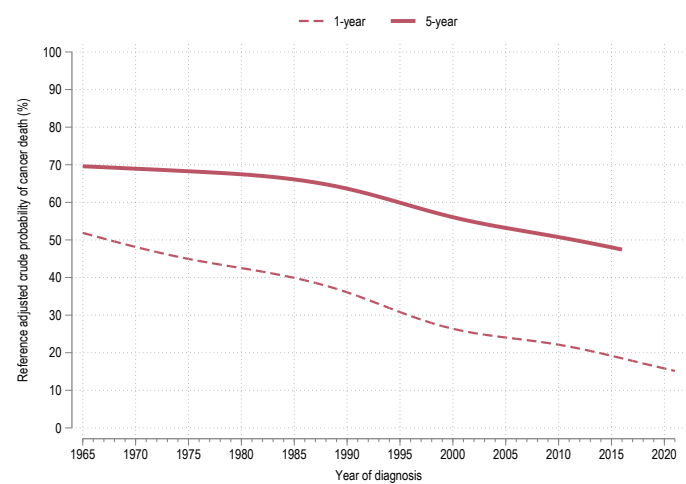


Figure 14.3-D: Trends in reference adjusted crude probability of cancer death



Ovary

Figure 14.3-E: Trends in reference adjusted life-years lost

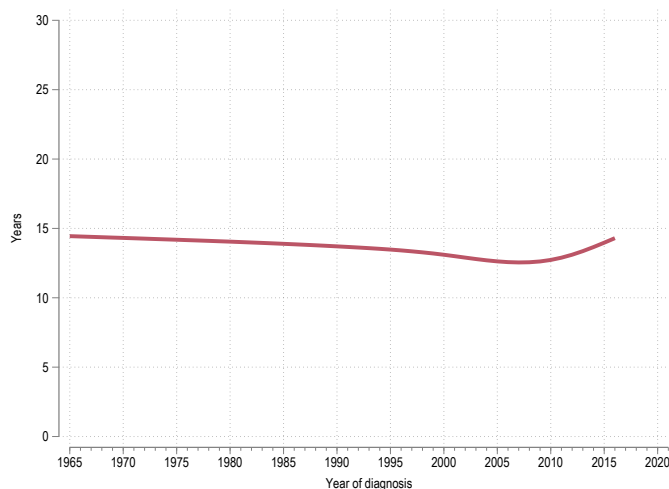
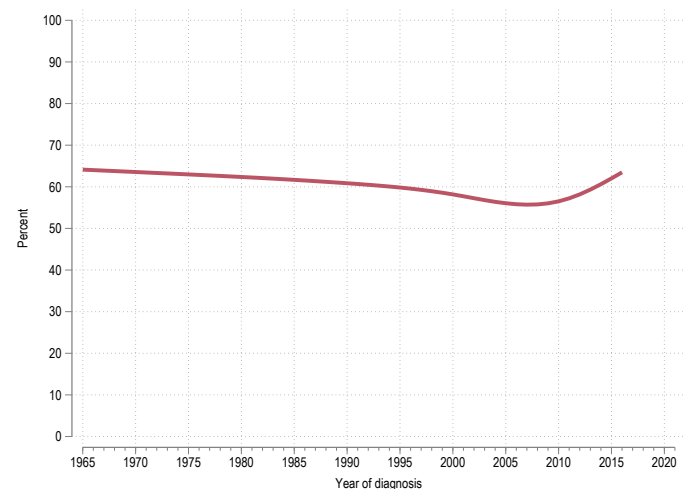


Figure 14.3-F: Trends in reference adjusted life-years lost (%)



Prostate

15.1 Net survival and crude probabilities

Net survival among prostate cancer patients slowly declines after diagnosis with a five year net survival estimate of 92.8 %. After five years the net survival continue to decline, without reaching a plateau, with ten year net survival equal to 86.4 % (Figure 15.1–A). This reflect the good prognosis for many prostate cancer patients, but also illustrates that some prostate cancer patients dies from their cancer a long time after diagnosis.

The probability of surviving five years after diagnosis is 82.3 % (Figure 15.1–B). The probability of dying from prostate cancer within five years is 6.4 % and the additional probability of dying from other causes is 11.4 % In comparison to net survival, the crude probability of surviving after prostate cancer is markedly lower, reflecting that a large proportion of these patients are older and therefore at risk of dying from other causes.

Crude probabilities of prostate cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figure 15.1–C). For localised prostate cancer, the five year crude probability of death due to cancer is 0.7 % at ages 60–69, while the corresponding probability is 44.1 % for distant prostate cancer. The differences in all-cause survival within each stage is mostly due to different risks of dying from other causes, increasing strongly with age.

The probability of dying from prostate cancer is only marginally influenced by the number of years survived since diagnosis (Figure 15.1–E). For a median aged prostate cancer patient with localised stage the probability of dying from prostate cancer within five years after diagnosis is 0.3 %, and the same five year risk is 0.4 % if surviving five years after diagnosis. In comparison, the probability of dying from distant prostate cancer within five years after diagnosis is 44.9 %. If surviving five years from diagnosis the future five year risk of dying from prostate cancer is reduced to 52.3 %.

15.2 Life expectancy and life-years lost

The differences in prognosis across stages of prostate cancer leads to differences in life-years lost. Patients with

localised prostate cancer lose few of their remaining life-years, whereas patients with distant prostate cancer lose many life-years (Figure 15.2–A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. However, the proportions of life-years lost are varying across age groups for all stages, with a tendency that younger patients lose a larger proportion of their remaining lifetime, possibly reflecting different patterns in aggressiveness across ages (Figure 15.2–C). These plots also shows the large difference in prognosis across stages, with patients with distant prostate cancer losing a much larger proportion of their remaining lifetime compared to regional and localised prostate cancer.

The proportion of life-years lost only slightly varies with the number of years survived since diagnosis (Figure 15.2–E). For localised prostate cancer the estimates ranges from 1.5 % for newly diagnosed patients to 1.8 % for those surviving five years after diagnosis. The corresponding numbers for distant prostate cancer is 62 % at diagnosis, declining to 61.1 % when surviving five years.

15.3 Time trends

Net survival of prostate cancer has increased over time, and in particular from the 1990s on wards (Figure 15.3–A). These improvements must be seen in light of increased used of PSA testing, leading to a large increase in incidence of localised prostate cancer. In addition, continuous improvement in treatment have occurred, particularly during the last two decades. Correspondingly, all-cause survival has increased and the crude probability of dying from prostate cancer has declined (Figures 15.3–C and 15.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 15.3–E and 15.3–F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 10.5 years in 1965 and expected to be 0.9 years in 2016. Correspondingly, the proportion of life-years lost due to prostate cancer has decreased from 61.8 % in 1965 to an expected 5.6 % in 2016, when averaging across all ages and stage at diagnosis.

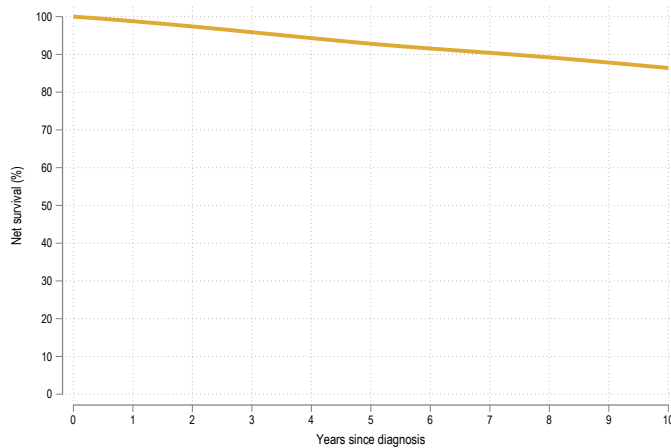
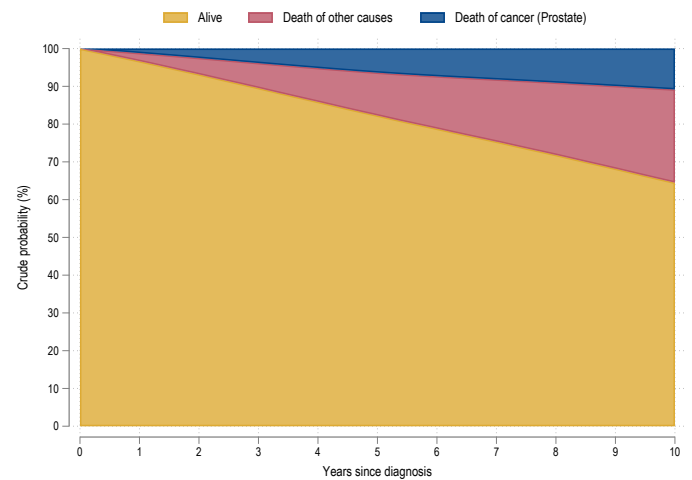
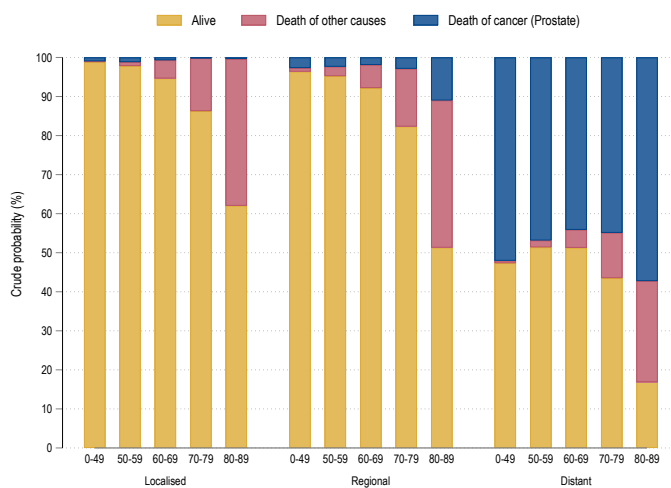
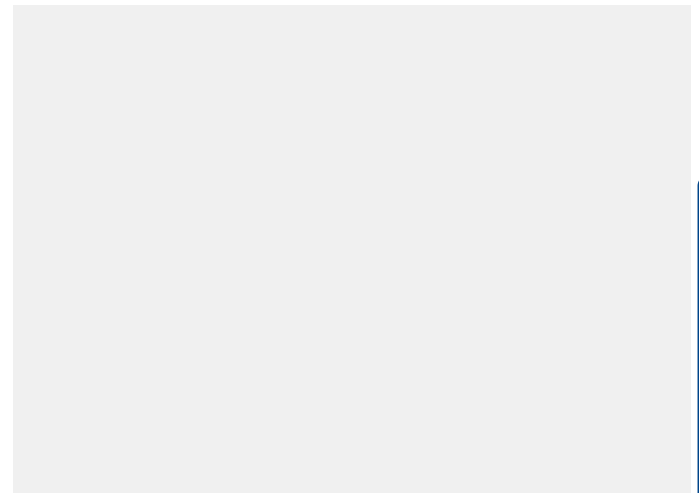
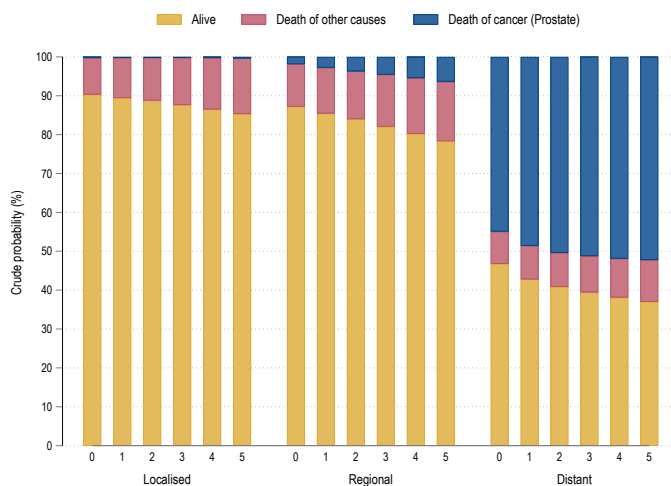
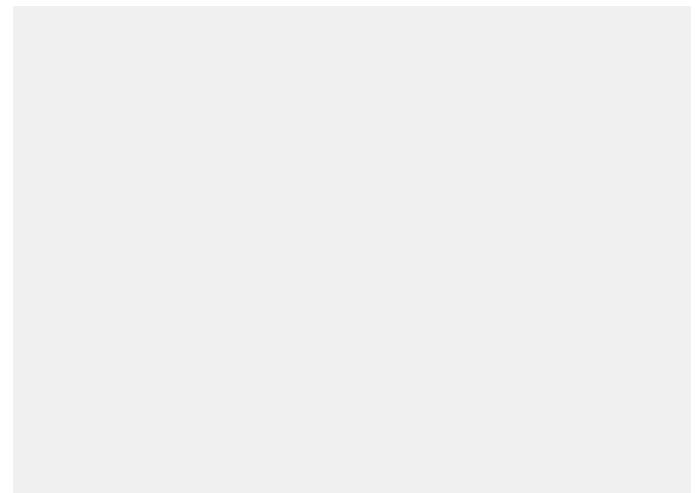
Figure 15.1: Prostate: net and crude probabilities**Figure 15.1-A:** Net survival 0–10 years**Figure 15.1-B:** Crude probabilities 0–10 years**Figure 15.1-C:** 5-year crude probabilities by age and stage. Males**Figure 15.1-D:** 5-year crude probabilities by age and stage. Females**Figure 15.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males**Figure 15.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females

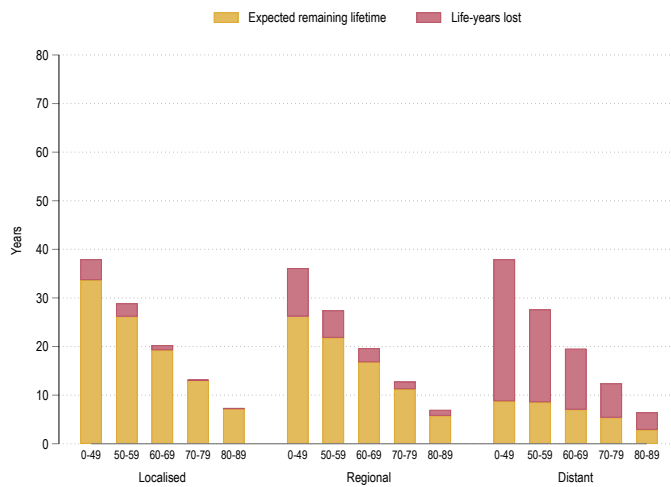
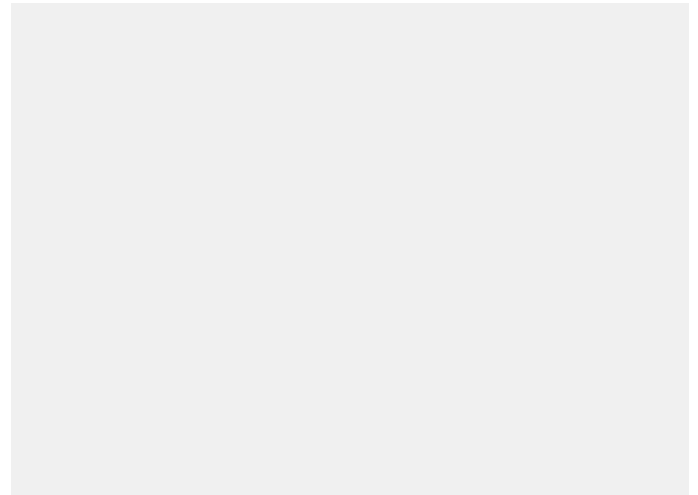
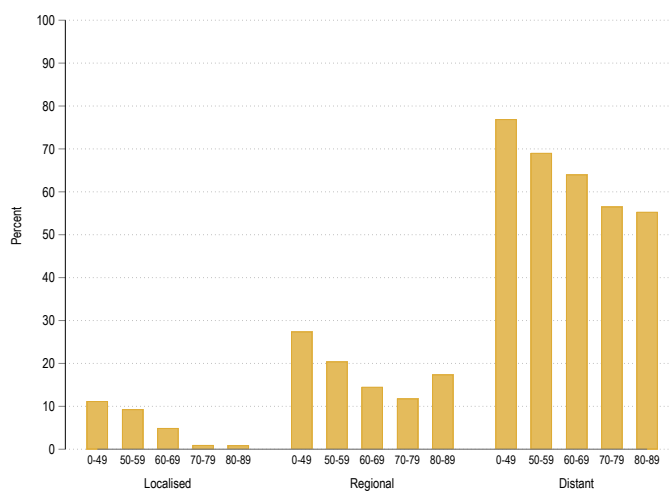
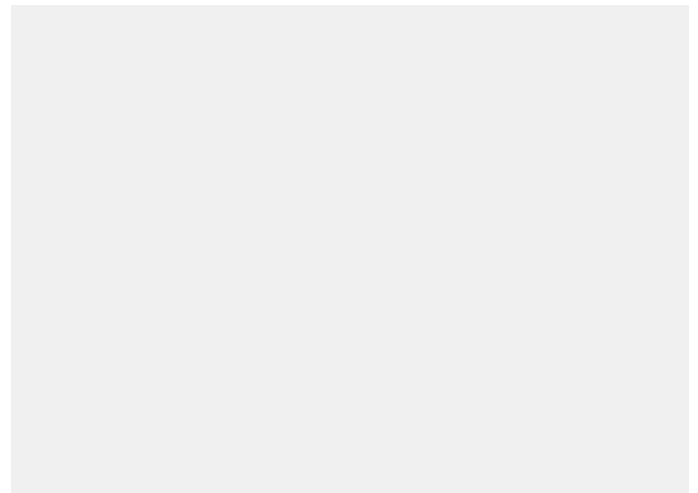
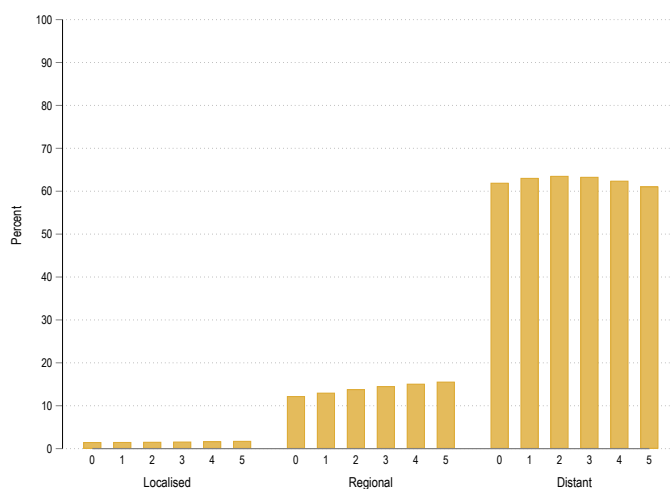
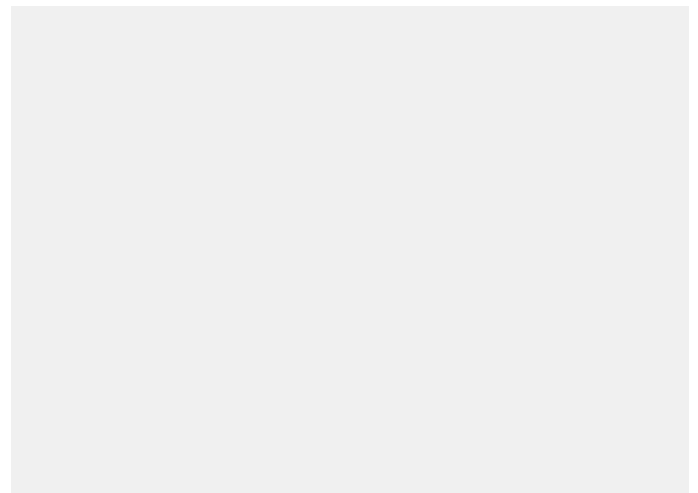
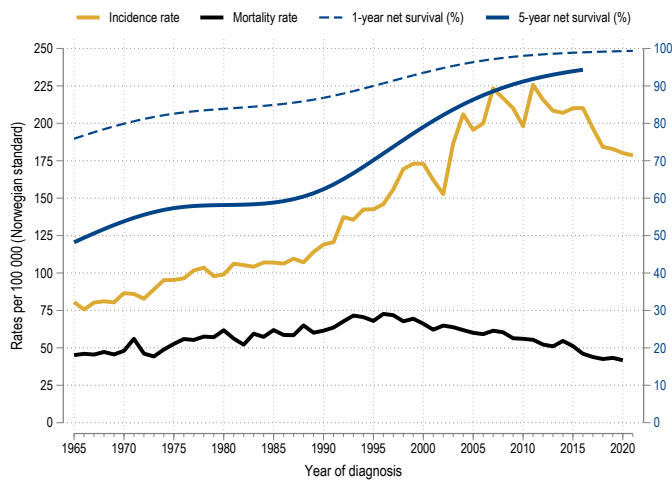
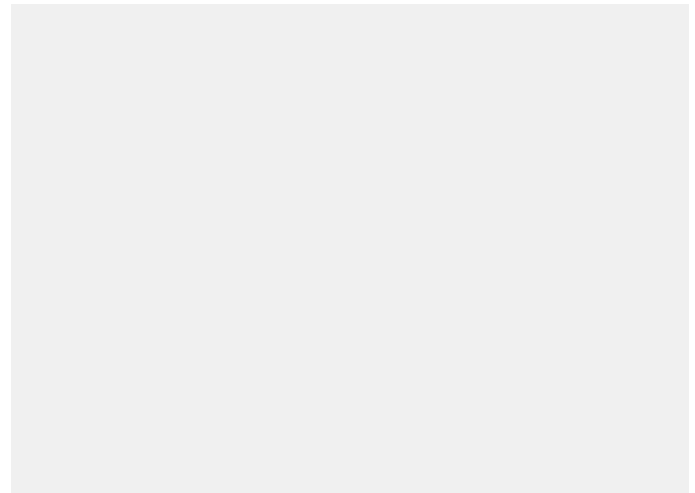
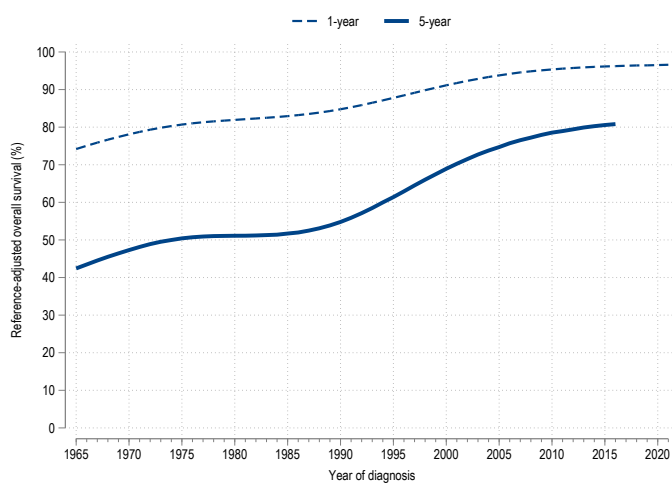
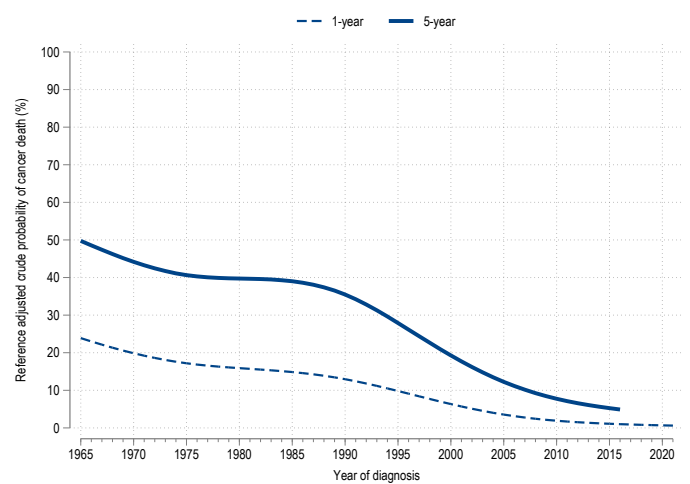
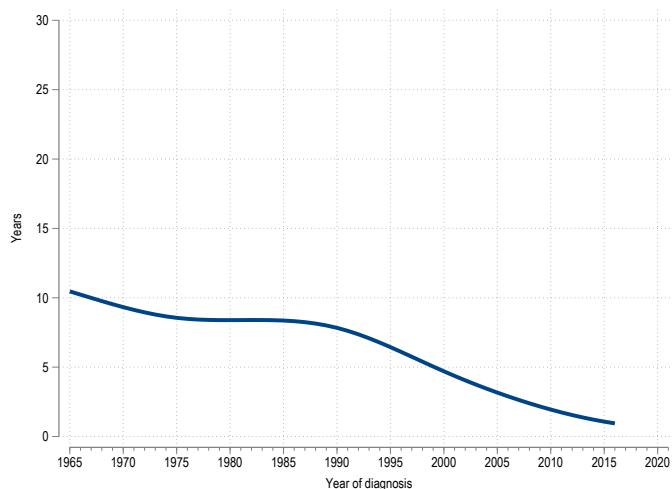
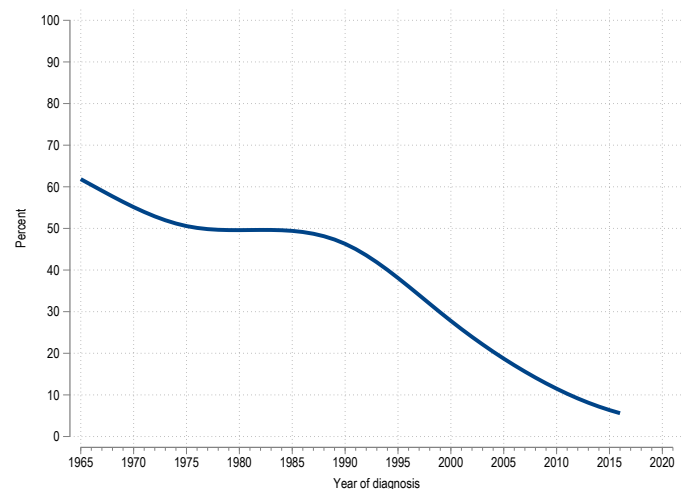
Figure 15.2: Prostate: life expectancy and life-years lost**Figure 15.2-A:** Life expectancy by age and stage. Males**Figure 15.2-B:** Life expectancy by age and stage. Females**Figure 15.2-C:** Proportion of life-years lost. Males**Figure 15.2-D:** Proportion of life-years lost. Females**Figure 15.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males**Figure 15.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females

Figure 15.3: Prostate: trends**Figure 15.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 15.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 15.3-C:** Trends in reference adjusted all-cause survival**Figure 15.3-D:** Trends in reference adjusted crude probability of cancer death

Prostate

Figure 15.3-E: Trends in reference adjusted life-years lost**Figure 15.3-F:** Trends in reference adjusted life-years lost (%)

Testis

16.1 Net survival and crude probabilities

Net survival among testicular cancer patients is very high throughout the first ten years after diagnosis, with a five year net survival estimate of 98.5 % and a ten year estimate of 98.3 % (Figure 16.1–A). Several studies have documented declining net survival for longer term follow-up due to treatment-related late effects. Such an effect would not show up in these result where follow-up is limited to ten years after diagnosis.

