Singapore Cancer Registry Annual Report 2022

National Registry of Diseases Office
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THE SINGAPORE CANCER REGISTRY

The Singapore Cancer Registry (SCR) was first established in 1967 to collect information on all cancers diagnosed in Singapore from 1 January 1968 onwards. The key objective of setting up this registry was to obtain information on population-based cancer trends and patterns in Singapore.

LEGISLATION

The National Registry of Diseases (including the Singapore Cancer Registry) is governed by the National Registry of Diseases Act which was enacted in 2007. The Act ensures comprehensive coverage of reportable diseases through the mandatory reporting and collection of information from healthcare providers and ensures appropriate use of the information while maintaining patient confidentiality. The National Registry of Diseases (Cancer Notification) Regulations 2009 has been operational since 1 August 2009.

DATA SOURCES

Comprehensive cancer registration is achieved through data obtained via notifications received from (a) medical practitioners, (b) pathology laboratories, (c) haematology laboratories and departments, and (d) healthcare institutions.

IDENTIFICATION KEY

The primary identification key for Singapore residents (consisting of Singapore citizens and permanent residents) is the National Registration Identity Card (NRIC) number. These unique numbers are used for updating existing records in the database and filtering duplicate records notified by multiple data sources.

VERIFICATION OF INFORMATION

All notifications were corroborated with clinical medical records. Registry coordinators (RCs) would review medical records to verify discrepancies in information and collect data to complete the registration of case records. A visiting consultant pathologist would be consulted for complex cases. Regular internal audits to assess the quality of the data were conducted and results from the audits showed that the registry achieved high inter-rater reliability (above 95%) for all data items.

CODING OF PRIMARY SITE AND HISTOLOGY

In this report, data on primary site was presented using the International Statistical Classification of Diseases and Related Health Problems, 10th Edition, Australian Modification (ICD-10-AM) (1). The referenced sites and respective ICD-10-AM codes can be found in **Appendix 1**.

The Manual of Tumour Nomenclature and Coding (MOTNAC) (2) was used for histology coding up till 1992. Between 1993 and 2002, the SCR employed the International Classification of Diseases for Oncology, 2nd Edition (ICD-O-2) (3). From 2003 onwards, the International Classification of Diseases for Oncology, 3rd Edition (ICD-O-3) was adopted (4). In addition to ICD-O-3, the World Health Organisation (WHO) Classification of Tumours, 4th Edition volumes (also known as the Blue Books) were also used (5).

CANCER STAGING

The registry adopted stage grouping guidelines from the American Joint Committee on Cancer (AJCC) Cancer Staging Manual, 6th edition for cases diagnosed between 2003 and 2009, 7th edition for cases diagnosed from 2010 to 2017, and 8th edition for cases diagnosed from 2018 onwards (6) (7) (8).

STATISTICAL METHODS

This report is based on the analysis of anonymised data on all cases of malignant and some tumours with borderline malignant potential diagnosed among Singapore residents from 1 January 1968 through 31 December 2022 in Singapore, as they stood as of 28 February 2024. Mortality data were as they stood as of 30 September 2023.

CANCER INCIDENCE AND MORTALITY

Computation of cancer incidence excludes benign and in-situ tumours (behaviour codes '0' and '2' respectively) (4).

Cancer incidence and mortality rates were calculated for all cancer sites combined, and for the most common cancer sites by sex, ethnicity, and age group. Incidence and mortality rates were age-standardised to adjust for differences in age structure in the Singapore resident population over time. Age-standardised incidence or mortality rates were calculated as the sum of the weighted age-specific incidence or mortality rates using the direct method based on the Segi-Doll World Standards. The age-specific incidence or mortality rates are defined as the number of new cancer cases or deaths, in the specified time period by the population at risk for that age stratum.

The population estimates were used as the denominators to calculate incidence and mortality rates. Population denominators from 1968 to 2022 were obtained from the Department of Statistics (DOS) (9).

LIFETIME RISK

Lifetime risk of developing cancer is calculated using the DevCan software package (version 6.6.1), developed by Surveillance, Epidemiology, and End Results (SEER), based on age-specific cancer rates (10). The cut-off point for lifetime risk was taken to be 75 years of age.

RELATIVE SURVIVAL

Single and multiple primary malignant tumours diagnosed in individuals aged 15 years and above were included for survival analysis in this report. Childhood cancer cases were not included in survival analysis because of their differences in biological characteristics, treatment protocols and survival outcomes. Multiple primary cases were included in accordance with the Eurocare-6 (European Cancer Registry) and CONCORD-3 study protocols (11) (12).

Cases based on Death Certificates Only (DCO i.e. cases which were registered based on mortality data) were excluded from the survival analysis since their survival time was unknown.

Relative survival is defined as the ratio of observed survival of the patients with the expected survival of a comparable group in the general population, matched according to factors believed to be associated with survival at baseline (sex, age and calendar year of diagnosis). In other words, it reflects the chances of survival assuming that cancer is the only possible cause of death.

The expected survival was estimated from the Singapore general population which included deaths from all causes. Population life tables for the period of 1968-2002 were constructed using the Mortpak software with deaths and population counts obtained from the DOS (9) (13). Complete life tables for the period of 2003-2022 were available from the DOS (14).

The Brenner method is used for age-standardisation (15). This was done so that age-standardised survival could still be obtained even if none of the patients within one or more age strata was followed up over the entire period of interest. Furthermore, this method also assures that age-adjustment using the study population's own age-distribution yields exactly the same result as obtained in the crude analysis. Analysis of five-year relative survival for the earliest five-year period, 1968-1972 was omitted, as there were insufficient cases available for analysis in one or more age groups.

Age-standardisation was performed using the International Cancer Survival Standards (ICSS) age categories for weights (16).

EXECUTIVE SUMMARY

This annual report presents data on trends for incidence, mortality, and survival of cancer in Singapore from 1968-2022, with additional site-specific trends for the ten most frequent cancers among males and females for the most recent 5-year period of 2018-2022.

Between 1968-1972 and 2018-2022, the crude incidence rate (CIR) of cancer had tripled and quadrupled respectively for males and females. The age-standardised incidence rate (ASIR) of cancer has also increased for both males and females (from 228.3 to 240.6, and 155.0 to 243.1 per 100,000 population respectively), narrowing the sex gap in cancer incidence. However, over the same period, while the crude mortality rates (CMR) of cancer rose for both sexes, the age-standardised mortality rates (ASMR) declined for males and remained comparatively unchanged for females (from 121.8 to 85.3, and 67.5 to 61.1 per 100,000 population respectively). Over the years, there has been an increase in the proportion of cancer diagnoses among the older age groups, with the median age at diagnosis rising for both males (from 59.6 to 68.8 years) and females (from 57.3 to 64.2 years).

In 2018-2022, prostate (17.4% of cancers in males), colorectal (16.2%) and lung (13.4%) cancers were the three most frequent incident cancers diagnosed in males, while breast (29.6% of cancers in females), colorectal, (12.9%) and lung (7.9%) cancers were the three most common cancer diagnoses in females. In terms of mortality, lung (24.4% of cancer deaths in males), colorectal (14.3%), and liver (12.3%) cancers were the three leading contributors of cancer deaths in males, while breast (17.1% of cancer deaths in females), colorectal (15.6%), and lung (15.1%) cancers accounted for the most cancer deaths among females.

Among both males and females, increases in age-specific cancer incidence were most prominent among the youngest (0-29 years) and oldest (80 years and above) age groups, with rates rising close to or over twofold since 1968-1972. While males aged 40-69 years showed a decline in age-specific cancer incidence, females of all ages displayed varying degrees of increase in age-specific cancer incidence. However, in recent years, the most rapid increase in age-specific incidence of cancer were observed in younger age groups (under 50 years of age); notably, the greatest increases were among young adults aged 30-39 years, for both males and females.

Cancer survival has improved drastically over the years – the 5-year age-standardised relative survival (ASRS) increased from 19.5% in 1973-1977 to 60.3% in 2018-2022. In addition, the 5-year ASRS was consistently better for females compared to males and was poorer for the Malays as compared to the Chinese and Indians.

Differing trends were observed for the incidence and mortality rates of the most common incident cancers in males and females. For example, among males, while the ASIR of prostate and colorectal cancers had risen, that of lung cancer had fallen. The ASMRs of these cancers had risen or fallen alongside the respective incidence rates. Similarly, among females, the ASIRs and ASMRs of breast and ovarian cancers had risen in tandem, whilst the incidence and mortality rates of cervical cancer had both declined drastically.

Cancer survival is linked in part to stage distribution, as cancers such as lung, pancreatic and stomach cancers were more likely to be diagnosed at later stages and consequently exhibit lower survival rates.

INTRODUCTION

Since its independence, Singapore has undergone an epidemiological transition, whereby the pattern of diseases in the society shifts from one rampant with infectious and vector-borne diseases like cholera and tuberculosis to one characterised by a predominance of chronic and non-communicable diseases such as cancer and heart disease [17] [18]. In Singapore, the percentage of deaths caused by infective and parasitic diseases had fallen from 6.6% in 1969-1973 to 2.6% in 2018-2022. In contrast, the percentage of deaths caused by cancer had increased almost twofold from 15.2% in 1969-1973 to 27.1% in 2018-2022 [19].

As a result, Singapore's disease burden has undergone a similar shift. While the burden posed by infectious diseases had decreased, that caused by chronic and non-communicable diseases had increased correspondingly. In 1991, cancer was the second leading contributor (after cardiovascular diseases) of **disability-adjusted life-years (DALYs)**[1] locally, accounting for 13.3% of all DALYs. This had gradually increased to 13.9% in 2021, making it the leading contributor to total DALYs in Singapore [20].

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[1] DALYs: a composite measure of health loss within a population that summarises the burden of early death and time spent with disability linked to ill health

(1) TRENDS IN CANCER INCIDENCE AND MORTALITY, 1968-2022

1.1 Trends by sex

Incidence and mortality of cancer by sex, 1968-2022

Sex differences have been observed in the trends for cancer incidence over the last five decades (Figure 1.1.1(a), Table 1.1.1(a)). The crude incidence rate (CIR) of cancer in males and females have increased more than threefold and fourfold respectively from 1968-1972 to 2018-2022. While males had a higher initial CIR in 1968-1972, at 136.0 per 100,000 population (compared to 103.9 per 100,000 population for females); in 2018-2022, the CIR of cancer in males and females were similar at 437.7 and 434.1 per 100,000 population respectively. In contrast, there was little change in the age-standardised incidence rate (ASIR) of cancer in males over this period, whereas that for females had risen, albeit to a less drastic degree compared to the corresponding CIR, suggesting that the drastic increase in CIR was due in part to population ageing. In 1968-1972, the ASIR of cancer among males was 228.3 per 100,000 population, significantly higher than that for females (155.0 per 100,000 population). After an initial rise in cancer incidence for both males and females in the 1970s-1980s, to 237.6 and 191.8 per 100,000 respectively in 1988-1992, the ASIR for males has plateaued thereafter, remaining similar at 240.6 per 100,000 population in 2018-2022. However, that for females had continued to rise over the year; and in 2018-2022, the ASIR was comparable to that of males, at 243.1 per 100,000 population.

The crude mortality rates (CMR) of cancer have also risen over the years, about twofold and threefold respectively for males and females (Figure 1.1.1(b), Table 1.1.1(b)). Like the CIR, the CMR also rose more drastically in females than in males. Over the same period, a narrowing sex gap was also observed for cancer mortality – while the age-standardised mortality rate (ASMR) declined overall among males, there was little overall change among females (Figure 1.1.1, Table 1.1.2). In 1968-1972, the ASMR of cancer among males was almost twice that of females, at 121.8 per 100,000 population, compared to 67.5 per 100,000 population among the latter. After an initial rise in ASMR to 165.1 and 96.3 per 100,000 population for males and females respectively in 1978-1982, the ASMR declined to 85.3 per 100,000 population for males, and 61.1 per 100,000 population for females in 2018-2022. Nonetheless, the ASMR of cancer had remained consistently higher among males than females throughout the years.

Ten most frequent incident cancers and cancer deaths by sex, 2018-2022

The lifetime risk (LTR) for cancer was 26.6% and 25.8% respectively for males and females in 2018-2022 (Table 1.1.3) – an estimated 1 in 4 Singapore residents may develop cancer by the age of 75 years. This is similar to what had been estimated by the WHO (23.7% and 22.1% for males and females in 2022 respectively)[2]. In comparison, the estimated LTR of cancer up till 75 years of age was 16.3% (1 in 6) and 15.0% (about 1 in 7) respectively for males and females in the Southeast Asia region[3] and 32.9% (1 in 3) and 27.0% (about 1 in 4) for males and females in high income countries[4] (21).

Currently, cancer is the leading cause of death in Singapore, accounting for 27.1% of all deaths from 2018-2022 (19). For the latest five-year period of 2018-2022, a total of 43,096 males and 44,620 females were diagnosed with cancer while 16,303 males and 13,598 females had died from the disease (Figure 1.1.2, Table 1.1.3). For both males and females, the ten most frequent incident cancers and causes of cancer deaths accounted for at least 80% of all cancer diagnoses and cancer deaths.

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[2] Based on 2013-2017 incidence, projected to 2022

[3] Populations included: Bahrain, Brunei Darussalam, Israel, Japan, Korea, Republic of, Kuwait, Oman, Qatar, Saudi Arabia, **Singapore**, United Arab Emirates, Austria, Belgium, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France (metropolitan), Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, The Netherlands, United Kingdom, Canada, United States of America, Bahamas, Barbados, Chile, Puerto Rico, Trinidad and Tobago, Uruguay, Australia, New Caledonia, French Polynesia, Guam, New Zealand

[4] Populations included: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, **Singapore**, Thailand, Timor-Leste, Vietnam

Prostate, colorectal and lung cancers were the three most commonly diagnosed cancers among males, while those among females were breast, colorectal and lung cancers. Prostate cancer, the most common cancer in males in 2018-2022, accounted for about 1 in 6 cancer diagnoses with 7,515 cases, with a lifetime risk of 4.8% (1 in 21 males) by 75 years of age. Breast cancer, the most common cancer among females with 13,193 diagnoses over this period, alone accounted for about three in ten cancer diagnoses in females, presenting a lifetime risk of 8.3% (1 in 12 females) by 75 years of age. The three leading incident cancers in males and females accounted for approximately 47% and 50% of total diagnoses respectively during this period.

The World Health Organisation (WHO) estimated that in 2020, prostate cancer was the leading cancer diagnosed in males in over 100 countries, while breast cancer was the most frequently diagnosed cancer among females in over 150 countries (22). As with Singapore, among high-income countries[5], prostate cancer was the most common diagnosis in males (19.1% of all cancers in 2022), and breast cancer was the leading diagnosis in females, accounting for 25.4% of all diagnoses. However, while breast cancer was similarly the most common diagnosis in females in Southeast Asia[6] (28.0% of all cancers), lung cancer was instead the leading cancer in males in Southeast Asia (16.7% of all cancers) (21). Worldwide, among 185 countries studied by the WHO, prostate cancer was the most common cancer diagnosed in males in 118 countries, while breast cancer was the most common cancer diagnosed among females in 157 countries (22).

In Singapore, lung cancer was the leading cause of cancer deaths in males, accounting for 3,970 - about a quarter - of all cancer deaths among males in 2018-2022, while breast cancer was the leading cause of cancer mortality in females, contributing to 2,323 (about 1 in 6) cancer deaths among females. Colorectal, liver, and pancreatic cancers were also among the top contributors to cancer mortality for both sexes.

Internationally, lung cancer was similarly estimated by the WHO to be the leading cause of cancer deaths among males in 89 countries, including high-income countries and the Southeast Asian region. However, while breast cancer was the leading cause of cancer deaths among females in 112 countries, including the Southeast Asia region, lung cancer was instead the leading cause of cancer deaths among females in high-income countries (22) (21).

Figure 1.1.1(a) Crude and age-standardised incidence rate (per 100,000 population) of cancer by sex, 1968-2022
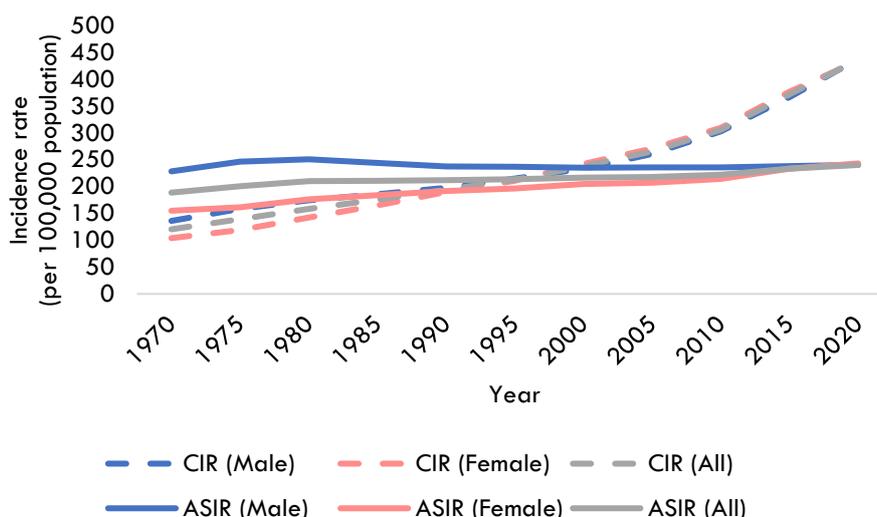
Table 1.1.1(a) Incidence number, crude and age-standardised incidence rate (per 100,000 population) of cancer by sex, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Male	No.	6987	8559	10126	11687	13647	16259
	CIR	136.0	158.5	174.5	185.8	197.9	214.7
	(95% CI)	(132.9-139.2)	(155.1-161.8)	(171.1-177.9)	(182.5-189.2)	(194.5-201.2)	(211.4-218.0)
	ASIR	228.3	246.4	250.8	244.2	237.6	236.7
	(95% CI)	(222.5-234.1)	(240.9-251.9)	(245.8-255.8)	(239.7-248.7)	(233.5-241.6)	(233.0-240.4)
Female	No.	5087	6192	7997	10081	12772	15776
	CIR	103.9	119.1	142.2	164.8	189.8	210.4
	(95% CI)	(101.1-106.8)	(116.2-122.1)	(139.1-145.4)	(161.6-168.1)	(186.5-193.1)	(207.2-213.7)
	ASIR	155.0	161.3	175.9	183.9	191.8	196.3
	(95% CI)	(150.6-159.3)	(157.3-165.4)	(172.0-179.8)	(180.3-187.6)	(188.4-195.2)	(193.2-199.5)
All	No.	12074	14751	18123	21768	26419	32035
	CIR	120.4	139.2	158.6	175.5	193.9	212.6
	(95% CI)	(118.2-122.5)	(136.9-141.4)	(156.3-160.9)	(173.2-177.8)	(191.5-196.2)	(210.2-214.9)
	ASIR	188.7	200.8	210.2	210.7	211.8	213.5
	(95% CI)	(185.2-192.2)	(197.5-204.1)	(207.1-213.3)	(207.9-213.5)	(209.2-214.4)	(211.1-215.9)
		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Male	No.	19082	22429	28007	35122	**43096**	
	CIR	233.1	260.4	302.6	366.5	**437.7**	
	(95% CI)	(229.8-236.4)	(257.0-263.8)	(299.0-306.1)	(362.7-370.3)	**(433.6-441.8)**	
	ASIR	235.2	235.4	235.4	238.3	**240.6**	
	(95% CI)	(231.8-238.5)	(232.3-238.6)	(232.6-238.3)	(235.7-240.8)	**(238.2-243.0)**	
Female	No.	19895	23651	29399	37429	**44620**	
	CIR	242.4	270.5	309.5	376.8	**434.1**	
	(95% CI)	(239.0-245.7)	(267.1-274.0)	(306.0-313.1)	(373.0-380.6)	**(430.1-438.1)**	
	ASIR	204.7	207.4	214.5	233.3	**243.1**	
	(95% CI)	(201.7-207.6)	(204.7-210.2)	(212.0-217.1)	(230.8-235.8)	**(240.7-245.5)**	
All	No.	38977	46080	57406	72551	**87716**	
	CIR	237.8	265.5	306.1	371.7	**435.9**	
	(95% CI)	(235.4-240.1)	(263.1-267.9)	(303.6-308.6)	(369.0-374.4)	**(433.0-438.7)**	
	ASIR	216.9	217.9	222.0	233.5	**240.3**	
	(95% CI)	(214.7-219.1)	(215.8-219.9)	(220.1-223.9)	(231.8-235.3)	**(238.6-242.0)**	

Figure 1.1.1(b) Crude and age-standardised mortality rate (per 100,000 population) of cancer by sex, 1968-2022
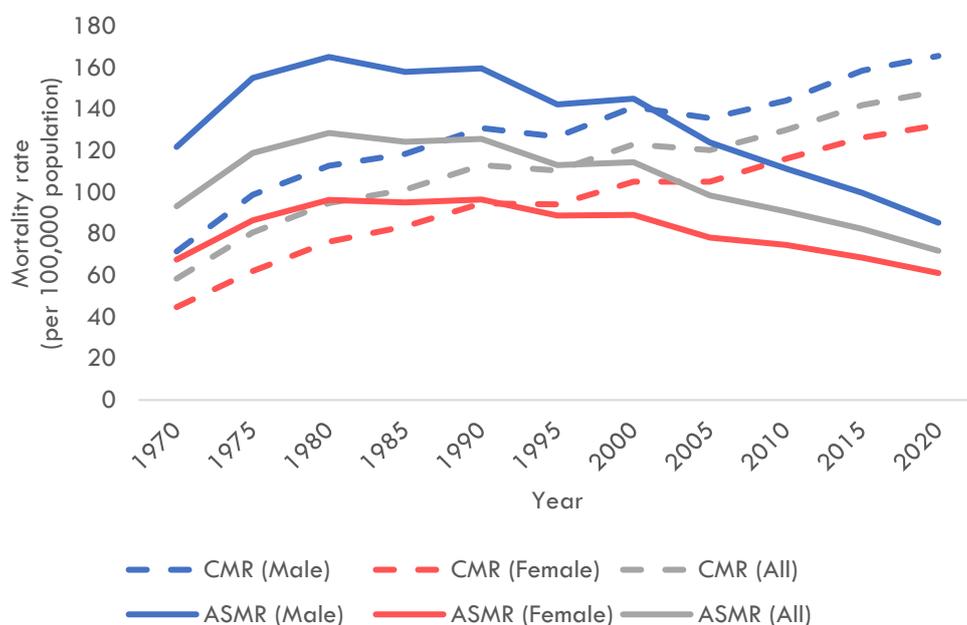
Table 1.1.1(b) Mortality number, crude and age-standardised mortality rate (per 100,000 population) of cancer by sex, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Male	**No.**	3671	5330	6543	7448	9031	9597
	CMR	71.5	98.7	112.8	118.4	130.9	126.7
	(95% CI)	(69.2-73.8)	(96.0-101.3)	(110.0-115.5)	(115.7-121.1)	(128.2-133.6)	(124.2-129.2)
	ASMR	121.8	155.0	165.1	157.9	159.6	142.3
	(95% CI)	(117.6-126.1)	(150.6-159.3)	(161.0-169.2)	(154.3-161.6)	(156.3-163.0)	(139.4-145.2)
Female	**No.**	2187	3224	4279	5104	6363	7054
	CMR	44.7	62.0	76.1	83.5	94.6	94.1
	(95% CI)	(42.8-46.5)	(59.9-64.2)	(73.8-78.4)	(81.2-85.8)	(92.2-96.9)	(91.9-96.3)
	ASMR	67.5	86.4	96.3	95.1	96.5	88.7
	(95% CI)	(64.6-70.4)	(83.4-89.4)	(93.4-99.3)	(92.5-97.8)	(94.0-98.9)	(86.6-90.8)
All	**No.**	5858	8554	10822	12552	15394	16651
	CMR	58.4	80.7	94.7	101.2	113.0	110.5
	(95% CI)	(56.9-59.9)	(79.0-82.4)	(92.9-96.5)	(99.4-103.0)	(111.2-114.8)	(108.8-112.2)
	ASMR	93.2	118.9	128.5	124.3	125.7	113.1
	(95% CI)	(90.8-95.7)	(116.3-121.4)	(126.1-131.0)	(122.1-126.5)	(123.7-127.7)	(111.4-114.9)

		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Male	**No.**	11539	11690	13337	15185	**16303**	
	CMR	141.0	135.7	144.1	158.5	**165.6**	
	(95% CI)	(138.4-143.6)	(133.3-138.2)	(141.6-146.5)	(155.9-161.0)	**(163.0-168.1)**	
	ASMR	145.0	123.9	111.4	99.7	**85.3**	
	(95% CI)	(142.3-147.7)	(121.6-126.2)	(109.5-113.3)	(98.1-101.3)	**(83.9-86.6)**	
Female	**No.**	8621	9181	11041	12539	**13598**	
	CMR	105.0	105.0	116.2	126.2	**132.3**	
	(95% CI)	(102.8-107.2)	(102.9-107.2)	(114.1-118.4)	(124.0-128.4)	**(130.1-134.5)**	
	ASMR	89.1	78.1	74.7	68.5	**61.1**	
	(95% CI)	(87.1-91.0)	(76.4-79.7)	(73.2-76.1)	(67.2-69.7)	**(60.0-62.2)**	
All	**No.**	20160	20871	24378	27724	**29901**	
	CMR	123.0	120.3	130.0	142.0	**148.6**	
	(95% CI)	(121.3-124.7)	(118.6-121.9)	(128.4-131.6)	(140.4-143.7)	**(146.9-150.3)**	
	ASMR	114.4	98.4	90.8	82.3	**71.8**	
	(95% CI)	(112.8-116.0)	(97.0-99.7)	(89.6-92.0)	(81.3-83.3)	**(70.9-72.6)**	

Figure 1.1.2 Ten most frequent incident cancers and cancer deaths by sex, 2018-2022

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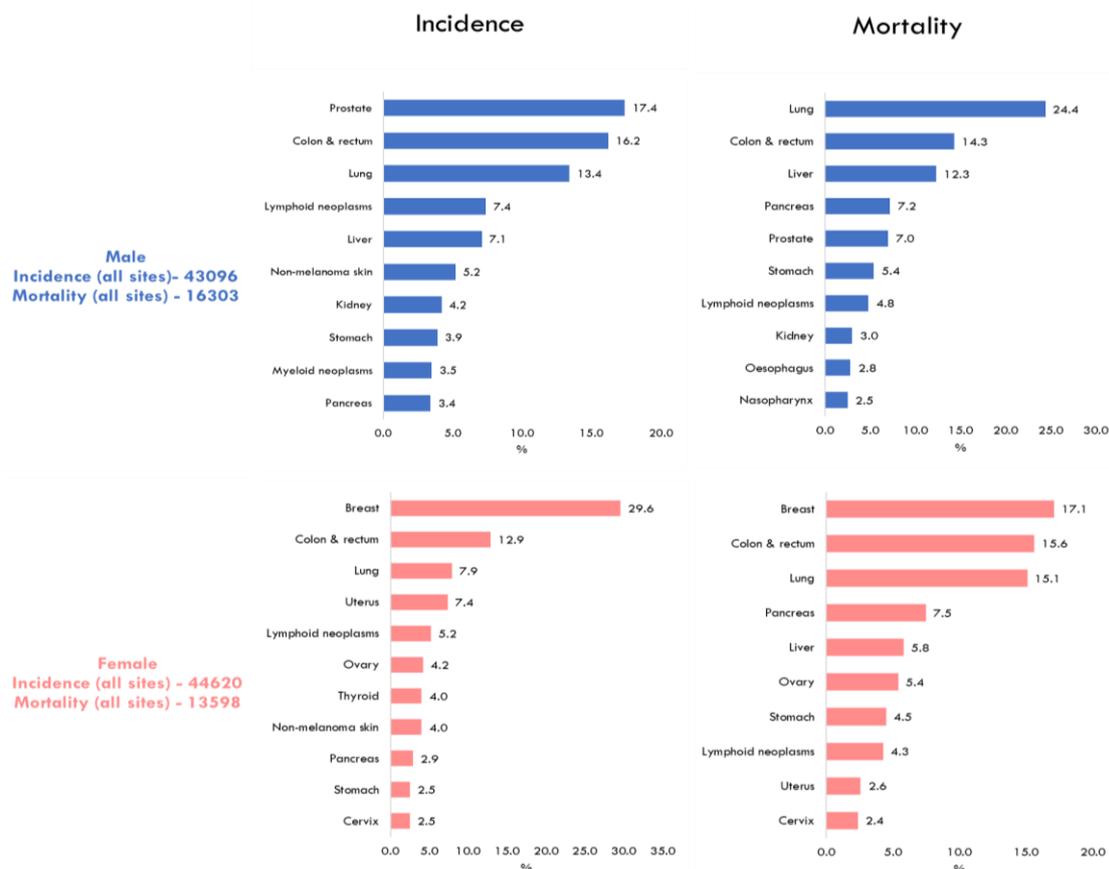
Table 1.1.2 Ten most frequent incident cancers, lifetime risk, and cancer deaths by sex, 2018-2022

Sex	Rank	Incidence			Lifetime risk		Mortality		
		Site	No.	%	%	1 in N	Site	No.	%
Male	1	Prostate	7515	17.4	4.8	21	Lung	3970	24.4
	2	Colon & rectum	6963	16.2	4.4	23	Colon & rectum	2324	14.3
	3	Lung	5759	13.4	3.4	30	Liver	2012	12.3
	4	Lymphoid neoplasms	3196	7.4	2.0	49	Pancreas	1170	7.2
	5	Liver	3041	7.1	1.9	54	Prostate	1144	7.0
	6	Non-melanoma skin	2225	5.2	1.2	87	Stomach	878	5.4
	7	Kidney	1808	4.2	1.2	86	Lymphoid neoplasms	789	4.8
	8	Stomach	1702	3.9	1.0	105	Kidney	491	3.0
	9	Myeloid neoplasms	1497	3.5	0.9	113	Oesophagus	464	2.8
	10	Pancreas	1470	3.4	0.9	110	Nasopharynx	410	2.5
		All sites	**43096**	**100.0**	**26.6**	**4**	**All sites**	**16303**	**100.0**
Female	1	Breast	13193	29.6	8.3	12	Breast	2323	17.1
	2	Colon & rectum	5741	12.9	3.0	34	Colon & rectum	2124	15.6
	3	Lung	3534	7.9	1.9	53	Lung	2054	15.1
	4	Uterus	3310	7.4	2.2	46	Pancreas	1022	7.5
	5	Lymphoid neoplasms	2318	5.2	1.4	73	Liver	787	5.8
	6	Ovary	1886	4.2	1.2	81	Ovary	729	5.4
	7	Thyroid	1791	4.0	1.2	86	Stomach	607	4.5
	8	Non-melanoma skin	1767	4.0	0.7	139	Lymphoid neoplasms	585	4.3
	9	Pancreas	1291	2.9	0.6	156	Uterus	359	2.6
	10	Stomach	1135	2.5	0.5	182	Cervix	328	2.4
	10	Cervix	1120	2.5	0.7	145			
		All sites	**44620**	**100.0**	**25.8**	**4**	**All sites**	**13598**	**100.0**

1.1 Sex trends for incidence and mortality of cancer, 1968-2022

KEY POINTS

- During the period from 1968-1972 to 2018-2022, the crude incidence rates of cancer for males and females increased by three and four times respectively. The age-standardised incidence rate of cancer increased slightly for males from 228.3 to 240.6 per 100,000 population, but increased more for females (from 155.0 to 243.1 per 100,000 population).
- During this same period, the crude mortality rate had risen for both males and females, but the age-standardised mortality rate of cancer for males decreased (from 121.8 to 85.3 per 100,000 population), while that of females remained relatively unchanged throughout (67.5 and 61.1 per 100,000 population).
- In the latest 5-year period from 2018-2022, 43,096 males and 44,620 females were diagnosed with cancer, while 16,303 males and 13,598 females died from it.
- The lifetime risks for cancer in 2018-2022 were 26.6% and 25.8% (or about 1 in 4) respectively for males and females.
- The three most frequent incident cancers were (2018-2022):
  o Males – prostate (17.4% of all cancers diagnosed in males), colorectal (16.2%), lung (13.4%)
  o Females – breast (29.6% of all cancers diagnosed in females), colorectal (12.9%), lung (7.9%)
- The three leading causes of cancer deaths were (2018-2022):
  o Males – lung (24.4% of cancer deaths in males), colorectal (14.3%), liver (12.3%)
  o Females – breast (17.1% of cancer deaths in females), colorectal (15.6%), lung (15.1%)

1.2 Trends by ethnicity

Incidence and mortality of cancer by sex and ethnicity, 1968-2022

Over the years, differing trends were observed among the three main ethnic groups in Singapore for both sexes. Ethnic differences in trends were apparent for both cancer incidence as well as mortality (Figure 1.2.1(a)-(c), Table 1.2.1(a)-(c), Figure 1.2.2 (a)-(c), Table 1.2.2(a)-(c)).

From 1968-1972 to 2018-2022, the CIR of cancer had increased for males of all three ethnic groups, the most drastic of which was seen among the Malays (a more than sixfold increase). While the ASIR of cancer among Chinese males had declined slightly from 258.1 per 100,000 population in 1968-1972 to 245.8 per 100,000 population in 2018-2022, it had risen among Malay and Indian males, increasing more than twofold from 96.6 to 229.8 per 100,000 population for the former, and rising less drastically with some fluctuations over the years from 125.4 to 164.5 per 100,000 population for the latter (Figure 1.2.1(a), Table 1.2.1(a)).

As with males, the CIR of cancer rose for females of all three ethnic groups, and once again, the increase was most apparent among the Malays (sevenfold increase). While the ASIR of cancer differed in their trends among males of the three ethnic groups, an increase in the ASIR of cancer was observed for all three ethnic groups (Figure 1.2.1(b), Table 1.2.1(b)). Among Chinese females, the ASIR of cancer rose from 158.5 to 244.5 per 100,000 population. The increase in ASIR was most prominent among female Malays, more than doubling from 98.5 per 100,000 population in 1968-1972 to 251.6 per 100,000 population in 2018-2022. Among Indian females, the ASIR of cancer rose slightly from 181.9 to 200.4 per 100,000 population.

Overall, although the Chinese had the highest ASIR of cancer consistently throughout the years, there is evidence of a closing ethnic gap in cancer incidence, particularly between the Chinese and Malays (Figure 1.2.1(c), Table 1.2.1(c)). In 1968-1972, the Chinese had a significantly higher incidence of cancer compared to the Malays and Indians (202.8, 96.4, and 139.0 per 100,000 population respectively). In 2018-2022, however, ethnic disparities had become less apparent with the ASIR of cancer among the Chinese exhibiting a gradual increase over the years to 243.7 per 100,000 population, while that among the Malays and Indians had risen more quickly to 239.0 and 179.8 per 100,000 population respectively).

The trend for cancer mortality rates by ethnicity among males was similar to that observed for the incidence rates. Malay males were likewise found to exhibit the greatest increase in CMR. Between 1968-1972 and 2018-2022, while the ASMR of cancer had decreased from 140.1 to 85.7 per 100,000 population for Chinese males (Figure 1.2.2(a), Table 1.2.2(a)), it had risen more than twofold among Malay males, from 45.8 to 102.9 for the former; while there was little overall change in that among Indian males, at 57.8 and 58.5 per 100,000 population respectively.

Among females, the greatest increase in CMR was also observed among Malays. While an increase in ASIR of cancer among females was observed for all three ethnic groups, the ASMR was found to have increased only for Malay females – rising from 46.6 to 82.2 per 100,000 population between 1968-1972 and 2018-2022, an almost twofold increase. In contrast, during the same period, the ASMR among Chinese females dipped slightly from 68.2 to 59.0 per 100,000 population, while that among Indian females decreased from 82.6 to 52.7 per 100,000 population (Figure 1.2.2(b), Table 1.2.2(b)).

As with the ethnic trends for cancer incidence, that for cancer mortality had also seen a closing of the ethnic gap over the years (Figure 1.2.2(c), Table 1.2.2(c)). While the Chinese had the highest cancer ASMR from 1968-1972 to 2008-2012, the ASMR among the Malays surpassed that of the Chinese to become the highest from 2013-2017 onwards. In 2018-2022, cancer mortality among the Malays stood at 91.0 per 100,000 population, while those of the Chinese and Indians were 70.8 and 55.1 per 100,000 population respectively.

Ten most frequent incident cancers by sex and ethnicity, 2018-2022

A total of 35,608 Chinese males and 36,104 Chinese females were diagnosed with cancer in 2018-2022. 4,173 Malay males and 4,870 Malay females were diagnosed with cancer; while 2,060 Indian males and 2,509 Indian females were diagnosed with cancer during this period (Figure 1.2.3, Table 1.2.3).

While prostate, colorectal, and lung cancers were the three most frequent incident cancers among Chinese and Indian males; lung and colorectal cancers, along with lymphoid neoplasms, were the three most frequent incident cancers among Malay males (Figure 1.2.3, Table 1.2.3). The three most frequent incident cancers among Chinese, Malay and Indian males accounted for approximately 41-48% of all diagnoses among each ethnic group.

Breast cancer was by far the most frequent incident cancer among females across all three ethnicities, accounting for about 30% of all cancer diagnoses among the Chinese and Malays, and over one-third of diagnoses among Indians (Figure 1.2.3, Table 1.2.3). While colorectal and lung cancers were the second and third most commonly diagnosed cancers in Chinese females, colorectal and uterine cancers were among the three most frequent incident cancers among Malays and Indians. Notably, while cervical cancer was tied with stomach cancer as the tenth most frequent incident cancer among the female resident population in 2018-2022 (Figure 1.1.2, Table 1.1.3), it was observed to be among the ten most frequent cancers only among the Malays at eighth position; but did not feature among the ten most common incident cancers among either Chinese or Indian females during this period.

Figure 1.2.1(a) Crude and age-standardised incidence rate (per 100,000 population) of cancer in males by ethnicity, 1968-2022

Figure 1.2.1(b) Crude and age-standardised incidence rate (per 100,000 population) of cancer in females by ethnicity, 1968-2022

Figure 1.2.1(c) Crude and age-standardised incidence rate (per 100,000 population) of cancer by ethnicity, 1968-2022

Table 1.2.1(a) Incidence number, crude and age-standardised incidence rate (per 100,000 population) of cancer in males by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	No.	6167	7467	8881	10159	11821	14094
	CIR (95% CI)	157.5 (153.6-161.5)	179.6 (175.5-183.7)	197.3 (193.2-201.4)	208.6 (204.6-212.7)	221.9 (217.9-225.9)	241.7 (237.7-245.7)
	ASIR (95% CI)	258.1 (251.3-265.0)	276.2 (269.7-282.7)	283.7 (277.7-289.7)	275.6 (270.2-281.1)	268.9 (263.9-273.9)	267.6 (263.1-272.2)
Malay	No.	359	512	609	787	1017	1248
	CIR (95% CI)	47.2 (42.3-52.1)	65.5 (59.8-71.1)	72.9 (67.1-78.7)	87.6 (81.5-93.7)	103.9 (97.5-110.3)	116.6 (110.2-123.1)
	ASIR (95% CI)	96.6 (84.9-108.3)	116.5 (105.5-127.6)	119.3 (109.1-129.5)	131.1 (121.5-140.8)	146.0 (136.7-155.3)	154.9 (146.0-163.8)
Indian	No.	398	499	537	622	624	697
	CIR (95% CI)	93.4 (84.2-102.5)	123.2 (112.4-134.0)	131.5 (120.3-142.6)	135.7 (125.0-146.3)	120.0 (110.6-129.4)	119.1 (110.3-128.0)
	ASIR (95% CI)	125.4 (109.2-141.5)	157.3 (140.5-174.1)	155.9 (140.9-170.9)	139.0 (127.1-150.9)	112.2 (102.9-121.6)	105.9 (97.7-114.2)

		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	No.	16363	19195	23572	29235	35608	
	CIR (95% CI)	261.6 (257.6-265.6)	295.6 (291.5-299.8)	345.1 (340.7-349.5)	413.2 (408.4-417.9)	489.8 (484.7-494.9)	
	ASIR (95% CI)	260.9 (256.8-264.9)	252.9 (249.3-256.6)	246.7 (243.5-250.0)	245.3 (242.4-248.2)	245.8 (243.1-248.5)	
Malay	No.	1600	1801	2392	3291	4173	
	CIR (95% CI)	139.7 (132.8-146.5)	149.8 (142.9-156.8)	191.0 (183.3-198.6)	253.8 (245.1-262.5)	308.1 (298.8-317.5)	
	ASIR (95% CI)	173.1 (164.2-181.9)	171.1 (162.8-179.4)	192.6 (184.6-200.6)	218.8 (211.1-226.5)	229.8 (222.6-236.9)	
Indian	No.	830	998	1300	1641	2060	
	CIR (95% CI)	123.3 (114.9-131.7)	133.3 (125.0-141.6)	146.6 (138.6-154.6)	180.1 (171.4-188.8)	222.6 (213.0-232.2)	
	ASIR (95% CI)	114.3 (106.1-122.5)	137.5 (128.5-146.4)	148.7 (140.1-157.2)	155.4 (147.5-163.3)	164.5 (157.2-171.8)	

Table 1.2.1(b) Incidence number, crude and age-standardised incidence rate (per 100,000 population) of cancer in females by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	No.	4460	5471	7035	8895	11208	13644
	CIR (95% CI)	115.9 (112.5-119.3)	133.5 (130.0-137.1)	158.4 (154.7-162.1)	185.0 (181.1-188.8)	212.8 (208.9-216.7)	234.0 (230.1-238.0)
	ASIR (95% CI)	158.5 (153.8-163.2)	167.7 (163.2-172.2)	183.3 (178.9-187.6)	194.1 (190.0-198.2)	202.4 (198.5-206.3)	205.6 (202.0-209.1)
Malay	No.	368	411	574	734	1009	1337
	CIR (95% CI)	50.3 (45.1-55.4)	54.4 (49.2-59.7)	71.2 (65.4-77.0)	84.9 (78.7-91.0)	107.0 (100.4-113.6)	128.0 (121.1-134.9)
	ASIR (95% CI)	98.5 (87.0-110.0)	97.3 (86.9-107.6)	114.5 (104.3-124.7)	117.0 (108.0-126.1)	135.2 (126.4-143.9)	149.7 (141.4-158.1)
Indian	No.	168	223	299	346	429	609
	CIR (95% CI)	60.1 (51.0-69.2)	76.7 (66.7-86.8)	93.7 (83.0-104.3)	91.9 (82.2-101.5)	96.9 (87.8-106.1)	116.7 (107.4-125.9)
	ASIR (95% CI)	181.9 (146.2-217.5)	153.6 (129.5-177.6)	176.0 (152.3-199.6)	145.2 (127.4-162.9)	134.5 (120.6-148.4)	144.5 (131.8-157.2)

		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	No.	17042	20088	24374	30613	36104	
	CIR (95% CI)	269.1 (265.1-273.2)	302.1 (297.9-306.3)	343.6 (339.2-347.9)	412.4 (407.7-417.0)	470.2 (465.3-475.0)	
	ASIR (95% CI)	213.7 (210.3-217.0)	216.1 (213.0-219.3)	220.4 (217.5-223.3)	236.5 (233.7-239.3)	244.5 (241.7-247.2)	
Malay	No.	1745	2216	2904	3955	4870	
	CIR (95% CI)	154.1 (146.8-161.3)	184.6 (176.9-192.3)	230.0 (221.7-238.4)	301.9 (292.5-311.3)	356.4 (346.4-366.4)	
	ASIR (95% CI)	165.0 (156.9-173.1)	178.7 (171.0-186.5)	195.7 (188.3-203.1)	231.9 (224.5-239.4)	251.6 (244.3-258.9)	
Indian	No.	851	1015	1476	2027	2509	
	CIR (95% CI)	137.5 (128.2-146.7)	143.6 (134.8-152.5)	178.3 (169.2-187.4)	234.6 (224.4-244.8)	284.7 (273.6-295.9)	
	ASIR (95% CI)	152.5 (141.6-163.4)	144.1 (134.8-153.4)	167.1 (158.2-175.9)	190.7 (182.1-199.2)	200.4 (192.3-208.5)	

Table 1.2.1(c) Incidence number, crude and age-standardised incidence rate (per 100,000 population) of cancer by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	No.	10627	12938	15916	19054	23029	27738
	CIR	136.9	156.7	178.0	196.9	217.4	237.9
	(95% CI)	(134.3-139.5)	(154.0-159.4)	(175.2-180.7)	(194.1-199.7)	(214.6-220.2)	(235.1-240.7)
	ASIR	202.8	215.7	227.0	228.3	229.6	230.5
	(95% CI)	(198.8-206.7)	(212.0-219.5)	(223.5-230.6)	(225.0-231.6)	(226.5-232.6)	(227.7-233.2)
Malay	No.	727	923	1183	1521	2026	2585
	CIR	48.7	60.1	72.1	86.2	105.5	122.2
	(95% CI)	(45.2-52.3)	(56.2-63.9)	(68.0-76.2)	(81.9-90.6)	(100.9-110.0)	(117.5-127.0)
	ASIR	96.4	107.8	118.0	125.6	141.6	153.0
	(95% CI)	(88.4-104.4)	(100.2-115.4)	(110.7-125.2)	(119.0-132.3)	(135.2-148.0)	(146.9-159.1)
Indian	No.	566	722	836	968	1053	1306
	CIR	80.2	103.8	114.9	115.9	109.4	118.0
	(95% CI)	(73.6-86.8)	(96.2-111.4)	(107.1-122.7)	(108.6-123.2)	(102.8-116.0)	(111.6-124.4)
	ASIR	139.0	157.2	162.7	145.1	121.3	121.4
	(95% CI)	(123.7-154.3)	(143.4-170.9)	(150.1-175.2)	(135.1-155.0)	(113.6-129.1)	(114.6-128.3)

		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	No.	33405	39283	47946	59848	71712	
	CIR	265.4	298.9	344.3	412.8	**479.7**	
	(95% CI)	(262.5-268.2)	(296.0-301.9)	(341.2-347.4)	(409.4-416.1)	**(476.2-483.2)**	
	ASIR	231.6	229.5	229.9	238.5	**243.7**	
	(95% CI)	(229.0-234.1)	(227.2-231.8)	(227.8-232.1)	(236.5-240.5)	**(241.8-245.6)**	
Malay	No.	3345	4017	5296	7246	9043	
	CIR	146.8	167.2	210.6	278.0	**332.4**	
	(95% CI)	(141.9-151.8)	(162.0-172.4)	(204.9-216.3)	(271.6-284.4)	**(325.5-339.2)**	
	ASIR	169.1	174.2	192.6	223.6	**239.0**	
	(95% CI)	(163.2-175.1)	(168.5-179.8)	(187.2-198.0)	(218.3-228.9)	**(233.9-244.0)**	
Indian	No.	1681	2013	2776	3668	4569	
	CIR	130.1	138.3	161.9	206.6	**252.9**	
	(95% CI)	(123.9-136.3)	(132.3-144.4)	(155.9-167.9)	(199.9-213.3)	**(245.6-260.2)**	
	ASIR	130.4	140.6	156.3	170.8	**179.8**	
	(95% CI)	(123.9-136.9)	(134.2-147.0)	(150.2-162.3)	(165.0-176.5)	**(174.4-185.1)**	