The probability of surviving five years after diagnosis is 97.5 % (Figure 16.1–B). The probability of dying from testicular cancer within five years is 1.5 % and the additional probability of dying from other causes is 1 % In comparison to net survival, the crude probability of surviving after testicular cancer is very similar, reflecting that a large proportion of these patients are young at the time of diagnosis and therefore at a low risk of dying from other causes.

Crude probabilities of testicular cancer death depend both on stage and age at diagnosis, while death due to other causes increases with age (Figure 16.1–C). For localised testicular cancer, the five year crude probability of death due to cancer is very low for all ages. For regional and distant cancer the probability of dying from cancer is quite low for younger men, but increasing markedly with age. The risk of dying from testicular cancer, if diagnosed with distant cancer, is 3 % for ages 0–24 and 63.3 % for ages 55–89.

The probability of dying from testicular cancer, when surviving one, two and up to five years after diagnosis is generally low for all stages, but still declining with number of years survived, in particular for distant stage. For a median aged testicular cancer patient diagnosed with distant stage the probability of dying from testicular cancer within five years after diagnosis is 6.3 %, declining to 1 % after surviving five years.

16.2 Life expectancy and life-years lost

The differences in prognosis across age and stages of testicular cancer leads to differences in life-years lost. Pa-

tients with localised testicular cancer lose almost none of their remaining life-years, whereas patients with distant testicular cancer lose more life-years. The number of life-years lost varies across age groups, with older men losing more life-years (Figure 16.2–A). Looking at the proportion of life-years lost, the age pattern becomes clearer, with a large increase in proportion of lifetime lost for the oldest men, possibly reflecting different patterns in aggressiveness across ages (Figure 16.2–C).

The proportion of life-years lost is close to zero for a median aged localised testicular cancer patient. For regional and distant testicular cancer, the proportion of life-years lost is declining with the number of years survived (Figure 16.2–E). For regional testicular cancer the estimates ranges from 2.3 % for newly diagnosed patients to 1.3 % for those surviving five years after diagnosis. The corresponding numbers for distant testicular cancer is 12.5 % at diagnosis, declining to 7.2 % when surviving five years.

16.3 Time trends

Net survival of testicular cancer increased dramatically when introducing cisplatin-based chemotherapy as standard treatment towards the end of the 1970s. In fact the increase is steeper than what the results in Figure 16.3–A indicates, since the smoothing of trends imply the increase was over a larger time-span than what is actually true. Correspondingly, all-cause survival has increased and the crude probability of dying from testicular cancer has declined (Figures 16.3–C and 16.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining sharply over time (Figures 16.3–E and 16.3–F). As an example, the number of life-years lost, if life expectancy is held constant at 2021-level, was on average 20.4 years in 1965 and expected to be 0.8 years in 2016. Correspondingly, the proportion of life-years lost due to testicular cancer has decreased from 45.3 % in 1965 to an expected 1.7 % in 2016, when averaging across all ages and stage at diagnosis.

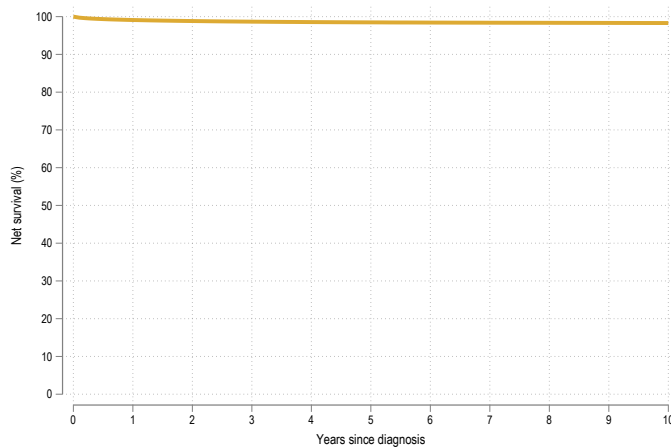
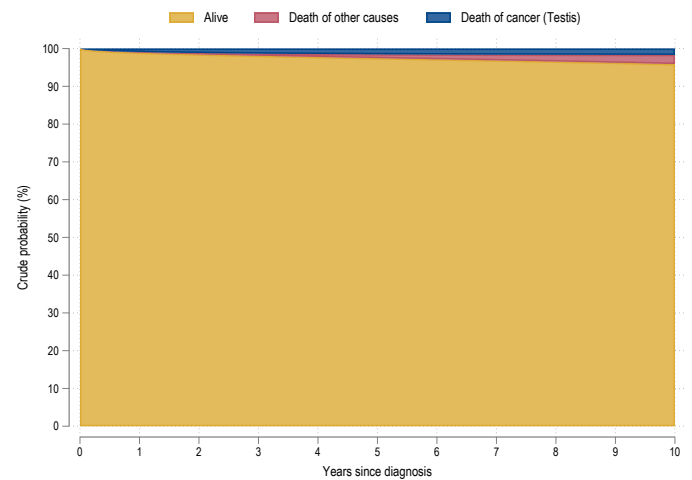
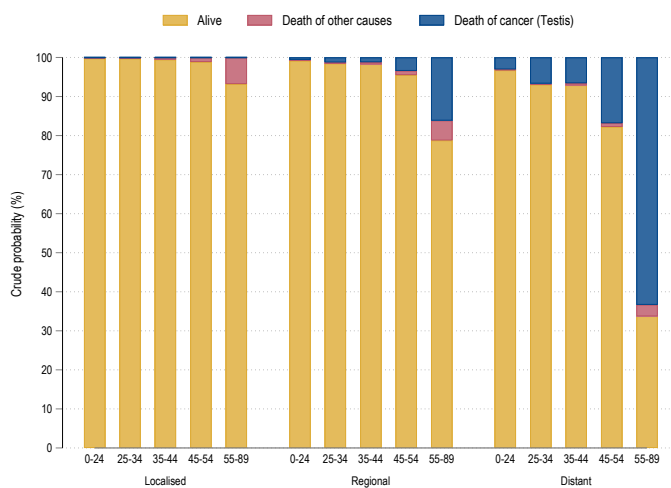
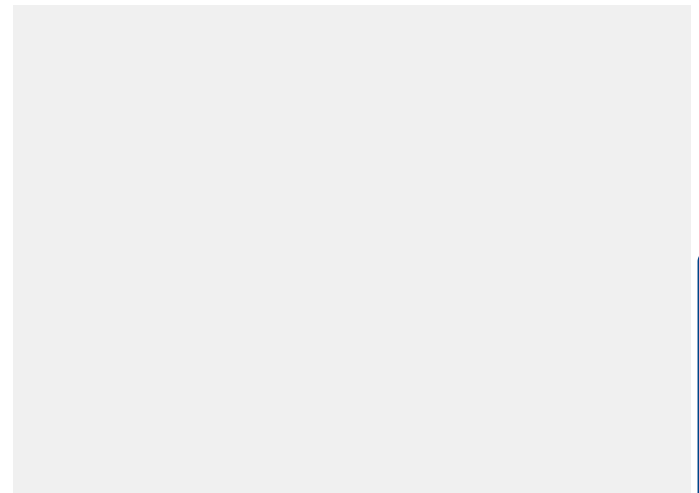
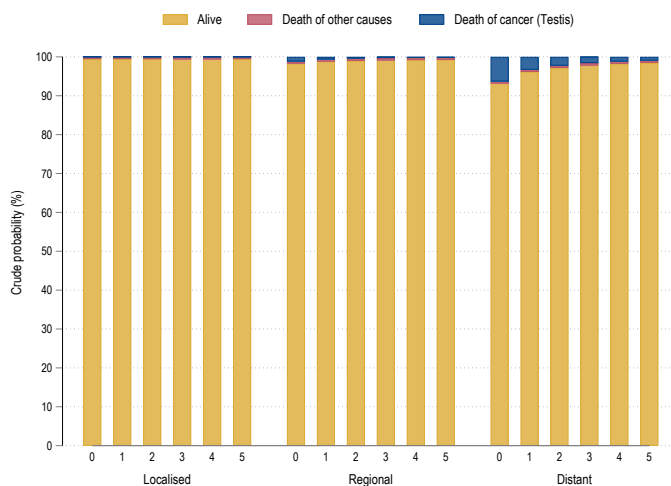
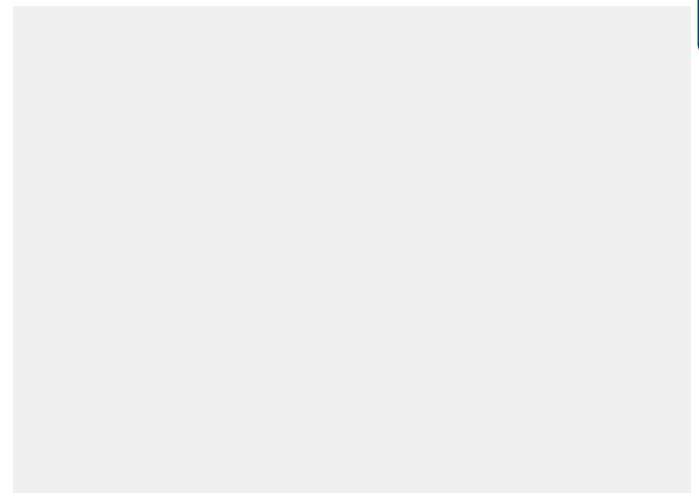
Figure 16.1: Testis: net and crude probabilities**Figure 16.1-A:** Net survival 0–10 years**Figure 16.1-B:** Crude probabilities 0–10 years**Figure 16.1-C:** 5-year crude probabilities by age and stage. Males**Figure 16.1-D:** 5-year crude probabilities by age and stage. Females**Figure 16.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Males**Figure 16.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Females

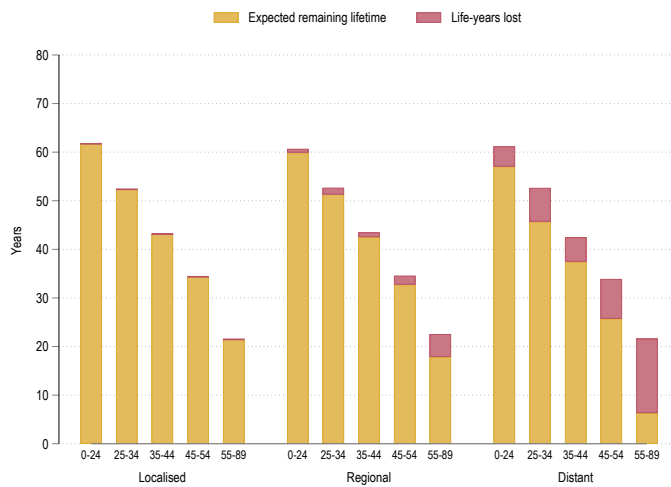
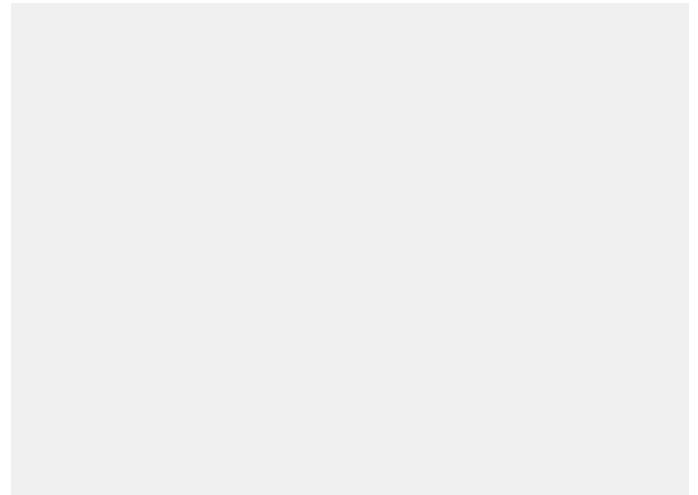
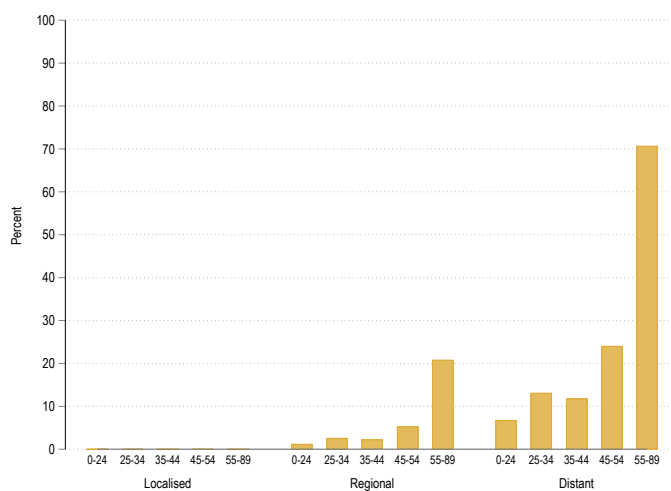
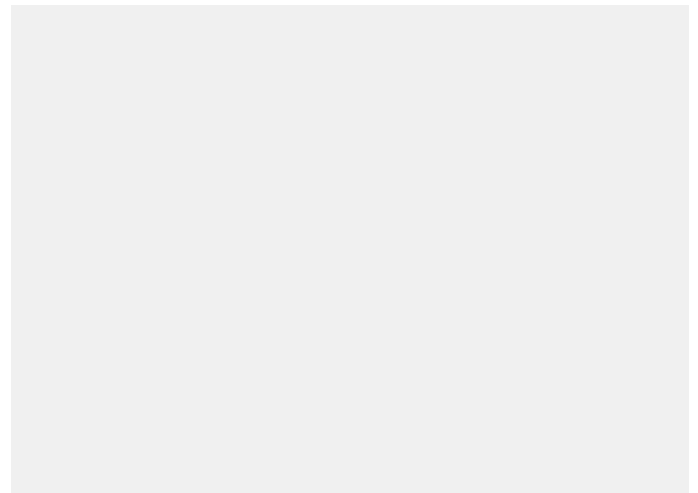
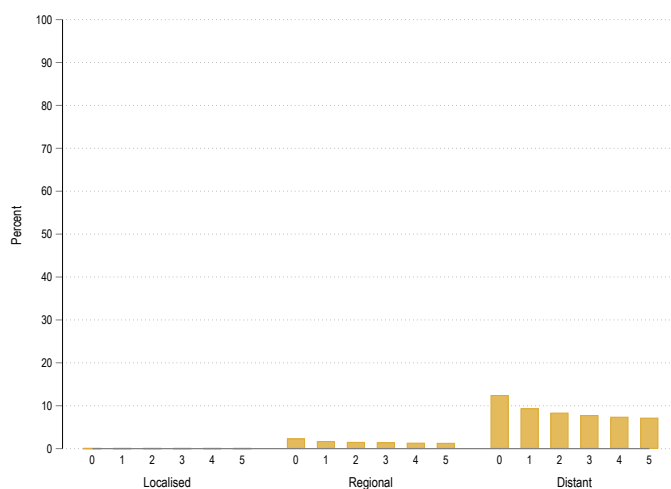
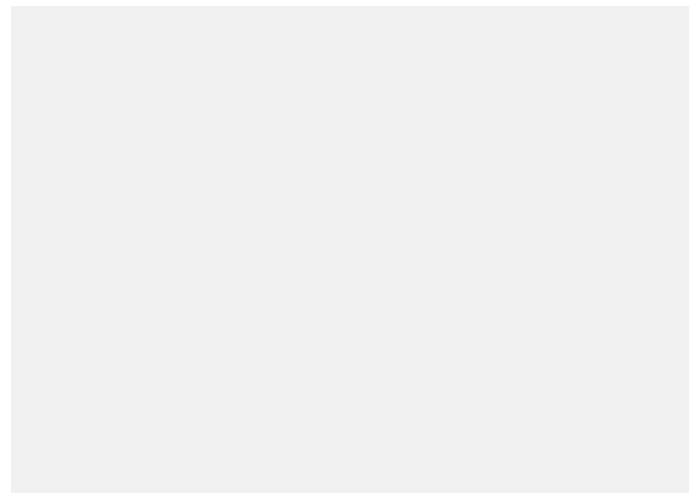
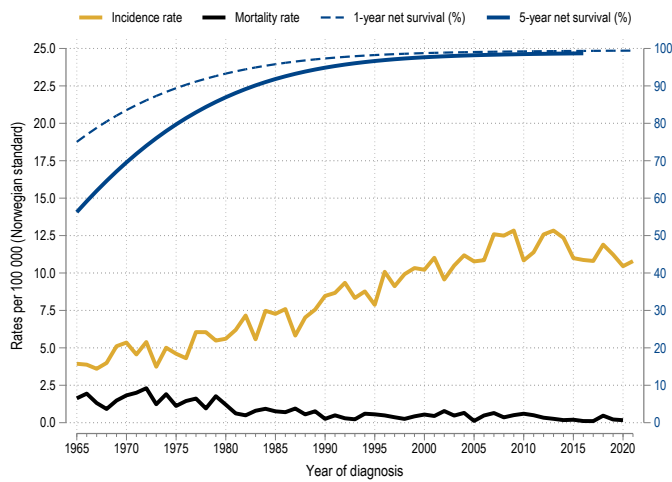
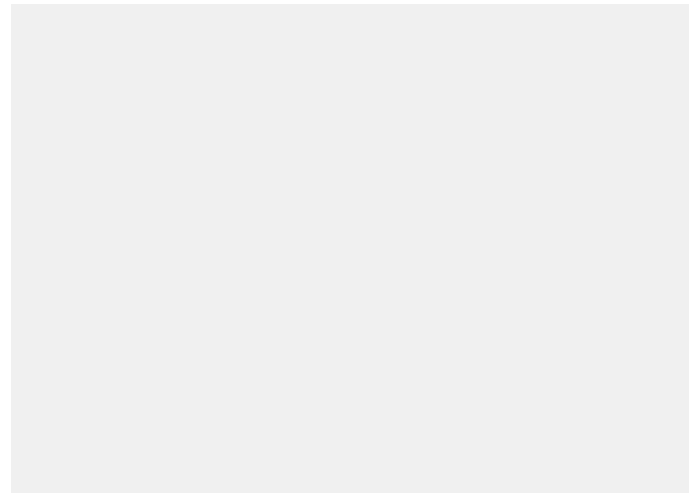
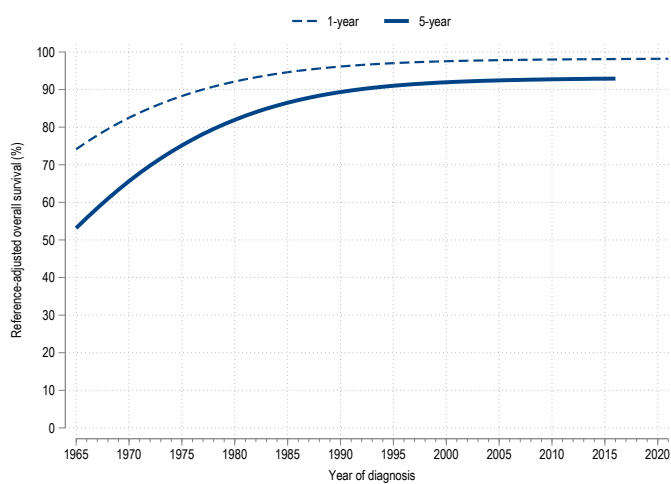
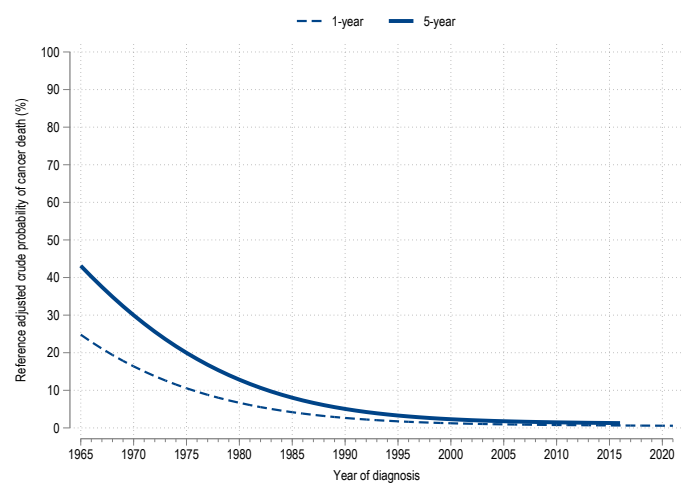
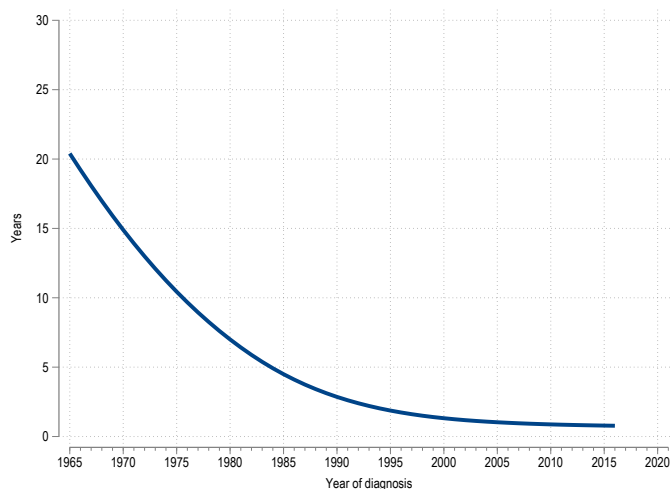
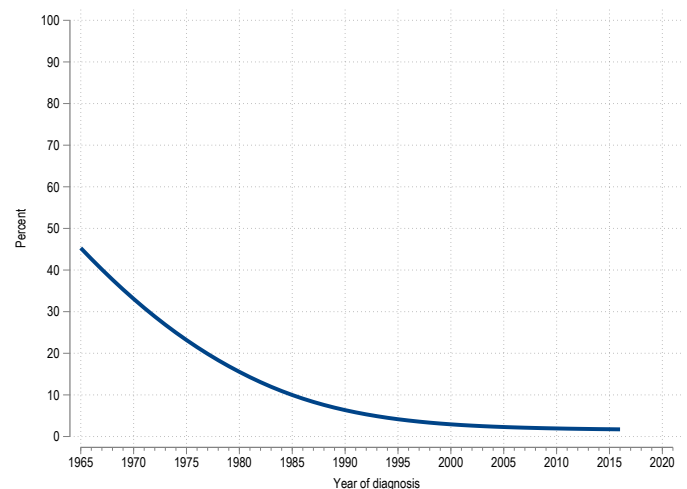
Figure 16.2: Testis: life expectancy and life-years lost**Figure 16.2-A:** Life expectancy by age and stage. Males**Figure 16.2-B:** Life expectancy by age and stage. Females**Figure 16.2-C:** Proportion of life-years lost. Males**Figure 16.2-D:** Proportion of life-years lost. Females**Figure 16.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Males**Figure 16.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 36 years at diagnosis (median age). Females

Figure 16.3: Testis: trends**Figure 16.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 16.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 16.3-C:** Trends in reference adjusted all-cause survival**Figure 16.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 16.3-E:** Trends in reference adjusted life-years lost**Figure 16.3-F:** Trends in reference adjusted life-years lost (%)

Kidney

17.1 Net survival and crude probabilities

Net survival among kidney cancer patients declines the first years after diagnosis with a five year net survival estimate of 77.8 %. After five years the net survival continues to decline without reaching a plateau, with a ten year net survival equal to 70.6 % for both sexes combined (Figure 17.1–A). Men and women have a very similar net survival.

The probability of surviving five years after diagnosis is 71.1 % (Figure 17.1–B). The probability of dying from kidney cancer within five years is 21.5 % and the additional probability of dying from other causes is 7.4 %. In comparison to net survival, the crude probability of dying from cancer is lower since patients may also die from other causes.

Crude probabilities of kidney cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 17.1–D and 17.1–C). The probability of dying from kidney cancer only slightly varies with age, with better survival in the youngest age groups. In women with localised cancer, the five year crude probability of death due to kidney cancer is 11 % at ages 80–89, while the corresponding probability is 6.1 % at ages 0–49. Among patients with distant metastases at diagnosis, the probability of cancer death is 85.2 % in the ages 80–89 and 68.5 % at ages 0–49.

Having survived kidney cancer for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 17.1–F and 17.1–E). This pattern is the same for all stages. For a median aged kidney cancer patient with distant metastases at the time of diagnosis, the five year risk of dying from the cancer is 79.6 %. If surviving five years from diagnosis the future five year risk of dying from kidney cancer is reduced to 63.9 %. Considerable differences in survival remain across stages even after surviving up to five years after diagnosis.

17.2 Life expectancy and life-years lost

The differences in prognosis across stages of kidney cancer leads to differences in life-years lost. Patients with localised kidney cancer lose relatively few of their remaining life-years, whereas patients with distant kidney cancer lose many life-years (Figures 17.2–B and 17.2–A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportions of life-years lost are quite similar across ages for all stages of kidney cancer (Figures 17.2–D and 17.2–C). These plots also shows the large difference in prognosis across stages, with patients with regional and distant kidney cancer losing a much larger proportion of their remaining lifetime compared to localised kidney cancer.

The proportion of life-years lost decreases only slightly with the number of years survived for all stages (Figures 17.2–F and 17.2–E). The proportion does not approach zero for any stages, meaning that the cancer diagnosis continues to influence expected remaining lifetime despite surviving several years after diagnosis.

17.3 Time trends

Net survival of kidney cancer has increased steadily over time for both sexes and especially over the past two decades (Figures 17.3–B and 17.3–A). Correspondingly, all-cause survival has increased and the crude probability of dying from kidney cancer has declined (Figures 17.3–C and 17.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 17.3–E and 17.3–F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 15.5 years in 1965 and expected to be 5.3 years in 2016. Correspondingly, the proportion of life-years lost due to kidney cancer has decreased from 68.7 % in 1965 to an expected 23.6 % in 2016, when averaging across all ages and stages at diagnosis.

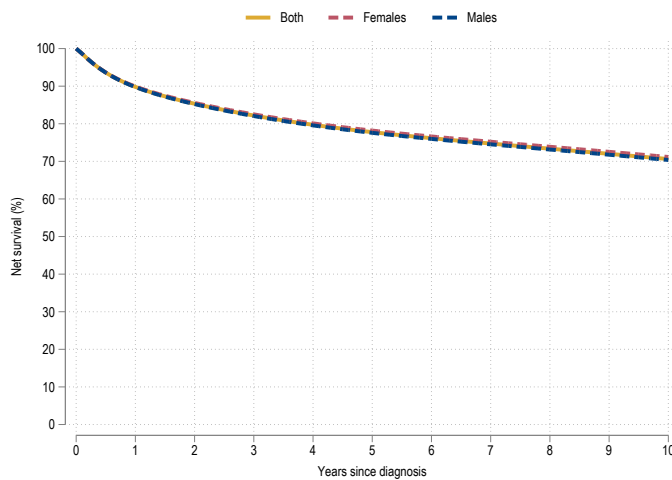
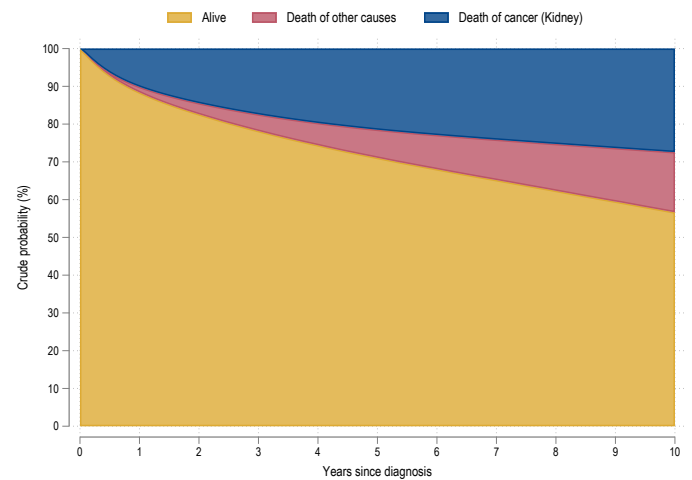
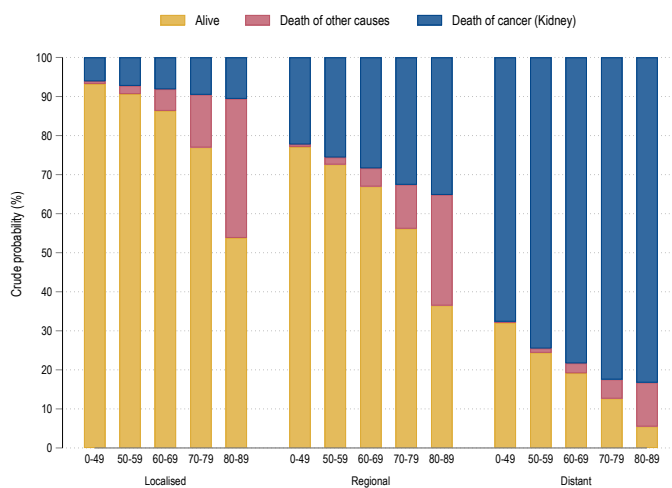
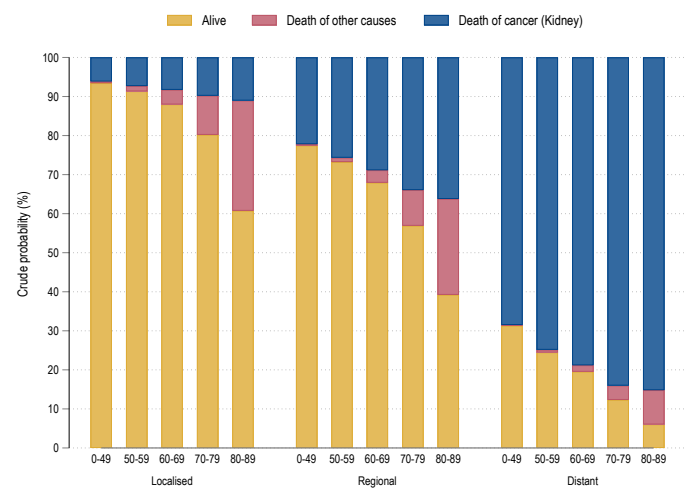
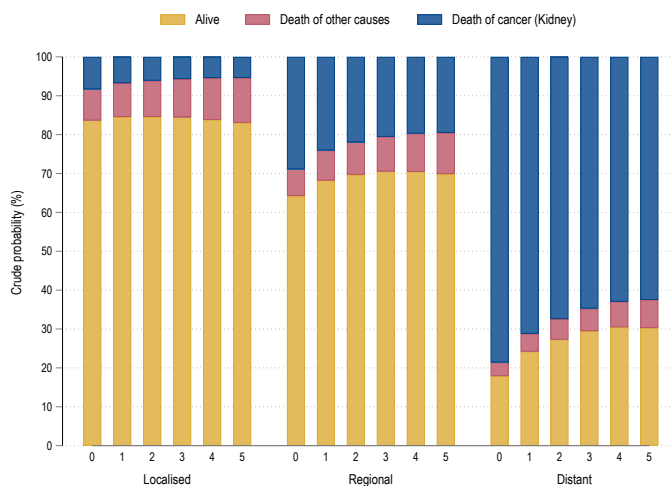
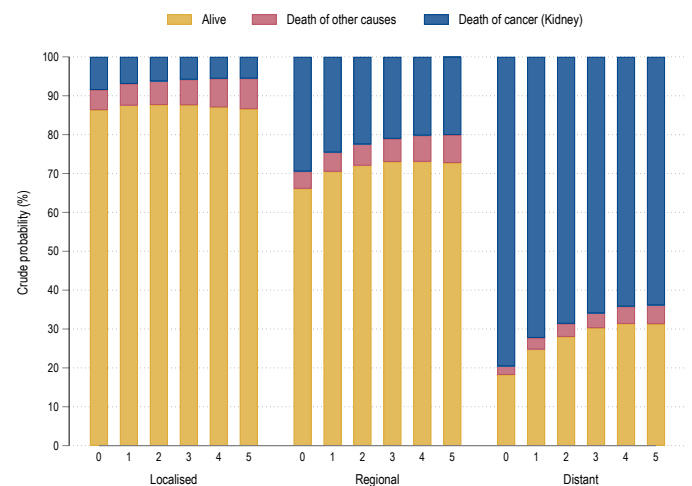
Figure 17.1: Kidney: net and crude probabilities**Figure 17.1-A:** Net survival 0–10 years**Figure 17.1-B:** Crude probabilities 0–10 years**Figure 17.1-C:** 5-year crude probabilities by age and stage. Males**Figure 17.1-D:** 5-year crude probabilities by age and stage. Females**Figure 17.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males**Figure 17.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

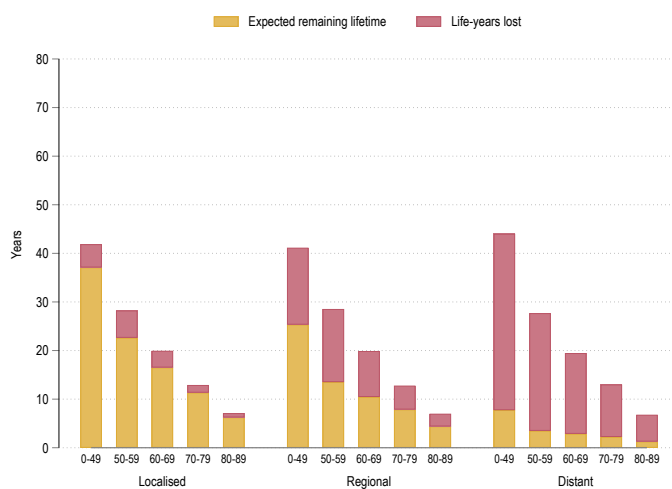
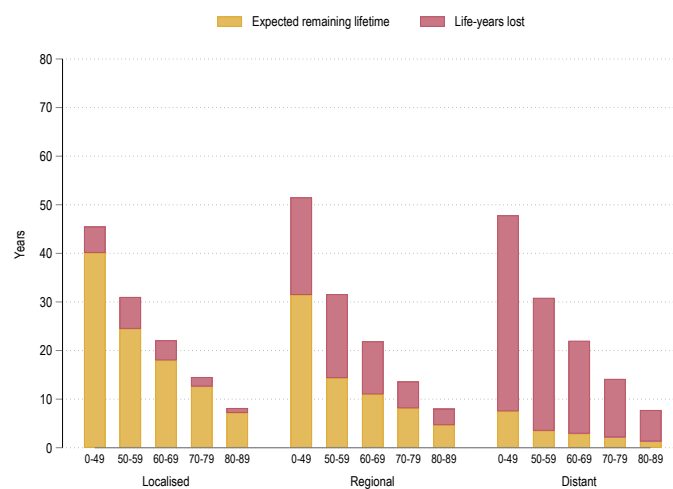
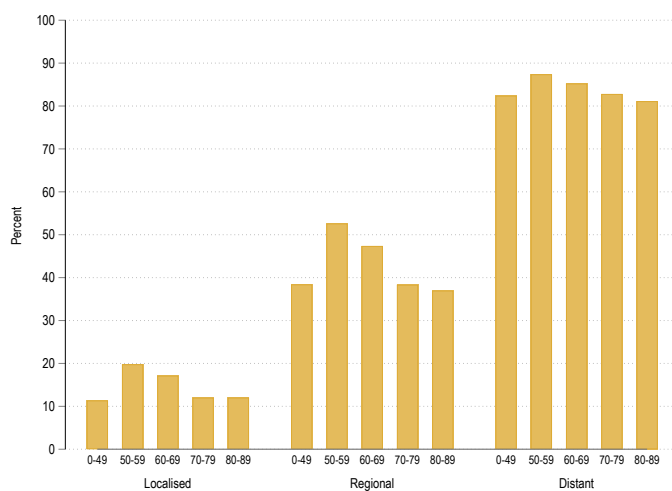
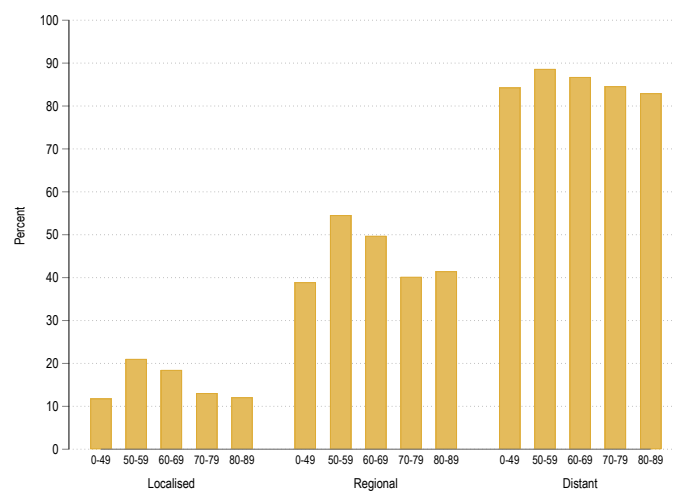
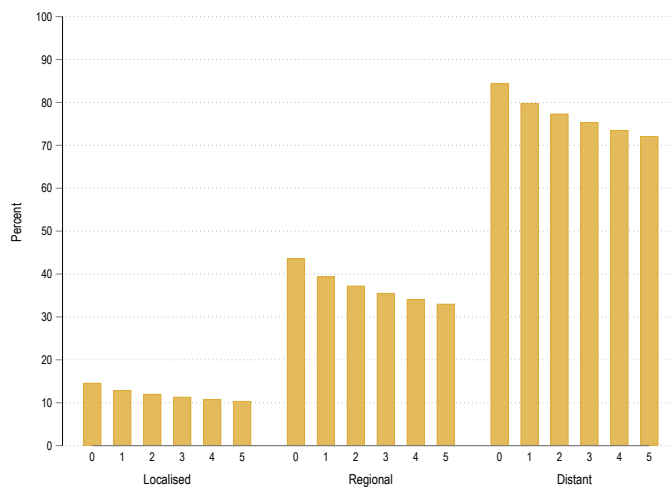
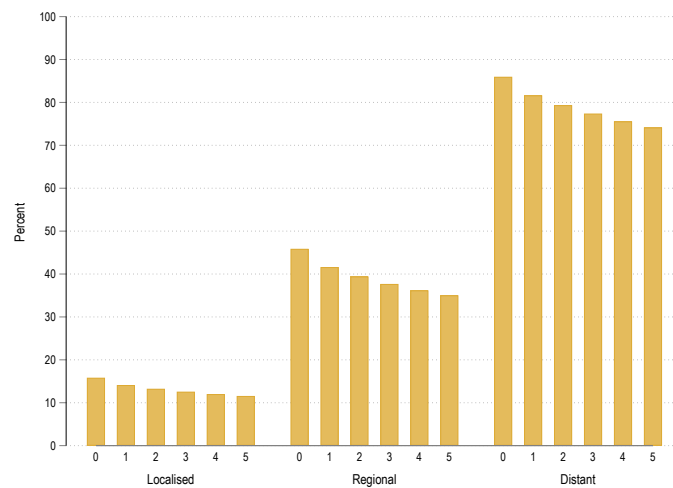
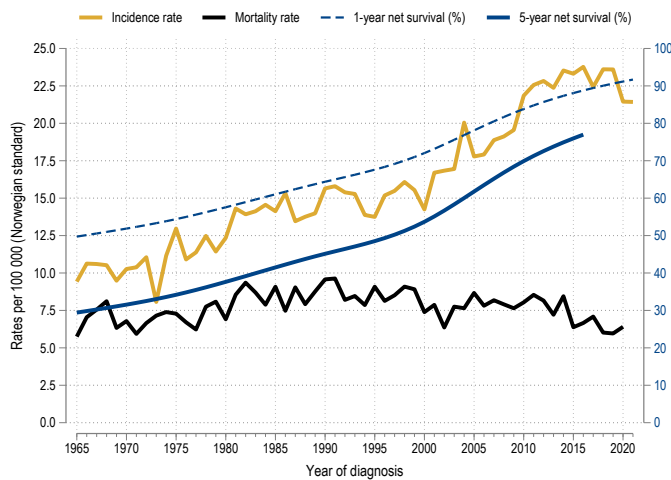
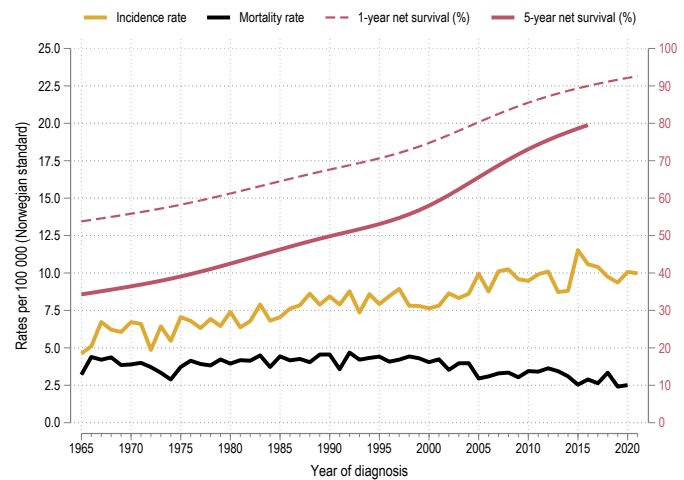
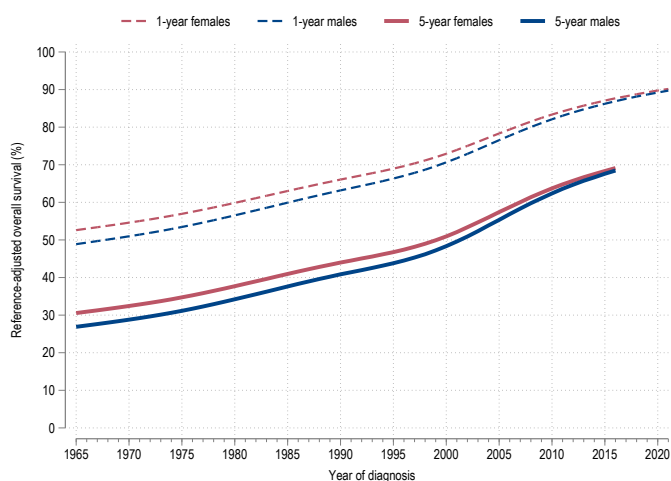
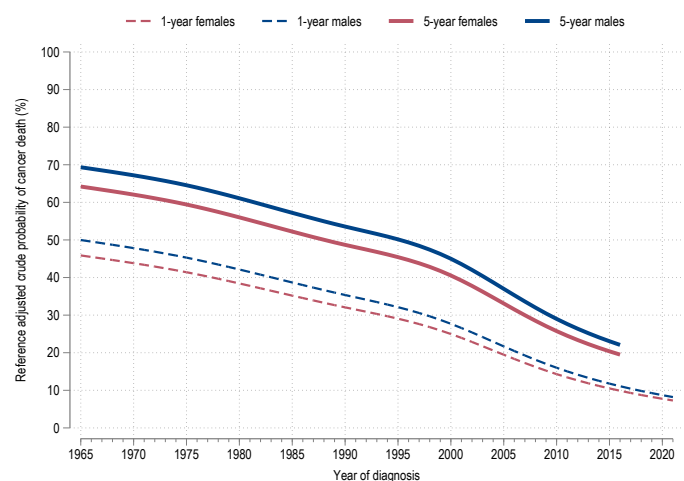
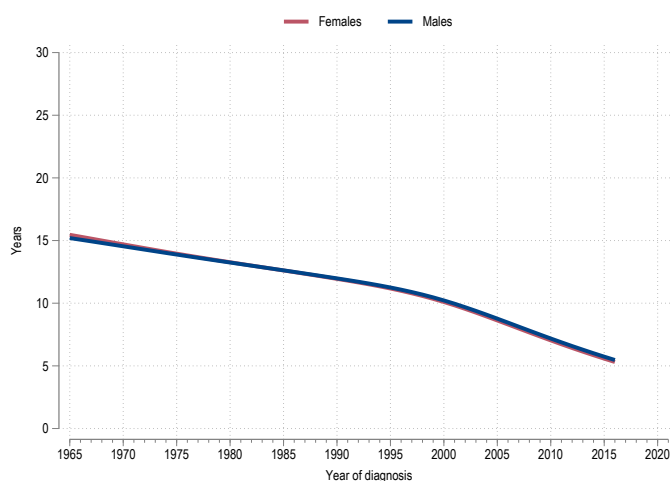
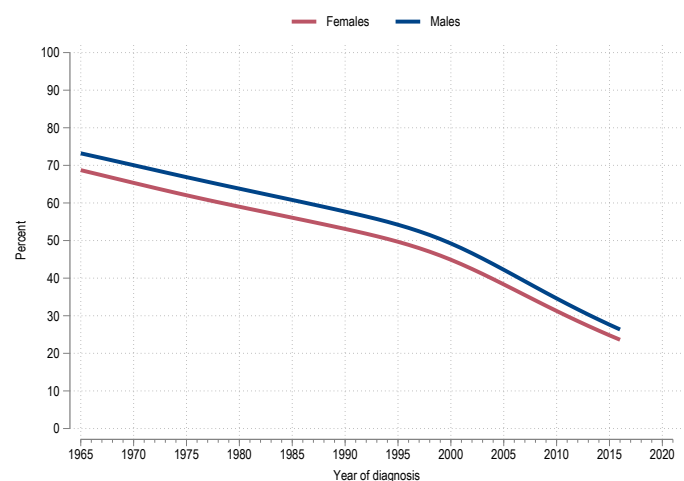
Figure 17.2: Kidney: life expectancy and life-years lost**Figure 17.2-A:** Life expectancy by age and stage. Males**Figure 17.2-B:** Life expectancy by age and stage. Females**Figure 17.2-C:** Proportion of life-years lost. Males**Figure 17.2-D:** Proportion of life-years lost. Females**Figure 17.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Males**Figure 17.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 67 years at diagnosis (median age). Females

Figure 17.3: Kidney: trends**Figure 17.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 17.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 17.3-C: Trends in reference adjusted all-cause survival****Figure 17.3-D: Trends in reference adjusted crude probability of cancer death****Figure 17.3-E: Trends in reference adjusted life-years lost****Figure 17.3-F: Trends in reference adjusted life-years lost (%)**

Urinary tract

18.1 Net survival and crude probabilities

Cancers in the urinary tract includes cancers of the renal pelvis (ICD10-C65), cancers of ureter (ICD10-C66), bladder cancer (ICD10-C67) and cancers of other and unspecified urinary organs (ICD10-C68). Most of the cancers in this group are bladder cancers, with a proportion of approximately 84 % for women and 91 % for men during the last five years. Net survival among urinary tract cancer patients declines the first years after diagnosis with a five year net survival estimate of 77.7 %. After five years the net survival continues to decline without reaching a plateau, with a ten year net survival equal to 69.6 % for both sexes combined (Figure 18.1-A). Men have a somewhat higher net survival compared to women.

The probability of surviving five years after diagnosis is 66 % (Figure 18.1-B). The probability of dying from urinary tract cancer within five years is 20.9 % and the additional probability of dying from other causes is 13.1 %. In comparison to net survival, the crude probability of dying from cancer is lower since patients may also die from other causes.

Crude probabilities of urinary tract cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 18.1-D and 18.1-C). The probability of dying from urinary tract cancer only slightly varies with age with better survival in the youngest age groups. In women with localised cancer, the five year crude probability of death due to urinary tract cancer is 24.2 % at ages 80–89, while the corresponding probability is 3.5 % at ages 0–49. Among patients with distant metastases at diagnosis, where the risk of dying from urinary tract cancer is higher, the age gradient is less clear.

Having survived a localised urinary tract cancer for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 18.1-F and 18.1-E). However, if more advanced cancer were present at the time of diagnosis the prognosis will strongly depend on how long you have survived since diagnosis. For these stages, the crude probability of death from urinary tract cancer declines a lot the first three years after diagnosis. For a median aged urinary tract cancer patient with distant metastases at the time of diagnosis, the five year risk of dying from

the cancer is 89.5 %. If surviving three years from diagnosis the future five year risk of dying from urinary tract cancer is reduced to 38 %. Even though survival improves with the number of years survived, considerable differences remain across stages.

18.2 Life expectancy and life-years lost

The differences in prognosis across stages of urinary tract cancer leads to differences in life-years lost. Patients with localised urinary tract cancer lose few of their remaining life-years, whereas patients with distant urinary tract cancer lose many life-years (Figures 18.2-B and 18.2-A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. The proportion of life-years lost are quite similar across ages for all stages of urinary tract cancer (Figures 18.2-D and 18.2-C). These plots also shows the large difference in prognosis across stages, with patients with regional and distant urinary tract cancer losing a much larger proportion of their remaining lifetime compared to localised urinary tract cancer.

The proportion of life-years lost decreases with the number of years survived, in particular for patients diagnosed with regional or distant urinary tract cancer (Figures 18.2-F and 18.2-E). Still, the proportion does not approach zero for any stages, meaning that the cancer diagnosis continues to influence expected remaining lifetime despite surviving several years after diagnosis.

18.3 Time trends

Net survival of urinary tract cancer has increased steadily over time for both sexes (Figures 18.3-B and 18.3-A). Correspondingly, all-cause survival has increased and the crude probability of dying from urinary tract cancer has declined (Figures 18.3-C and 18.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 18.3-E and 18.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 10.6 years in 1965 and expected to be 4.6 years in 2016. Correspondingly, the proportion of life-years lost due to urinary tract cancer has decreased from 61.1 % in 1965 to an expected 26.7 % in 2021, when averaging across all ages and stage at diagnosis.

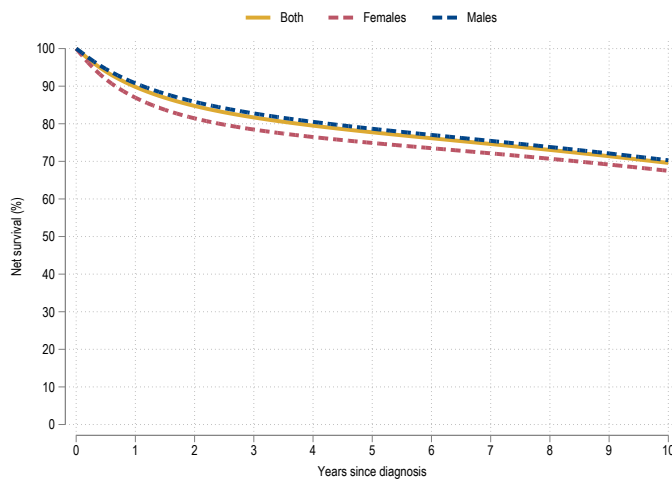
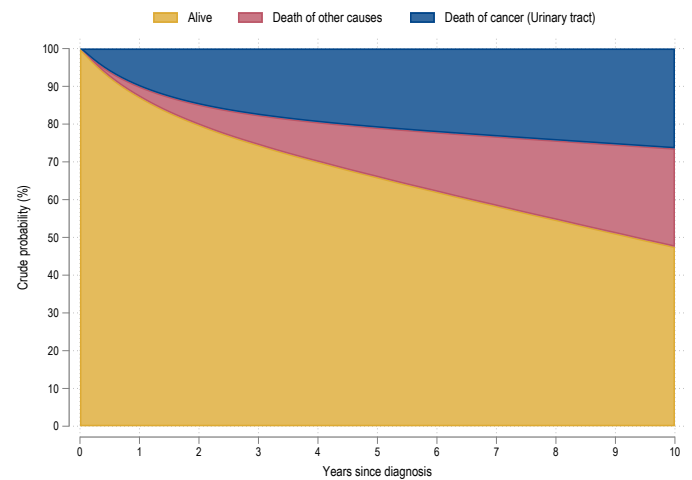
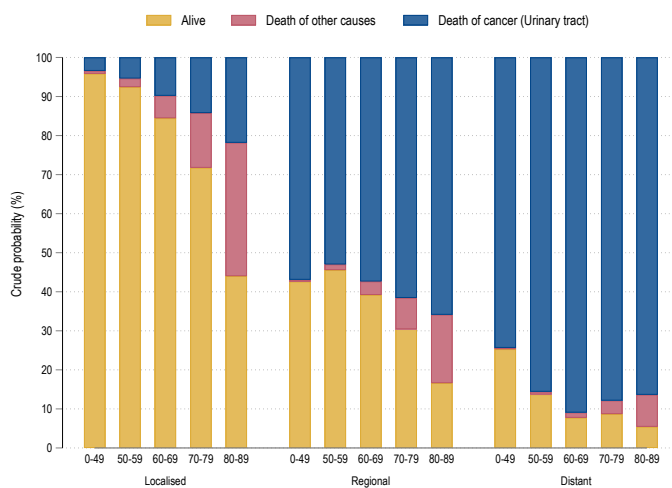
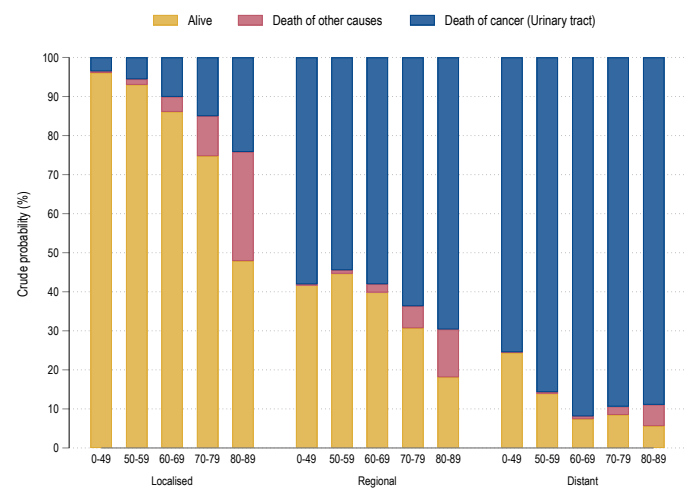
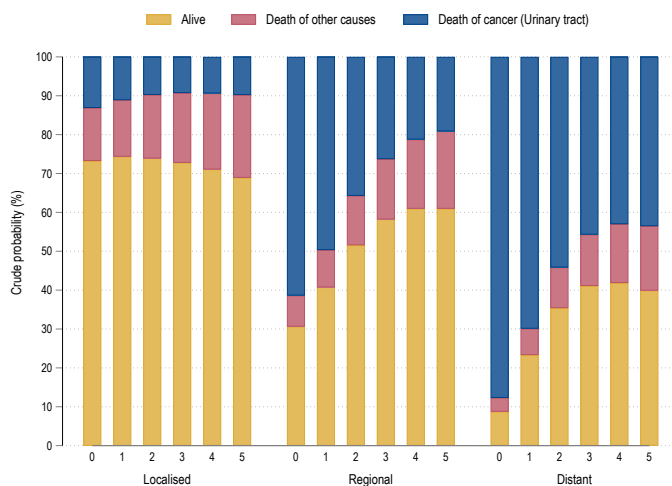
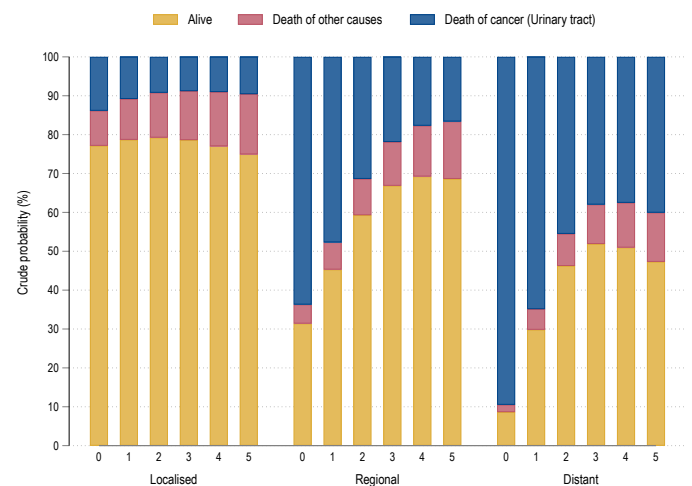
Figure 18.1: Urinary tract: net and crude probabilities**Figure 18.1-A:** Net survival 0–10 years**Figure 18.1-B:** Crude probabilities 0–10 years**Figure 18.1-C:** 5-year crude probabilities by age and stage. Males**Figure 18.1-D:** 5-year crude probabilities by age and stage. Females**Figure 18.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males**Figure 18.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females