Figure 1.2.2(a) Crude and age-standardised mortality rate (per 100,000 population) of cancer in males by ethnicity, 1968-2022
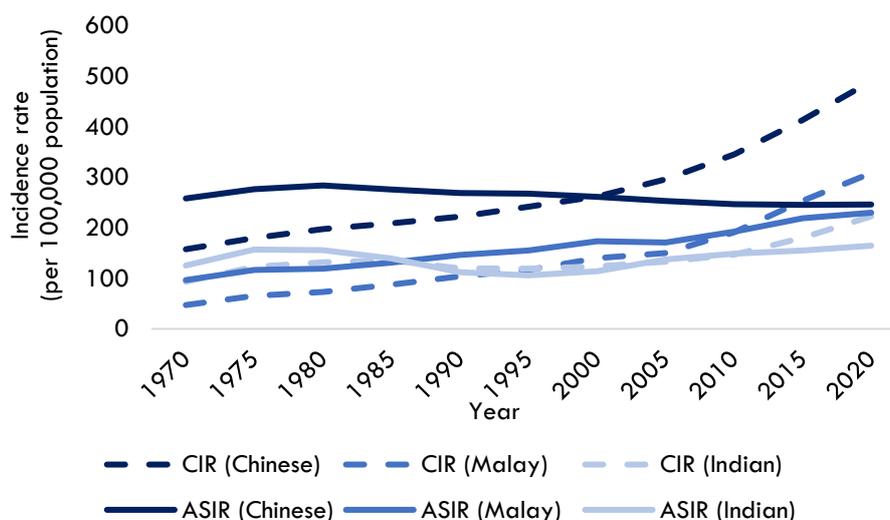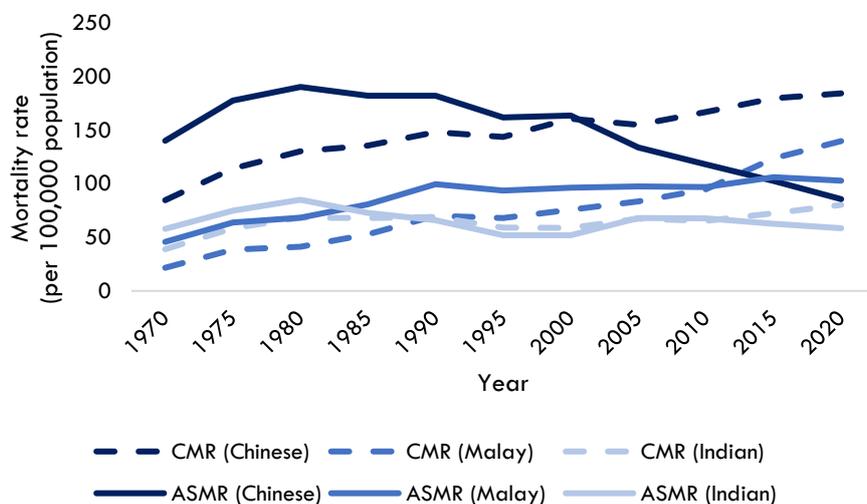
Figure 1.2.2(b) Crude and age-standardised mortality rate (per 100,000 population) of cancer in females by ethnicity, 1968-2022
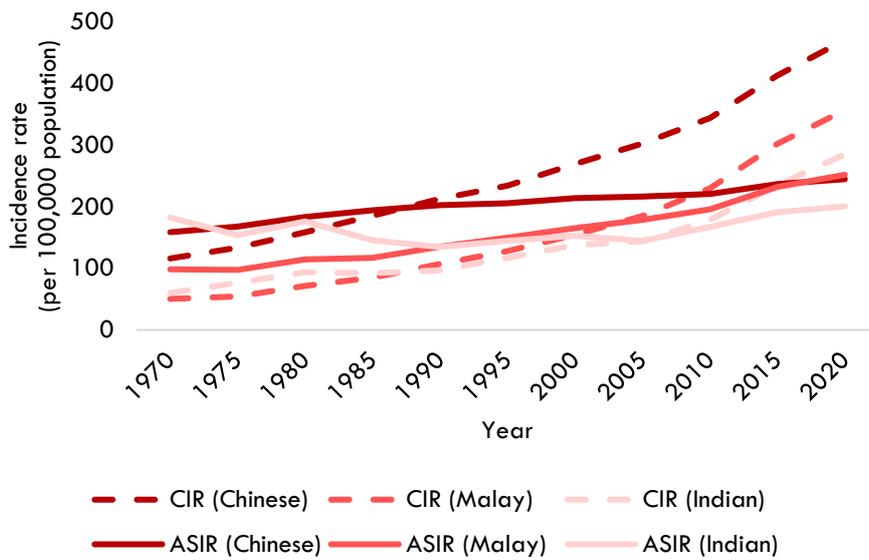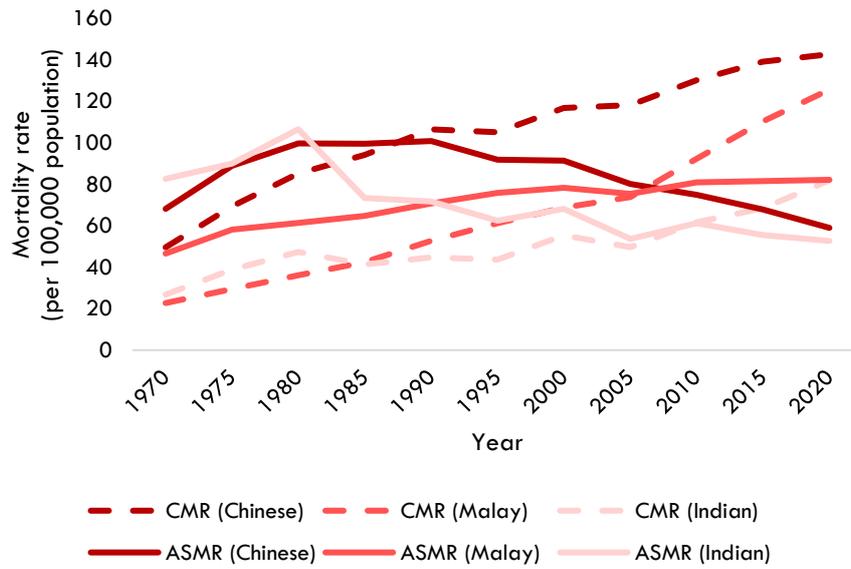

Figure 1.2.2(c) Crude and age-standardised mortality rate (per 100,000 population) of cancer by ethnicity, 1968-2022
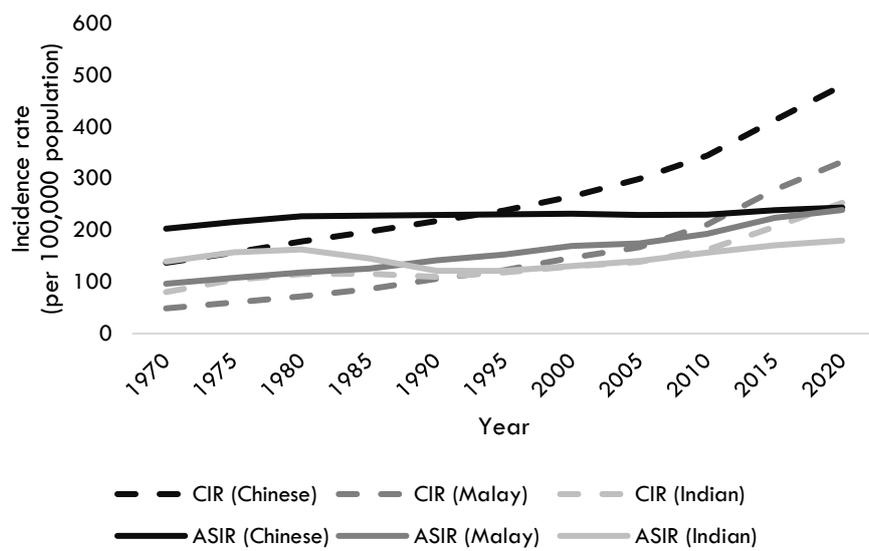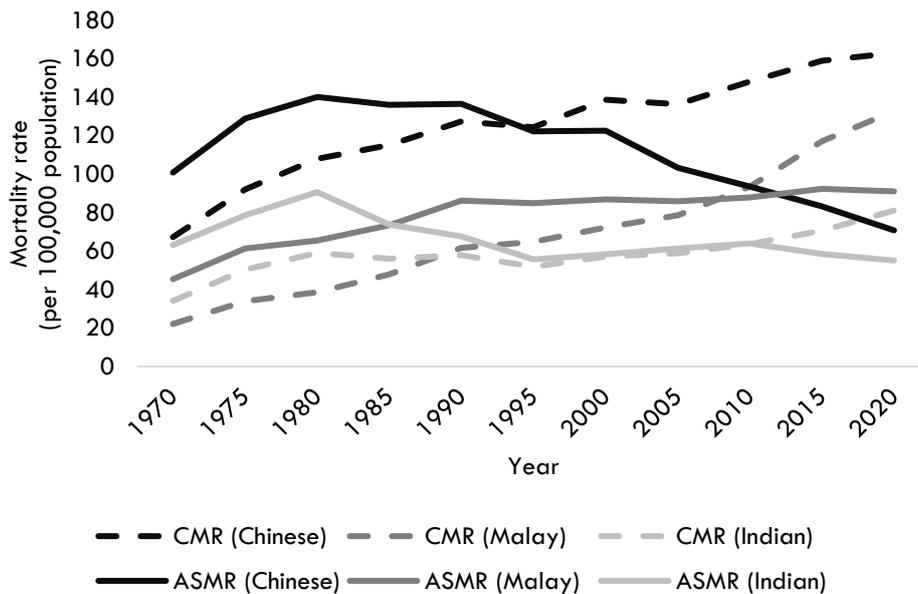
Table 1.2.2(a) Mortality number, crude and age-standardised mortality rate (per 100,000 population) of cancer in males by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	No.	3315	4751	5869	6613	7896	8379
	CMR (95% CI)	84.7 (81.8-87.6)	114.3 (111.0-117.5)	130.4 (127.0-133.7)	135.8 (132.5-139.1)	148.2 (144.9-151.5)	143.7 (140.6-146.8)
	ASMR (95% CI)	140.1 (135.0-145.2)	177.9 (172.6-183.1)	190.5 (185.6-195.5)	182.4 (177.9-186.8)	182.4 (178.3-186.5)	162.1 (158.6-165.7)
Malay	No.	164	300	343	476	686	730
	CMR (95% CI)	21.6 (18.3-24.9)	38.4 (34.0-42.7)	41.1 (36.7-45.4)	53.0 (48.2-57.7)	70.1 (64.9-75.3)	68.2 (63.3-73.2)
	ASMR (95% CI)	45.8 (37.6-54.0)	63.9 (56.0-71.8)	68.3 (60.5-76.1)	80.9 (73.2-88.5)	99.8 (92.0-107.5)	93.6 (86.6-100.6)
Indian	No.	166	237	279	312	359	346
	CMR (95% CI)	38.9 (33.0-44.9)	58.5 (51.1-65.9)	68.3 (60.3-76.3)	68.0 (60.5-75.6)	69.1 (61.9-76.2)	59.1 (52.9-65.4)
	ASMR (95% CI)	57.8 (45.6-70.0)	74.8 (63.9-85.6)	85.1 (73.6-96.6)	72.8 (64.0-81.7)	66.1 (58.7-73.6)	52.0 (46.3-57.7)
		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	No.	10051	10066	11420	12726	13409	
	CMR (95% CI)	160.7 (157.5-163.8)	155.0 (152.0-158.1)	167.2 (164.1-170.2)	179.9 (176.7-183.0)	184.5 (181.3-187.6)	
	ASMR (95% CI)	163.8 (160.6-167.0)	134.0 (131.3-136.7)	118.2 (116.0-120.4)	102.8 (101.0-104.6)	85.7 (84.2-87.2)	
Malay	No.	868	1004	1188	1605	1895	
	CMR (95% CI)	75.8 (70.7-80.8)	83.5 (78.4-88.7)	94.9 (89.5-100.2)	123.8 (117.7-129.8)	139.9 (133.6-146.2)	
	ASMR (95% CI)	96.3 (89.7-103.0)	97.7 (91.4-104.1)	97.0 (91.2-102.7)	106.2 (100.9-111.6)	102.9 (98.2-107.6)	
Indian	No.	396	505	580	661	743	
	CMR (95% CI)	58.8 (53.0-64.6)	67.5 (61.6-73.3)	65.4 (60.1-70.7)	72.5 (67.0-78.1)	80.3 (74.5-86.1)	
	ASMR (95% CI)	52.1 (46.6-57.5)	68.2 (62.0-74.5)	67.8 (62.0-73.6)	62.6 (57.6-67.6)	58.5 (54.3-62.8)	

Table 1.2.2(b) Mortality number, crude and age-standardised mortality rate (per 100,000 population) of cancer in females by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	No.	1909	2843	3787	4531	5614	6131
	CMR (95% CI)	49.6 (47.4-51.8)	69.4 (66.8-71.9)	85.3 (82.6-88.0)	94.2 (91.5-97.0)	106.6 (103.8-109.4)	105.2 (102.5-107.8)
	ASMR (95% CI)	68.2 (65.1-71.3)	88.9 (85.6-92.2)	99.7 (96.5-102.9)	99.6 (96.7-102.6)	100.9 (98.2-103.6)	91.9 (89.5-94.3)
Malay	No.	166	223	291	368	497	640
	CMR (95% CI)	22.7 (19.2-26.1)	29.5 (25.7-33.4)	36.1 (31.9-40.2)	42.5 (38.2-46.9)	52.7 (48.1-57.3)	61.3 (56.5-66.0)
	ASMR (95% CI)	46.6 (38.6-54.5)	58.2 (49.8-66.6)	61.4 (53.7-69.0)	64.8 (57.8-71.8)	70.8 (64.4-77.3)	75.9 (69.8-82.0)
Indian	No.	75	113	151	156	198	228
	CMR (95% CI)	26.8 (20.8-32.9)	38.9 (31.7-46.1)	47.3 (39.8-54.8)	41.4 (34.9-47.9)	44.7 (38.5-51.0)	43.7 (38.0-49.3)
	ASMR (95% CI)	82.6 (59.0-106.3)	90.0 (70.1-109.9)	106.6 (87.0-126.2)	73.4 (60.1-86.8)	71.7 (60.6-82.7)	62.4 (53.5-71.3)
		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	No.	7404	7861	9237	10332	10968	
	CMR (95% CI)	116.9 (114.3-119.6)	118.2 (115.6-120.8)	130.2 (127.5-132.9)	139.2 (136.5-141.9)	142.8 (140.2-145.5)	
	ASMR (95% CI)	91.5 (89.3-93.7)	80.2 (78.3-82.0)	74.9 (73.3-76.5)	67.8 (66.4-69.2)	59.0 (57.8-60.2)	
Malay	No.	779	887	1165	1447	1718	
	CMR (95% CI)	68.8 (63.9-73.6)	73.9 (69.0-78.7)	92.3 (87.0-97.6)	110.4 (104.8-116.1)	125.7 (119.8-131.7)	
	ASMR (95% CI)	78.4 (72.7-84.1)	75.4 (70.3-80.6)	81.0 (76.2-85.9)	81.6 (77.2-85.9)	82.2 (78.2-86.2)	
Indian	No.	343	351	511	592	722	
	CMR (95% CI)	55.4 (49.5-61.3)	49.7 (44.5-54.9)	61.7 (56.4-67.1)	68.5 (63.0-74.0)	81.9 (76.0-87.9)	
	ASMR (95% CI)	68.1 (60.4-75.8)	53.7 (47.8-59.5)	61.3 (55.8-66.8)	55.5 (50.9-60.1)	52.7 (48.8-56.6)	

Table 1.2.2(c) Mortality number, crude and age-standardised mortality rate (per 100,000 population) of cancer by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	**No.**	5224	7594	9656	11144	13510	14510
	CMR (95% CI)	67.3 (65.5-69.1)	92.0 (89.9-94.1)	108.0 (105.8-110.1)	115.1 (113.0-117.3)	127.5 (125.4-129.7)	124.4 (122.4-126.4)
	ASMR (95% CI)	100.9 (98.1-103.7)	129.0 (126.0-131.9)	140.2 (137.4-143.0)	136.1 (133.5-138.7)	136.6 (134.2-138.9)	122.3 (120.3-124.3)
Malay	**No.**	330	523	634	844	1183	1370
	CMR (95% CI)	22.1 (19.7-24.5)	34.0 (31.1-36.9)	38.6 (35.6-41.6)	47.9 (44.6-51.1)	61.6 (58.1-65.1)	64.8 (61.4-68.2)
	ASMR (95% CI)	45.4 (39.8-50.9)	61.4 (55.6-67.1)	65.5 (60.0-71.0)	73.5 (68.3-78.7)	86.3 (81.2-91.4)	85.0 (80.4-89.6)
Indian	**No.**	241	350	430	468	557	574
	CMR (95% CI)	34.1 (29.8-38.5)	50.3 (45.0-55.6)	59.1 (53.5-64.7)	56.0 (51.0-61.1)	57.9 (53.1-62.7)	51.8 (47.6-56.1)
	ASMR (95% CI)	63.2 (52.4-74.0)	78.6 (69.0-88.2)	90.7 (80.9-100.5)	73.8 (66.4-81.1)	67.6 (61.6-73.7)	55.7 (51.0-60.4)

		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	**No.**	17455	17927	20657	23058	**24377**	
	CMR (95% CI)	138.7 (136.6-140.7)	136.4 (134.4-138.4)	148.3 (146.3-150.4)	159.0 (157.0-161.1)	**163.1 (161.0-165.1)**	
	ASMR (95% CI)	122.7 (120.8-124.5)	103.3 (101.7-104.8)	93.6 (92.3-95.0)	83.2 (82.0-84.3)	**70.8 (69.8-71.7)**	
Malay	**No.**	1647	1891	2353	3052	**3613**	
	CMR (95% CI)	72.3 (68.8-75.8)	78.7 (75.2-82.3)	93.6 (89.8-97.3)	117.1 (112.9-121.2)	**132.8 (128.5-137.1)**	
	ASMR (95% CI)	87.0 (82.7-91.4)	85.9 (81.8-89.9)	88.0 (84.3-91.7)	92.4 (89.0-95.8)	**91.0 (87.9-94.0)**	
Indian	**No.**	739	856	1091	1253	**1465**	
	CMR (95% CI)	57.2 (53.1-61.3)	58.8 (54.9-62.8)	63.6 (59.9-67.4)	70.6 (66.7-74.5)	**81.1 (76.9-85.2)**	
	ASMR (95% CI)	58.4 (54.0-62.8)	61.3 (57.0-65.5)	64.0 (60.0-67.9)	58.5 (55.1-61.8)	**55.1 (52.2-57.9)**	

Figure 1.2.3 Ten most frequent incident cancers by sex and ethnicity, 2018-2022

Male / Female

Chinese
Male (all sites) - 35608
Female (all sites) - 36104

Male

Site	%
Prostate	18.5
Colon & rectum	16.5
Lung	13.2
Liver	7.0
Lymphoid neoplasms	6.8
Non-melanoma skin	5.0
Kidney	4.2
Stomach	4.1
Pancreas	3.5
Myeloid neoplasms	3.3

Female

Site	%
Breast	29.3
Colon & rectum	13.4
Lung	8.5
Uterus	6.9
Lymphoid neoplasms	4.8
Non-melanoma skin	4.2
Ovary	4.0
Thyroid	3.8
Pancreas	3.1
Stomach	2.8

Malay
Male (all sites) - 4173
Female (all sites) - 4870

Male

Site	%
Lung	17.1
Colon & rectum	15.5
Lymphoid neoplasms	11.7
Prostate	10.9
Liver	9.2
Myeloid neoplasms	4.8
Kidney	3.7
Pancreas	2.9
Bladder	2.7
Stomach	2.4

Female

Site	%
Breast	28.7
Colon & rectum	12.1
Uterus	9.0
Lymphoid neoplasms	7.4
Lung	5.9
Ovary	5.5
Thyroid	4.7
Cervix	3.8
Myeloid neoplasms	3.2
Liver	3.0

Indian
Male (all sites) - 2060
Female (all sites) - 2509

Male

Site	%
Colon & rectum	15.2
Prostate	14.1
Lung	11.9
Lymphoid neoplasms	10.5
Liver	6.1
Kidney	5.0
Stomach	4.8
Myeloid neoplasms	3.7
Pancreas	3.6
Thyroid	2.9

Female

Site	%
Breast	34.2
Uterus	11.2
Colon & rectum	9.4
Lymphoid neoplasms	6.3
Ovary	5.1
Thyroid	4.7
Lung	4.1
Myeloid neoplasms	2.8
Stomach	2.5
Pancreas	2.0

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Table 1.2.3 Ten most frequent incident cancers by sex and ethnicity, 2018-2022

Ethnicity	Rank	Male			Female		
		Site	No.	%	Site	No.	%
Chinese	1	Prostate	6580	18.5	Breast	10586	29.3
	2	Colon & rectum	5885	16.5	Colon & rectum	4828	13.4
	3	Lung	4705	13.2	Lung	3084	8.5
	4	Liver	2491	7.0	Uterus	2485	6.9
	5	Lymphoid neoplasms	2404	6.8	Lymphoid neoplasms	1747	4.8
	6	Non-melanoma skin	1769	5.0	Non-melanoma skin	1523	4.2
	7	Kidney	1498	4.2	Ovary	1444	4.0
	8	Stomach	1475	4.1	Thyroid	1372	3.8
	9	Pancreas	1251	3.5	Pancreas	1102	3.1
	10	Myeloid neoplasms	1184	3.3	Stomach	1002	2.8
		All sites	**35608**	**100.0**	**All sites**	**36104**	**100.0**
Malay	1	Lung	715	17.1	Breast	1396	28.7
	2	Colon & rectum	645	15.5	Colon & rectum	591	12.1
	3	Lymphoid neoplasms	487	11.7	Uterus	440	9.0
	4	Prostate	456	10.9	Lymphoid neoplasms	358	7.4
	5	Liver	384	9.2	Lung	286	5.9
	6	Myeloid neoplasms	200	4.8	Ovary	267	5.5
	7	Kidney	154	3.7	Thyroid	231	4.7
	8	Pancreas	119	2.9	Cervix	187	3.8
	9	Bladder	113	2.7	Myeloid neoplasms	157	3.2
	10	Stomach	102	2.4	Liver	145	3.0
		All sites	**4173**	**100.0**	**All sites**	**4870**	**100.0**
Indian	1	Colon & rectum	313	15.2	Breast	857	34.2
	2	Prostate	290	14.1	Uterus	280	11.2
	3	Lung	245	11.9	Colon & rectum	236	9.4
	4	Lymphoid neoplasms	216	10.5	Lymphoid neoplasms	158	6.3
	5	Liver	125	6.1	Ovary	129	5.1
	6	Kidney	104	5.0	Thyroid	119	4.7
	7	Stomach	98	4.8	Lung	104	4.1
	8	Myeloid neoplasms	77	3.7	Myeloid neoplasms	69	2.8
	9	Pancreas	74	3.6	Stomach	62	2.5
	10	Thyroid	59	2.9	Pancreas	51	2.0
		All sites	**2060**	**100.0**	**All sites**	**2509**	**100.0**

1.2 Ethnic trends for incidence and mortality of cancer, 1968-2022

KEY POINTS

- The crude incidence rate of cancer increased for Chinese, Malays, and Indians of both sexes, most notably among the Malays.
- The age-standardised incidence rate of cancer had decreased for Chinese males (from 258.1 to 245.8 per 100,000 population), but it increased for Malay and Indian males (from 96.6 to 229.8 per 100,000 population, and from 125.4 to 164.5 per 100,000 population respectively) between 1968-1972 and 2018-2022.
- Regardless of ethnic group, the age-standardised incidence rate of cancer had increased for females between 1968-1972 and 2018-2022 (Chinese: 158.5 to 244.5; Malays: 98.5 to 251.6; Indians: 181.9 to 200.4 per 100,000 population respectively).
- The crude mortality rate rose over the years for males and females of all three ethnic groups, again most markedly in the Malays.
- From 1968-1972 to 2018-2022, the age-standardised mortality rate of cancer decreased among Chinese males (from 140.1 to 85.7 per 100,000 population), increased from 45.8 to 102.9 for Malay males, and saw little overall change at 57.8 and 58.5 per 100,000 population for Indian males.
- From 1968-1972 to 2018-2022, the age-standardised mortality rate of cancer fell for Chinese and Indian females (from 68.2 to 59.0 and 82.6 to 52.7 per 100,000 respectively) but increased nearly twofold for Malay females (from 46.6 to 82.2 per 100,000 population).
- In 2018-2022, among males, colorectal and lung cancers were among the three most frequent incident cancers in all ethnic groups, each accounting for approximately 12-19% of all diagnoses within each ethnic group.
- In 2018-2022, breast cancer was by far the leading cancer diagnosed among females across all three ethnic groups, accounting for about 29-34% of all diagnoses within each ethnic group.