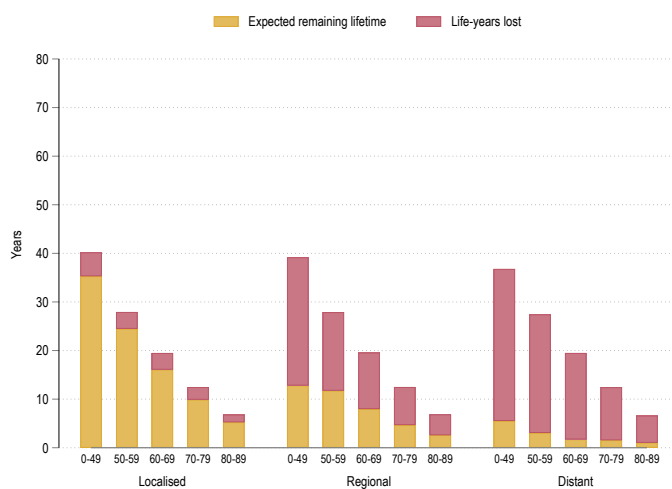
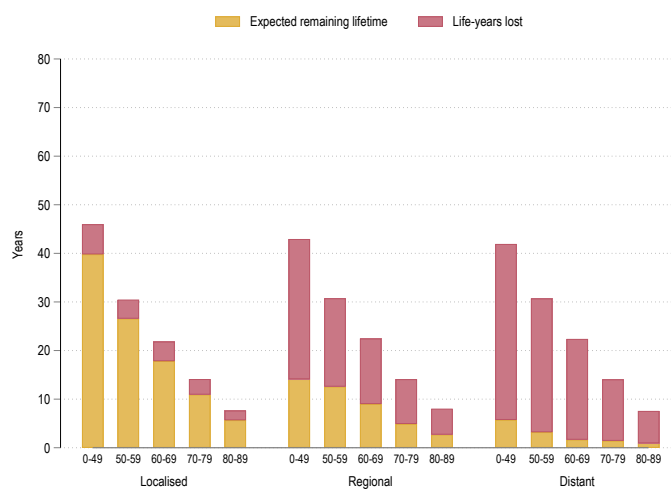
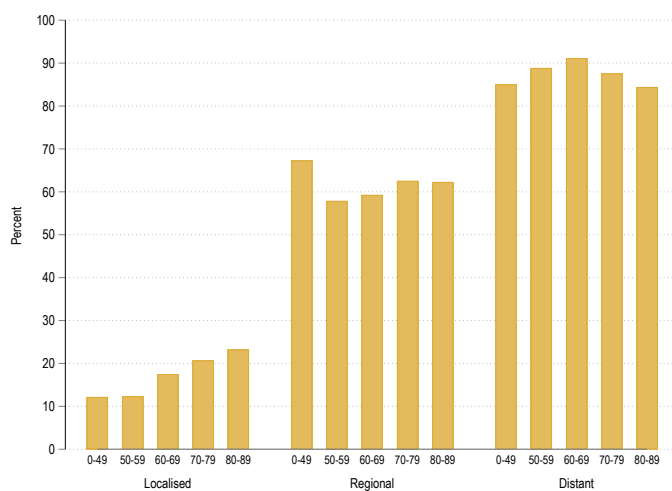
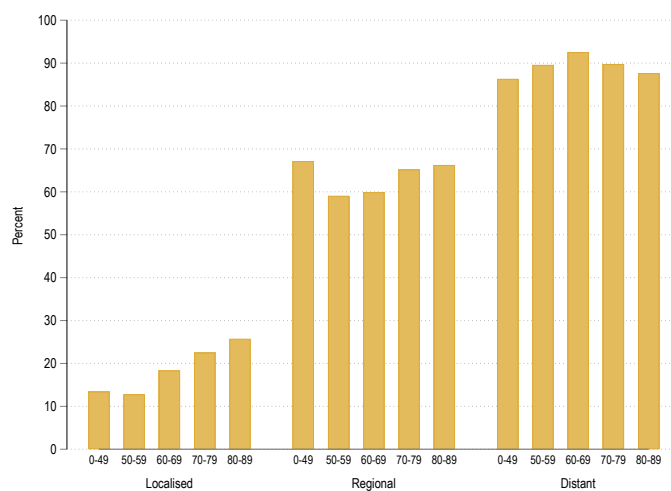
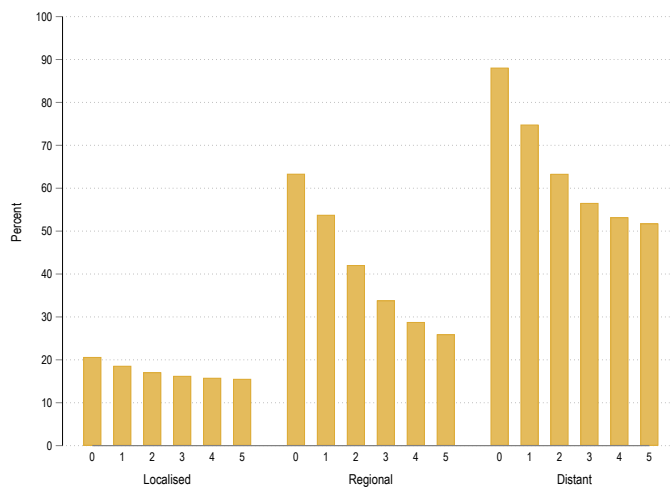
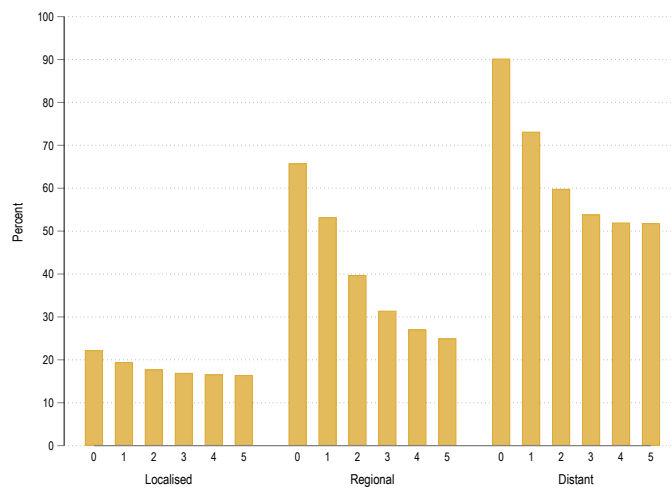
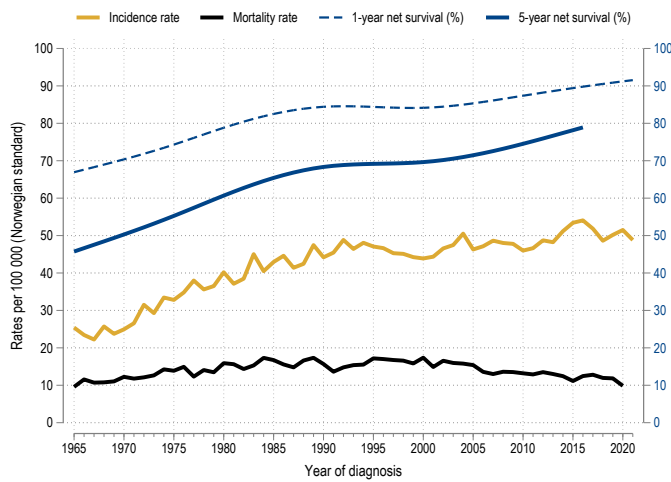
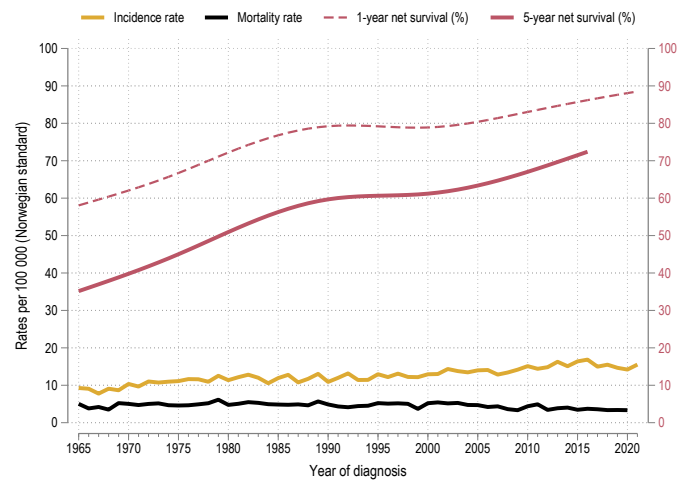
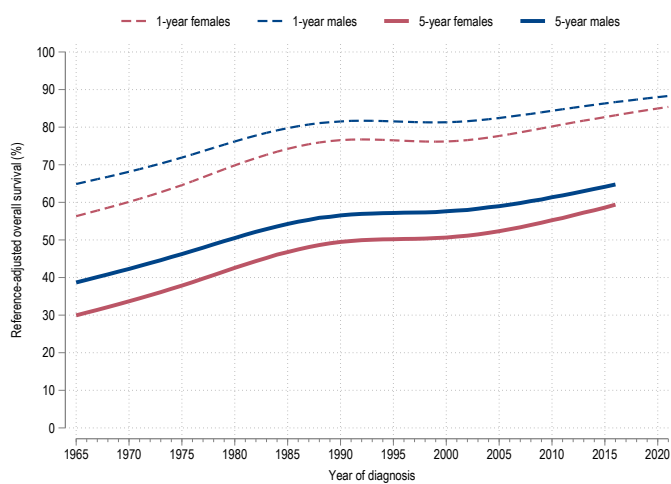
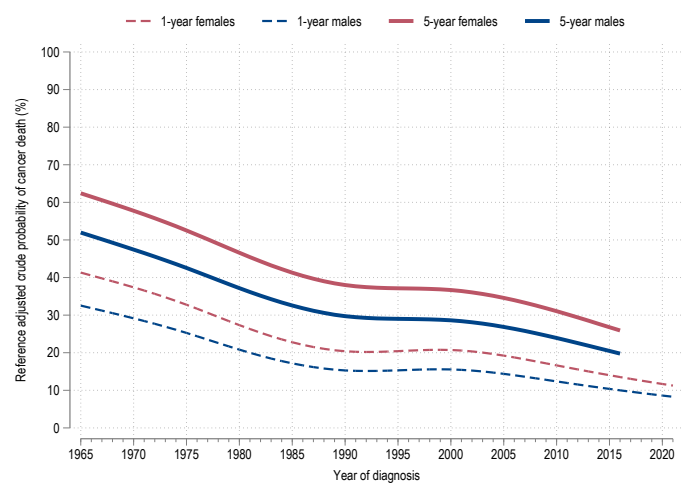
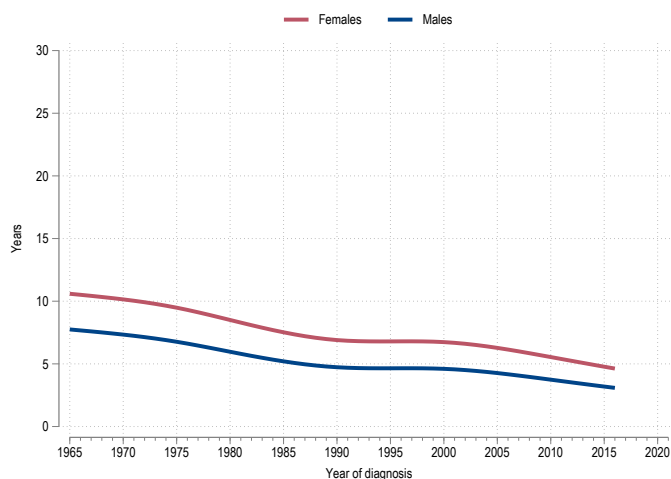
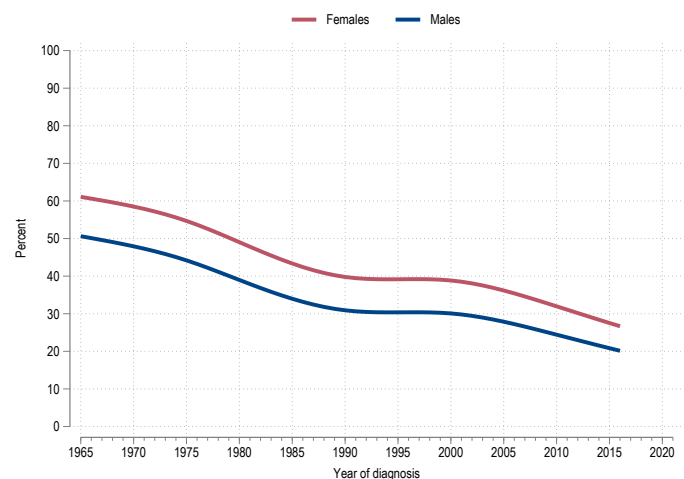
Figure 18.2: Urinary tract: life expectancy and life-years lost**Figure 18.2-A:** Life expectancy by age and stage. Males**Figure 18.2-B:** Life expectancy by age and stage. Females**Figure 18.2-C:** Proportion of life-years lost. Males**Figure 18.2-D:** Proportion of life-years lost. Females**Figure 18.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Males**Figure 18.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 73 years at diagnosis (median age). Females

Figure 18.3: Urinary tract: trends**Figure 18.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 18.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 18.3-C:** Trends in reference adjusted all-cause survival**Figure 18.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 18.3-E:** Trends in reference adjusted life-years lost**Figure 18.3-F:** Trends in reference adjusted life-years lost (%)

Central nervous system

19.1 Net survival and crude probabilities

Cancers in the central nervous system (CNS) includes cancers of the meninges (ICD10-C70), cancers of the brain (ICD10-C71) and cancers of other parts in the CNS (ICD10-C72), with the two former being the dominating groups.

Net survival for patients with CNS cancers declines quite sharply the first two years after diagnosis, with a two year net survival estimate of 72.4 %. After two years the net survival only marginally declines, reaching a plateau, with a ten year net survival equal to 62.7 % for both sexes combined (Figure 19.1-A). Women have a much higher net survival compared to men.

The probability of surviving five years after diagnosis is 62.5 % (Figure 19.1-B). The probability of dying from CNS cancer within five years is 33.7 % and the additional probability of dying from other causes is 3.8 %. In comparison to net survival, the crude probability of dying from cancer is quite similar, despite accounting for deaths from other causes, reflecting the fact that these cancers occur in many younger patients.

Crude probabilities of death from CNS cancer strongly depend on malignancy grade, with non-malignant cancers having a very low risk of cancer death for all age groups. Patients with malignant CNS cancers, on the other hand, have a much larger risk of cancer death. In this group there is also a strong dependency on age, with the risk of cancer death increasing sharply with older age (Figures 19.1-D and 19.1-C). For women with malignant CNS cancer, the five year crude probability of death due to cancer is 93.9 % at ages 80–89, while the corresponding probability is 29.8 % at ages 0–19.

Having survived CNS cancer for one, two and up to five years after diagnosis, does not impact your survival the coming five years for non-malignant cancer, since the prognosis is very good already from the time of diagnosis. For malignant CNS cancer the coming five year survival is strongly affected by the number of years survived since diagnosis (Figures 19.1-F and 19.1-E). For

a median aged patient with malignant CNS cancer the five year risk of dying from the cancer is 80 % when seen from diagnosis. If surviving five years from diagnosis the future five year risk of dying cancer is 27.3 %.

19.2 Life expectancy and life-years lost

The differences in prognosis across malignancy grade and age of CNS cancer leads to differences in life-years lost. Looking at the absolute number of life-years lost, the youngest patients lose most, related to the higher expected remaining lifetime for younger ages. In general, the loss in life expectancy is low for non-malignant cancer, but much larger for malignant cancer (Figures 19.2-B and 19.2-A). The proportion of life-years lost increases slightly with age for malignant CNS cancer (Figures 19.2-D and 19.2-C).

The proportion of life-years lost decreases with the number of years survived for malignant CNS cancer. For non-malignant cancer the proportion of loss in life expectancy is stable and low throughout (Figures 19.2-F and 19.2-E).

19.3 Time trends

Keeping the distribution of malignant and non-malignant cancers the same over time, net survival of CNS cancer has increased steadily over time for both sexes (Figures 19.3-B and 19.3-A). Correspondingly, all-cause survival has increased and the crude probability of dying from CNS cancer has declined (Figures 19.3-C and 19.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 19.3-E and 19.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 14.1 years in 1965 and expected to be 8.5 years in 2016. Correspondingly, the proportion of life-years lost due to CNS cancer has decreased from 46.6 % in 1965 to an expected 28.2 % in 2016, when averaging across all ages at diagnosis.

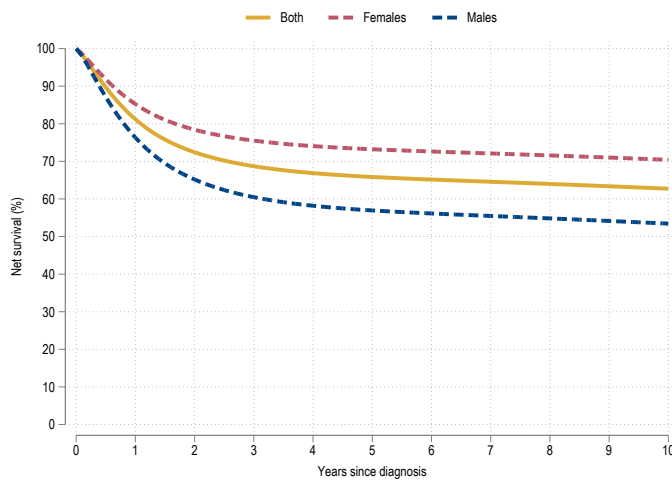
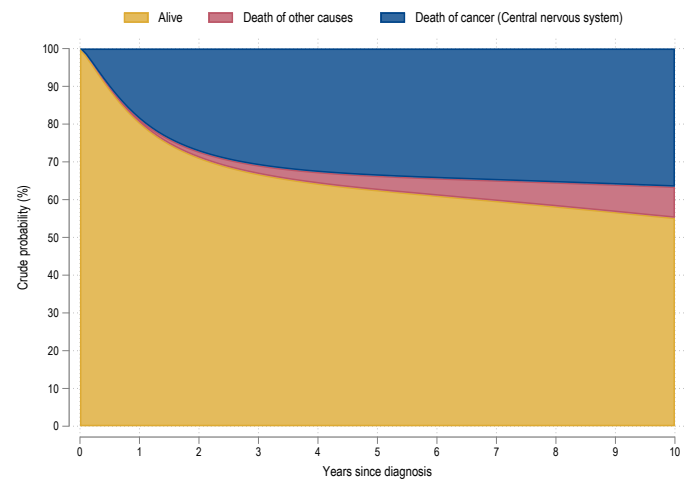
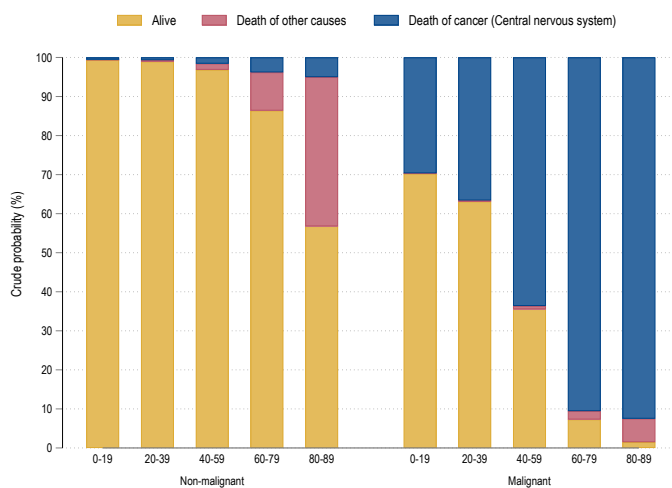
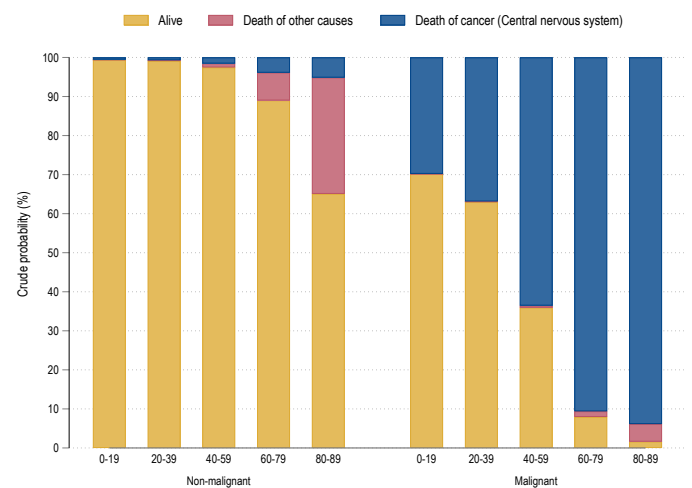
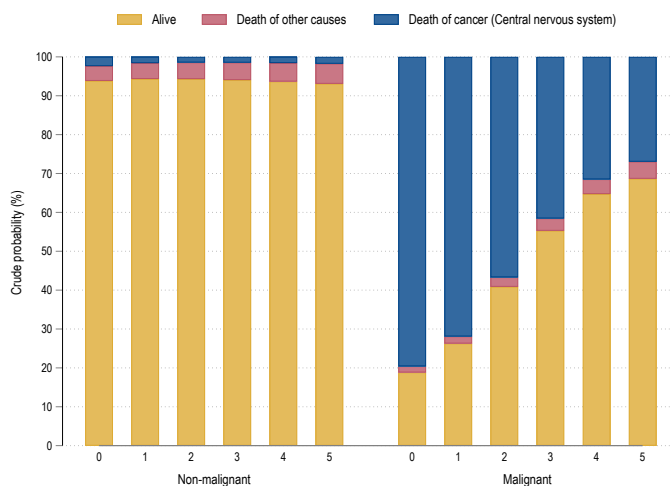
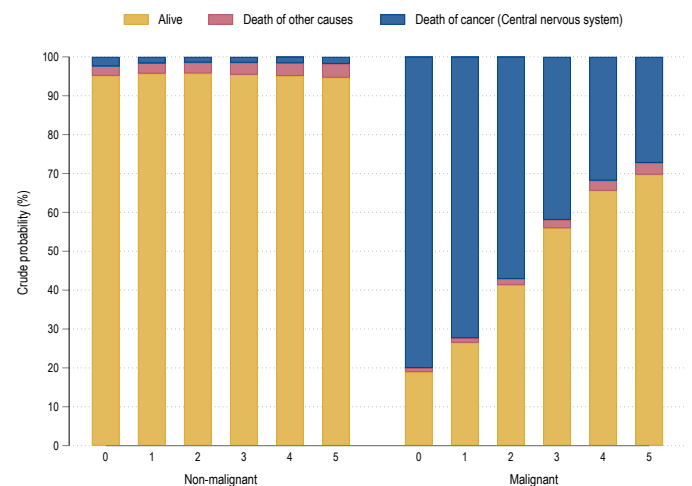
Figure 19.1: Central nervous system: net and crude probabilities**Figure 19.1-A:** Net survival 0–10 years**Figure 19.1-B:** Crude probabilities 0–10 years**Figure 19.1-C:** 5-year crude probabilities by age and stage. Males**Figure 19.1-D:** 5-year crude probabilities by age and stage. Females**Figure 19.1-E:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Males**Figure 19.1-F:** Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Females