1.3 Trends by age group

Incidence and mortality of cancer by sex and age group, 1968-2022

Over time, the age-specific incidence of cancer had increased most prominently among the youngest (0-29 years) and oldest (80 years and above) age groups among males, rising from 13.9 to 24.1 and 1438.6 to 2913.4 per 100,000 population respectively. Males aged 30-39 years and 70-79 years also saw increases in age-specific cancer incidence, while those in the 40-49, 50-59, and 60-69 years age bands registered differing degrees of decreases in age-specific cancer incidence (Figure 1.3.1(a), Table 1.3.1(a)). However, the age-specific incidence of cancer rose for all females regardless of age group, and like males, these changes were most prominent in the youngest and oldest age groups. For females aged 0-29 years, the age-specific incidence of cancer rose about 2.5 times from 11.8 to 30.2 per 100,000 population, while that for females aged 80 years and above also rose approximately 2.5 times, from 710.5 to 1803.2 per 100,000 population (Figure 1.3.1(b), Table 1.3.1(b)).

Notably, in more recent years, increases in age-specific cancer incidence rates were most prominent in those under 50 years of age. For instance, since 2008-2012, the age groups with the most rapid increases in the age-specific incidence of cancer were all under 50 years of age, with those aged 30-39 years registering the largest differences. Males aged 0-29, 30-39, and 40-49 years recorded increases in age-specific incidence of cancer of 9.5%, 15.6%, and 8% respectively, while the corresponding increases for females were 20.3%, 20.6%, and 20.1% respectively.

Data from the Global Burden of Diseases (GBD) study similarly reflected an increasing trend of cancer among younger age groups, with a 79% increase in "early onset" (under 50 years) cancer globally between 1990 and 2019 (23). In the UK, the 0-24 age group also registered the greatest increase in cancer incidence rates since the early 1990s (24). In Singapore, between 1988-1992 and 2018-2022, there was a similar 90% increase in the number of cases of individuals diagnosed before 50 years of age (54% for males and 112% for females) (Table 1.3.1(a)-(b)).

Despite this trend of increasing cancer incidence among younger age groups, cancer remains a disease of older age — worldwide, most cases of cancer are diagnosed after 50 years of age (25) (26). This was true for Singapore across the entire period from 1968-2022. Additionally, in 2018-2022, 76.4% of male and 60.4% of female cancer patients in Singapore were diagnosed at or above the age of 60 years, falling in between the International Agency for Research on Cancer's (IARC) estimates for Southeast Asia and high-income countries (58.5% and 82% respectively for males, and 44.8% and 72.4% respectively for females) (Table 1.3.2(a)-(b)) (27).

Between 1968-1972 and 2018-2022, the proportion of all cancer diagnoses among the younger age groups had fallen; while that among the older age groups had correspondingly increased (Figure 1.3.2(a)-(b)). Among males, the percentage of cancer diagnoses among those under 40 years of age had fallen from 12.1% in 1968-1972 to 4.1% in 2018-2022, while that among those aged 70 years and above had almost tripled from 15.7% to 45.3% during the same period (Table 1.3.2(a)). For females, the proportion of diagnoses in those under 40 years of age had fallen from 16.9% in 1968-1972 to 7.0% in 2018-2022; while that among those aged 70 years and above had doubled from 17.0% to 35.3% (Table 1.3.2(b)). This resulted in an increase in the median age at cancer diagnosis for both sexes, from 59.6 years to 68.8 years for males and 57.3 years to 64.2 years for females (Figure 1.3.2(a)-(b)). This observed trend is linked to an increase in life expectancy over the years as more individuals live past their 80s, when age-specific incidence rate of cancer is at its highest (Table 1.3.1(a)-(b)) (28) (29).

For 2018-2022, while females had a higher age-specific incidence rate of cancer from 0-59 years of age, the age-specific cancer incidence rate among males increased sharply from age 60 years onwards to surpass that of females. Estimates from the IARC showed similar patterns in 2022, with females in Southeast Asia and high-income countries registering a 50% and 36% higher age-specific cancer incidence respectively before the age of 60 in comparison to males. However, males in these two country groups had a 44% and 60% higher cancer incidence respectively compared to females from 60 years of age onwards (27).

The trends for age-specific cancer mortality differs from that of cancer incidence, in that over time, overall increases in cancer mortality were observed only among older individuals. Among males aged 80 years and above, the age-specific cancer mortality rate had more than doubled from 786.6 to 1847.2 per 100,000 population from 1968-1972 to 2018-2022, while that among all other age groups registered declines over time (Table 1.3.3(a)). Meanwhile, among females aged 80 years and above, the age-specific mortality rate of cancer had nearly tripled from 405.4 to 1133.2 per 100,000 population over the same period. Females aged 70-79 years also registered a slight increase in age-specific cancer mortality rates, from 442.6 to 480.9 per 100,000 population, whereas all other age groups saw their age-specific cancer mortality rates decreasing (Table 1.3.3(b)). Nonetheless, age-specific cancer mortality rates have declined for all age groups of both sexes over the last two decades (from 1998-2002 onwards) after initial increases and reaching peaks at various time-points prior (Figure 1.3.3(a)-(b)). Additionally, while age-specific cancer mortality was generally higher in females than males up till 59 years of age, similar to incidence trends, it became higher among males from 60 years of age onwards.

Ten most frequent incident cancers by sex and age group, 2018-2022

The patterns of the ten most frequent incident cancers for males and females also differed by age group (Figure 1.3.4, Table 1.3.4). In the period 2018-2022, lymphoid neoplasms were the most common diagnosis in males below 40 years old, accounting for about one in three cancer diagnoses in this age group. While prostate cancer is rarely diagnosed in younger males, it the most common diagnosis in males aged 60 years and above. The two other most common cancers diagnosed in males 60 years and above were colorectal and lung cancers.

Among females, lymphoid neoplasms were similarly the most common diagnosis for those below 30 years old, accounting for about one-fifth of all incident cases of cancer in that age group. Between the ages of 30 to 79 years, breast cancer was the most common diagnosis and accounted for nearly half of all cancer diagnoses within the 40-49 years age band. As with males, colorectal and lung cancers were also more common among older females.

Figure 1.3.1(a) Age-specific incidence rate (per 100,000 population) of cancer in males, 1968-2022
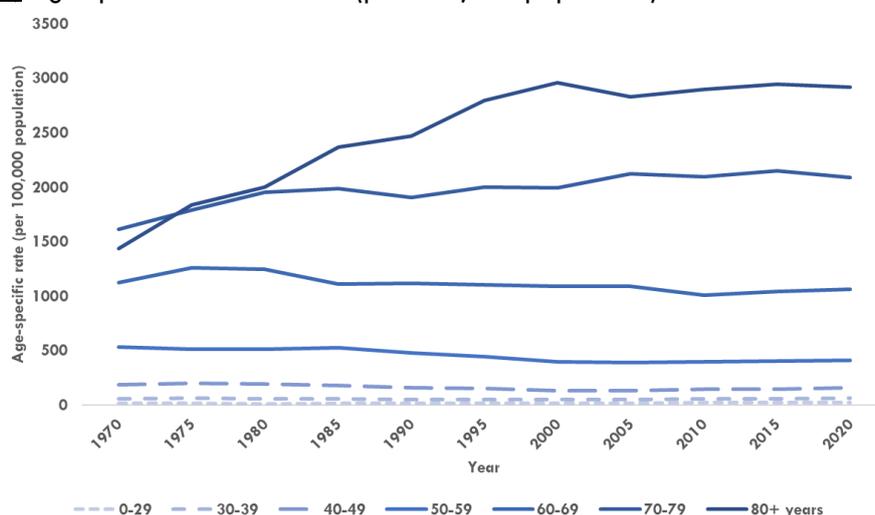
Figure 1.3.1(b) Age-specific incidence rate (per 100,000 population) of cancer in females, 1968-2022

Table 1.3.1(a) Age-specific incidence number and rate (per 100,000 population) of cancer in males, 1968-2022

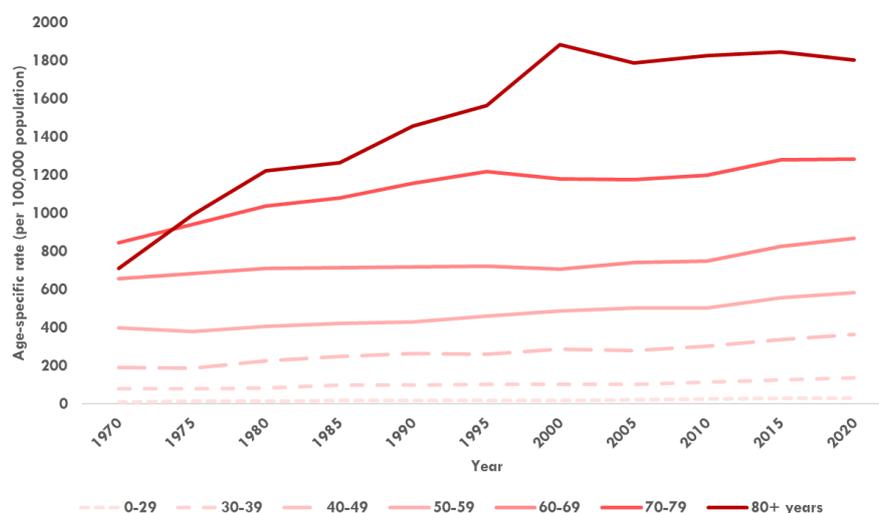|		0-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1968-1972	**No.**	477	369	887	1872	2287	956	139
	Age-specific rate (95% CI)	13.9 (12.6-15.1)	61.0 (54.8-67.2)	187.6 (175.3-200.0)	536.0 (511.7-560.3)	1125.5 (1079.3-1171.6)	1610.1 (1508.0-1712.1)	1438.6 (1199.5-1677.8)
1973-1977	**No.**	515	428	1028	1935	2911	1482	260
	Age-specific rate (95% CI)	14.8 (13.5-16.0)	61.7 (55.9-67.6)	199.8 (187.6-212.0)	510.9 (488.2-533.7)	1261.5 (1215.7-1307.3)	1788.1 (1697.0-1879.1)	1836.5 (1613.3-2059.8)
1978-1982	**No.**	476	476	1121	2136	3252	2250	415
	Age-specific rate (95% CI)	13.2 (12.0-14.4)	58.3 (53.1-63.6)	195.3 (183.9-206.8)	515.0 (493.2-536.9)	1246.7 (1203.8-1289.5)	1954.7 (1874.0-2035.5)	1998.5 (1806.2-2190.7)
1983-1987	**No.**	533	621	1130	2499	3237	2879	788
	Age-specific rate (95% CI)	14.8 (13.6-16.1)	55.7 (51.3-60.1)	176.8 (166.5-187.1)	526.4 (505.8-547.1)	1110.5 (1072.2-1148.7)	1983.8 (1911.4-2056.3)	2368.0 (2202.7-2533.3)
1988-1992	**No.**	586	713	1328	2591	3922	3237	1270
	Age-specific rate (95% CI)	16.6 (15.2-17.9)	50.9 (47.2-54.7)	157.0 (148.5-165.4)	475.6 (457.3-493.9)	1120.0 (1084.9-1155.0)	1903.8 (1838.3-1969.4)	2467.3 (2331.6-2603.0)
1993-1997	**No.**	544	842	1784	2762	4549	3882	1896
	Age-specific rate (95% CI)	15.3 (14.0-16.6)	54.4 (50.7-58.1)	151.4 (144.4-158.4)	441.9 (425.4-458.4)	1104.7 (1072.6-1136.8)	2003.1 (1940.1-2066.1)	2796.5 (2670.6-2922.3)
1998-2002	**No.**	629	803	1969	3328	5231	4843	2279
	Age-specific rate (95% CI)	17.6 (16.2-18.9)	52.7 (49.0-56.3)	135.8 (129.8-141.8)	400.3 (386.7-413.9)	1091.2 (1061.6-1120.7)	1994.6 (1938.5-2050.8)	2959.7 (2838.2-3081.3)
2003-2007	**No.**	656	704	2134	4432	5920	5951	2632
	Age-specific rate (95% CI)	18.5 (17.1-19.9)	48.6 (45.0-52.2)	135.0 (129.3-140.7)	393.7 (382.2-405.3)	1090.0 (1062.3-1117.8)	2125.4 (2071.4-2179.4)	2830.1 (2722.0-2938.2)
2008-2012	**No.**	791	839	2300	5524	7501	7408	3644
	Age-specific rate (95% CI)	22.0 (20.5-23.6)	56.9 (53.0-60.7)	145.5 (139.6-151.4)	398.3 (387.8-408.8)	1010.9 (988.0-1033.8)	2093.2 (2045.6-2140.9)	2893.1 (2799.2-2987.1)
2013-2017	**No.**	802	813	2203	6199	10752	9262	5091
	Age-specific rate (95% CI)	23.0 (21.4-24.6)	57.7 (53.8-61.7)	144.8 (138.8-150.9)	406.7 (396.6-416.9)	1039.7 (1020.0-1059.3)	2146.7 (2103.0-2190.4)	2943.6 (2862.7-3024.5)
2018-2022	**No.**	815	933	2298	6090	13420	12673	6867
	Age-specific rate (95% CI)	24.1 (22.5-25.8)	65.8 (61.6-70.0)	157.2 (150.8-163.6)	409.3 (399.0-419.6)	1063.8 (1045.8-1081.8)	2091.5 (2055.1-2128.0)	2913.4 (2844.4-2982.3)

Table 1.3.1(b) Age-specific incidence number and rate (per 100,000 population) of cancer in females, 1968-2022

		0-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1968-1972	**No.**	388	474	790	1260	1306	699	170
	Age-specific rate (95% CI)	11.8 (10.7-13.0)	80.9 (73.6-88.2)	192.5 (179.1-205.9)	398.9 (376.9-420.9)	655.5 (620.0-691.1)	845.2 (782.5-907.9)	710.5 (603.7-817.3)
1973-1977	**No.**	503	536	902	1324	1594	1019	314
	Age-specific rate (95% CI)	15.2 (13.9-16.5)	78.6 (71.9-85.2)	186.9 (174.7-199.1)	379.4 (358.9-399.8)	684.5 (650.9-718.1)	941.0 (883.2-998.8)	989.0 (879.6-1098.4)
1978-1982	**No.**	560	672	1275	1591	1920	1465	514
	Age-specific rate (95% CI)	16.4 (15.1-17.8)	83.3 (77.0-89.6)	225.5 (213.1-237.9)	407.7 (387.6-427.7)	712.2 (680.4-744.1)	1036.1 (983.1-1089.2)	1221.3 (1115.8-1326.9)
1983-1987	**No.**	648	1079	1582	1948	2138	1936	750
	Age-specific rate (95% CI)	19.1 (17.6-20.6)	98.9 (93.0-104.8)	249.6 (237.3-261.9)	420.9 (402.2-439.6)	712.4 (682.2-742.6)	1080.0 (1031.9-1128.1)	1264.0 (1173.6-1354.5)
1988-1992	**No.**	651	1336	2180	2324	2591	2447	1243
	Age-specific rate (95% CI)	19.4 (18.0-20.9)	98.8 (93.5-104.1)	263.1 (252.1-274.2)	428.3 (410.9-445.7)	718.0 (690.4-745.7)	1155.1 (1109.3-1200.9)	1457.2 (1376.2-1538.2)
1993-1997	**No.**	620	1567	2984	2894	3122	2857	1732
	Age-specific rate (95% CI)	18.1 (16.7-19.6)	102.9 (97.8-108.0)	259.4 (250.1-268.7)	461.0 (444.3-477.8)	720.5 (695.2-745.8)	1218.9 (1174.2-1263.6)	1563.2 (1489.6-1636.8)
1998-2002	**No.**	695	1614	4070	4045	3612	3418	2441
	Age-specific rate (95% CI)	20.0 (18.5-21.5)	104.1 (99.1-109.2)	286.2 (277.4-295.0)	485.8 (470.8-500.7)	705.3 (682.3-728.3)	1180.7 (1141.1-1220.2)	1883.5 (1808.8-1958.2)
2003-2007	**No.**	789	1576	4353	5643	4307	4103	2880
	Age-specific rate (95% CI)	22.8 (21.2-24.4)	103.4 (98.3-108.5)	280.3 (272.0-288.6)	504.7 (491.5-517.9)	740.0 (717.9-762.1)	1174.6 (1138.7-1210.6)	1787.7 (1722.4-1853.0)
2008-2012	**No.**	887	1810	4793	6912	5827	5173	3997
	Age-specific rate (95% CI)	25.1 (23.4-26.7)	114.7 (109.4-120.0)	302.7 (294.2-311.3)	504.0 (492.1-515.9)	748.0 (728.8-767.2)	1197.5 (1164.8-1230.1)	1824.1 (1767.5-1880.6)
2013-2017	**No.**	990	1946	5357	8406	8819	6582	5329
	Age-specific rate (95% CI)	28.9 (27.1-30.7)	125.7 (120.1-131.3)	338.6 (329.6-347.7)	555.4 (543.5-567.3)	827.3 (810.0-844.5)	1278.6 (1247.7-1309.4)	1844.2 (1794.6-1893.7)
2018-2022	**No.**	989	2154	5706	8854	11194	8908	6815
	Age-specific rate (95% CI)	30.2 (28.3-32.1)	138.3 (132.5-144.2)	363.4 (353.9-372.8)	585.3 (573.1-597.5)	867.5 (851.4-883.6)	1281.1 (1254.5-1307.7)	1803.2 (1760.4-1846.0)

Figure 1.3.2(a) Distribution of age at diagnosis (%) of cancer in males, 1968-2022
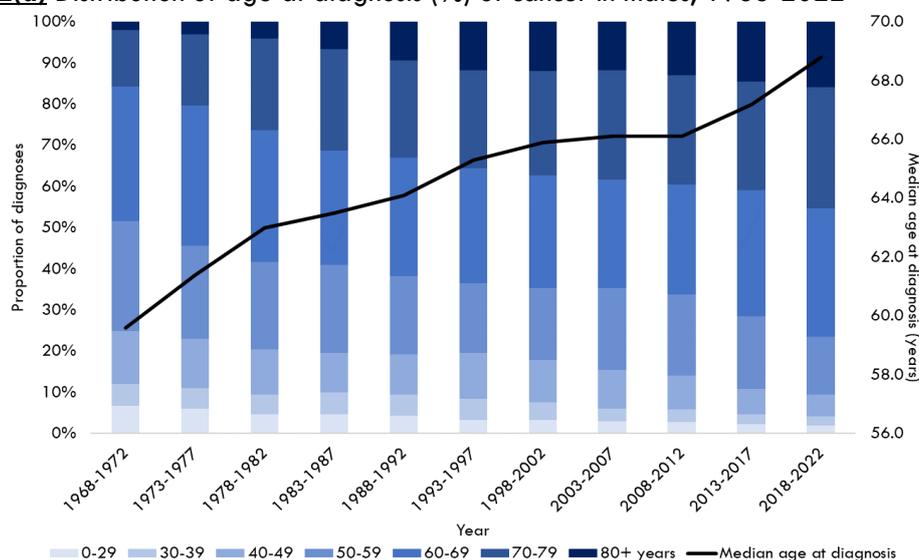
Table 1.3.2(a) Distribution of age at diagnosis (%) of cancer in males, 1968-2022

Age group	1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
0-29 years	6.8	6.0	4.7	4.6	4.3	3.3
30-39 years	5.3	5.0	4.7	5.3	5.2	5.2
40-49 years	12.7	12.0	11.1	9.7	9.7	11.0
50-59 years	26.8	22.6	21.1	21.4	19	17.0
60-69 years	32.7	34.0	32.1	27.7	28.7	28.0
70-79 years	13.7	17.3	22.2	24.6	23.7	23.9
80+ years	2.0	3.0	4.1	6.7	9.3	11.7
Median age at diagnosis	59.6	61.4	63.0	63.5	64.1	65.3

Age group	1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
0-29 years	3.3	2.9	2.8	2.3	1.9	
30-39 years	4.2	3.1	3.0	2.3	2.2	
40-49 years	10.3	9.5	8.2	6.3	5.3	
50-59 years	17.4	19.8	19.7	17.6	14.1	
60-69 years	27.4	26.4	26.8	30.6	31.1	
70-79 years	25.4	26.5	26.5	26.4	29.4	
80+ years	11.9	11.7	13.0	14.5	15.9	
Median age at diagnosis	65.9	66.1	66.1	67.2	68.8	

Figure 1.3.2(b) Distribution of age at diagnosis (%) of cancer in females, 1968-2022
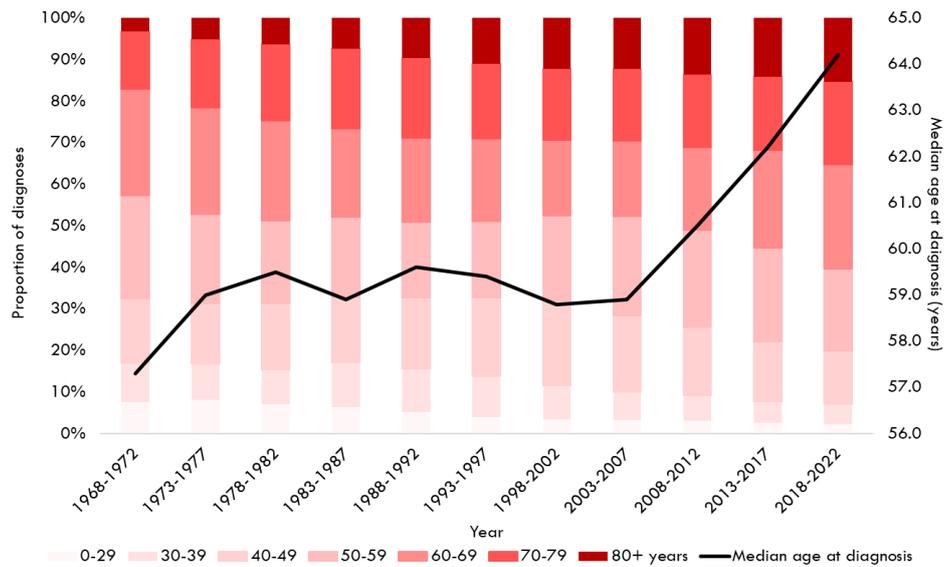
Table 1.3.2(b) Distribution of age at diagnosis (%) of cancer in females, 1968-2022

Age group	1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
0-29 years	7.6	8.1	7.0	6.4	5.1	3.9
30-39 years	9.3	8.7	8.4	10.7	10.5	9.9
40-49 years	15.5	14.6	15.9	15.7	17.1	18.9
50-59 years	24.8	21.4	19.9	19.3	18.2	18.3
60-69 years	25.7	25.7	24.0	21.2	20.3	19.8
70-79 years	13.7	16.5	18.3	19.2	19.2	18.1
80+ years	3.3	5.1	6.4	7.4	9.7	11.0
Median age at diagnosis	57.3	59.0	59.5	58.9	59.6	59.4
Age group	1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
0-29 years	3.5	3.3	3.0	2.6	2.2	
30-39 years	8.1	6.7	6.2	5.2	4.8	
40-49 years	20.5	18.4	16.3	14.3	12.8	
50-59 years	20.3	23.9	23.5	22.5	19.8	
60-69 years	18.2	18.2	19.8	23.6	25.1	
70-79 years	17.2	17.3	17.6	17.6	20.0	
80+ years	12.3	12.2	13.6	14.2	15.3	
Median age at diagnosis	58.8	58.9	60.5	62.2	64.2	

Figure 1.3.3(a) Age-specific mortality rate (per 100,000 population) of cancer in males, 1968-2022

Figure 1.3.3(b) Age-specific mortality rate (per 100,000 population) of cancer in females, 1968-2022

Table 1.3.3(a) Age-specific mortality number and rate (per 100,000 population) of cancer in males, 1968-2022

		0-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1968-1972	No.	180	148	438	984	1284	561	76
	Age-specific rate (95% CI)	5.2 (4.5-6.0)	24.5 (20.5-28.4)	92.6 (84.0-101.3)	281.7 (264.1-299.3)	631.9 (597.3-666.4)	944.8 (866.6-1023.0)	786.6 (609.7-963.4)
1973-1977	No.	251	217	624	1229	1879	972	158
	Age-specific rate (95% CI)	7.2 (6.3-8.1)	31.3 (27.1-35.5)	121.3 (111.8-130.8)	324.5 (306.4-342.7)	814.3 (777.4-851.1)	1172.7 (1099.0-1246.5)	1116.1 (942.0-1290.1)
1978-1982	No.	226	220	626	1377	2243	1556	295
	Age-specific rate (95% CI)	6.3 (5.5-7.1)	27.0 (23.4-30.5)	109.1 (100.5-117.6)	332.0 (314.5-349.6)	859.9 (824.3-895.4)	1351.8 (1284.6-1419.0)	1420.6 (1258.5-1582.7)
1983-1987	No.	214	291	623	1592	2162	2034	532
	Age-specific rate (95% CI)	6.0 (5.2-6.8)	26.1 (23.1-29.1)	97.5 (89.8-105.1)	335.4 (318.9-351.8)	741.7 (710.4-772.9)	1401.6 (1340.7-1462.5)	1598.7 (1462.8-1734.6)
1988-1992	No.	234	331	714	1646	2671	2413	1022
	Age-specific rate (95% CI)	6.6 (5.8-7.5)	23.7 (21.1-26.2)	84.4 (78.2-90.6)	302.1 (287.5-316.7)	762.7 (733.8-791.6)	1419.2 (1362.6-1475.8)	1985.5 (1863.8-2107.2)
1993-1997	No.	191	326	811	1485	2731	2625	1428
	Age-specific rate (95% CI)	5.4 (4.6-6.1)	21.1 (18.8-23.4)	68.8 (64.1-73.6)	237.6 (225.5-249.7)	663.2 (638.3-688.1)	1354.5 (1302.7-1406.3)	2106.2 (1997.0-2215.4)
1998-2002	No.	157	272	888	1701	3222	3363	1936
	Age-specific rate (95% CI)	4.4 (3.7-5.1)	17.8 (15.7-20.0)	61.3 (57.2-65.3)	204.6 (194.9-214.3)	672.1 (648.9-695.3)	1385.1 (1338.3-1431.9)	2514.3 (2402.3-2626.3)
2003-2007	No.	145	180	789	1989	2978	3629	1980
	Age-specific rate (95% CI)	4.1 (3.4-4.8)	12.4 (10.6-14.3)	49.9 (46.4-53.4)	176.7 (168.9-184.5)	548.3 (528.6-568.0)	1296.1 (1253.9-1338.2)	2129.0 (2035.3-2222.8)
2008-2012	No.	117	171	696	2199	3342	4088	2724
	Age-specific rate (95% CI)	3.3 (2.7-3.8)	11.6 (9.9-13.3)	44.0 (40.8-47.3)	158.5 (151.9-165.2)	450.4 (435.1-465.7)	1155.1 (1119.7-1190.5)	2162.7 (2081.5-2243.9)
2013-2017	No.	108	143	597	2257	4110	4473	3497
	Age-specific rate (95% CI)	3.1 (2.5-3.7)	10.2 (8.5-11.8)	39.2 (36.1-42.4)	148.1 (142.0-154.2)	397.4 (385.3-409.6)	1036.7 (1006.4-1067.1)	2022.0 (1954.9-2089.0)
2018-2022	No.	96	122	504	1761	4486	4980	4354
	Age-specific rate (95% CI)	2.8 (2.3-3.4)	8.6 (7.1-10.1)	34.5 (31.5-37.5)	118.4 (112.8-123.9)	355.6 (345.2-366.0)	821.9 (799.1-844.7)	1847.2 (1792.3-1902.1)

Table 1.3.3(b) Age-specific mortality number and rate (per 100,000 population) of cancer in females, 1968-2022

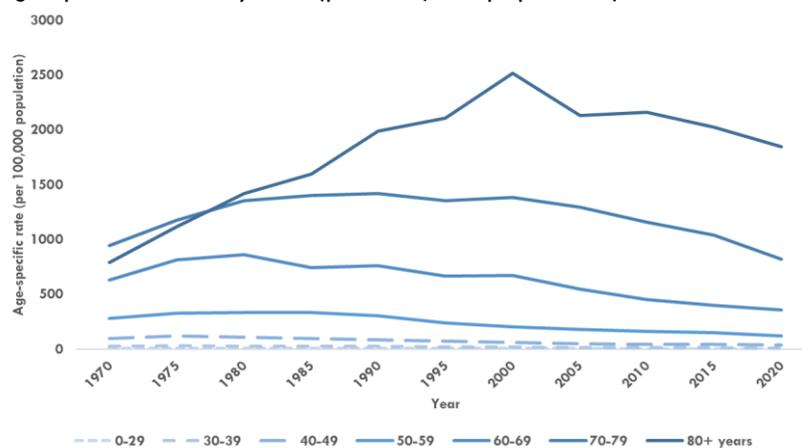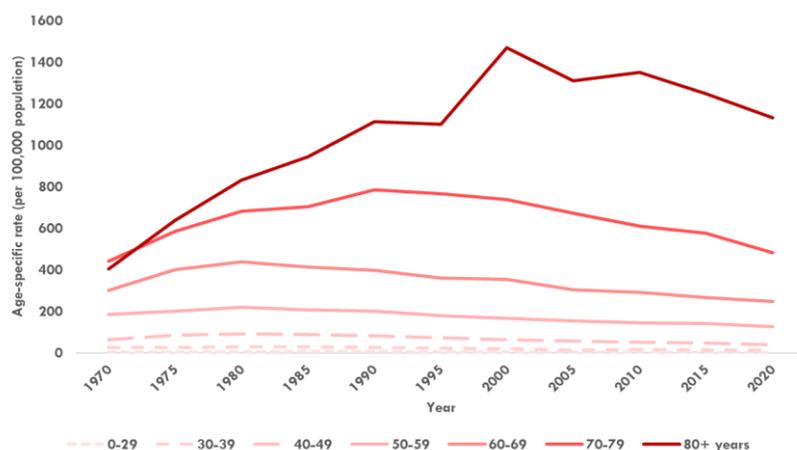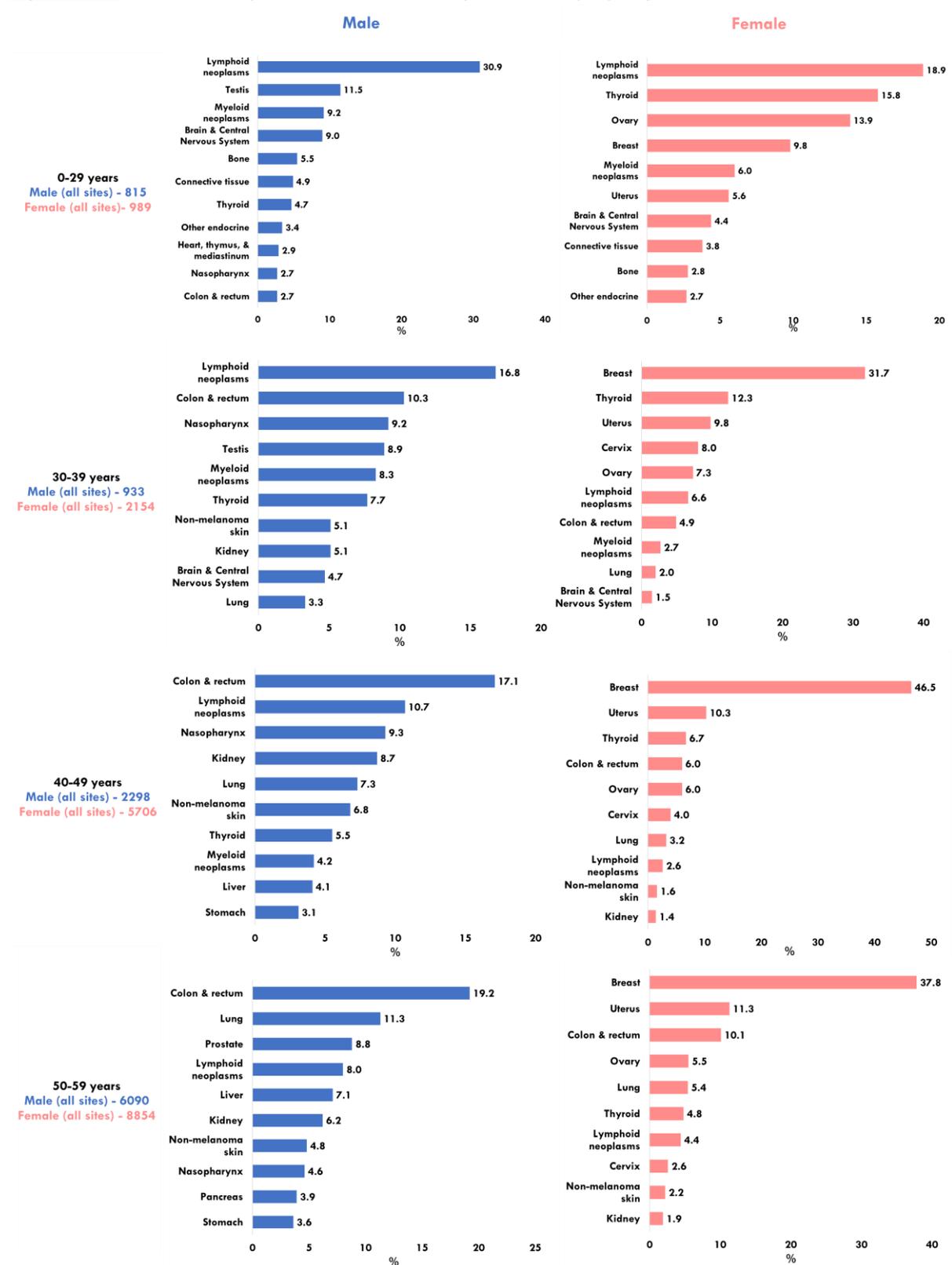|		0-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1968-1972	No.	127	148	262	590	597	366	97
	Age-specific rate (95% CI)	3.9 (3.2-4.5)	25.3 (21.2-29.3)	63.8 (56.1-71.6)	186.8 (171.7-201.9)	299.7 (275.6-323.7)	442.6 (397.2-487.9)	405.4 (324.7-486.1)
1973-1977	No.	159	176	410	706	937	633	203
	Age-specific rate (95% CI)	4.8 (4.1-5.5)	25.8 (22.0-29.6)	84.9 (76.7-93.2)	202.3 (187.4-217.2)	402.4 (376.6-428.1)	584.5 (539.0-630.1)	639.4 (551.4-727.3)
1978-1982	No.	174	231	514	859	1184	967	350
	Age-specific rate (95% CI)	5.1 (4.3-5.9)	28.6 (24.9-32.3)	90.9 (83.0-98.8)	220.1 (205.4-234.8)	439.2 (414.2-464.2)	683.9 (640.8-727.0)	831.7 (744.5-918.8)
1983-1987	No.	196	317	556	966	1244	1265	560
	Age-specific rate (95% CI)	5.8 (5.0-6.6)	29.1 (25.9-32.3)	87.7 (80.4-95.0)	208.7 (195.6-221.9)	414.5 (391.5-437.6)	705.7 (666.8-744.5)	943.8 (865.6-1022.0)
1988-1992	No.	187	354	683	1090	1435	1664	950
	Age-specific rate (95% CI)	5.6 (4.8-6.4)	26.2 (23.5-28.9)	82.4 (76.3-88.6)	200.9 (188.9-212.8)	397.7 (377.1-418.3)	785.5 (747.7-823.2)	1113.7 (1042.9-1184.5)
1993-1997	No.	155	338	854	1126	1562	1797	1222
	Age-specific rate (95% CI)	4.5 (3.8-5.3)	22.2 (19.8-24.6)	74.2 (69.3-79.2)	179.4 (168.9-189.9)	360.5 (342.6-378.4)	766.6 (731.2-802.1)	1102.9 (1041.1-1164.7)
1998-2002	No.	122	326	918	1390	1821	2138	1906
	Age-specific rate (95% CI)	3.5 (2.9-4.1)	21.0 (18.8-23.3)	64.6 (60.4-68.7)	166.9 (158.2-175.7)	355.6 (339.3-371.9)	738.5 (707.2-769.8)	1470.7 (1404.7-1536.7)
2003-2007	No.	105	227	882	1727	1777	2350	2113
	Age-specific rate (95% CI)	3.0 (2.5-3.6)	14.9 (13.0-16.8)	56.8 (53.0-60.5)	154.5 (147.2-161.7)	305.3 (291.1-319.5)	672.8 (645.6-700.0)	1311.6 (1255.7-1367.5)
2008-2012	No.	95	272	822	1977	2276	2639	2960
	Age-specific rate (95% CI)	2.7 (2.1-3.2)	17.2 (15.2-19.3)	51.9 (48.4-55.5)	144.1 (137.8-150.5)	292.2 (280.2-304.2)	610.9 (587.6-634.2)	1350.8 (1302.2-1399.5)
2013-2017	No.	77	187	740	2122	2837	2972	3604
	Age-specific rate (95% CI)	2.3 (1.7-2.8)	12.1 (10.4-13.8)	46.8 (43.4-50.1)	140.2 (134.2-146.2)	266.1 (256.3-275.9)	577.3 (556.6-598.1)	1247.2 (1206.5-1287.9)
2018-2022	No.	69	191	625	1887	3199	3344	4283
	Age-specific rate (95% CI)	2.1 (1.6-2.6)	12.3 (10.5-14.0)	39.8 (36.7-42.9)	124.7 (119.1-130.4)	247.9 (239.3-256.5)	480.9 (464.6-497.2)	1133.2 (1099.3-1167.2)

Figure 1.3.4 Ten most frequent incident cancers by sex and age group, 2018-2022

Male | Female

0-29 years
Male (all sites) - 815
Female (all sites)- 989

Male:
- Lymphoid neoplasms: 30.9
- Testis: 11.5
- Myeloid neoplasms: 9.2
- Brain & Central Nervous System: 9.0
- Bone: 5.5
- Connective tissue: 4.9
- Thyroid: 4.7
- Other endocrine: 3.4
- Heart, thymus, & mediastinum: 2.9
- Nasopharynx: 2.7
- Colon & rectum: 2.7

Female:
- Lymphoid neoplasms: 18.9
- Thyroid: 15.8
- Ovary: 13.9
- Breast: 9.8
- Myeloid neoplasms: 6.0
- Uterus: 5.6
- Brain & Central Nervous System: 4.4
- Connective tissue: 3.8
- Bone: 2.8
- Other endocrine: 2.7

30-39 years
Male (all sites) - 933
Female (all sites) - 2154

Male:
- Lymphoid neoplasms: 16.8
- Colon & rectum: 10.3
- Nasopharynx: 9.2
- Testis: 8.9
- Myeloid neoplasms: 8.3
- Thyroid: 7.7
- Non-melanoma skin: 5.1
- Kidney: 5.1
- Brain & Central Nervous System: 4.7
- Lung: 3.3

Female:
- Breast: 31.7
- Thyroid: 12.3
- Uterus: 9.8
- Cervix: 8.0
- Ovary: 7.3
- Lymphoid neoplasms: 6.6
- Colon & rectum: 4.9
- Myeloid neoplasms: 2.7
- Lung: 2.0
- Brain & Central Nervous System: 1.5

40-49 years
Male (all sites) - 2298
Female (all sites) - 5706

Male:
- Colon & rectum: 17.1
- Lymphoid neoplasms: 10.7
- Nasopharynx: 9.3
- Kidney: 8.7
- Lung: 7.3
- Non-melanoma skin: 6.8
- Thyroid: 5.5
- Myeloid neoplasms: 4.2
- Liver: 4.1
- Stomach: 3.1

Female:
- Breast: 46.5
- Uterus: 10.3
- Thyroid: 6.7
- Colon & rectum: 6.0
- Ovary: 6.0
- Cervix: 4.0
- Lung: 3.2
- Lymphoid neoplasms: 2.6
- Non-melanoma skin: 1.6
- Kidney: 1.4

50-59 years
Male (all sites) - 6090
Female (all sites) - 8854

Male:
- Colon & rectum: 19.2
- Lung: 11.3
- Prostate: 8.8
- Lymphoid neoplasms: 8.0
- Liver: 7.1
- Kidney: 6.2
- Non-melanoma skin: 4.8
- Nasopharynx: 4.6
- Pancreas: 3.9
- Stomach: 3.6

Female:
- Breast: 37.8
- Uterus: 11.3
- Colon & rectum: 10.1
- Ovary: 5.5
- Lung: 5.4
- Thyroid: 4.8
- Lymphoid neoplasms: 4.4
- Cervix: 2.6
- Non-melanoma skin: 2.2
- Kidney: 1.9

35

Male

Female

60-69 years
Male (all sites) - 13420
Female (all sites) - 11194

Male	%
Prostate	19.8
Colon & rectum	18.0
Lung	13.5
Liver	8.1
Lymphoid neoplasms	6.4
Kidney	4.3
Non-melanoma skin	3.8
Stomach	3.5
Pancreas	3.5
Myeloid neoplasms	2.7

Female	%
Breast	30.8
Colon & rectum	13.6
Lung	8.7
Uterus	8.2
Lymphoid neoplasms	4.9
Ovary	4.0
Pancreas	3.2
Non-melanoma skin	2.9
Thyroid	2.8
Stomach	2.5
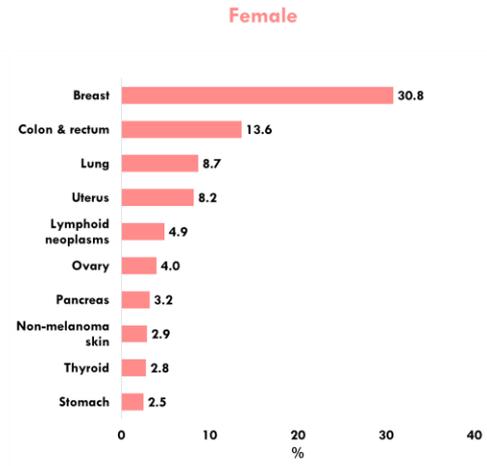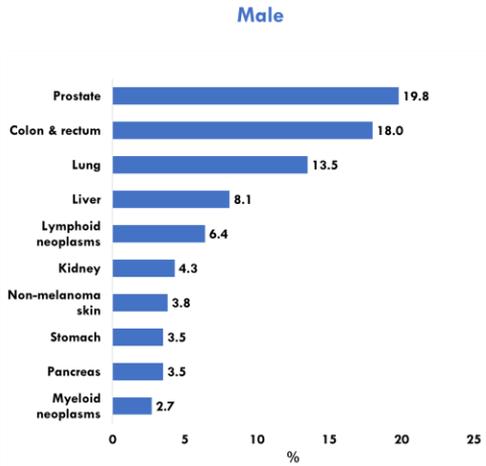
70-79 years
Male (all sites) - 12673
Female (all sites) - 8908

Male	%
Prostate	24.7
Lung	15.5
Colon & rectum	14.8
Liver	6.8
Lymphoid neoplasms	6.2
Non-melanoma skin	5.0
Stomach	4.0
Pancreas	3.6
Myeloid neoplasms	3.2
Kidney	3.1

Female	%
Breast	22.3
Colon & rectum	16.4
Lung	12.0
Lymphoid neoplasms	6.1
Non-melanoma skin	5.2
Uterus	4.6
Pancreas	4.5
Liver	3.9
Stomach	3.4
Myeloid neoplasms	2.6

80 years+
Male (all sites) - 6867
Female (all sites) - 6815

Male	%
Prostate	16.4
Lung	15.8
Colon & rectum	14.5
Non-melanoma skin	8.3
Liver	8.0
Lymphoid neoplasms	6.0
Stomach	5.9
Myeloid neoplasms	4.0
Pancreas	3.5
Bladder	2.9

Female	%
Colon & rectum	20.4
Breast	14.3
Lung	11.5
Non-melanoma skin	9.7
Lymphoid neoplasms	5.2
Liver	5.2
Stomach	4.8
Pancreas	4.8
Myeloid neoplasms	3.7
Gallbladder	2.2

Table 1.3.4 Ten most frequent incident cancers by sex and age group, 2018-2022

Age group	Rank	Male Site	Male No.	Male %	Female Site	Female No.	Female %
0-29 years	1	Lymphoid neoplasms	252	30.9	Lymphoid neoplasms	187	18.9
	2	Testis	94	11.5	Thyroid	156	15.8
	3	Myeloid neoplasms	75	9.2	Ovary	137	13.9
	4	Brain & Central Nervous System	73	9.0	Breast	97	9.8
	5	Bone	45	5.5	Myeloid neoplasms	59	6.0
	6	Connective tissue	40	4.9	Uterus	55	5.6
	7	Thyroid	38	4.7	Brain & Central Nervous System	44	4.4
	8	Other endocrine	28	3.4	Connective tissue	38	3.8
	9	Heart, thymus, & mediastinum	24	2.9	Bone	28	2.8
	10	Nasopharynx	22	2.7	Other endocrine	27	2.7
	10	Colon & rectum	22	2.7			
		All sites	**815**	**100.0**	**All sites**	**989**	**100.0**
30-39 years	1	Lymphoid neoplasms	157	16.8	Breast	683	31.7
	2	Colon & rectum	96	10.3	Thyroid	264	12.3
	3	Nasopharynx	86	9.2	Uterus	212	9.8
	4	Testis	83	8.9	Cervix	173	8.0
	5	Myeloid neoplasms	77	8.3	Ovary	158	7.3
	6	Thyroid	72	7.7	Lymphoid neoplasms	142	6.6
	7	Kidney	48	5.1	Colon & rectum	105	4.9
	8	Non-melanoma skin	48	5.1	Myeloid neoplasms	58	2.7
	9	Brain & Central Nervous System	44	4.7	Lung	44	2.0
	10	Lung	31	3.3	Brain & Central Nervous System	32	1.5
		All sites	**933**	**100.0**	**All sites**	**2154**	**100.0**
40-49 years	1	Colon & rectum	393	17.1	Breast	2656	46.5
	2	Lymphoid neoplasms	246	10.7	Uterus	589	10.3
	3	Nasopharynx	214	9.3	Thyroid	381	6.7
	4	Kidney	199	8.7	Colon & rectum	342	6.0
	5	Lung	167	7.3	Ovary	340	6.0
	6	Non-melanoma skin	156	6.8	Cervix	230	4.0
	7	Thyroid	127	5.5	Lung	181	3.2
	8	Myeloid neoplasms	96	4.2	Lymphoid neoplasms	151	2.6
	9	Liver	94	4.1	Non-melanoma skin	94	1.6
	10	Stomach	72	3.1	Kidney	82	1.4
		All sites	**2298**	**100.0**	**All sites**	**5706**	**100.0**
50-59 years	1	Colon & rectum	1168	19.2	Breast	3345	37.8
	2	Lung	687	11.3	Uterus	999	11.3
	3	Prostate	538	8.8	Colon & rectum	898	10.1
	4	Lymphoid neoplasms	489	8.0	Ovary	487	5.5
	5	Liver	433	7.1	Lung	475	5.4
	6	Kidney	378	6.2	Thyroid	428	4.8
	7	Non-melanoma skin	295	4.8	Lymphoid neoplasms	387	4.4
	8	Nasopharynx	282	4.6	Cervix	228	2.6
	9	Pancreas	235	3.9	Non-melanoma skin	192	2.2
	10	Stomach	222	3.6	Kidney	166	1.9
		All sites	**6090**	**100.0**	**All sites**	**8854**	**100.0**
60-69 years	1	Prostate	2663	19.8	Breast	3448	30.8
	2	Colon & rectum	2411	18.0	Colon & rectum	1521	13.6
	3	Lung	1813	13.5	Lung	973	8.7
	4	Liver	1089	8.1	Uterus	914	8.2
	5	Lymphoid neoplasms	856	6.4	Lymphoid neoplasms	551	4.9
	6	Kidney	577	4.3	Ovary	447	4.0
	7	Non-melanoma skin	513	3.8	Pancreas	356	3.2
	8	Pancreas	467	3.5	Non-melanoma skin	330	2.9
	9	Stomach	467	3.5	Thyroid	310	2.8
	10	Myeloid neoplasms	359	2.7	Stomach	278	2.5
		All sites	**13420**	**100.0**	**All sites**	**11194**	**100.0**

Age group	Rank	Site (Male)			Site (Female)		
70-79 years	1	Prostate	3135	24.7	Breast	1989	22.3
	2	Lung	1969	15.5	Colon & rectum	1463	16.4
	3	Colon & rectum	1879	14.8	Lung	1066	12.0
	4	Liver	857	6.8	Lymphoid neoplasms	546	6.1
	5	Lymphoid neoplasms	786	6.2	Non-melanoma skin	460	5.2
	6	Non-melanoma skin	634	5.0	Uterus	408	4.6
	7	Stomach	509	4.0	Pancreas	403	4.5
	8	Pancreas	450	3.6	Liver	345	3.9
	9	Myeloid neoplasms	403	3.2	Stomach	302	3.4
	10	Kidney	395	3.1	Myeloid neoplasms	233	2.6
		All sites	**12673**	**100.0**	**All sites**	**8908**	**100.0**
80+ years	1	Prostate	1123	16.4	Colon & rectum	1393	20.4
	2	Lung	1083	15.8	Breast	975	14.3
	3	Colon & rectum	994	14.5	Lung	786	11.5
	4	Non-melanoma skin	567	8.3	Non-melanoma skin	658	9.7
	5	Liver	548	8.0	Lymphoid neoplasms	354	5.2
	6	Lymphoid neoplasms	410	6.0	Liver	351	5.2
	7	Stomach	402	5.9	Stomach	330	4.8
	8	Myeloid neoplasms	275	4.0	Pancreas	325	4.8
	9	Pancreas	241	3.5	Myeloid neoplasms	251	3.7
	10	Bladder	202	2.9	Gallbladder	152	2.2
		All sites	**6867**	**100.0**	**All sites**	**6815**	**100.0**

1.3 Age group trends for incidence and mortality of cancer, 1968-2022

KEY POINTS

- Among males, the age-specific incidence of cancer had increased most prominently in the youngest (0-29 years) and oldest (80 years and above) age groups, from 13.9 to 24.1 and 1438.6 to 2913.4 per 100,000 population respectively over the period 1968-1972 to 2018-2022; but cancer incidence in males aged 40-69 had instead decreased over time during this period.