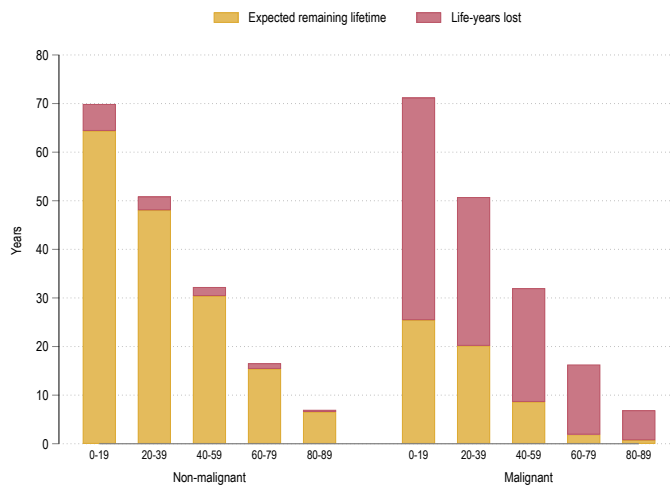
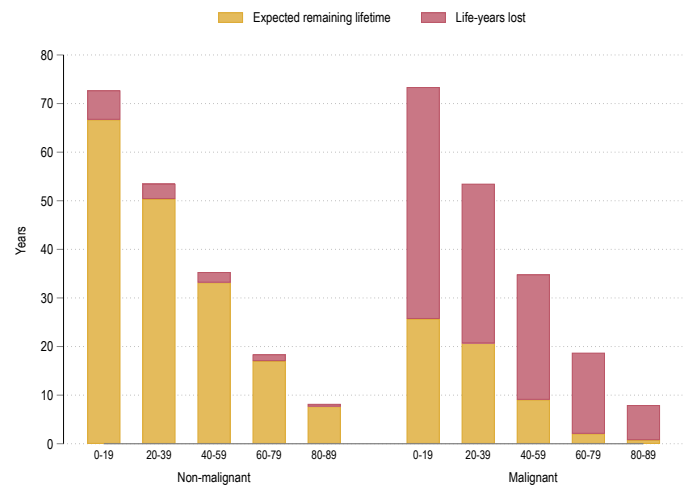
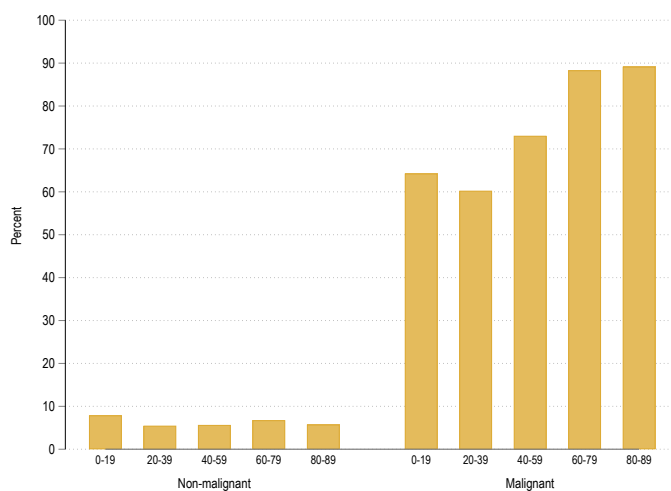
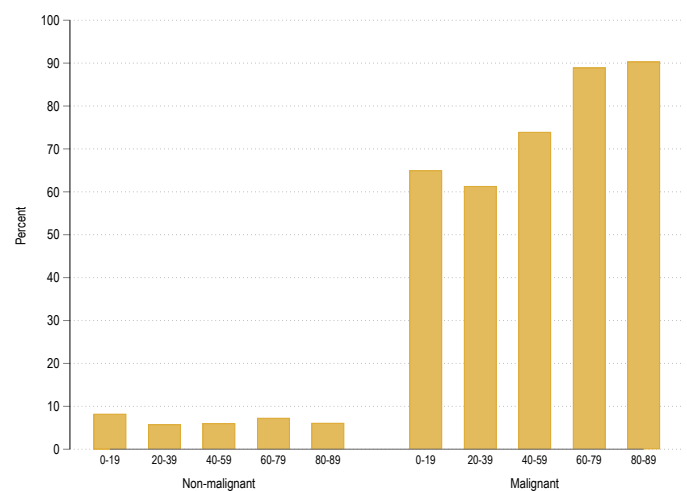
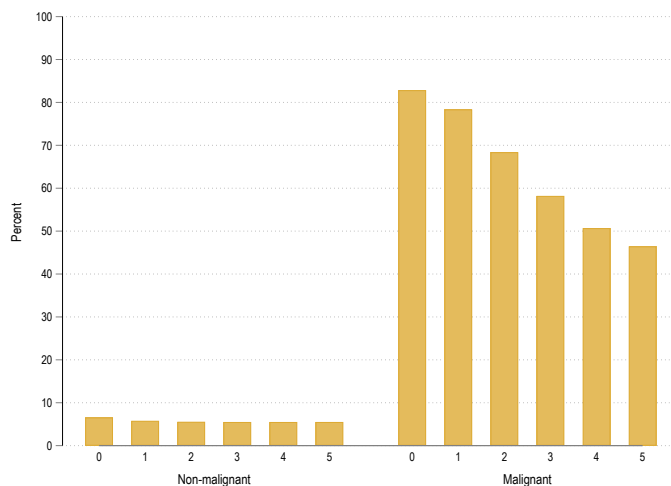
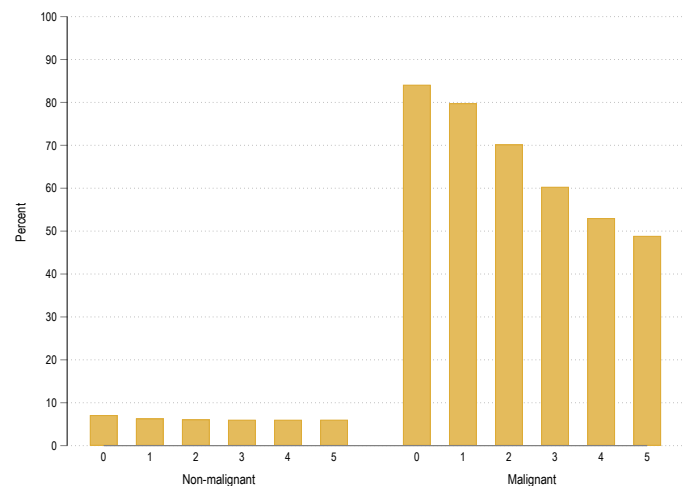
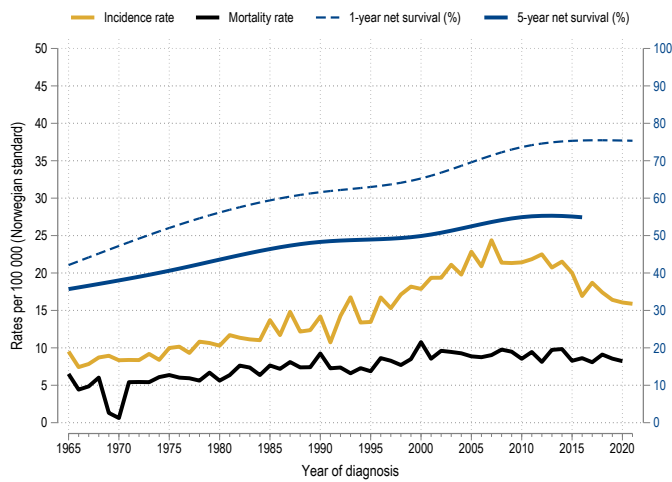
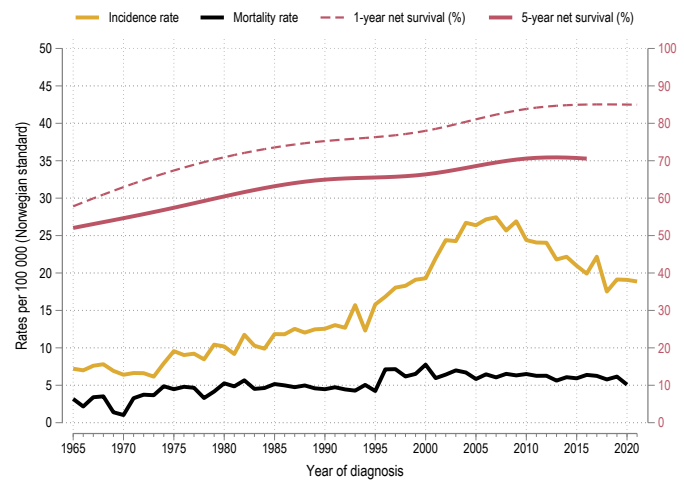
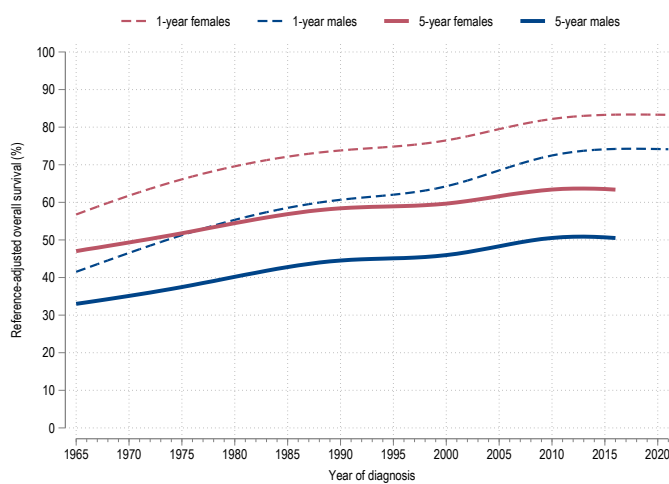
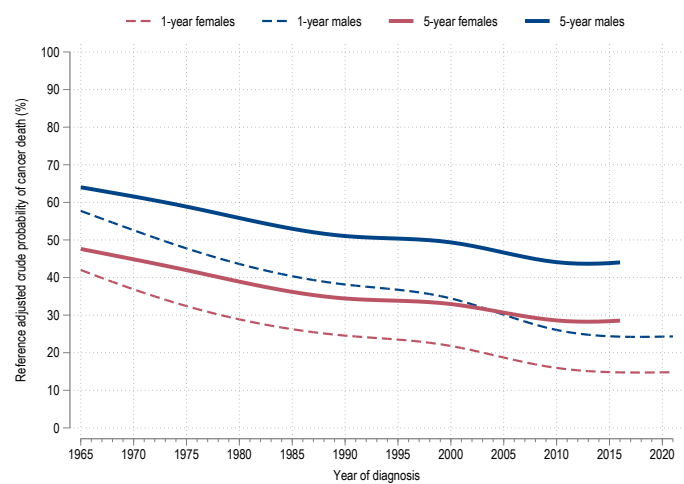
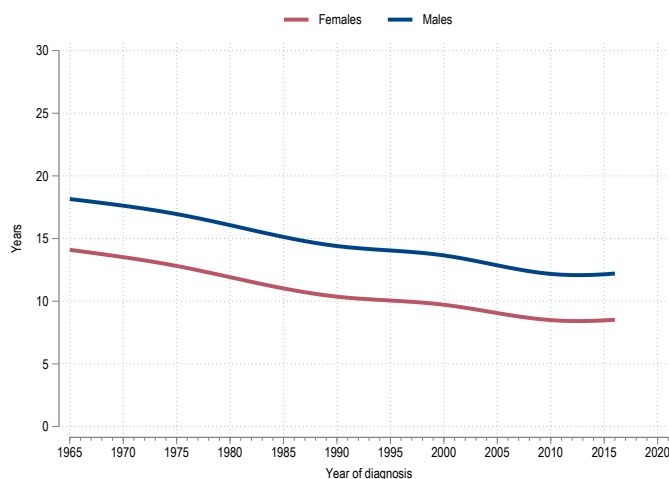
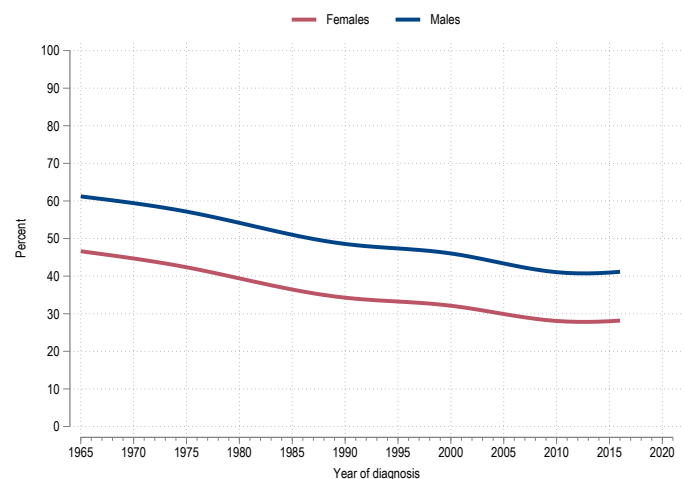
Figure 19.2: Central nervous system: life expectancy and life-years lost**Figure 19.2-A:** Life expectancy by age and stage. Males**Figure 19.2-B:** Life expectancy by age and stage. Females**Figure 19.2-C:** Proportion of life-years lost. Males**Figure 19.2-D:** Proportion of life-years lost. Females**Figure 19.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Males**Figure 19.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 59 years at diagnosis (median age). Females

Figure 19.3: Central nervous system: trends**Figure 19.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 19.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 19.3-C:** Trends in reference adjusted all-cause survival**Figure 19.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 19.3-E:** Trends in reference adjusted life-years lost**Figure 19.3-F:** Trends in reference adjusted life-years lost (%)

Thyroid gland

20.1 Net survival and crude probabilities

Net survival among thyroid cancer patients is steadily at a high level, with a five year net survival estimate of 94.1 %. After five years the net survival does not change much and the ten year net survival is equal to 92 %. There are quite large differences between sexes, with men having a lower net survival. In particular for women, net survival also seem to flatten out at a high level, suggesting that a large proportion of women live for a long time with their cancer, or get cured. Approximately 70 % of all thyroid cancers are diagnosed in women.

The probability of surviving five years after diagnosis is 90 % (Figure 20.1-B). The probability of dying from thyroid cancer within five years is 5.7 % and the additional probability of dying from other causes is 4.3 %. In comparison to net survival, the crude probability of surviving after thyroid cancer is only marginally lower, reflecting that a substantial proportion of these patients are younger and therefore at low risk of dying from other causes.

Crude probabilities of thyroid cancer death depend strongly on stage at diagnosis, while death due to other causes increases with age (Figures 20.1-D and 20.1-C). Localised thyroid cancer patients have a very low risk of dying from cancer, with a five year crude probability of death equal to 0.5 % in women aged 45–59. The corresponding probability is 27.3 % for distant thyroid cancer. For more advanced stages there is also a clear age pattern, where older patients are at a higher risk of dying from thyroid cancer.

The probability of dying from thyroid cancer is only marginally influenced by the number of years survived since diagnosis (Figures 20.1-F and 20.1-E). For a median aged, female localised thyroid cancer patient, the probability of dying from cancer within five years after diagnosis is 0.5 %, and the same five year risk is 0.3 % if surviving five years after diagnosis. In comparison, the probability of dying from distant thyroid cancer within five years after diagnosis is 26.6 %. If surviving five years from diagnosis the future five year risk of dying from thyroid cancer is reduced to 15.9 %.

20.2 Life expectancy and life-years lost

The differences in prognosis across stages of thyroid cancer leads to differences in life-years lost. Patients with localised thyroid cancer generally lose very few of their remaining life-years, whereas patients with distant thyroid cancer lose many life-years (Figures 20.2-B and 20.2-A). The number of life-years lost varies across age groups, related to the reduced expected remaining lifetime for older ages. However, the proportions of life-years lost is increasing with age (Figures 20.2-D and 20.2-C). These plots also shows the large difference in prognosis across stages, with women with distant thyroid cancer losing a much larger proportion of their remaining lifetime compared to less advanced stages.

The proportion of life-years lost is quite similar across number of years survived for each stage (Figures 20.2-F and 20.2-E). For localised thyroid cancer this proportion approaches zero. A median aged woman with distant thyroid cancer is expected to lose 46.2 % of her remaining lifetime at the time of diagnosis. If surviving five years after diagnosis this proportion declines to 33.6 %.

20.3 Time trends

Net survival of thyroid cancer has been quite high since 1965, but still has increased over time (Figures 20.3-B and 20.3-A). The high survival is related to most patients being diagnosed with a disease which is at a stage where curative treatment options exist. Correspondingly, all-cause survival has increased and the crude probability of dying from thyroid cancer has declined (Figures 20.3-C and 20.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 20.3-E and 20.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 7.6 years in 1965 and expected to be 1.2 years in 2016. Correspondingly, the proportion of life-years lost due to thyroid cancer has declined from 22.2 % in 1965 to an expected 3.6 % in 2016, when averaging across all ages and stages at diagnosis.

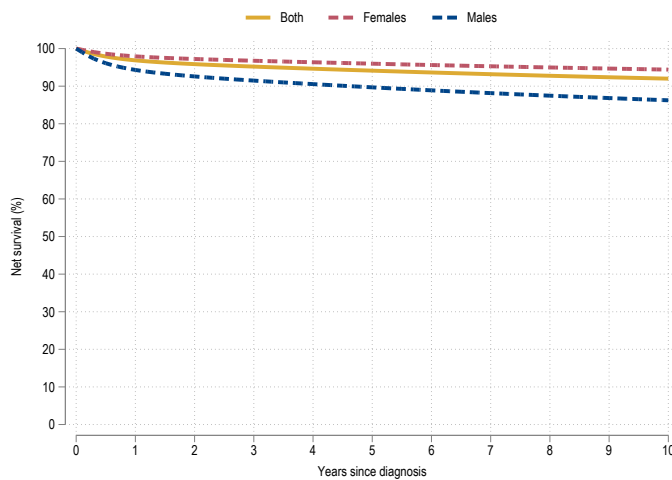
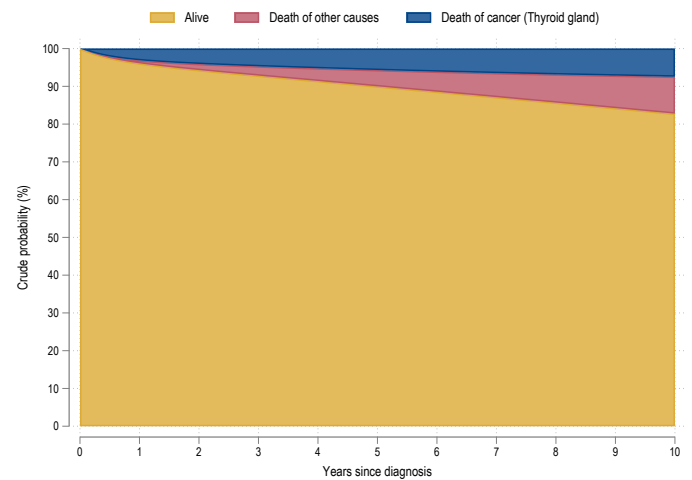
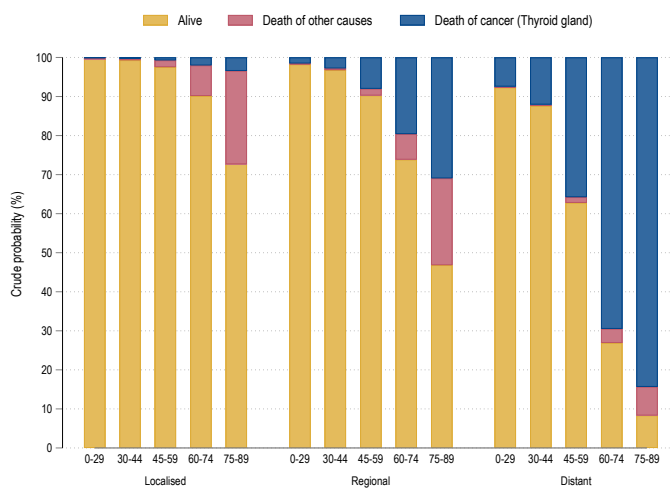
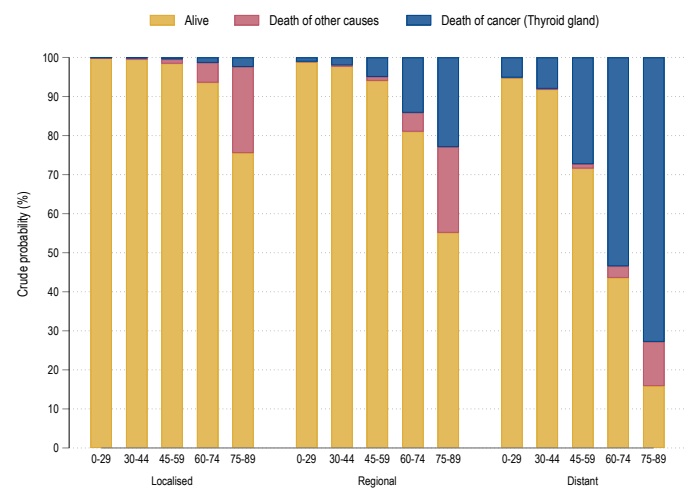
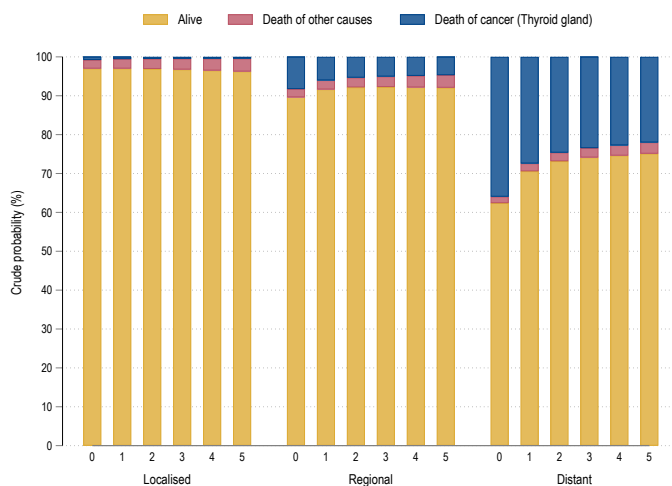
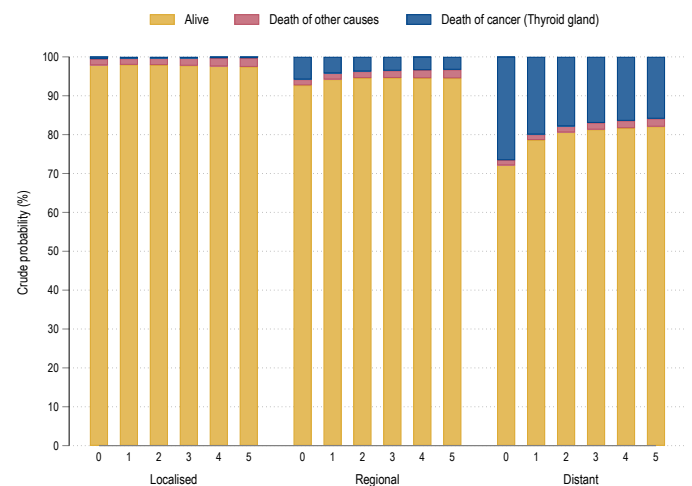
Figure 20.1: Thyroid gland: net and crude probabilities**Figure 20.1-A: Net survival 0–10 years****Figure 20.1-B: Crude probabilities 0–10 years****Figure 20.1-C: 5-year crude probabilities by age and stage. Males****Figure 20.1-D: 5-year crude probabilities by age and stage. Females****Figure 20.1-E: Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Males****Figure 20.1-F: Conditional 5-year crude probabilities by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Females**

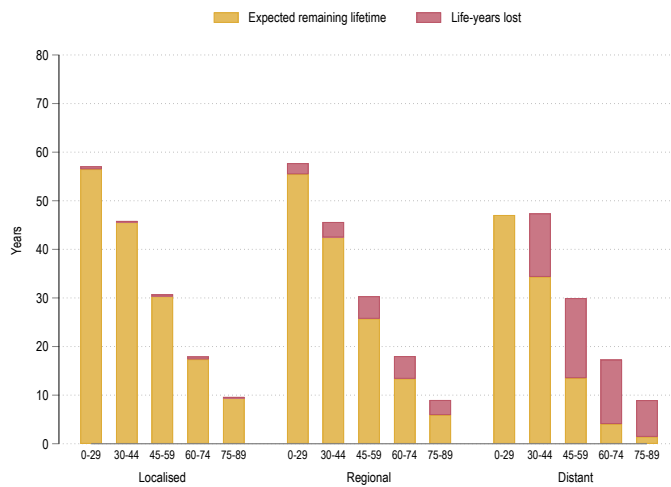
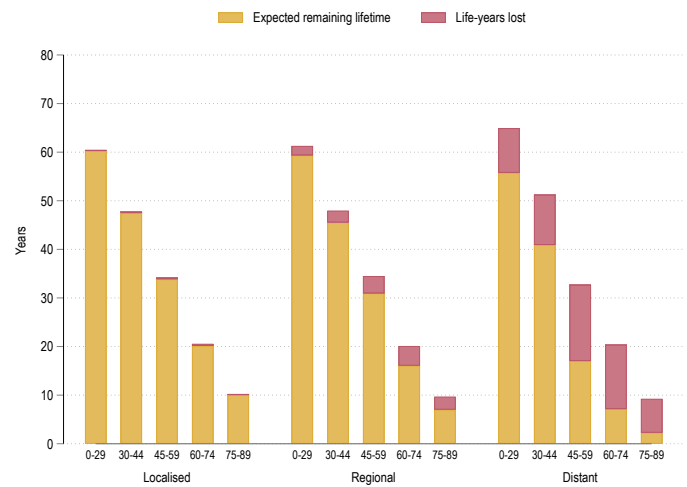
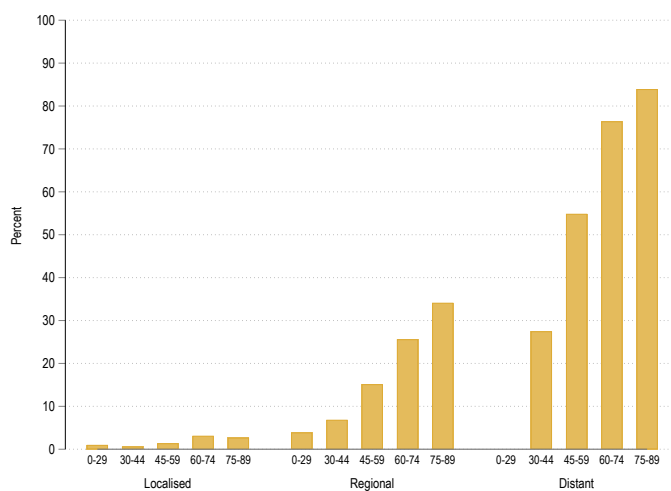
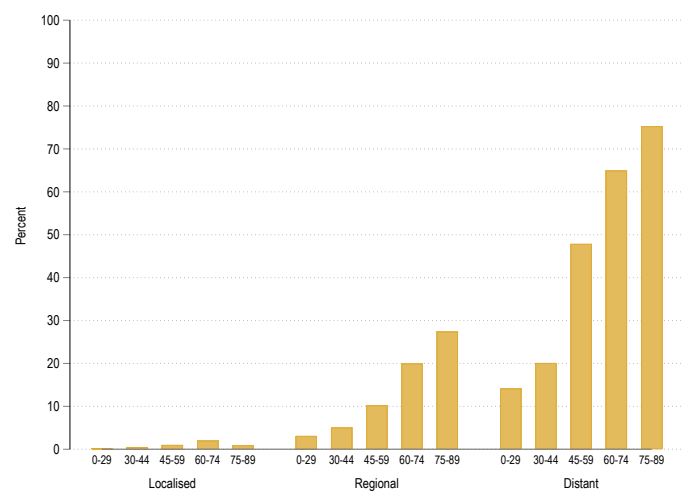
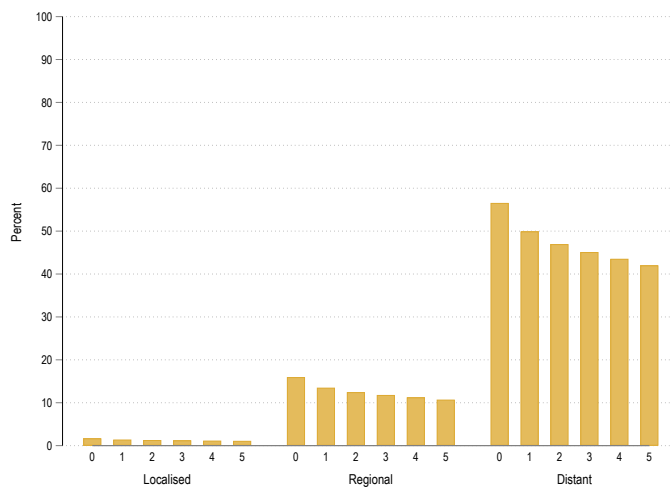
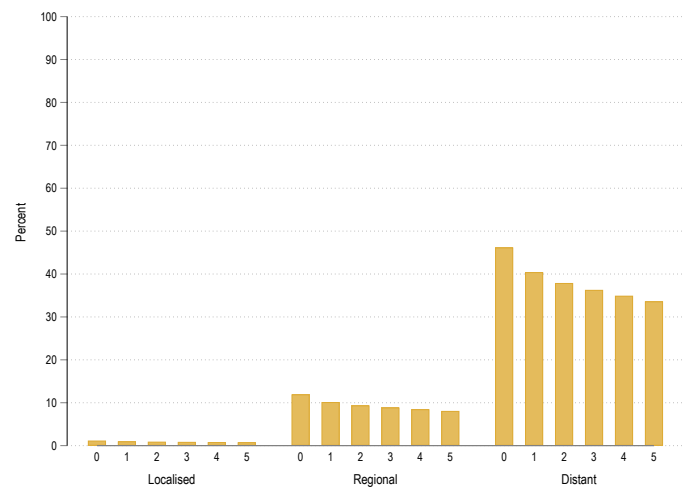
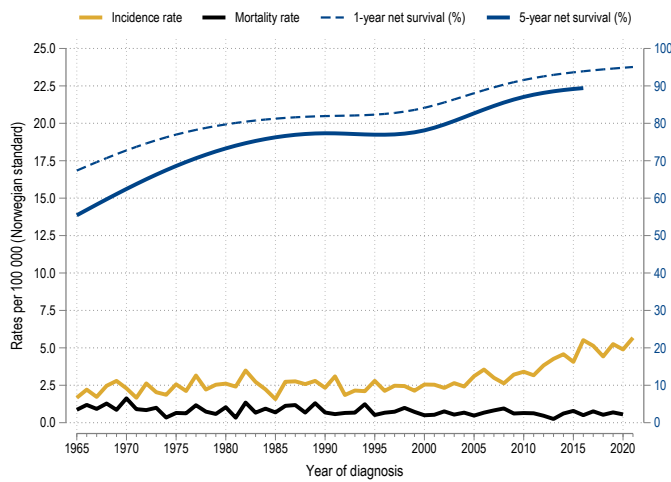
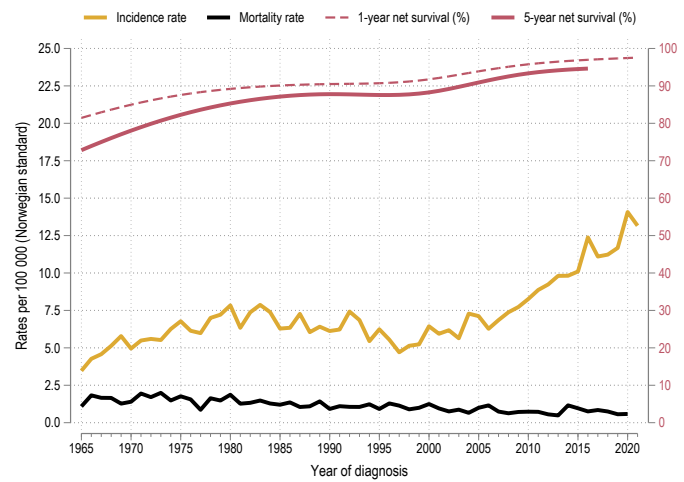
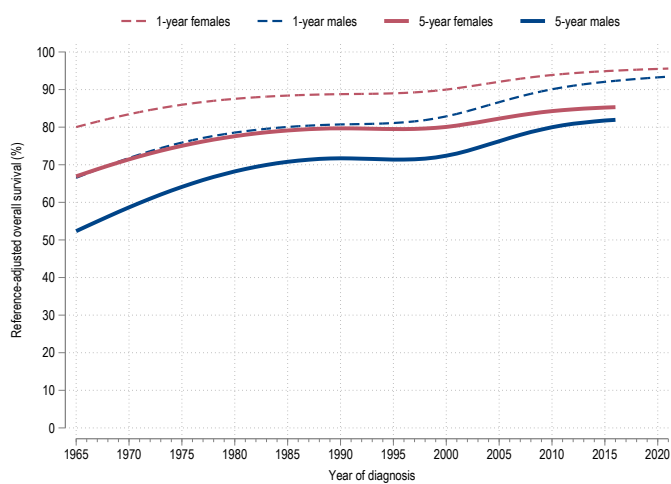
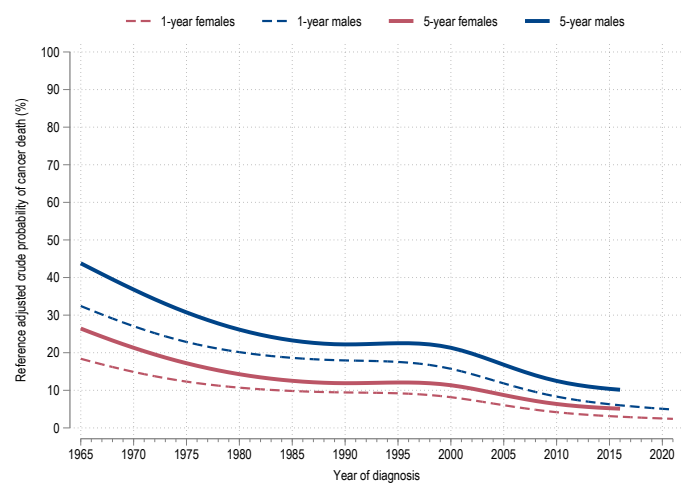
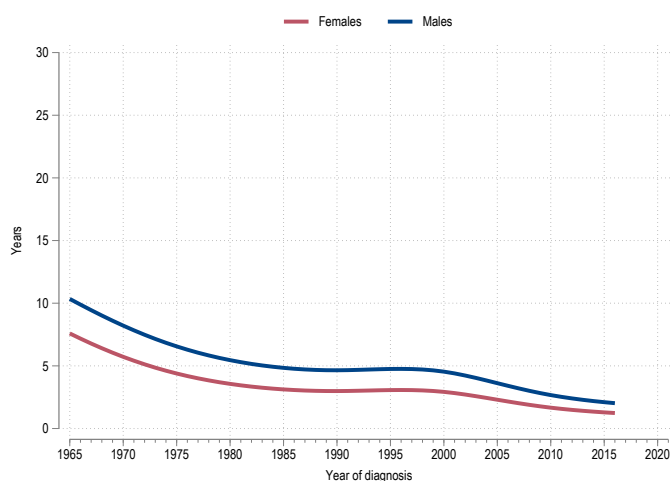
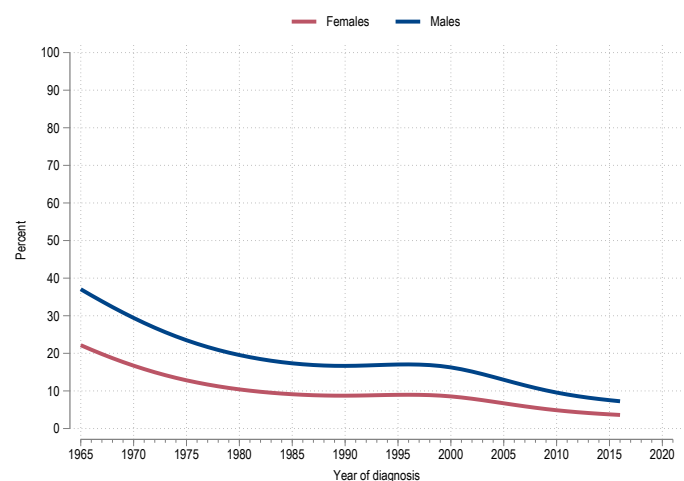
Figure 20.2: Thyroid gland: life expectancy and life-years lost**Figure 20.2-A:** Life expectancy by age and stage. Males**Figure 20.2-B:** Life expectancy by age and stage. Females**Figure 20.2-C:** Proportion of life-years lost. Males**Figure 20.2-D:** Proportion of life-years lost. Females**Figure 20.2-E:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Males**Figure 20.2-F:** Conditional proportion of life-years lost by stage and years (0–5) since diagnosis. Patients aged 54 years at diagnosis (median age). Females

Figure 20.3: Thyroid gland: trends**Figure 20.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 20.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 20.3-C:** Trends in reference adjusted all-cause survival**Figure 20.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 20.3-E:** Trends in reference adjusted life-years lost**Figure 20.3-F:** Trends in reference adjusted life-years lost (%)

Hodgkin lymphoma

21.1 Net survival and crude probabilities

Net survival for patients with Hodgkin lymphoma declines somewhat the first years after diagnosis, but with a high five year net survival estimate of 88.9 %. After five years there is a tendency for net survival to decline further and not reaching a plateau, with a ten year net survival equal to 82.9 % for both sexes combined (Figure 21.1–A). There are virtually no differences between men and women.

The probability of surviving five years after diagnosis is 85.9 % (Figure 21.1–B). The probability of dying from Hodgkin lymphoma within five years is 10.7 % and the additional probability of dying from other causes is 3.4 %. In comparison to net survival, the crude probability of dying from cancer is similar, reflecting that a large proportion of these patients are younger, and have a low risk of dying from other causes.

Crude probabilities of death from Hodgkin lymphoma depend on age at diagnosis, with poorer prognosis for the older age groups. Also adding the increased risk of other cause deaths by age, the overall five year survival is much lower for the oldest compared to the youngest patients (Figures 21.1–D and 21.1–C). For women, the five year crude probability of death due to Hodgkin lymphoma is 42.3 % at ages 80–89, while the corresponding probability is 0.7 % at ages 0–19. The five year all-cause survival is 36.3 % at ages 80–89 and 99.3 % at ages 0–19.

Since prognosis for Hodgkin lymphoma patients as a group is very good, having survived for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 21.1–F and 21.1–E). For a median aged woman with Hodgkin lymphoma the five year risk of dying from the cancer is

2.5 % when seen from diagnosis. If surviving five years from diagnosis the future five year risk of dying from Hodgkin lymphoma is 1.2 %.

21.2 Life expectancy and life-years lost

The differences in prognosis across age groups of Hodgkin lymphoma leads to differences in life-years lost. Looking at the absolute number of life-years lost, the oldest patients lose fewer years, related to the shorter expected remaining lifetime for older ages (Figures 21.2–B and 21.2–A). However, when looking at the proportion of life-years lost, the picture is different, with a sharply increasing proportion by age (Figures 21.2–D and 21.2–C). The proportion of life-years lost is only marginally decreasing with the number of years survived (Figures 21.2–F and 22.2–E).

21.3 Time trends

Net survival of Hodgkin lymphomas has increased steadily over time for both sexes (Figures 21.3–B and 21.3–A). Correspondingly, all-cause survival has increased and the crude probability of dying from Hodgkin lymphoma has declined (Figures 21.3–C and 21.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 21.3–E and 21.3–F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 17.2 years in 1965 and expected to be 2.7 years in 2016. Correspondingly, the proportion of life-years lost due to Hodgkin lymphoma has decreased from 40.5 % in 1965 to an expected 6.3 % in 2016, when averaging across all ages at diagnosis.

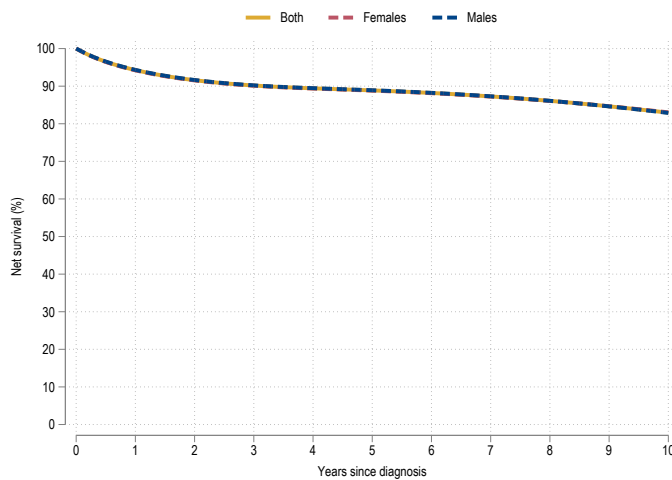
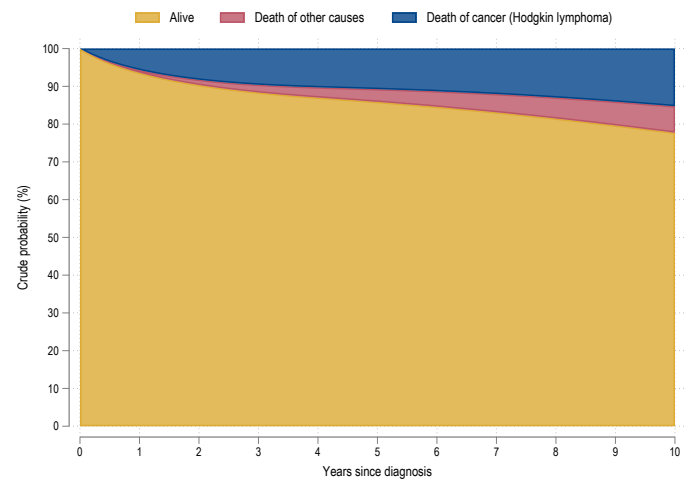
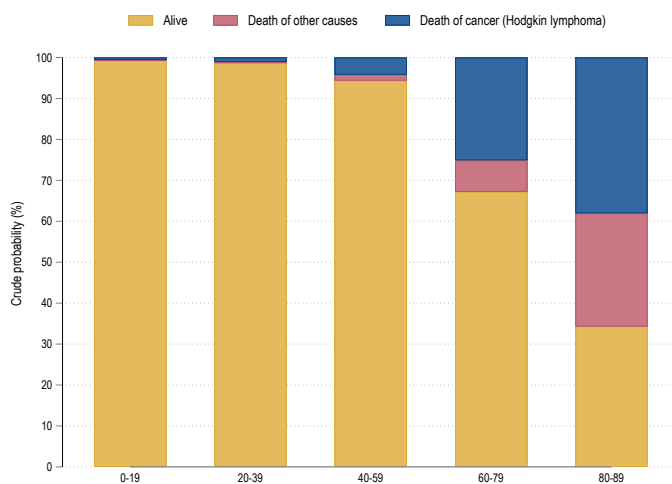
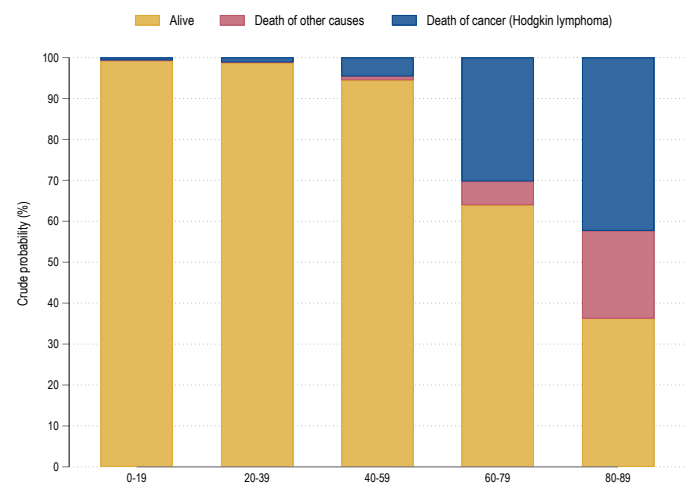
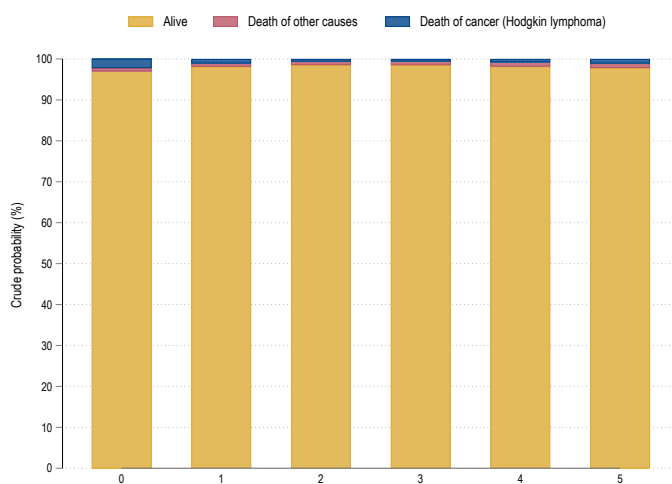
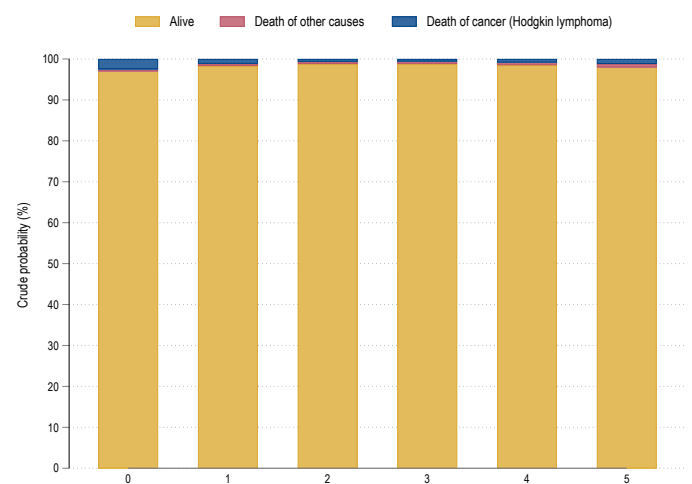
Figure 21.1: Hodgkin lymphoma: net and crude probabilities**Figure 21.1-A: Net survival 0–10 years****Figure 21.1-B: Crude probabilities 0–10 years****Figure 21.1-C: 5-year crude probabilities by age. Males****Figure 21.1-D: 5-year crude probabilities by age. Females****Figure 21.1-E: Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Males****Figure 21.1-F: Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Females**

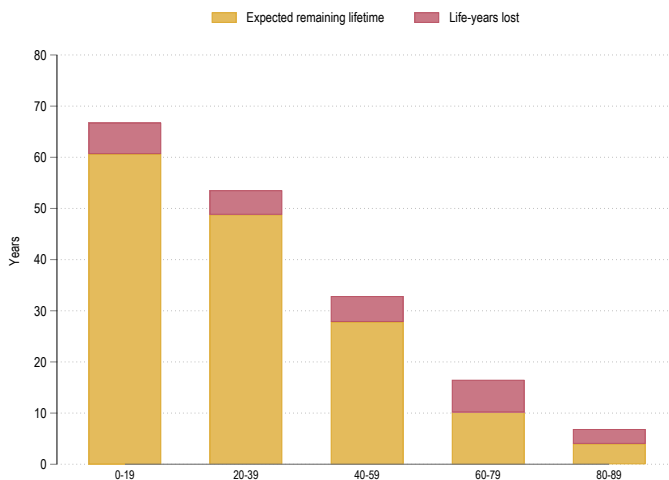
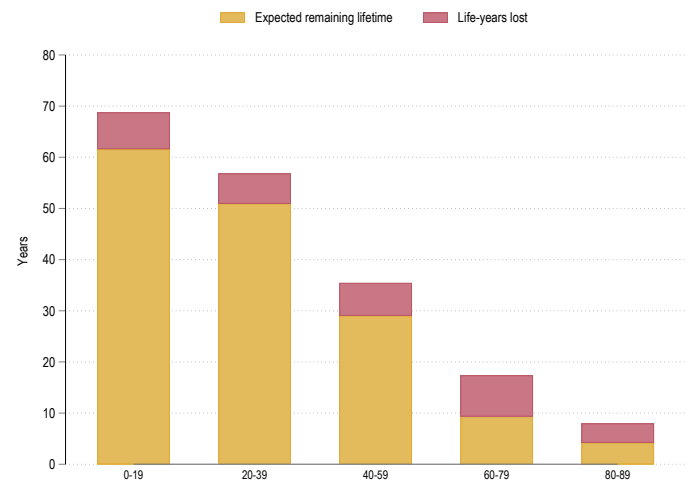
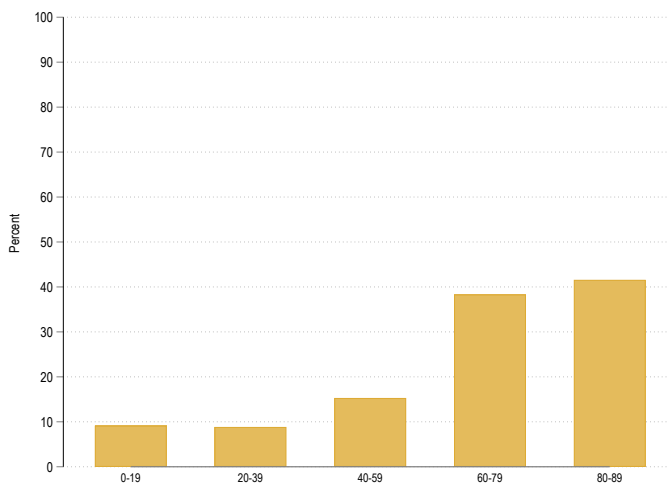
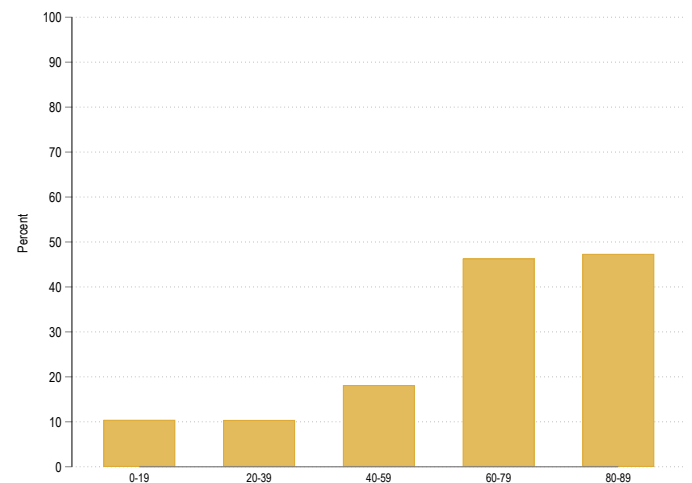
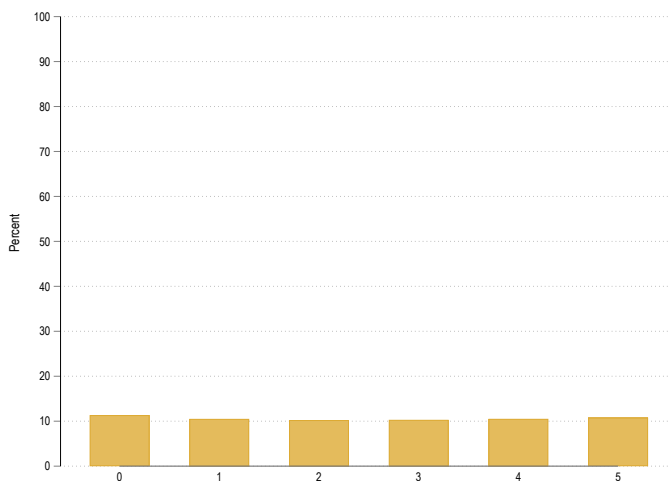
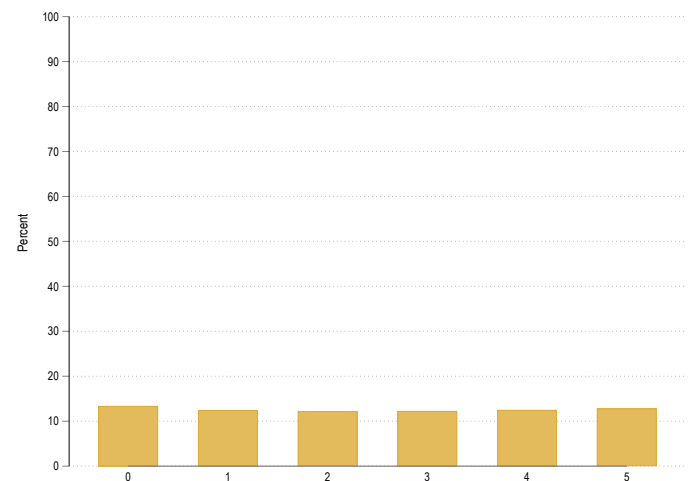
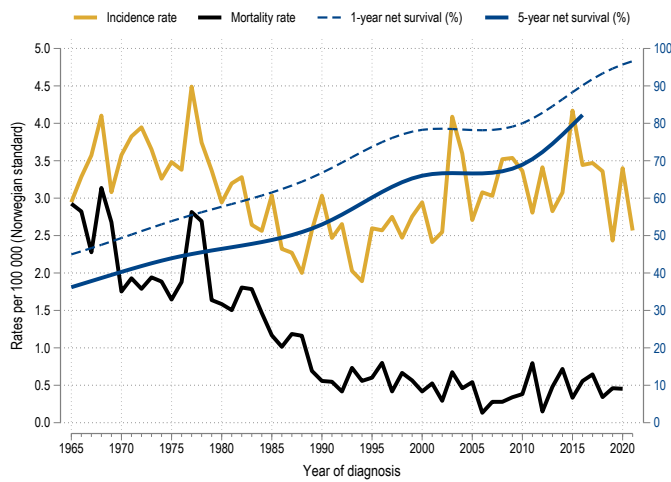
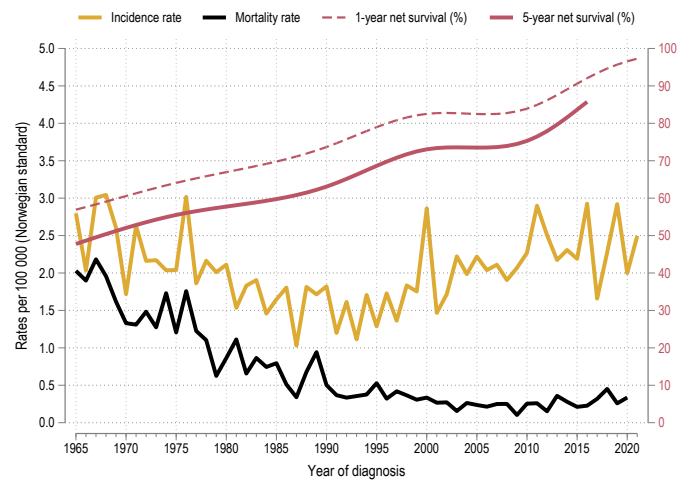
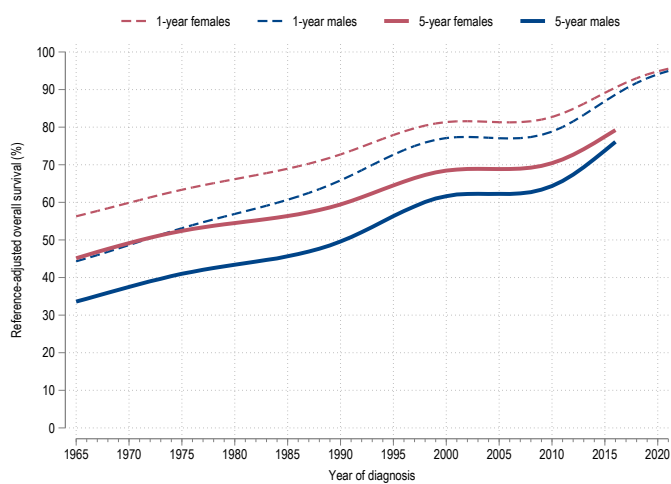
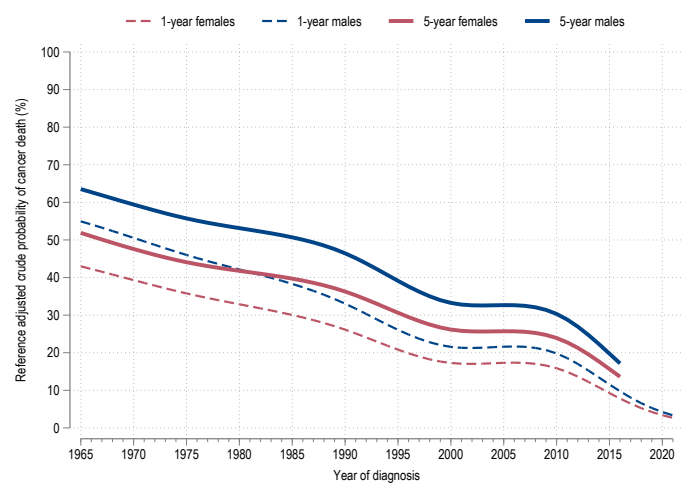
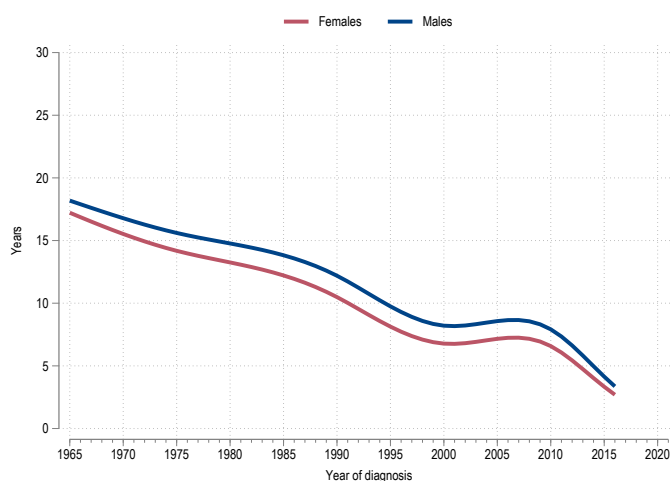
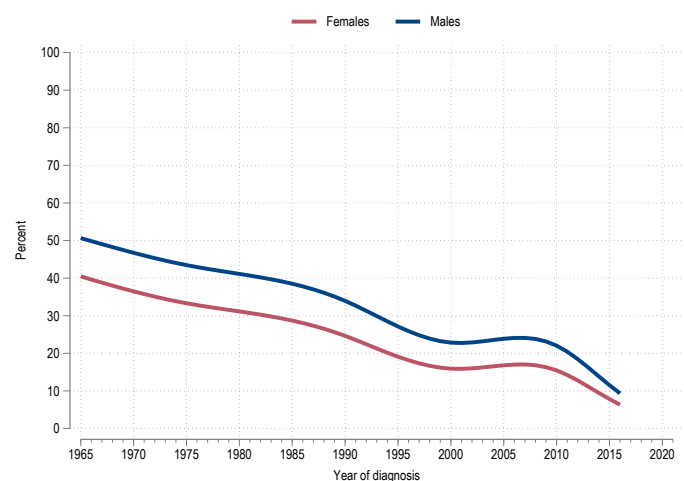
Figure 21.2: Hodgkin lymphoma: life expectancy and life-years lost**Figure 21.2-A: Life expectancy by age. Males****Figure 21.2-B: Life expectancy by age. Females****Figure 21.2-C: Proportion of life-years lost. Males****Figure 21.2-D: Proportion of life-years lost. Females****Figure 21.2-E: Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Males****Figure 21.2-F: Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 44 years at diagnosis (median age). Females**

Figure 21.3: Hodgkin lymphoma: trends**Figure 21.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 21.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 21.3-C: Trends in reference adjusted all-cause survival****Figure 21.3-D: Trends in reference adjusted crude probability of cancer death****Figure 21.3-E: Trends in reference adjusted life-years lost****Figure 21.3-F: Trends in reference adjusted life-years lost (%)**

Non-Hodgkin lymphoma

22.1 Net survival and crude probabilities

Non-Hodgkin lymphomas includes follicular (ICD10-C82) and non-follicular lymphomas (ICD10-C83) as the two dominating groups. Non-Hodgkin lymphoma are a heterogeneous group of diseases, with great variability in prognosis. In this report we do not separate different histological subgroups, and this is important to remember when interpreting the results.