- However, age-specific cancer incidence increased for all females regardless of age group, with the youngest and oldest age groups (0-29 and 80 years and above) both registering increases of about 2.5 times over this period – 11.8 to 30.2 per 100,000 population for the former and 710.5 to 1803.2 per 100,000 population for the latter.

- Despite the trend of increasing cancer incidence among younger age groups, older individuals still primarily comprise the majority of diagnosed cases, with a shift towards a greater proportion of cancer diagnoses among the older age groups over time. The proportion of diagnoses at the age of 70 years and above had risen from 15.7% to 45.3% for males, and from 17.0% to 35.3% in females during 1968-1972 to 2018-2022.

- Age-specific cancer mortality rates dropped for all age groups among males except those aged 80 years and above, which more than doubled from 786.6 to 1847.2 per 100,000 population in 1968-1972 and 2018-2022 respectively. Likewise, for females, age-specific cancer mortality registered increases only among older individuals – rising from 442.6 to 480.9 per 100,000 population for those aged 70-79 years, and 405.4 to 1133.2 per 100,000 population among those age 80 years and older.

- Nevertheless, for all age groups of both sexes , age-specific cancer mortality rates have been seeing a downward trend from 1998-2002 onwards, after reaching peaks in the years prior.

- In 2018-2022, lymphoid neoplasms were the most common diagnosis in younger males while prostate, colorectal, and lung cancers were more common among older males. Breast cancer was the most common diagnosis in females aged 30 – 79 years; colorectal and lung cancers were also common among older females.

(2) TRENDS IN CANCER SURVIVAL, 1968-2022

2.1 Five-year age-standardised relative survival (ASRS) of cancer, 1968-2022

2.1.1 Trends by sex

The five-year age-standardised relative survival (ASRS) of all cancers had improved for males and females over the years (Figure 2.1.1, Table 2.1.1). The five-year ASRS increased from 13.2% to 56.6% for males from 1973-1977 to 2018-2022 and rose from 28.0% to 63.7% for females over the same period. Notably, the five-year ASRS in every five-year period was higher for females than for males.

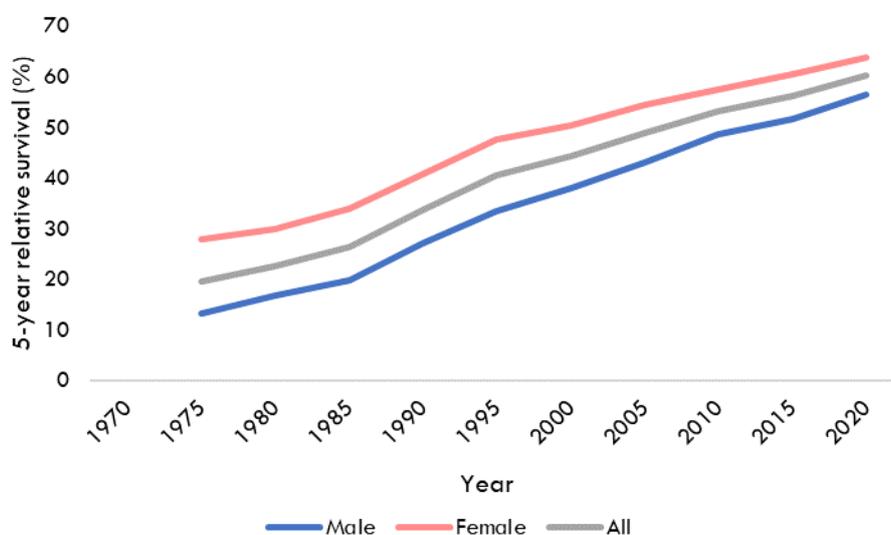**Figure 2.1.1** Five-year age-standardised relative survival rate (%) of cancer by sex, 1968-2022

Table 2.1.1 Five-year age-standardised relative survival rate (%) of cancer by sex, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Male	**5-year ASRS**	-	13.2	16.8	19.9	27.1	33.4
	(95% CI)	-	(12.3-14.1)	(15.9-17.7)	(19.0-20.8)	(26.2-28.1)	(32.5-34.4)
Female	**5-year ASRS**	-	28.0	30.0	34.1	40.8	47.7
	(95% CI)	-	(26.6-29.5)	(28.7-31.3)	(32.9-35.2)	(39.8-41.9)	(46.7-48.6)
All	**5-year ASRS**	-	19.5	22.6	26.4	33.8	40.5
	(95% CI)	-	(18.7-20.3)	(21.8-23.4)	(25.7-27.2)	(33.1-34.5)	(39.8-41.1)
		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Male	**5-year ASRS**	38.1	43.1	48.7	51.6	**56.6**	
	(95% CI)	(37.2-38.9)	(42.3-43.9)	(48.0-49.5)	(51.0-52.3)	**(56.0-57.2)**	
Female	**5-year ASRS**	50.5	54.5	57.4	60.5	**63.7**	
	(95% CI)	(49.7-51.3)	(53.8-55.3)	(56.8-58.1)	(60.0-61.1)	**(63.2-64.2)**	
All	**5-year ASRS**	44.4	49.0	53.2	56.3	**60.3**	
	(95% CI)	(43.8-45.0)	(48.4-49.5)	(52.7-53.7)	(55.8-56.7)	**(59.9-60.7)**	

2.1.2 Trends by ethnicity

From 1973-1977 onwards, the five-year ASRS of cancer has increased for all three ethnic groups (Figure 2.1.2, Table 2.1.2). From 1973-1977 to 2018-2022, the five-year ASRS of cancer rose from 19.6% to 61.5%, 17.0% to 46.7%, and 24.6% to 58.2% for the Chinese, Malays and Indians respectively. Aside from some fluctuation in the five-year ASRS during the earlier time periods, the survival rates of cancer

for the Chinese and Indians remained fairly similar. However, the Malays consistently had the lowest five-year ASRS throughout the years.

Figure 2.1.2 Five-year age-standardised relative survival rate (%) of cancer by ethnicity, 1968-2022
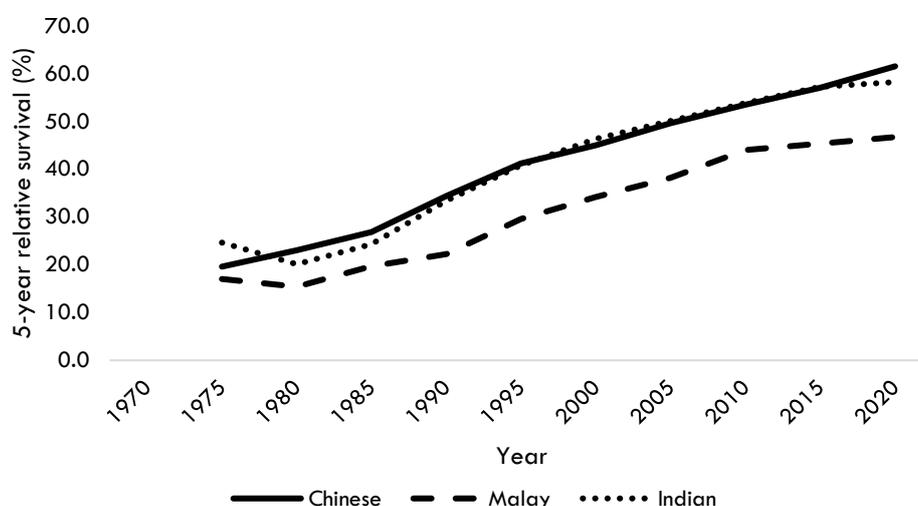

Table 2.1.2 Five-year age-standardised relative survival rate (%) of cancer by ethnicity, 1968-2022

		1968-1972	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997
Chinese	5-year ASRS	-	19.6	23.0	26.8	34.4	41.2
	(95% CI)	-	(18.7-20.5)	(22.2-23.8)	(26.0-27.6)	(33.7-35.2)	(40.5-41.9)
Malay	5-year ASRS	-	17.0	15.4	19.7	22.2	29.6
	(95% CI)	-	(13.8-20.6)	(12.8-18.1)	(17.3-22.3)	(19.8-24.6)	(27.5-31.8)
Indian	5-year ASRS	-	24.6	20.1	24.3	33.4	40.8
	(95% CI)	-	(19.9-29.6)	(16.8-23.8)	(20.7-28.2)	(29.7-37.2)	(37.4-44.3)
		1998-2002	2003-2007	2008-2012	2013-2017	2018-2022	
Chinese	5-year ASRS	45.0	49.6	53.5	57.0	**61.5**	
	(95% CI)	(44.3-45.6)	(49.0-50.1)	(53.0-54.1)	(56.5-57.4)	**(61.1-61.9)**	
Malay	5-year ASRS	34.2	38.2	44.0	45.3	**46.7**	
	(95% CI)	(32.3-36.1)	(36.5-39.9)	(42.4-45.5)	(44.0-46.6)	**(45.6-47.9)**	
Indian	5-year ASRS	46.3	50.1	53.8	57.2	**58.2**	
	(95% CI)	(43.4-49.2)	(47.5-52.7)	(51.5-56.0)	(55.3-59.1)	**(56.5-59.9)**	

2.1.3 Trends by age group

The five-year ASRS of cancer had seen an overall increase across all the different age groups. This was so even among the oldest age groups (70-79 years and 80 years and above), where relative survival rose from 13.3% in 1973-1977 to 57.1% in 2018-2022 for the former and from 22.4% to 38.6% over the same period for the latter (Figure 2.1.3(a), Table 2.1.3). In the 2018-2022 period, the five-year ASRS of cancer was observed to decline with age, particularly after the age of 49 years, dropping from 88.1% among individuals under 30 years of age to 71.9% for those aged 50-59 years, and further dropping to 38.6% in those aged 80 years and above (Figure 2.1.3(b), Table 2.1.3).

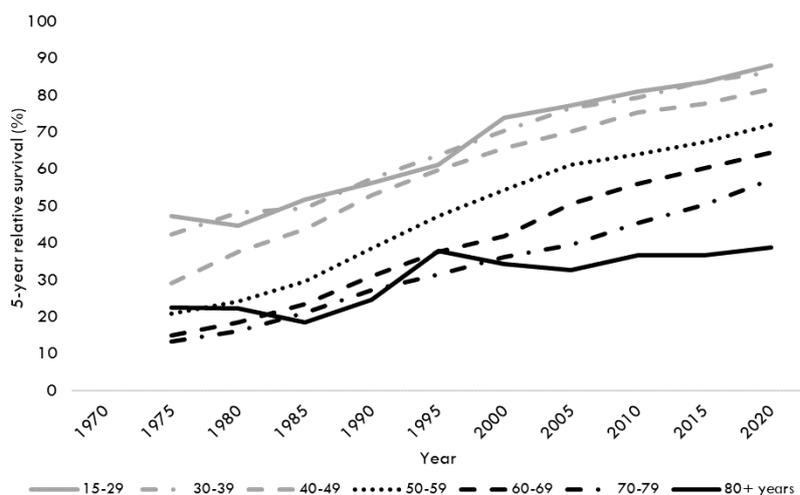**Figure 2.1.3(a)** Five-year age-specific relative survival rate (%) of cancer by age group, 1968-2022

Figure 2.1.3(b) Five-year age-specific relative survival rate (%) of cancer by age group, 2018-2022
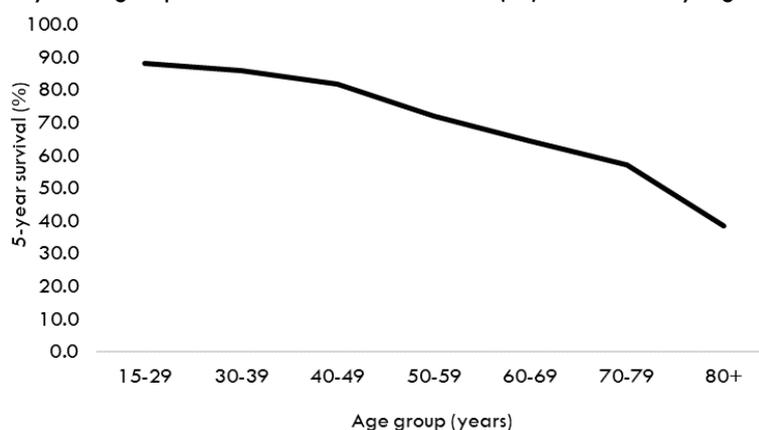

Table 2.1.3 Five-year age-specific relative survival rate (%) of cancer by age group, 1968-2022

		15-29 years	30-39 years	40-49 years	50-59 years	60-69 years	70-79 years	80+ years
1968-1972	5-year ASRS	-	-	-	-	-	-	-
	(95% CI)	-	-	-	-	-	-	-
1973-1977	5-year ASRS	47.2	42.2	29.1	20.7	15.0	13.3	22.4
	(95% CI)	(42.7-51.7)	(38.5-45.8)	(26.8-31.4)	(19.1-22.3)	(13.8-16.3)	(11.5-15.3)	(15.0-31.7)
1978-1982	5-year ASRS	44.5	48.2	37.5	24.1	18.4	16.0	22.2
	(95% CI)	(40.6-48.3)	(44.9-51.4)	(35.3-39.8)	(22.5-25.7)	(17.1-19.7)	(14.4-17.8)	(16.9-28.5)
1983-1987	5-year ASRS	51.7	49.4	43.6	29.4	23.3	21.0	18.5
	(95% CI)	(47.7-55.6)	(46.6-52.2)	(41.4-45.7)	(27.9-31.0)	(21.9-24.7)	(19.4-22.7)	(15.0-22.5)
1988-1992	5-year ASRS	56.2	57.4	52.9	38.5	31.0	27.2	24.6
	(95% CI)	(52.4-59.9)	(55.0-59.8)	(51.0-54.8)	(36.9-40.0)	(29.6-32.4)	(25.6-28.8)	(21.2-28.3)
1993-1997	5-year ASRS	61.1	63.7	59.8	47.3	37.6	31.3	37.8
	(95% CI)	(57.2-64.8)	(61.6-65.8)	(58.2-61.4)	(45.8-48.8)	(36.3-38.9)	(29.8-32.8)	(34.6-41.2)
1998-2002	5-year ASRS	73.9	70.2	65.7	54.2	41.7	36.1	34.2
	(95% CI)	(70.6-77.0)	(68.3-72.1)	(64.4-67.0)	(52.9-55.5)	(40.6-42.9)	(34.8-37.4)	(32.0-36.5)
2003-2007	5-year ASRS	77.2	76.4	70.1	61.0	50.5	39.5	32.5
	(95% CI)	(74.2-80.0)	(74.5-78.1)	(68.9-71.3)	(59.9-62.0)	(49.4-51.6)	(38.3-40.7)	(30.5-34.4)
2008-2012	5-year ASRS	80.8	79.3	75.2	63.9	55.9	45.4	36.5
	(95% CI)	(78.1-83.3)	(77.5-80.9)	(74.1-76.3)	(63.0-64.9)	(54.9-56.9)	(44.2-46.5)	(34.8-38.3)
2013-2017	5-year ASRS	83.6	83.7	77.7	67.2	60.1	50.2	36.7
	(95% CI)	(81.2-85.7)	(82.2-85.1)	(76.7-78.7)	(66.4-68.1)	(59.3-60.9)	(49.2-51.2)	(35.3-38.1)
2018-2022	**5-year ASRS**	**88.1**	**86.0**	**81.7**	**71.9**	**64.4**	**57.1**	**38.6**
	(95% CI)	**(86.1-89.8)**	**(84.7-87.3)**	**(80.8-82.6)**	**(71.2-72.7)**	**(63.7-65.1)**	**(56.2-57.9)**	**(37.4-39.8)**

2.1 Five-year relative survival of cancer by sex, ethnicity and age group, 1968-2022

KEY POINTS

- From 1973-1977 to 2018-2022, the five-year relative survival rate had improved significantly for both males and females (increased from 13.2% to 56.6% and 28.0% to 63.7% respectively). Females had a consistently higher survival rate compared to males throughout this period.
- While the five-year relative survival rate improved for all three ethnic groups over the years, Malays were found to consistently have the lowest survival rates throughout the years (Chinese: rose from 19.6% to 61.5% from 1973-1977 to 2018-2022; Malay: 17% to 46.7%; Indian: 24.6% to 58.2%).
- The five-year relative survival rates decreased with age. In 2018-2022, for individuals aged 15-29 years, it was 88.1%, compared to 38.6% for those aged 80 years and above. Nevertheless, survival had increased for all age groups since 1968-1972.

2.2 Five-year age-standardised relative survival rate (%) for ten most frequent incident cancers by sex, 2018-2022

Of the ten most frequent incident cancers for males as well as females in 2018-2022, non-melanoma skin cancer had the highest five-year ASRS, at 93.2% and 97.5% respectively (Figure 2.2.1, Figure 2.2.2). Prostate cancer in males as well as breast and thyroid cancers in females also had high survival rates that exceeded 80%. Cancers of the stomach, liver, lung, and pancreas had poorer survival rates on the whole. Of the ten most frequent incident cancers among males, pancreatic cancer had the lowest five-year ASRS at 13.4% followed by lung and liver cancers at 21.9% and 26.8% respectively. Pancreatic cancer also had the lowest five-year ASRS among the top ten most commonly diagnosed cancers in females at 13.7%, followed by lung and stomach cancers at 37.8% and 42.4% respectively.

Figure 2.2.1 Five-year age-standardised relative survival rate (%) for ten most frequent incident cancers in males, 2018-2022
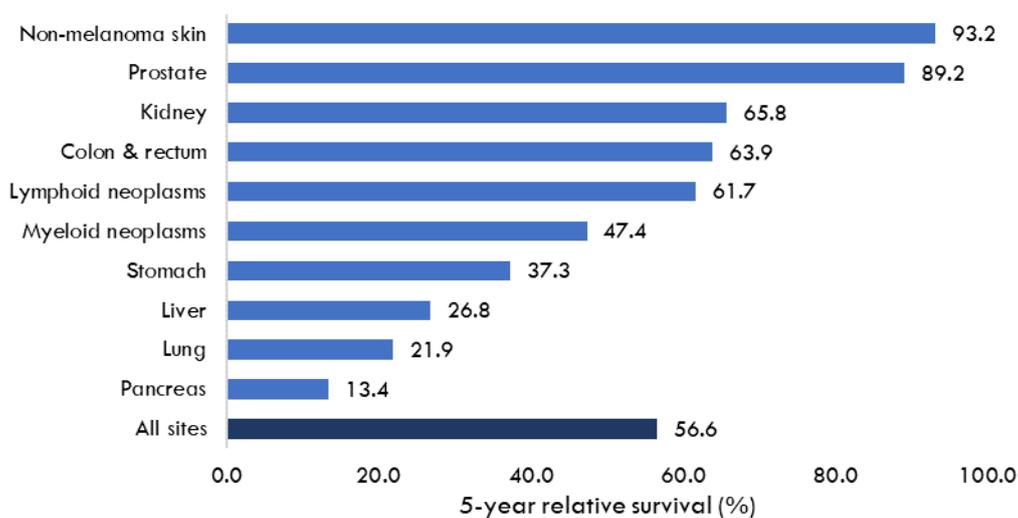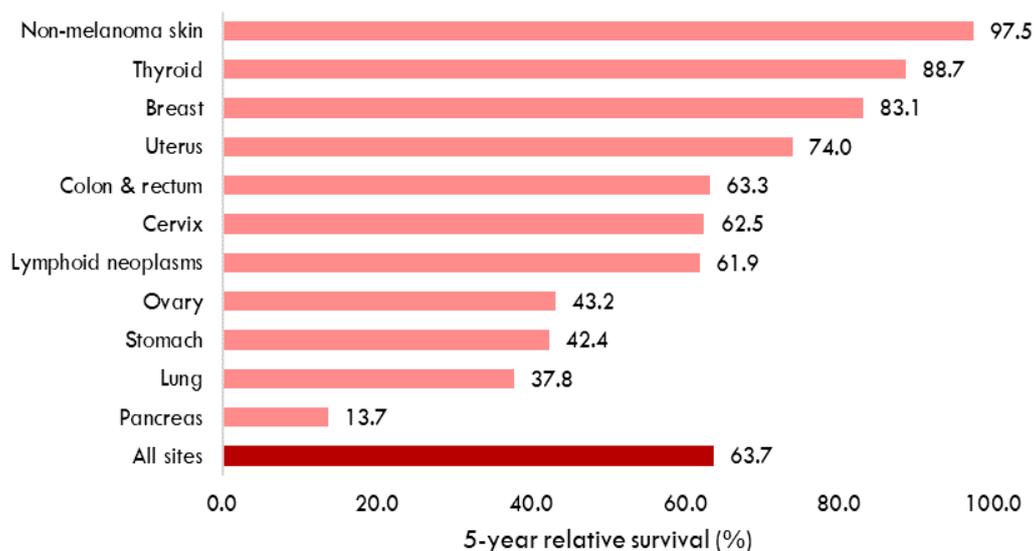

Figure 2.2.2 Five-year age-standardised relative survival rate (%) for ten most frequent incident cancers in females, 2018-2022

2.2 Five-year relative survival of ten most frequent incident cancers by sex

KEY POINTS

- Non-melanoma skin cancer had the highest five-year survival rates among the most common incident cancers in both males (93.2%) and females (97.5%) for the period 2018-2022.
- The five-year relative survival rates of prostate cancer in males (89.2%) as well as thyroid and breast cancers in females (88.7% and 83.1% respectively) were the next highest among the common incident cancers for 2018-2022.
- Among the most common incident cancers for 2018-2022, pancreatic, lung, and liver cancers had the poorest survival rates for males (13.4%, 21.9% and 26.8% respectively); while pancreatic, lung, and stomach cancers had the lowest survival rates for females (13.7%, 37.8% and 42.4% respectively).

2.3 Age-standardised relative survival rate (%) five years following diagnosis for ten most frequent incident cancers by sex, 2018-2022

While the ASRS of cancer for both sexes decreased with each year post-diagnosis, the survival for some cancers declined more rapidly for every additional year post-diagnosis in comparison to others. Overall, the cancer survival rate for each year following diagnosis for all cancers was better among for females compared than males.