Net survival for patients with Non-Hodgkin lymphoma declines the first years after diagnosis with a five year net survival estimate of 78 %. After five years the net survival continues to decline without reaching a plateau, with a ten year net survival equal to 66.4 % for both sexes combined (Figure 22.1-A). Women have a higher net survival compared to men.

The probability of surviving five years after diagnosis is 69.8 % (Figure 22.1-B). The probability of dying from Non-Hodgkin lymphoma within five years is 21 % and the additional probability of dying from other causes is 9.2 %. In comparison to net survival, the crude probability of dying from cancer is lower since patients may also die from other causes.

Crude probabilities of death from Non-Hodgkin lymphoma depend on age at diagnosis, with poorer prognosis for the older age groups. Also adding the increased risk of other cause deaths by age, the overall five year survival is much lower for the oldest compared to the youngest patients (Figures 22.1-D and 22.1-C). For women, the five year crude probability of death due to Non-Hodgkin lymphoma is 36.9 % at ages 80–89, while the corresponding probability is 6.5 % at ages 0–19. The five year all-cause survival is 40.1 % at ages 80–89 and 93.5 % at ages 0–19.

Having survived Non-Hodgkin lymphomas for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 22.1-F and 22.1-E). For a median aged woman with Non-Hodgkin lymphoma the five year risk of dying

from the cancer is 17 % when seen from diagnosis. If surviving five years from diagnosis the future five year risk of dying from Non-Hodgkin lymphoma is 13.7 %.

22.2 Life expectancy and life-years lost

The differences in prognosis across age groups of Non-Hodgkin lymphoma leads to differences in life-years lost. Looking at the absolute number of life-years lost, the youngest patients lose most, related to the higher expected remaining lifetime for younger ages (Figures 22.2-B and 22.2-A). However, when looking at the proportion of life-years lost, the picture is different, with a sharply increasing proportion by age (Figures 22.2-D and 22.2-C). Men lose more of their remaining lifetime compared to women.

The proportion of life-years lost is only marginally decreasing with the number of years survived, reflecting the continued influence from Non-Hodgkin lymphomas on expected remaining lifetime despite surviving several years after diagnosis (Figures 22.2-F and 22.2-E).

22.3 Time trends

Net survival of Non-Hodgkin lymphomas has increased over time for both sexes, especially over the past two decades (Figures 22.3-B and 22.3-A). Correspondingly, all-cause survival has increased and the crude probability of dying from Non-Hodgkin lymphoma has declined (Figures 22.3-C and 22.3-D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 22.3-E and 22.3-F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 14.1 years in 1965 and expected to be 4.5 years in 2016. Correspondingly, the proportion of life-years lost due to Non-Hodgkin lymphoma has decreased from 67.8 % in 1965 to an expected 21.5 % in 2016, when averaging across all ages at diagnosis.

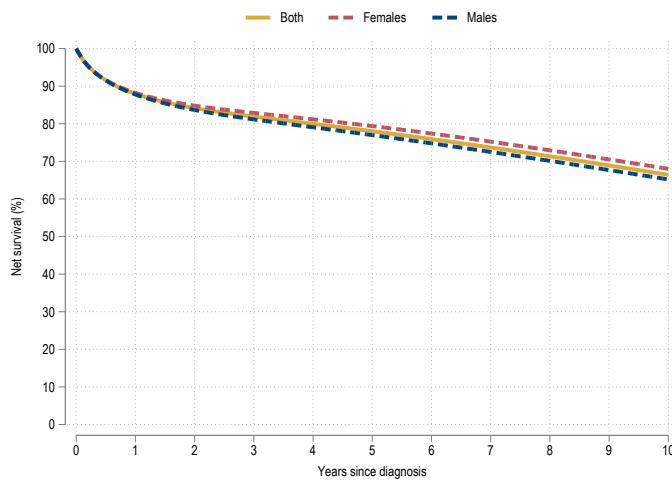
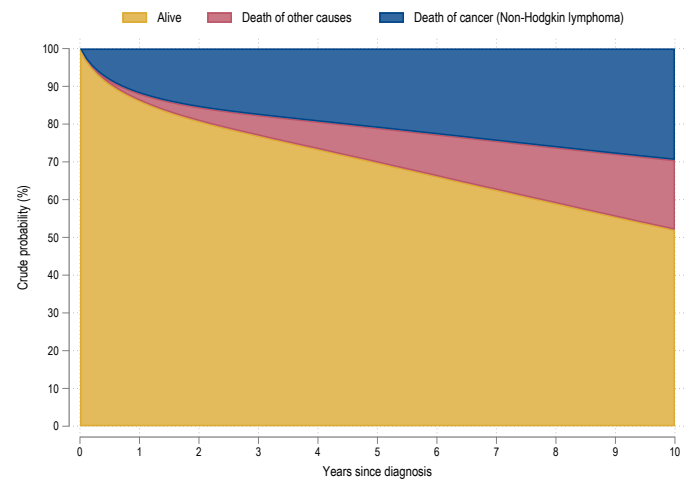
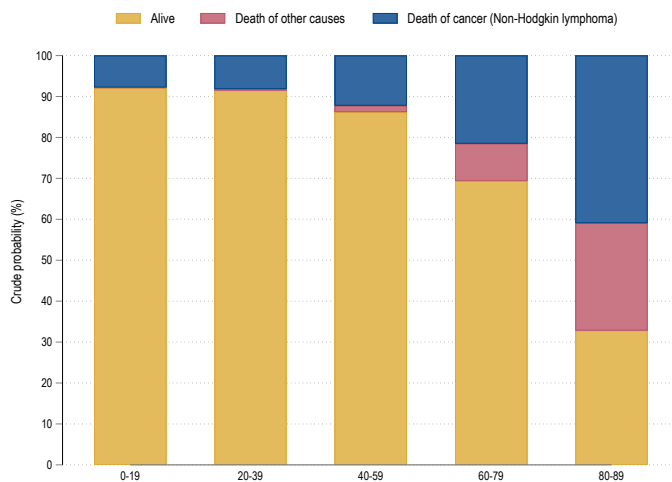
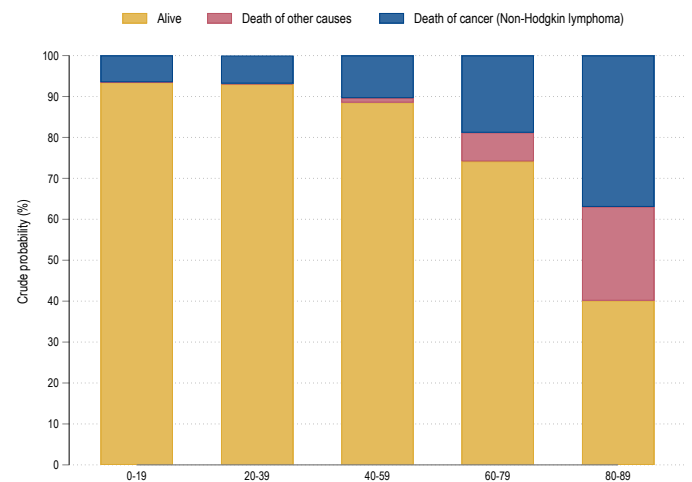
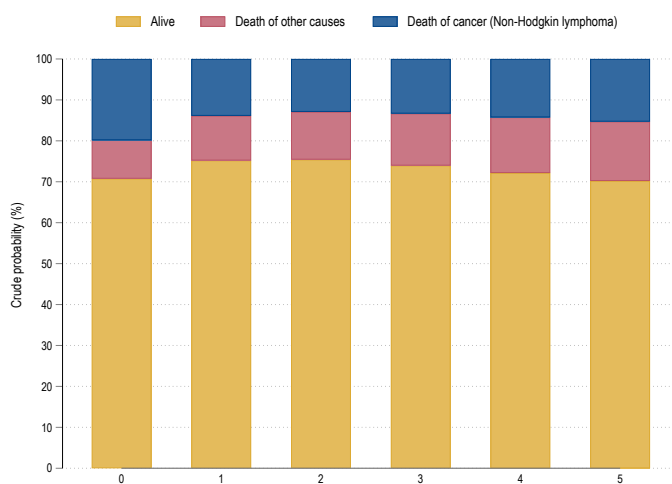
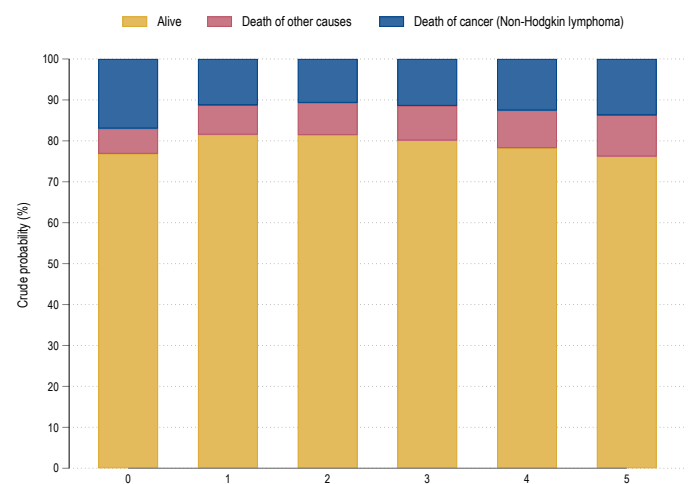
Figure 22.1: Non-Hodgkin lymphoma: net and crude probabilities**Figure 22.1-A:** Net survival 0–10 years**Figure 22.1-B:** Crude probabilities 0–10 years**Figure 22.1-C:** 5-year crude probabilities by age. Males**Figure 22.1-D:** 5-year crude probabilities by age. Females**Figure 22.1-E:** Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males**Figure 22.1-F:** Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females

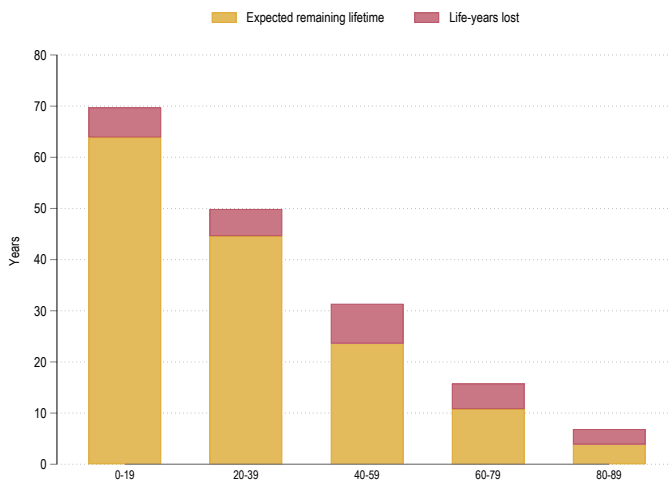
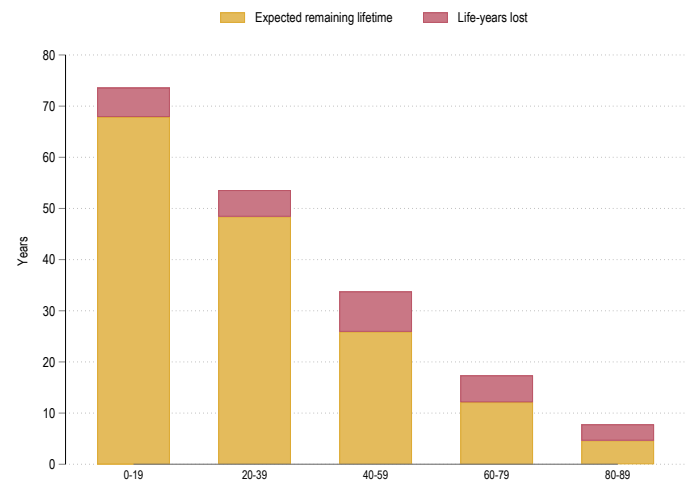
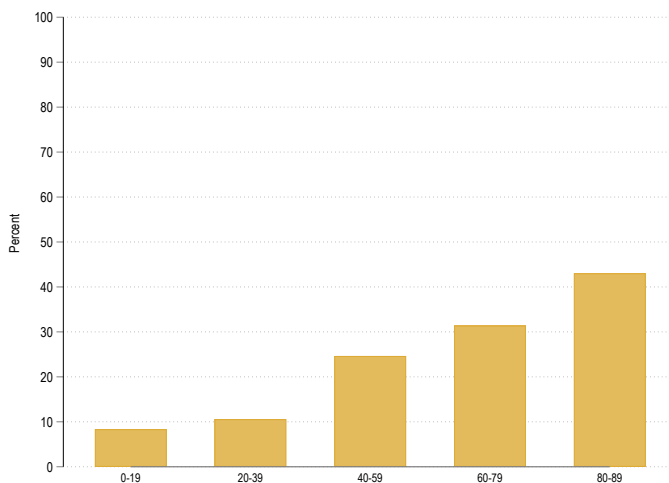
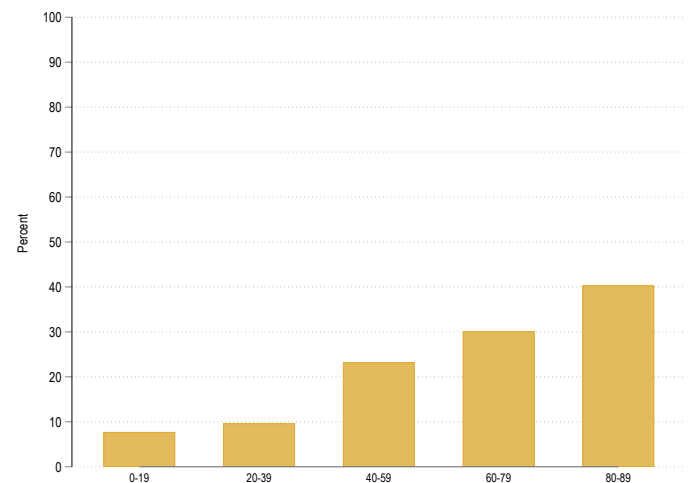
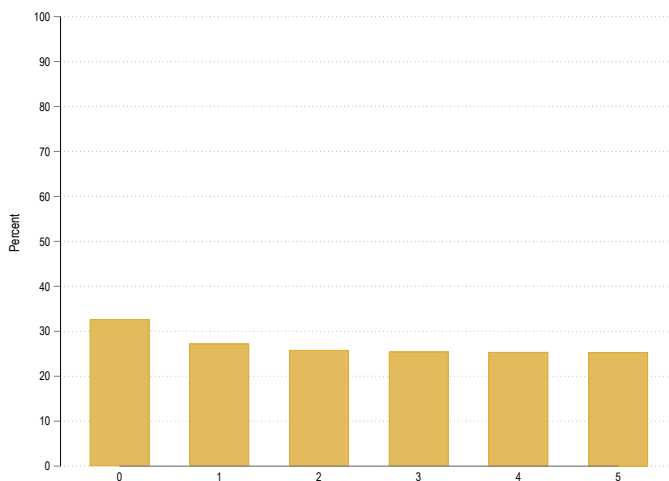
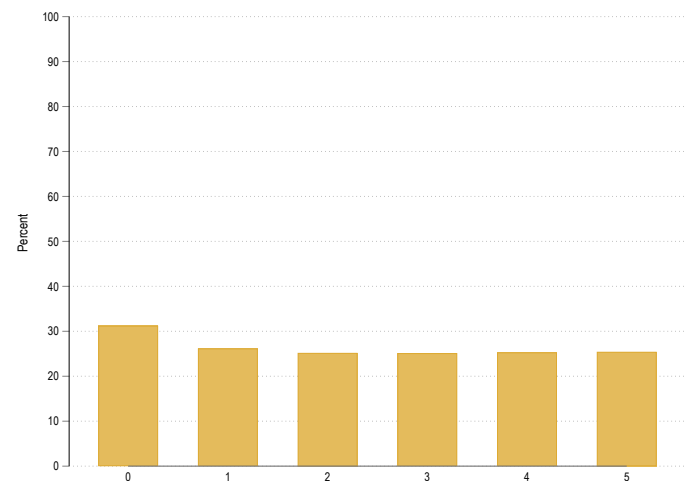
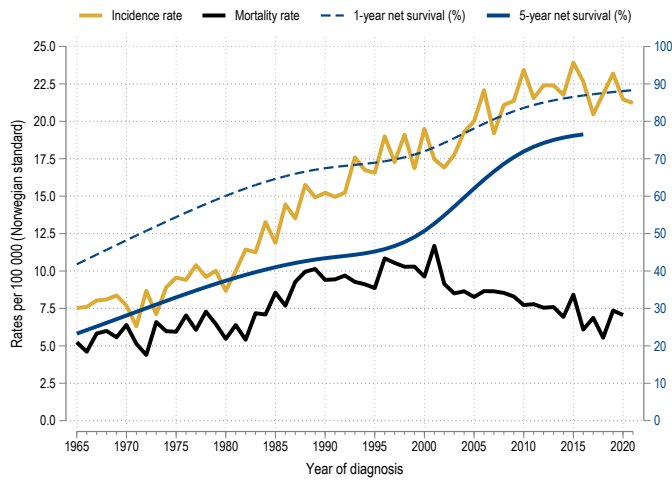
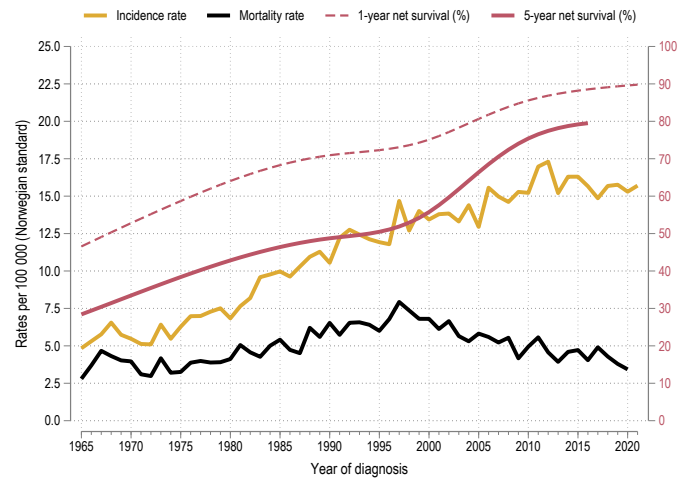
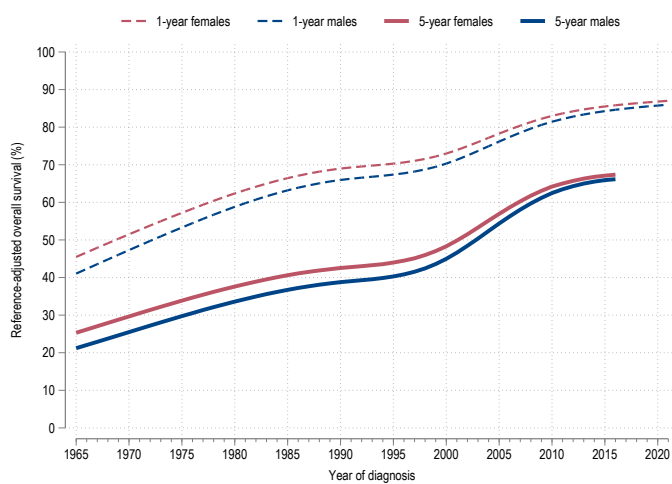
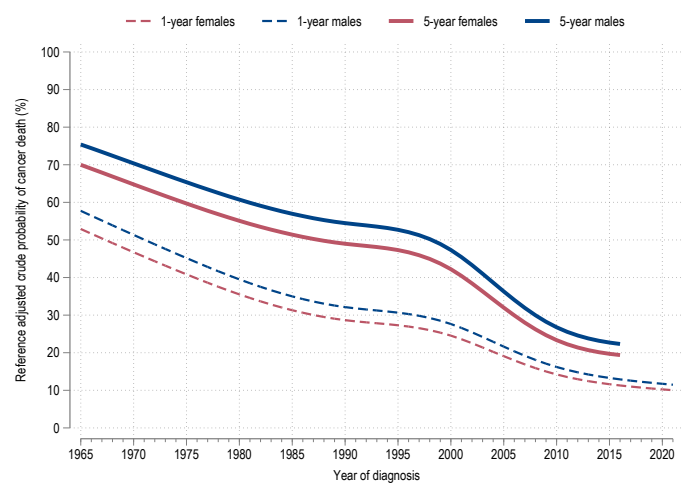
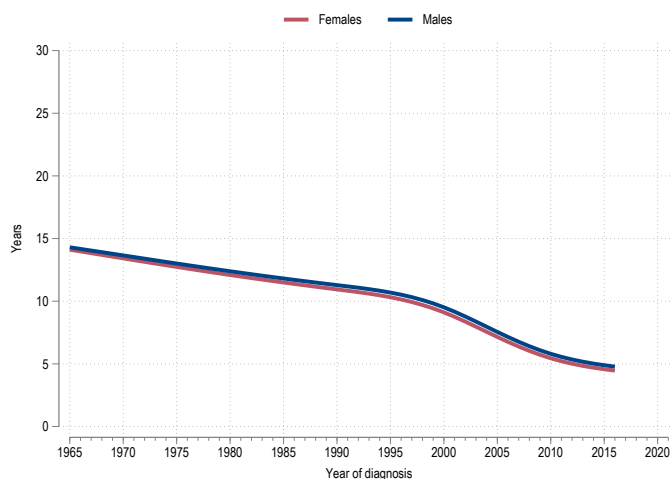
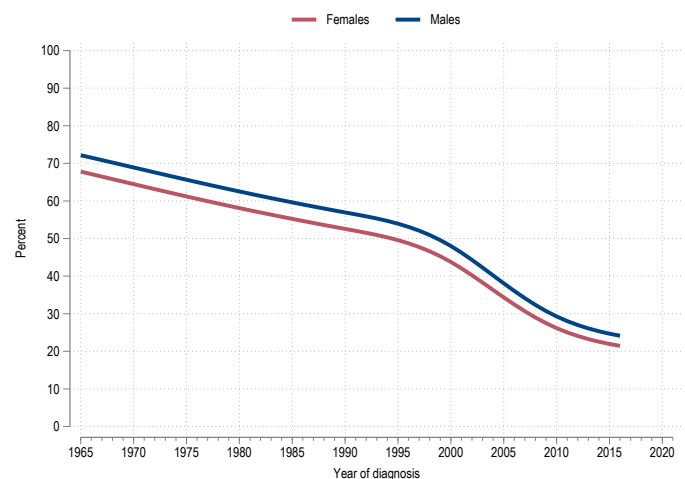
Figure 22.2: Non-Hodgkin lymphoma: life expectancy and life-years lost**Figure 22.2-A:** Life expectancy by age. Males**Figure 22.2-B:** Life expectancy by age. Females**Figure 22.2-C:** Proportion of life-years lost. Males**Figure 22.2-D:** Proportion of life-years lost. Females**Figure 22.2-E:** Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Males**Figure 22.2-F:** Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 70 years at diagnosis (median age). Females

Figure 22.3: Non-Hodgkin lymphoma: trends**Figure 22.3-A: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males****Figure 22.3-B: Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females****Figure 22.3-C: Trends in reference adjusted all-cause survival****Figure 22.3-D: Trends in reference adjusted crude probability of cancer death****Figure 22.3-E: Trends in reference adjusted life-years lost****Figure 22.3-F: Trends in reference adjusted life-years lost (%)**

Leukaemia

23.1 Net survival and crude probabilities

Net survival for patients with leukaemia declines the first years after diagnosis with a five year net survival estimate of 72.7 %. After five years the net survival continues to decline without reaching a plateau, with a ten year net survival equal to 61.2 % for both sexes combined (Figure 23.1–A). Women have a higher net survival compared to men.

The probability of surviving five years after diagnosis is 65.5 % (Figure 23.1–B). The probability of dying from leukaemia within five years is 25.9 % and the additional probability of dying from other causes is 8.7 %. In comparison to net survival, the crude probability of dying from cancer is lower since patients may also die from other causes.

Crude probabilities of death from leukaemia depend on age at diagnosis, with poorer prognosis for the older age groups. Also adding the increased risk of other cause deaths by age, the overall five year survival is much lower for the oldest compared to the youngest patients (Figures 23.1–D and 23.1–C). For women, the five year crude probability of death due to leukaemia is 37.7 % at ages 75–89, while the corresponding probability is 8.3 % at ages 0–29. The five year all-cause survival is 45.1 % at ages 75–89 and 91.6 % at ages 0–29.