Among males, the one-year survival rate for all cancers was 75.5%, and by the five-year mark, this had decreased gradually to 56.6% (Figure 2.3.1, Table 2.3.1). Prostate and non-melanoma skin cancers had the highest survival rate at every one-year interval after diagnosis (97.9% and 97.1% at one year, and 89.2% and 93.2% at five years post-diagnosis respectively). Pancreatic, lung, and liver cancers had the poorest survival rates among males for each year after diagnosis (37.2%, 51.7% and 52.3% at one year and 13.4%, 21.9% and 26.8% respectively at five years), with the most rapid deterioration occurring between the first and second year.

For females, the ASRS for all cancers declined gradually from 80.2% at the one-year mark to 63.7% after five years (Figure 2.3.2, Table 2.3.2). Non-melanoma skin, breast, and thyroid cancers had the best survival rates out of the most frequent incident cancers among females (98.8%, 95.3% and 92.5% at one year; and 97.5%, 83.1% and 88.7% at five years respectively), with the survival rate for non-melanoma skin cancer being consistently the highest over the five years following diagnosis. In contrast, pancreatic, stomach and lung cancers had consistently poorer survival rates than other commonly diagnosed cancers in females in the five years following diagnosis (41.0%, 63.3%, and 71.4% at one year; and 13.7%, 42.4% and 37.8% respectively at five years), with the most rapid declines observed between the first and second year.

Figure 2.3.1 Age-standardised relative survival rate (%) five years following diagnosis for ten most frequent incident cancers in males, 2018-2022

Figure 2.3.2 Age-standardised relative survival rate (%) five years following diagnosis for ten most frequent incident cancers in females, 2018-2022

Table 2.3.1 Age-standardised relative survival rate (%) five years following diagnosis for ten most frequent incident cancers in males, 2018-2022

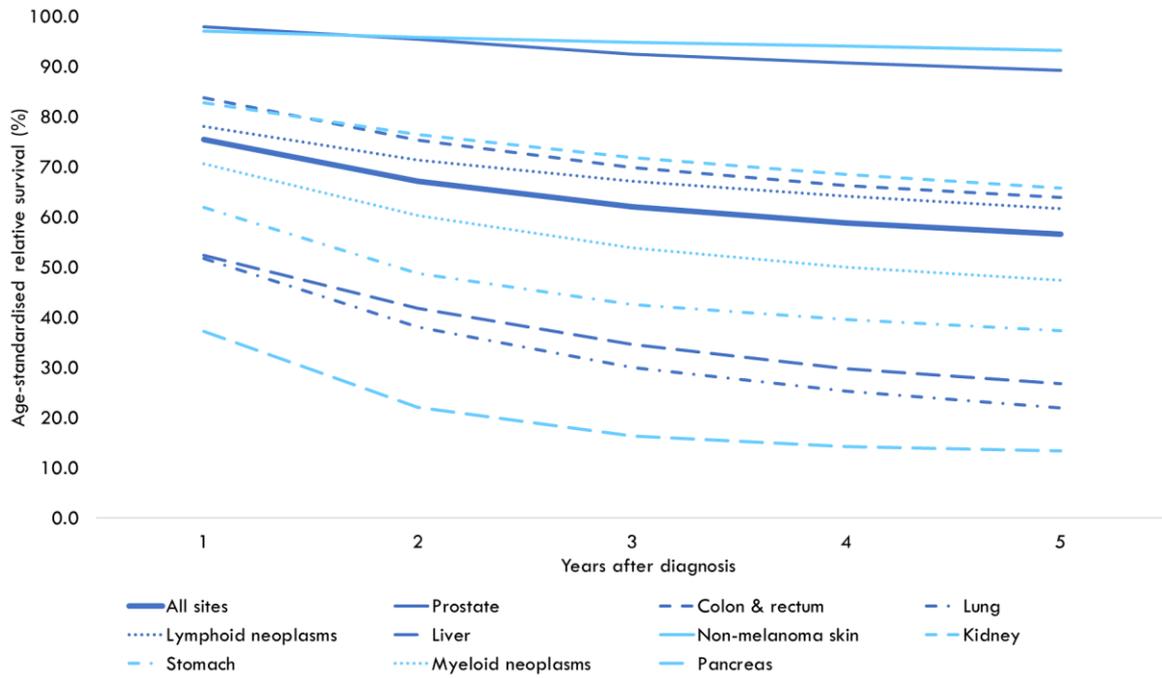|		Years after diagnosis				
		1	2	3	4	5
Male	Prostate	97.9 (97.3-98.4)	95.4 (94.6-96.2)	92.5 (91.5-93.5)	90.7 (89.6-91.8)	89.2 (87.9-90.5)
	Colon & rectum	83.8 (82.8-84.8)	75.3 (74.2-76.5)	69.9 (68.6-71.1)	66.2 (64.8-67.5)	63.9 (62.5-65.3)
	Lung	51.7 (50.3-53.1)	38.1 (36.8-39.5)	30.0 (28.7-31.3)	25.3 (24.0-26.6)	21.9 (20.7-23.2)
	Lymphoid neoplasms	78.1 (76.5-79.6)	71.4 (69.6-73.2)	67.1 (65.1-69.0)	64.1 (62.0-66.1)	61.7 (59.5-63.8)
	Liver	52.3 (50.4-54.2)	41.8 (40.0-43.7)	34.6 (32.8-36.5)	29.7 (27.9-31.5)	26.8 (25.0-28.6)
	Non-melanoma skin	97.1 (96.0-98.1)	95.8 (94.3-97.1)	94.8 (92.9-96.4)	94.1 (92.1-96.1)	93.2 (91.0-95.4)
	Kidney	82.8 (80.8-84.6)	76.4 (74.2-78.5)	71.8 (69.4-74.1)	68.5 (65.9-70.9)	65.8 (63.1-68.4)
	Stomach	61.9 (59.4-64.3)	48.8 (46.2-51.3)	42.6 (40.0-45.2)	39.5 (36.9-42.1)	37.3 (34.7-40.0)
	Myeloid neoplasms	70.6 (68.1-72.9)	60.3 (57.6-62.9)	53.8 (51.0-56.5)	50.0 (47.2-52.8)	47.4 (44.5-50.2)
	Pancreas	37.2 (34.7-39.7)	22.0 (19.9-24.2)	16.4 (14.5-18.5)	14.2 (12.3-16.2)	13.4 (11.5-15.4)
	All sites	**75.5 (75.1-76.0)**	**67.1 (66.6-67.6)**	**62.0 (61.5-62.6)**	**58.8 (58.3-59.4)**	**56.6 (56.0-57.2)**

Table 2.3.2 Age-standardised relative survival rate (%) five years following diagnosis for ten most frequent incident cancers in females, 2018-2022

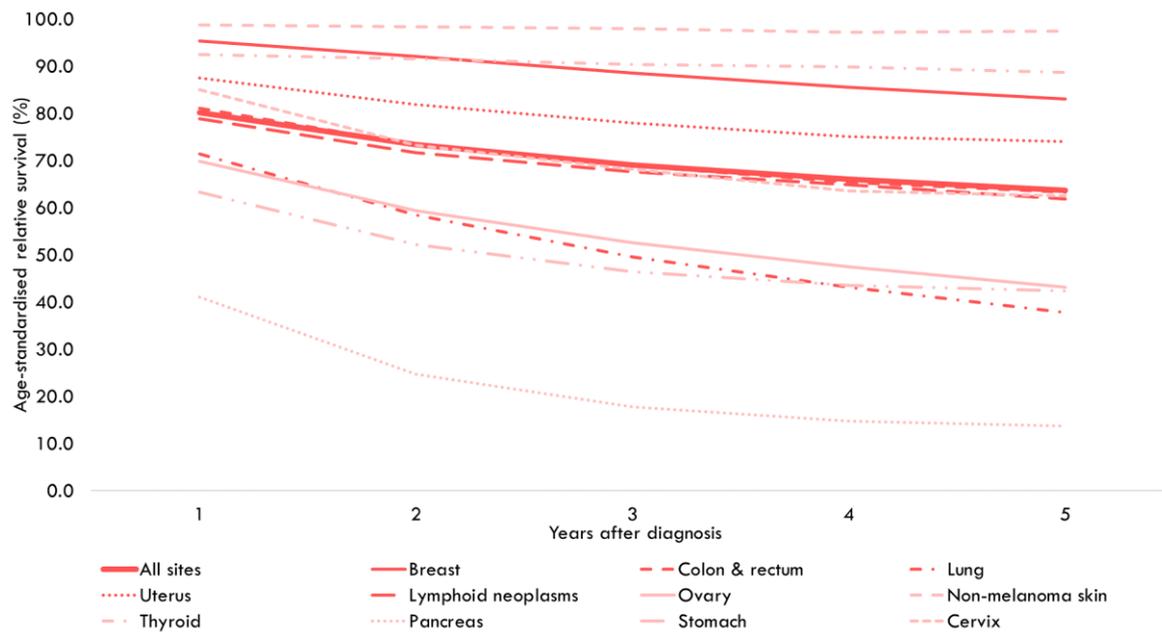|		Years after diagnosis				
		1	2	3	4	5
Female	Breast	95.3 (94.9-95.7)	92.1 (91.6-92.6)	88.5 (87.9-89.1)	85.5 (84.7-86.2)	83.1 (82.3-83.9)
	Colon & rectum	81.1 (80.0-82.2)	73.4 (72.1-74.7)	68.9 (67.6-70.3)	65.4 (64.0-66.8)	63.3 (61.8-64.8)
	Lung	71.4 (69.8-73.0)	58.5 (56.8-60.3)	49.6 (47.7-51.4)	43.2 (41.4-45.1)	37.8 (35.9-39.7)
	Uterus	87.5 (86.4-88.6)	81.9 (80.5-83.2)	78.0 (76.5-79.5)	75.1 (73.5-76.7)	74.0 (72.3-75.6)
	Lymphoid neoplasms	78.9 (77.1-80.6)	71.6 (69.6-73.6)	67.6 (65.4-69.7)	64.9 (62.7-67.1)	61.9 (59.5-64.2)
	Ovary	69.8 (67.9-71.7)	59.3 (57.2-61.4)	52.5 (50.3-54.6)	47.5 (45.3-49.6)	43.2 (41.0-45.4)
	Thyroid	92.5 (91.1-93.6)	91.5 (90.0-92.8)	90.4 (88.8-91.8)	89.9 (88.2-91.4)	88.7 (86.9-90.4)
	Non-melanoma skin	98.8 (97.7-99.7)	98.3 (96.7-99.5)	98.0 (96.1-99.6)	97.2 (95.1-99.1)	97.5 (95.1-99.7)
	Pancreas	41.0 (38.3-43.8)	24.7 (22.3-27.3)	17.7 (15.5-20.0)	14.8 (12.7-17.0)	13.7 (11.7-15.8)
	Stomach	63.3 (60.3-66.2)	52.2 (49.1-55.3)	46.4 (43.2-49.6)	43.5 (40.3-46.6)	42.4 (39.2-45.7)
	Cervix	85.0 (82.9-86.9)	73.2 (70.5-75.6)	68.1 (65.3-70.7)	63.5 (60.6-66.2)	62.5 (59.6-65.3)
	All sites	**80.2 (79.8-80.6)**	**73.3 (72.9-73.7)**	**69.0 (68.5-69.5)**	**66.0 (65.5-66.5)**	**63.7 (63.2-64.2)**

2.3 Age-standardised relative survival five years following diagnosis for ten most frequent incident cancers by sex, 2018-2022

KEY POINTS

- While cancer survival rates decreased each year after diagnosis, the rate of decline was observed to be quicker for some cancers compared to others.
- Among males, prostate and non-melanoma skin cancers had the highest survival rates for each year post-diagnosis (97.9% and 97.1% at one year and 89.2% and 93.2% at five years respectively), while pancreatic, lung, and liver cancers had the lowest survival rates at every one-year interval post-diagnosis (37.2%, 51.7% and 52.3% at one year and 13.4%, 21.9% and 26.8% respectively at five years).
- Among females, non-melanoma skin, breast, and thyroid cancers had the highest survival rates for each year post-diagnosis (98.8%, 95.3% and 92.5% at one year; and 97.5%, 83.1% and 88.7% at five years respectively); whereas pancreatic, stomach, and lung cancers had the poorest survival rates at nearly every one-year interval post-diagnosis (41.0%, 63.3%, and 71.4% at one year; and 13.7%, 42.4% and 37.8% respectively at five years).

(3) TRENDS IN INCIDENCE, MORTALITY AND SURVIVAL OF SELECTED CANCERS, 1968-2022

3.1 Age-standardised incidence, age-standardised mortality, and five-year age-standardised relative survival for selected cancers in males and females, 1968-2022

Males

Among cancers that are most commonly diagnosed in males, there had been increases in the CIR and CMR of nearly all of them, the exception being stomach cancer, which saw both the CIR and CMR dip over the years. Owing to a high survival rate, the CMR of non-melanoma skin cancer also remained consistently low despite an increase in the CIR.

While there had been an overall increase in the five-year ASRS across the board from 1968-2022, differing trends can be observed for the ASIR and ASMR of these cancers (Figure 3.1.1, Table 3.1.1).

From the period of 1968-1972 to 2018-2022, there was a notable rise in the ASIR of two common cancers – prostate and colorectal cancers – from 4.0 to 38.2 per 100,000 population (a jump of almost 10 times) and 19.4 to 37.9 per 100,000 population respectively. This is likely linked to Singapore's ageing population, as the likelihood of being diagnosed with these cancers increase significantly with age. Prostate cancer is known to be strikingly more common in developed countries with a high human development index, where life expectancy is longer (30) (31). Notably, over the most recent three decades since 1988-1992, while the ASIR of prostate cancer has almost quadrupled, that for male colorectal cancer had plateaued. For comparison, based on GBD data available for 1991-2021, the ASIR of prostate cancer in the high-income Asia Pacific region[7] almost doubled from 15.3 to 28.7 per 100,000 population during this time; while that of male colorectal cancer increased gradually from 53.5 to 59.3 per 100,000 population (20).

Nevertheless, there were also significant decreases in the incidence of other cancers during the same period. For instance, the ASIR of lung and liver cancers dropped from 47.3 to 30.0 per 100,000 population and from 28.7 to 16.2 per 100,000 population. Meanwhile, the ASIR of stomach cancer in 2018-2022 was 9.0 per 100,000 population, less than a quarter of what it used to be in 1968-1972 (37.7 per 100,000 population).

Similar to the trends observed for ASIR, the ASMR for stomach cancer also declined from 26.2 per 100,000 population in 1968-1972 to 4.5 per 100,000 population in 2018-2022. The ASMR of prostate and colorectal cancers in males, on the other hand, had risen from 1968-1972 to 2018-2022, alongside the rise in its corresponding incidence rate, from 1.2 to 5.5 per 100,000 population and 8.9 to 12.2 per 100,000 population respectively. During the same period, pancreatic cancer, which has a low survival rate, also exhibited an increasing mortality rate alongside its rising incidence, where its ASMR rose from 1.7 to 6.1 per 100,000 population – an increase of more than threefold, although the overall mortality rate was low vis-à-vis other more common cancers such as lung, colorectal, and liver cancers.

Despite exhibiting differing trends in age-standardised incidence and mortality over the years, there had been improvements in the survival across all ten commonly diagnosed cancers. For instance, the survival of prostate cancer had increased from 47.3% in 1973-1977 to 89.2% in 2018-2022. Likewise, the five-year ASRS of colorectal cancer climbed from 24.4% to 63.9% over this period. Even among cancers with generally poorer survival rates, there had been significant improvements in the five-year ASRS over the years – in 1973-1977, the five-year ASRS of lung and liver cancers were 3.0% and 0.2% respectively, but in 2018-2022, these figures had risen to 21.9% and 26.8% respectively.

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[7] GBD High-income Asia-Pacific region: Brunei Darussalam, Japan, South Korea, Singapore

Females

As with males, there had likewise been an increase in the CIR and CMR of common cancers in females, apart from stomach and cervical cancers. For the former, there was little overall change in the CIR, while the CMR dipped slightly; for the latter, there was a slight decrease in CIR, coupled with little overall change in the CMR. The CMR for thyroid and non-melanoma skin cancers also remained low with little change across the years overall.

As with the trends observed for males, cancers most often diagnosed among females also displayed differing trends for their ASIR and ASMR over the years from 1968-2022. However, there had likewise been a consistent pattern of an overall increase in survival rates for all ten common cancers (Figure 3.1.2, Table 3.1.2).

Notably, the ASIR of breast cancer, which is the most common cancer diagnosis in females, had risen close to fourfold, from 20.1 per 100,000 population in 1968-1972 to 76.2 per 100,000 population in 2018-2022. Within the first two decades from 1968-1972 to 1988-1992, breast cancer ASIR rose nearly twofold, and by 2018-2022, had approximately doubled again in a span of thirty years. Likewise, available GBD data showed increasing breast cancer ASIR in the high-income Asia Pacific region[8], almost doubling over the last three decades from 30.1 to 55.1 per 100,000 population in 1991 and 2021 respectively (20).

The ASIR of uterine and ovarian cancers in Singapore had also risen significantly over 1968-1972 to 2018-2022, from 4.9 to 19.7 per 100,000 population and 5.9 to 12.2 per 100,000 population – registering increases of about fourfold and twice respectively. On the other hand, as with males, the ASIR of stomach cancer in females had also decreased significantly, from 17.4 per 100,000 population in 1968-1972 to 5.2 per 100,000 population in 2018-2022. During the same period, the ASIR of cervical cancer had also fallen drastically from 18.0 to 6.8 per 100,000 population.

The ASMR of many common cancers in females have risen over the years, alongside a corresponding increase in the ASIR of these cancers. For example, the ASMR of breast cancer rose from 5.7 per 100,000 population in 1968-1972 to 11.6 per 100,000 population in 2018-2022. During the same period, the ASMR of ovarian cancer had also increased from 1.4 per 100,000 population to 3.7 per 100,000 population, in tandem with an increasing incidence rate. On the other hand, the ASMR of stomach cancer had fallen drastically from 11.9 per 100,000 population in 1968-1972 to 2.5 per 100,000 population in 2018-2022. Similarly, the ASMR of cervical cancer had also decreased from 4.9 to 1.7 per 100,000 population over the same period.

As mortality rates are a function of both incidence and survival rates, rising cancer mortality should not be interpreted in isolation from either. Despite increasing mortality rates, significant improvements were observed in the survival rates for many common cancers. For example, the five-year ASRS of the most common incident cancer in females – breast cancer – had significantly improved from 49.9% in 1973-1977 to 83.1% in 2018-2022. Similarly, the five-year ASRS for uterine cancer had also increased from 48.3% to 74.0% during this period. As with males, improvements were also observed for other common cancers with generally poorer survival rates such as lung and stomach cancers, whereby five-year ASRS improved from 5.3% to 37.8% and 6.4% to 42.4% over the same period respectively. Pancreatic cancer survival had also risen markedly from 0.7% to 13.7% during this period.

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[8] GBD High-income Asia-Pacific region: Brunei Darussalam, Japan, South Korea, Singapore

Figure 3.1.1 Crude and age-standardised incidence rate (per 100,000 population), crude and age-standardised mortality rate (per 100,000 population) and five-year age-standardised relative survival rate (%) of selected cancers in males, 1968-2022