Having survived leukaemia for one, two and up to five years after diagnosis, only has a minor impact on your survival the coming five years (Figures 23.1–F and 23.1–E). For a median aged woman with leukaemia the five year risk of dying from the cancer is 22.4 % when seen from diagnosis. If surviving five years from diagnosis the future five year risk of dying from leukaemia is 13.5 %.

23.2 Life expectancy and life-years lost

The differences in prognosis across age groups of leukaemia leads to differences in life-years lost. Looking at the absolute number of life-years lost, the youngest patients lose most, related to the higher expected remaining lifetime for younger ages (Figures 23.2–B and 23.2–A). However, when looking at the proportion of life-years lost, the picture is different, with a sharply increasing proportion by age (Figures 23.2–D and 23.2–C). Men lose more of their remaining lifetime compared to women.

The proportion of life-years lost is only marginally decreasing with the number of years survived, reflecting the continued influence from leukaemia on expected remaining lifetime despite surviving several years after diagnosis (Figures 23.2–F and 23.2–E).

23.3 Time trends

Net survival of leukaemia has increased steadily over time for both sexes (Figures 23.3–B and 23.3–A). Correspondingly, all-cause survival has increased and the crude probability of dying from leukaemia has declined (Figures 23.3–C and 23.3–D). This has also affected life-years lost, with both the number and proportion of life-years lost declining over time (Figures 23.3–E and 23.3–F). As an example, the number of life-years lost for women, if life expectancy is held constant at 2021-level, was on average 18.8 years in 1965 and expected to be 5.1 years in 2016. Correspondingly, the proportion of life-years lost due to leukaemia has decreased from 79.6 % in 1965 to an expected 21.7 % in 2016, when averaging across all ages at diagnosis.

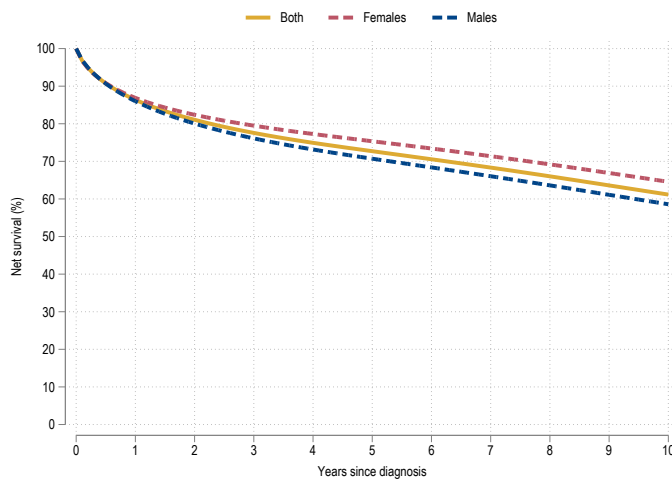
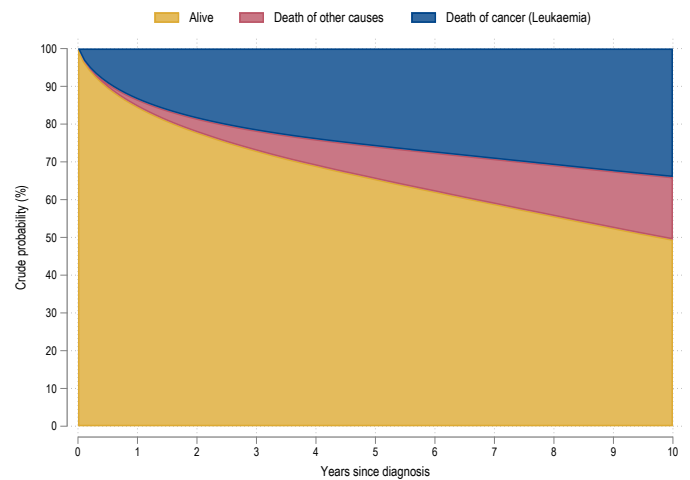
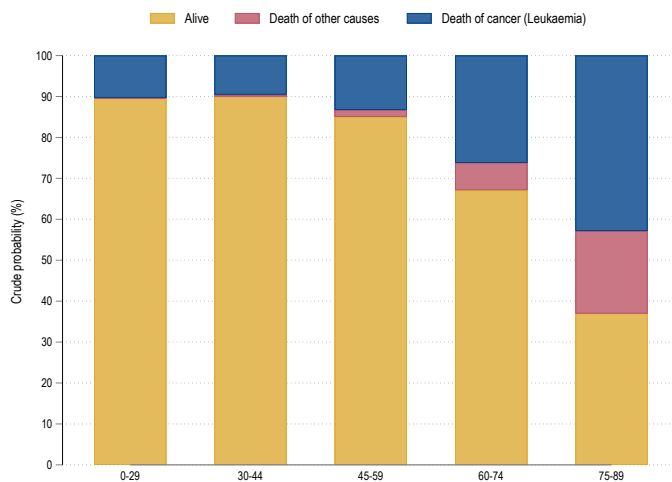
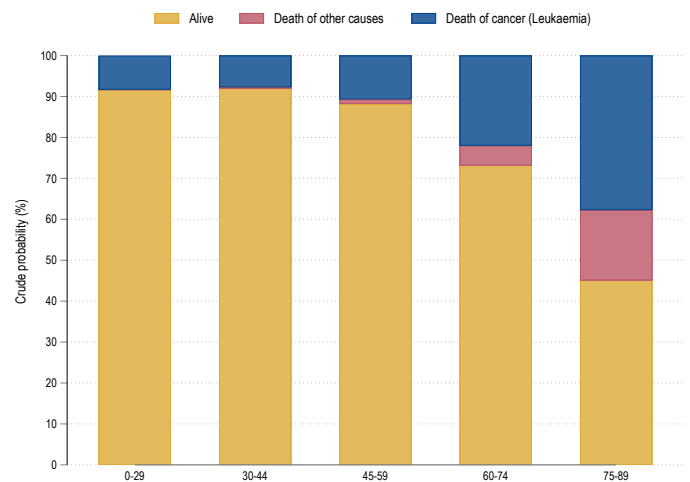
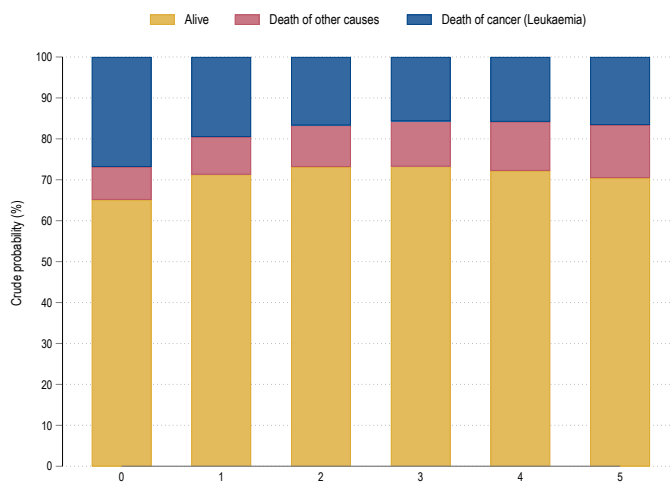
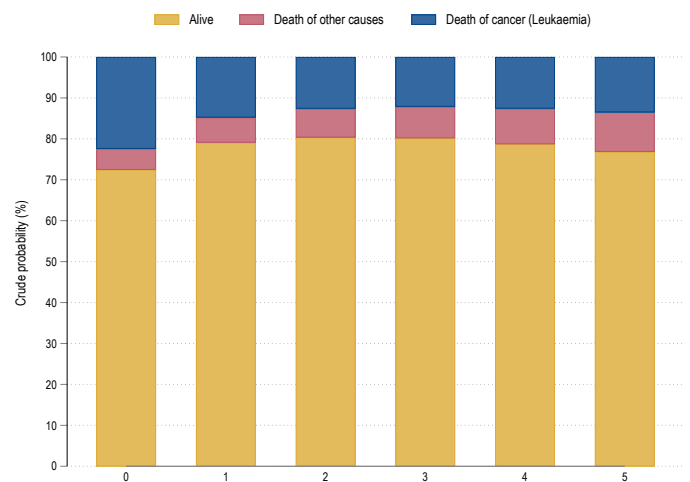
Figure 23.1: Leukaemia: net and crude probabilities**Figure 23.1-A:** Net survival 0–10 years**Figure 23.1-B:** Crude probabilities 0–10 years**Figure 23.1-C:** 5-year crude probabilities by age. Males**Figure 23.1-D:** 5-year crude probabilities by age. Females**Figure 23.1-E:** Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 23.1-F:** Conditional 5-year crude probabilities by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

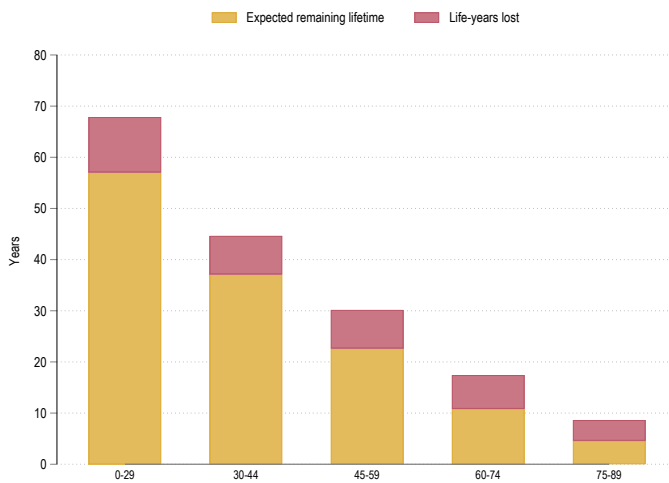
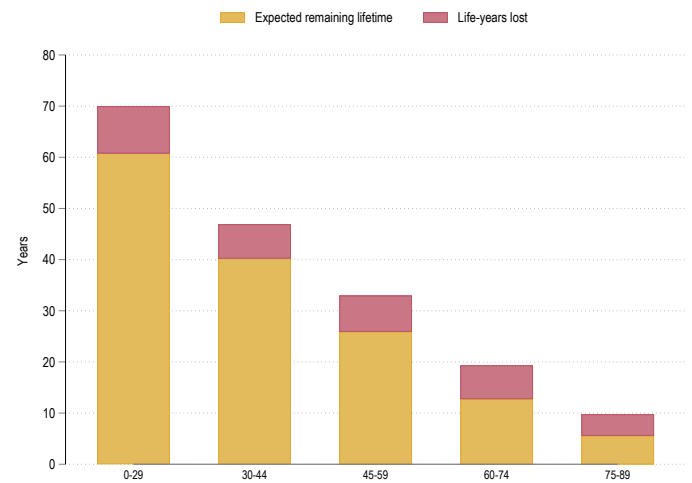
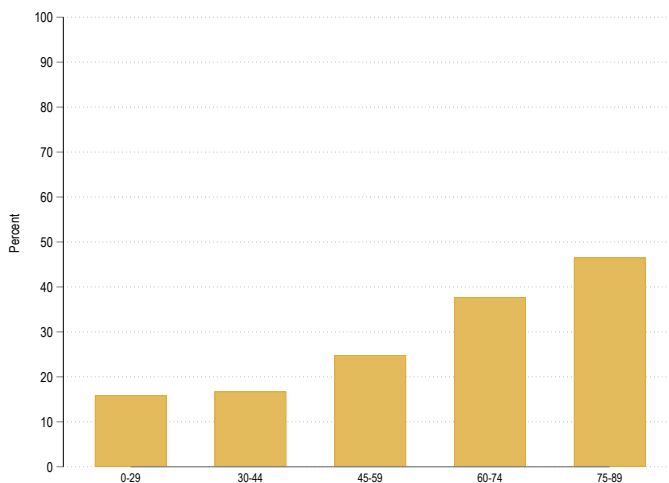
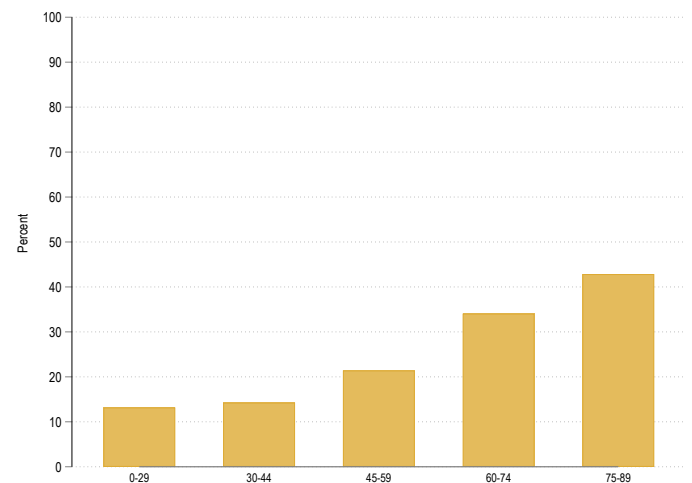
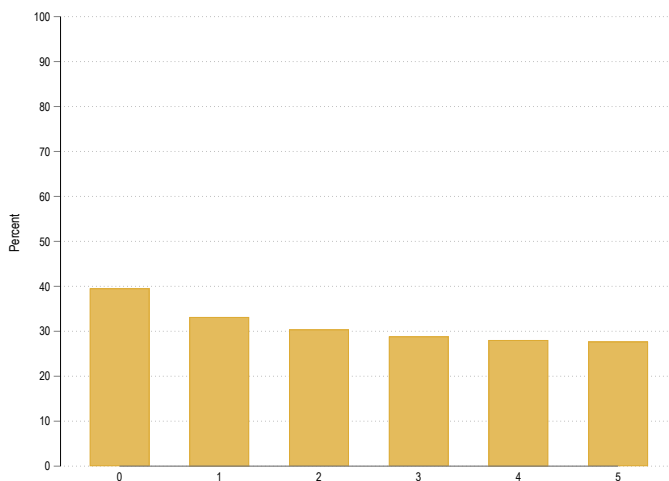
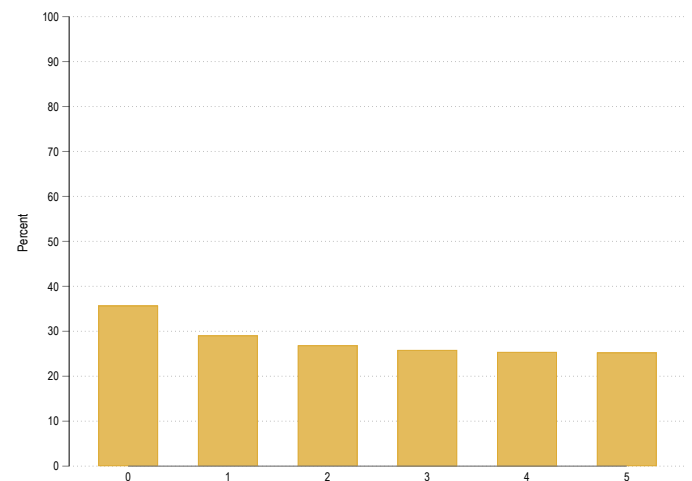
Figure 23.2: Leukaemia: life expectancy and life-years lost**Figure 23.2-A:** Life expectancy by age. Males**Figure 23.2-B:** Life expectancy by age. Females**Figure 23.2-C:** Proportion of life-years lost. Males**Figure 23.2-D:** Proportion of life-years lost. Females**Figure 23.2-E:** Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Males**Figure 23.2-F:** Conditional proportion of life-years lost by years (0–5) since diagnosis. Patients aged 69 years at diagnosis (median age). Females

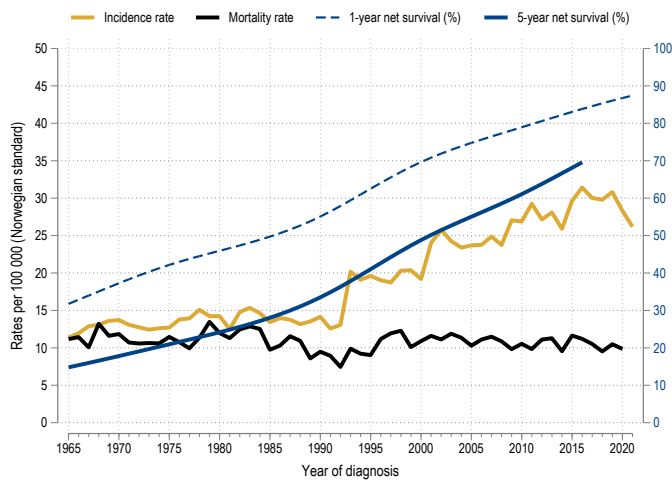
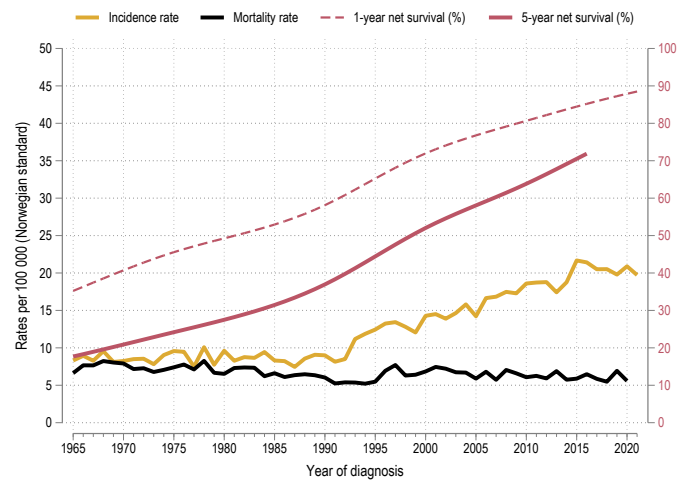
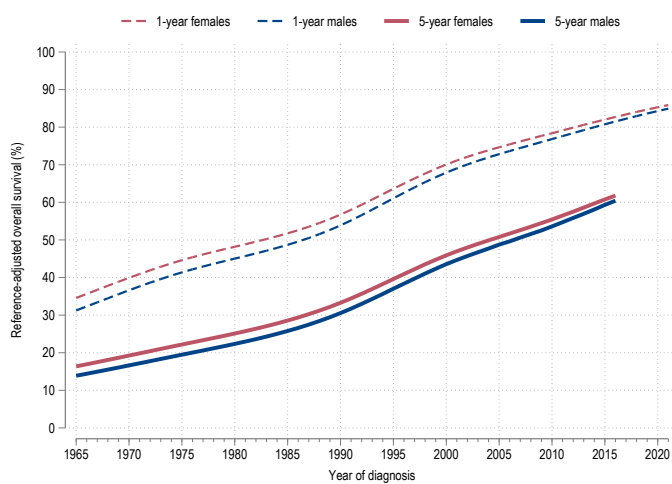
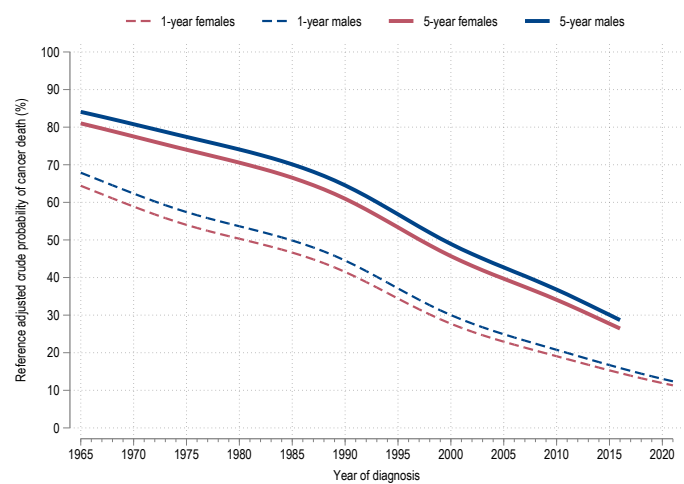
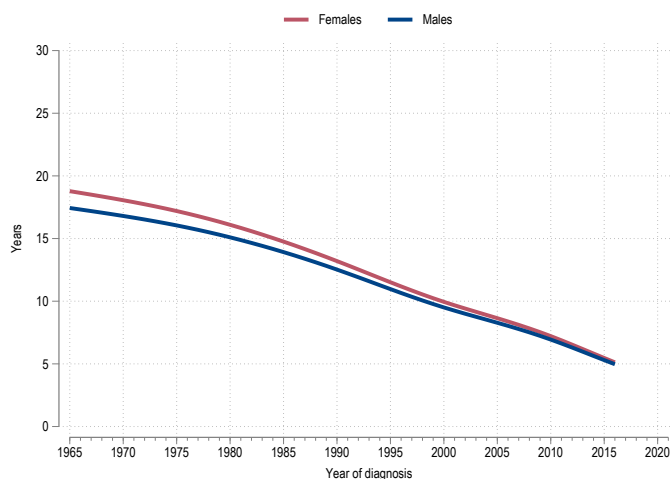
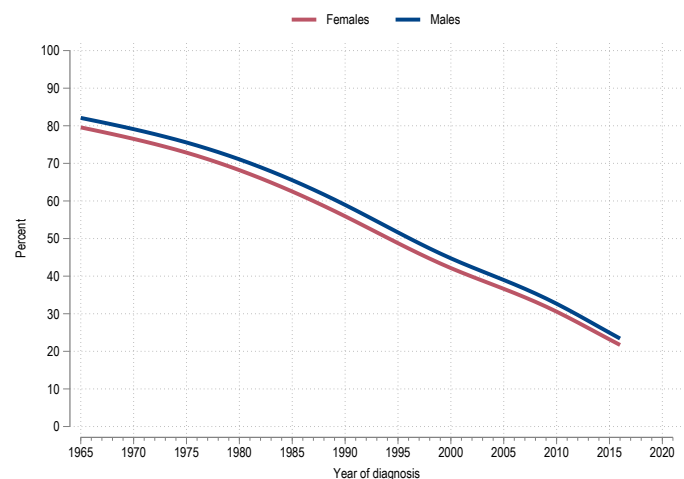
Figure 23.3: Leukaemia: trends**Figure 23.3-A:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Males**Figure 23.3-B:** Trends in incidence and mortality rates and 1- and 5-year net survival (%). Females**Figure 23.3-C:** Trends in reference adjusted all-cause survival**Figure 23.3-D:** Trends in reference adjusted crude probability of cancer death**Figure 23.3-E:** Trends in reference adjusted life-years lost**Figure 23.3-F:** Trends in reference adjusted life-years lost (%)

Table 1: Specification of models used when analysing survival for recently diagnosed patients

ICD-10	Site	Covariates	Interactions	DF Age ¹	Tvc ²	DF Tvc ³	DF ⁴
C00–14	Mouth,pharynx	sex, stage, age	age×stage	4	stage, age	2	5
C15	Oesophagus	sex, stage, age	-	4	age	3	5
C16	Stomach	sex, stage, age	-	4	sex, stage, age	3	5
C18	Colon	sex, stage, age	age×stage	4	stage, age	2	5
C19–20	Rectum	sex, stage, age	age×stage	4	stage, age	2	5
C22	Liver	sex, stage, age	-	4	age	3	5
C23–24	Gallbladder	sex, stage, age	-	3	stage, age	3	5
C25	Pancreas	sex, stage, age	age×stage	4	sex, stage, age	3	5
C33–34	Lung	sex, stage, age	age×stage	4	stage, age	3	5
C43	Melanoma of the skin	sex, stage, age	-	3	stage, age	3	5
C50	Breast	stage, age	age×stage	4	stage, age	2	5
C53	Cervix uteri	stage, age	-	4	age	2	4
C54	Corpus uteri	stage, age	-	4	age	2	4
C56, C57.0–4, C48.2	Ovary	stage, age	-	4	stage, age	3	5
C61	Prostate	stage, age	age×stage	4	sex, stage, age	3	5
C62	Testis	stage, age	-	3	-	-	4
C64	Kidney	sex, stage, age	-	4	age	3	5
C65–68	Urinary tract	sex, stage, age	age×stage	4	sex, stage, age	3	5
C70–72	Central nervous system	sex, stage, age	-	3	stage, age	3	5
C73	Thyroid gland	sex, stage, age	-	3	age	2	4
C81	Hodgkin lymphoma	sex, age	-	3	stage, age	2	4
C82–86, C96	Non-Hodgkin lymphoma	sex, age	age×stage	4	sex, age	3	5
C91–95	Leukaemia	sex, age	age×stage	4	sex, age	3	5

¹ Degrees of freedom used for generating basis functions for restricted cubic splines for age at diagnosis² List of covariates with time-dependent effects³ Degrees of freedom used for each time-dependent effect⁴ Degrees of freedom used for baseline excess hazard function

Table 2: Specification of models used when analysing survival trends

ICD-10	Site	Covariates	Interactions	DF Year ¹	DF Age ²	Tvc ³	DF Tvc ⁴	DF ⁵
C00–C14	Mouth, pharynx	sex, age, year	age×year	5	4	age, year	3	5
C15	Oesophagus	sex, age, year	age×year	5	4	age, year	3	5
C16	Stomach	sex, age, year	age×year	5	4	age, year	3	5
C18	Colon	sex, age, year	age×year	5	4	age, year	3	5
C19–20	Rectum	sex, age, year	age×year	5	4	age, year	3	5
C22	Liver	sex, age, year	age×year	5	4	age, year	3	5
C23–24	Gallbladder	sex, age, year	age×year	5	4	age, year	3	5
C25	Pancreas	sex, age, year	age×year	5	4	age, year	3	5
C33–34	Lung	sex, age, year	age×year	5	4	age, year	3	5
C43	Melanoma of the skin	sex, age, year	age×year	5	4	age, year	3	5
C50	Breast	age, year	age×year	5	4	age, year	3	5
C53	Cervix uteri	age, year	age×year	5	4	age, year	3	5
C54	Corpus uteri	age, year	age×year	5	4	age, year	3	5
C56, C57.0–4, C48.2	Ovary	age, year	age×year	5	4	age, year	3	5
C61	Prostate	age, year	age×year	5	4	age, year	3	5
C62	Testis	age, year	-	3	4	year	2	5
C64	Kidney	sex, age, year	age×year	5	4	age, year	3	5
C65–68	Urinary tract	sex, age, year	age×year	5	4	age, year	3	5
C70–72	Central nervous system	sex, stage, age, year	age×year	5	4	age, year	3	5
C73	Thyroid gland	sex, age, year	-	5	4	year	3	5
C81	Hodgkin lymphoma	sex, age, year	age×year	5	4	age, year	3	5
C82–86, C96	Non-Hodgkin lymphoma	sex, age, year	age×year	5	4	age, year	3	5
C91–95	Leukaemia	sex, age, year	age×year	5	4	age, year	3	5

¹ Degrees of freedom used for generating basis functions for restricted cubic splines for year of diagnosis² Degrees of freedom used for generating basis functions for restricted cubic splines for age at diagnosis³ List of covariates with time-dependent effects⁴ Degrees of freedom used for each time-dependent effect⁵ Degrees of freedom used for baseline excess hazard function

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Return Address:

Kreftregisteret
P.O. box 5313 Majorstuen
N-0304 Oslo
Norway

Cancer Registry of Norway

Institute of Population-based Cancer Research

Postal Address:

P.O. box 5313 Majorstuen
N-0304 Oslo
Norway

Office Address:

Ullernchausséen 64, Oslo

Telephone: +47 22 45 13 00

E-mail: kreftregisteret@kreftregisteret.no

Internet: www.kreftregisteret.no