Table 3.1.1 Incidence number, crude and age-standardised incidence rate (per 100,000 population), crude and age-standardised mortality rate (per 100,000 population) and five-year age-standardised relative survival rate (%) of selected cancers in males, 1968-2022
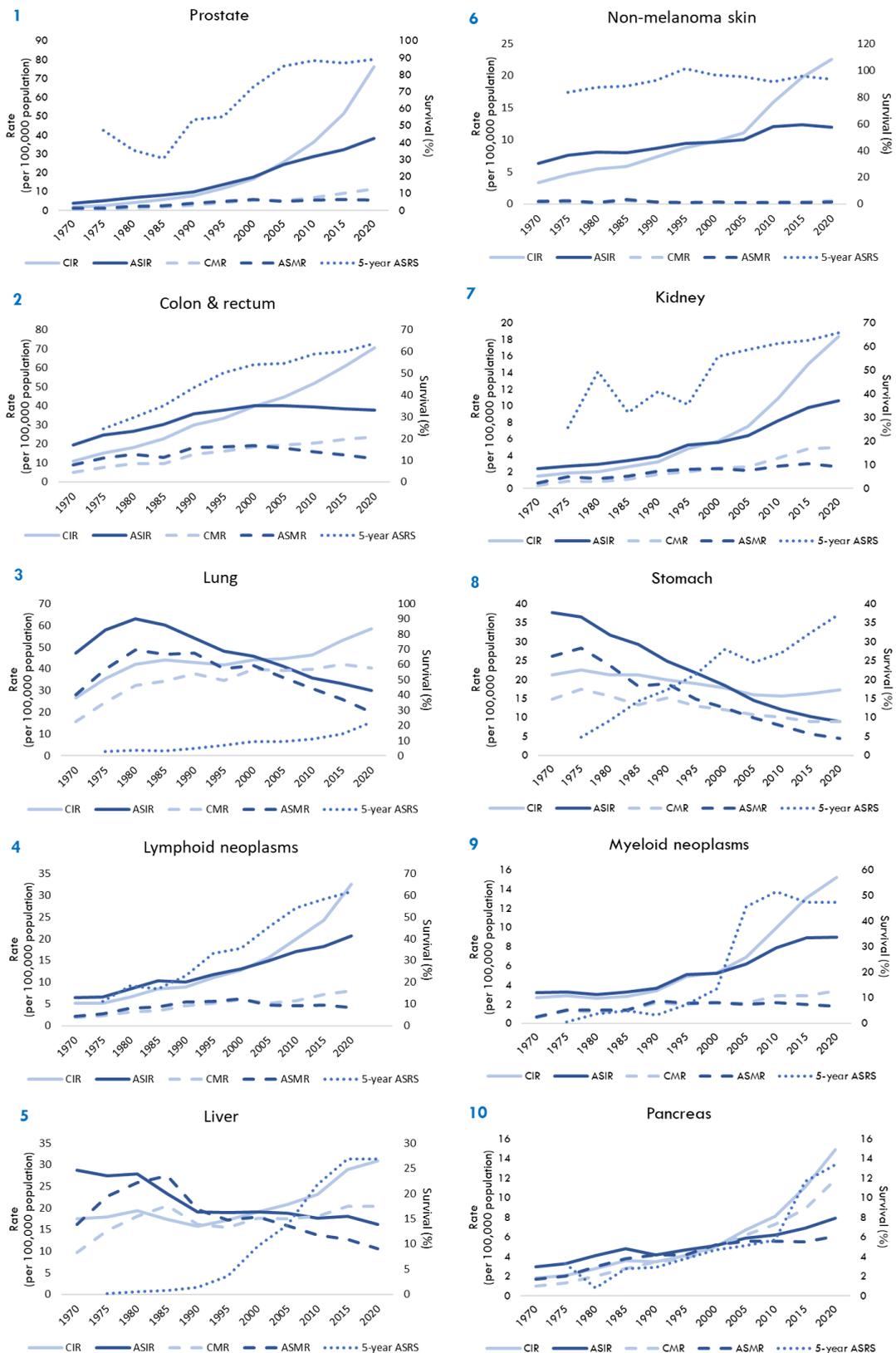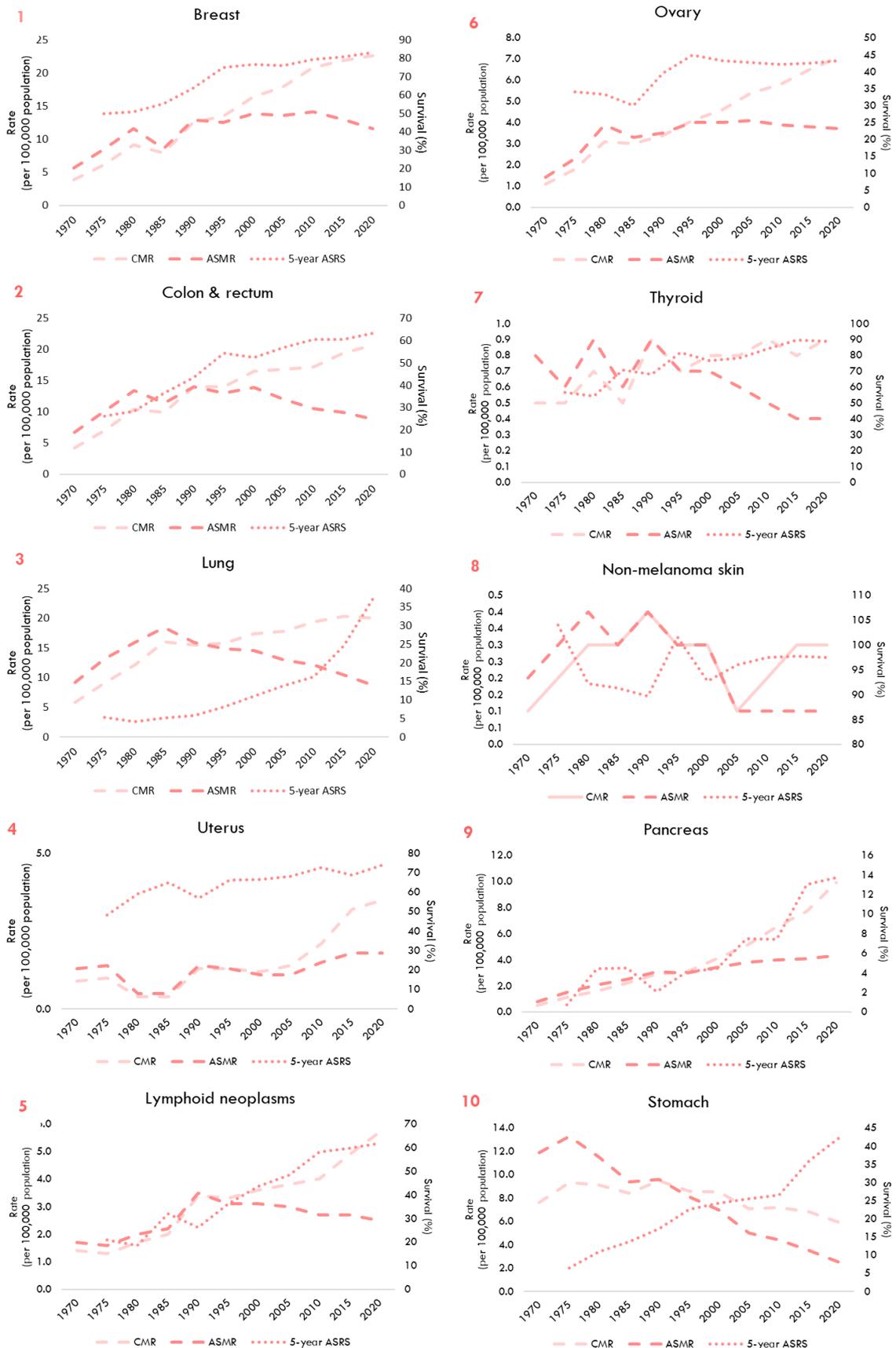
Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Prostate	1968-1972	94	1.8 (1.5-2.2)	4.0 (3.1-4.8)	0.6 (0.4-0.8)	1.2 (0.8-1.7)	
	1973-1977	144	2.7 (2.2-3.1)	5.2 (4.3-6.0)	0.7 (0.5-0.9)	1.3 (0.9-1.7)	47.3 (33.6-61.6)
	1978-1982	240	4.1 (3.6-4.7)	6.8 (5.9-7.7)	1.3 (1.0-1.6)	2.2 (1.7-2.7)	35.4 (25.5-46.2)
	1983-1987	356	5.7 (5.1-6.2)	8.2 (7.4-9.1)	1.8 (1.4-2.1)	2.5 (2.1-3.0)	30.8 (24.0-38.1)
	1988-1992	529	7.7 (7.0-8.3)	9.9 (9.1-10.8)	2.9 (2.5-3.3)	3.7 (3.2-4.2)	53.4 (46.0-60.7)
	1993-1997	902	11.9 (11.1-12.7)	13.8 (12.9-14.7)	4.1 (3.7-4.6)	4.8 (4.3-5.4)	55.3 (49.9-60.7)
	1998-2002	1360	16.6 (15.7-17.5)	17.6 (16.7-18.6)	5.5 (5.0-6.0)	5.9 (5.4-6.5)	73.0 (68.9-76.9)
	2003-2007	2213	25.7 (24.6-26.8)	24.3 (23.2-25.3)	5.1 (4.6-5.5)	4.8 (4.3-5.2)	85.1 (82.2-87.7)
	2008-2012	3339	36.1 (34.8-37.3)	28.6 (27.6-29.6)	7.0 (6.5-7.6)	5.6 (5.2-6.0)	88.5 (86.5-90.4)
	2013-2017	4923	51.4 (49.9-52.8)	32.2 (31.3-33.1)	9.2 (8.6-9.8)	5.7 (5.3-6.1)	87.0 (85.4-88.5)
	2018-2022	7515	76.3 (74.6-78.1)	38.2 (37.3-39.0)	11.6 (10.9-12.3)	5.5 (5.2-5.8)	89.2 (87.9-90.5)
Colon & rectum	1968-1972	563	11.0 (10.1-11.9)	19.4 (17.6-21.2)	4.9 (4.3-5.5)	8.9 (7.7-10.1)	
	1973-1977	824	15.3 (14.2-16.3)	24.6 (22.8-26.4)	7.6 (6.9-8.4)	12.6 (11.3-13.9)	24.4 (20.2-28.9)
	1978-1982	1057	18.2 (17.1-19.3)	26.7 (25.0-28.4)	9.7 (8.9-10.5)	14.6 (13.3-15.8)	29.6 (25.9-33.5)
	1983-1987	1435	22.8 (21.6-24.0)	30.2 (28.6-31.8)	9.6 (8.9-10.4)	12.9 (11.9-14.0)	35.2 (31.7-38.8)
	1988-1992	2052	29.8 (28.5-31.0)	36.0 (34.4-37.6)	14.7 (13.8-15.7)	18.0 (16.9-19.2)	43.5 (40.4-46.6)
	1993-1997	2553	33.7 (32.4-35.0)	37.7 (36.2-39.2)	16.3 (15.3-17.2)	18.5 (17.5-19.6)	50.3 (47.6-53.0)
	1998-2002	3252	39.7 (38.4-41.1)	40.1 (38.7-41.5)	18.4 (17.5-19.4)	19.1 (18.1-20.0)	54.1 (51.8-56.4)
	2003-2007	3850	44.7 (43.3-46.1)	40.0 (38.7-41.3)	19.5 (18.6-20.4)	17.9 (17.0-18.7)	54.7 (52.6-56.6)
	2008-2012	4794	51.8 (50.3-53.3)	39.3 (38.2-40.5)	20.6 (19.7-21.6)	16.0 (15.3-16.7)	58.9 (57.1-60.7)
	2013-2017	5829	60.8 (59.3-62.4)	38.4 (37.4-39.4)	22.5 (21.5-23.4)	14.1 (13.5-14.7)	60.1 (58.5-61.7)
	2018-2022	6963	70.7 (69.1-72.4)	37.9 (37.0-38.9)	23.6 (22.6-24.6)	12.2 (11.7-12.7)	63.9 (62.5-65.3)
Lung	1968-1972	1361	26.5 (25.1-27.9)	47.3 (44.6-49.9)	15.7 (14.6-16.8)	28.0 (25.9-30.0)	
	1973-1977	1920	35.5 (34.0-37.1)	57.9 (55.3-60.6)	24.7 (23.4-26.1)	39.9 (37.7-42.2)	3.0 (2.1-4.0)
	1978-1982	2440	42.1 (40.4-43.7)	63.0 (60.4-65.5)	32.4 (31.0-33.9)	48.8 (46.5-51.0)	3.5 (2.7-4.4)
	1983-1987	2770	44.0 (42.4-45.7)	60.1 (57.9-62.4)	34.3 (32.8-35.7)	46.6 (44.6-48.6)	3.3 (2.7-4.1)
	1988-1992	2972	43.1 (41.5-44.6)	54.1 (52.1-56.0)	37.8 (36.3-39.2)	47.3 (45.4-49.1)	4.9 (4.1-5.9)
	1993-1997	3168	41.8 (40.4-43.3)	48.1 (46.4-49.8)	34.6 (33.3-35.9)	40.0 (38.4-41.5)	7.1 (6.0-8.2)
	1998-2002	3599	44.0 (42.5-45.4)	45.8 (44.3-47.3)	39.7 (38.3-41.0)	41.6 (40.1-43.0)	9.4 (8.4-10.5)
	2003-2007	3862	44.8 (43.4-46.2)	41.3 (39.9-42.6)	39.2 (37.9-40.5)	36.2 (34.9-37.4)	9.2 (8.2-10.3)
	2008-2012	4292	46.4 (45.0-47.8)	35.7 (34.6-36.8)	39.8 (38.5-41.1)	30.9 (29.9-31.9)	11.1 (10.1-12.2)
	2013-2017	5069	52.9 (51.4-54.3)	33.1 (32.1-34.0)	42.2 (40.9-43.5)	26.2 (25.4-27.0)	14.1 (13.0-15.2)
	2018-2022	5759	58.5 (57.0-60.0)	30.0 (29.2-30.8)	40.3 (39.1-41.6)	20.1 (19.5-20.8)	21.9 (20.7-23.2)

Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Lymphoid neoplasms	1968-1972	260	5.1 (4.4-5.7)	6.4 (5.6-7.3)	1.8 (1.4-2.2)	2.2 (1.7-2.7)	
	1973-1977	279	5.2 (4.6-5.8)	6.6 (5.8-7.5)	2.3 (1.9-2.7)	2.8 (2.3-3.4)	11.3 (6.9-16.9)
	1978-1982	381	6.6 (5.9-7.2)	8.4 (7.5-9.3)	3.2 (2.7-3.6)	4.0 (3.4-4.7)	18.3 (13.2-24.3)
	1983-1987	527	8.4 (7.7-9.1)	10.3 (9.4-11.2)	3.5 (3.1-4.0)	4.3 (3.7-4.8)	16.8 (12.5-21.7)
	1988-1992	611	8.9 (8.2-9.6)	10.1 (9.3-11.0)	4.6 (4.1-5.1)	5.4 (4.8-6.0)	22.9 (18.9-27.2)
	1993-1997	835	11.0 (10.3-11.8)	11.7 (10.9-12.6)	5.2 (4.7-5.7)	5.6 (5.0-6.2)	33.4 (29.1-37.9)
	1998-2002	1050	12.8 (12.1-13.6)	13.0 (12.2-13.8)	6.0 (5.5-6.6)	6.1 (5.5-6.6)	35.5 (31.9-39.1)
	2003-2007	1354	15.7 (14.9-16.6)	14.9 (14.1-15.8)	5.1 (4.6-5.6)	4.8 (4.3-5.2)	45.3 (42.0-48.6)
	2008-2012	1854	20.0 (19.1-20.9)	17.0 (16.1-17.8)	5.8 (5.3-6.3)	4.6 (4.2-5.0)	54.2 (51.4-57.0)
	2013-2017	2319	24.2 (23.2-25.2)	18.2 (17.3-19.0)	7.2 (6.7-7.8)	4.8 (4.4-5.1)	58.1 (55.6-60.5)
	2018-2022	**3196**	**32.5 (31.3-33.6)**	**20.6 (19.8-21.4)**	**8.0 (7.5-8.6)**	**4.2 (3.9-4.5)**	**61.7 (59.5-63.8)**
Liver	1968-1972	898	17.5 (16.3-18.6)	28.7 (26.7-30.6)	9.7 (8.9-10.6)	16.2 (14.7-17.7)	
	1973-1977	965	17.9 (16.7-19.0)	27.4 (25.6-29.3)	14.8 (13.8-15.8)	22.7 (21.0-24.3)	0.2 (0.1-0.4)
	1978-1982	1126	19.4 (18.3-20.5)	27.8 (26.1-29.4)	18.0 (17.0-19.1)	25.9 (24.3-27.5)	0.5 (0.3-1.0)
	1983-1987	1095	17.4 (16.4-18.4)	23.2 (21.8-24.5)	20.5 (19.4-21.7)	27.4 (25.9-29.0)	0.8 (0.4-1.3)
	1988-1992	1089	15.8 (14.9-16.7)	19.0 (17.8-20.1)	16.2 (15.3-17.2)	19.6 (18.4-20.7)	1.4 (0.7-2.4)
	1993-1997	1303	17.2 (16.3-18.1)	18.9 (17.9-20.0)	15.5 (14.6-16.4)	17.2 (16.2-18.2)	3.6 (2.5-5.0)
	1998-2002	1555	19.0 (18.1-19.9)	19.1 (18.1-20.1)	17.7 (16.8-18.6)	17.9 (16.9-18.8)	9.5 (7.9-11.3)
	2003-2007	1791	20.8 (19.8-21.8)	18.8 (17.9-19.7)	17.5 (16.6-18.4)	15.9 (15.1-16.7)	13.7 (11.8-15.7)
	2008-2012	2139	23.1 (22.1-24.1)	17.6 (16.9-18.4)	18.1 (17.2-18.9)	13.8 (13.1-14.5)	21.8 (19.8-24.0)
	2013-2017	2771	28.9 (27.8-30.0)	18.1 (17.5-18.8)	20.4 (19.5-21.3)	12.7 (12.1-13.3)	26.8 (24.9-28.8)
	2018-2022	**3041**	**30.9 (29.8-32.0)**	**16.2 (15.6-16.8)**	**20.4 (19.5-21.3)**	**10.5 (10.0-10.9)**	**26.8 (25.0-28.6)**
Non-melanoma skin	1968-1972	167	3.3 (2.8-3.7)	6.3 (5.2-7.4)	0.2 (0.1-0.4)	0.4 (0.2-0.6)	
	1973-1977	247	4.6 (4.0-5.1)	7.6 (6.6-8.6)	0.3 (0.1-0.4)	0.5 (0.2-0.9)	83.5 (70.7-95.1)
	1978-1982	319	5.5 (4.9-6.1)	8.1 (7.1-9.0)	0.1 (0.0-0.2)	0.2 (0.1-0.3)	87.3 (78.7-95.0)
	1983-1987	371	5.9 (5.3-6.5)	8.0 (7.1-8.8)	0.5 (0.3-0.7)	0.7 (0.5-1.0)	88.2 (79.6-96.0)
	1988-1992	501	7.3 (6.6-7.9)	8.7 (7.9-9.5)	0.3 (0.1-0.4)	0.3 (0.2-0.5)	92.6 (85.7-98.8)
	1993-1997	667	8.8 (8.1-9.5)	9.5 (8.8-10.3)	0.2 (0.1-0.3)	0.2 (0.1-0.3)	101.4 (95.8-106.4)
	1998-2002	790	9.7 (9.0-10.3)	9.6 (8.9-10.3)	0.2 (0.1-0.3)	0.3 (0.1-0.4)	96.5 (91.8-100.8)
	2003-2007	958	11.1 (10.4-11.8)	10.0 (9.4-10.7)	0.2 (0.1-0.3)	0.2 (0.1-0.3)	95.2 (91.4-98.6)
	2008-2012	1473	15.9 (15.1-16.7)	12.1 (11.4-12.7)	0.3 (0.2-0.4)	0.2 (0.1-0.3)	91.3 (88.1-94.2)
	2013-2017	1891	19.7 (18.8-20.6)	12.4 (11.9-13.0)	0.3 (0.2-0.4)	0.2 (0.1-0.2)	95.8 (93.4-98.1)
	2018-2022	**2225**	**22.6 (21.7-23.5)**	**12.0 (11.5-12.5)**	**0.5 (0.4-0.7)**	**0.3 (0.2-0.4)**	**93.2 (91.0-95.4)**
Kidney	1968-1972	77	1.5 (1.2-1.8)	2.4 (1.8-3.0)	0.4 (0.2-0.6)	0.7 (0.4-1.0)	
	1973-1977	100	1.9 (1.5-2.2)	2.7 (2.2-3.3)	0.9 (0.6-1.1)	1.4 (1.0-1.8)	25.7 (15.5-37.7)
	1978-1982	118	2.0 (1.7-2.4)	2.9 (2.3-3.4)	0.8 (0.6-1.1)	1.2 (0.9-1.6)	49.6 (33.8-65.7)
	1983-1987	161	2.6 (2.2-3.0)	3.4 (2.8-3.9)	1.1 (0.9-1.4)	1.5 (1.2-1.9)	32.1 (22.5-42.8)
	1988-1992	223	3.2 (2.8-3.7)	3.9 (3.4-4.4)	1.7 (1.4-2.1)	2.1 (1.7-2.5)	41.2 (32.6-50.1)
	1993-1997	366	4.8 (4.3-5.3)	5.3 (4.7-5.9)	2.0 (1.7-2.4)	2.3 (1.9-2.7)	35.7 (29.2-42.5)
	1998-2002	470	5.7 (5.2-6.3)	5.6 (5.1-6.1)	2.5 (2.1-2.8)	2.4 (2.1-2.8)	55.9 (50.1-61.6)
	2003-2007	644	7.5 (6.9-8.1)	6.4 (5.9-6.9)	2.6 (2.2-2.9)	2.2 (1.9-2.5)	58.9 (53.8-63.9)
	2008-2012	1010	10.9 (10.2-11.6)	8.2 (7.7-8.7)	3.7 (3.3-4.1)	2.7 (2.4-3.0)	61.4 (57.4-65.3)
	2013-2017	1451	15.1 (14.4-15.9)	9.8 (9.3-10.3)	4.8 (4.4-5.2)	3.0 (2.7-3.3)	62.7 (59.5-65.9)
	2018-2022	**1808**	**18.4 (17.5-19.2)**	**10.6 (10.1-11.1)**	**5.0 (4.5-5.4)**	**2.6 (2.4-2.9)**	**65.8 (63.1-68.4)**

Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Stomach	1968-1972	1094	21.3 (20.0-22.6)	37.7 (35.3-40.2)	14.9 (13.9-16.0)	26.2 (24.2-28.2)	
	1973-1977	1216	22.5 (21.2-23.8)	36.5 (34.3-38.6)	17.4 (16.3-18.5)	28.3 (26.4-30.2)	4.8 (3.6-6.4)
	1978-1982	1233	21.3 (20.1-22.4)	31.8 (29.9-33.6)	15.7 (14.7-16.7)	23.8 (22.2-25.4)	9.2 (7.4-11.3)
	1983-1987	1334	21.2 (20.1-22.4)	29.3 (27.7-30.9)	13.3 (12.4-14.2)	18.3 (17.1-19.6)	14.4 (12.3-16.8)
	1988-1992	1374	19.9 (18.9-21.0)	24.8 (23.5-26.1)	15.2 (14.3-16.1)	18.9 (17.8-20.1)	17.3 (15.0-19.8)
	1993-1997	1442	19.0 (18.1-20.0)	21.7 (20.5-22.8)	13.1 (12.3-13.9)	14.8 (13.9-15.8)	21.5 (18.9-24.2)
	1998-2002	1453	17.8 (16.8-18.7)	18.5 (17.5-19.4)	12.1 (11.3-12.8)	12.6 (11.8-13.4)	28.0 (25.4-30.7)
	2003-2007	1381	16.0 (15.2-16.9)	14.6 (13.8-15.4)	10.7 (10.0-11.4)	9.9 (9.2-10.5)	24.5 (21.9-27.1)
	2008-2012	1452	15.7 (14.9-16.5)	12.0 (11.4-12.7)	10.0 (9.3-10.6)	7.7 (7.2-8.3)	27.1 (24.4-29.8)
	2013-2017	1569	16.4 (15.6-17.2)	10.3 (9.7-10.8)	9.0 (8.4-9.6)	5.6 (5.2-6.0)	32.5 (29.8-35.3)
	2018-2022	1702	17.3 (16.5-18.1)	9.0 (8.6-9.4)	8.9 (8.3-9.5)	4.5 (4.2-4.8)	37.3 (34.7-40.0)
Myeloid neoplasms	1968-1972	138	2.7 (2.2-3.1)	3.2 (2.6-3.8)	0.6 (0.4-0.8)	0.7 (0.5-1.0)	
	1973-1977	154	2.9 (2.4-3.3)	3.3 (2.7-3.8)	1.3 (1.0-1.6)	1.4 (1.0-1.7)	0.6 (0.1-2.4)
	1978-1982	150	2.6 (2.2-3.0)	3.0 (2.5-3.5)	1.2 (0.9-1.5)	1.4 (1.0-1.7)	3.8 (1.3-8.7)
	1983-1987	177	2.8 (2.4-3.2)	3.3 (2.8-3.8)	1.3 (1.0-1.5)	1.4 (1.1-1.8)	4.9 (1.8-10.5)
	1988-1992	232	3.4 (2.9-3.8)	3.7 (3.2-4.1)	2.2 (1.9-2.6)	2.4 (2.0-2.8)	3.2 (1.4-6.1)
	1993-1997	369	4.9 (4.4-5.4)	5.1 (4.6-5.7)	2.0 (1.7-2.3)	2.1 (1.7-2.4)	7.5 (4.4-11.8)
	1998-2002	435	5.3 (4.8-5.8)	5.2 (4.7-5.7)	2.2 (1.9-2.5)	2.2 (1.9-2.5)	13.4 (9.4-18.2)
	2003-2007	592	6.9 (6.3-7.4)	6.2 (5.7-6.7)	2.1 (1.8-2.5)	2.0 (1.7-2.3)	45.6 (39.9-51.2)
	2008-2012	925	10.0 (9.3-10.6)	7.9 (7.4-8.4)	2.9 (2.5-3.2)	2.2 (1.9-2.5)	51.4 (47.1-55.5)
	2013-2017	1258	13.1 (12.4-13.9)	8.9 (8.4-9.4)	2.9 (2.6-3.3)	2.0 (1.7-2.2)	47.4 (44.0-50.7)
	2018-2022	1497	15.2 (14.4-16.0)	9.0 (8.5-9.5)	3.4 (3.0-3.8)	1.8 (1.6-2.0)	47.4 (44.5-50.2)
Pancreas	1968-1972	92	1.8 (1.4-2.2)	3.0 (2.4-3.7)	1.0 (0.7-1.2)	1.7 (1.2-2.2)	
	1973-1977	112	2.1 (1.7-2.5)	3.3 (2.7-3.9)	1.3 (1.0-1.6)	2.0 (1.5-2.5)	3.3 (0.9-8.5)
	1978-1982	161	2.8 (2.3-3.2)	4.1 (3.4-4.7)	2.0 (1.7-2.4)	3.0 (2.5-3.6)	0.8 (0.2-2.6)
	1983-1987	224	3.6 (3.1-4.0)	4.8 (4.1-5.4)	2.8 (2.4-3.2)	3.8 (3.2-4.4)	2.8 (0.9-6.7)
	1988-1992	239	3.5 (3.0-3.9)	4.2 (3.7-4.7)	3.5 (3.0-3.9)	4.2 (3.6-4.7)	2.9 (1.1-6.2)
	1993-1997	310	4.1 (3.6-4.5)	4.7 (4.1-5.2)	3.8 (3.3-4.2)	4.2 (3.7-4.7)	3.8 (1.7-7.2)
	1998-2002	410	5.0 (4.5-5.5)	5.1 (4.6-5.6)	5.0 (4.5-5.5)	5.2 (4.7-5.7)	4.7 (2.9-7.0)
	2003-2007	579	6.7 (6.2-7.3)	5.9 (5.4-6.4)	6.2 (5.7-6.7)	5.6 (5.1-6.0)	5.1 (3.4-7.5)
	2008-2012	748	8.1 (7.5-8.7)	6.2 (5.7-6.6)	7.3 (6.7-7.8)	5.6 (5.1-6.0)	5.7 (4.0-7.9)
	2013-2017	1068	11.1 (10.5-11.8)	6.9 (6.5-7.4)	8.9 (8.3-9.5)	5.5 (5.1-5.9)	11.7 (9.7-14.0)
	2018-2022	1470	14.9 (14.2-15.7)	7.9 (7.4-8.3)	11.9 (11.2-12.6)	6.1 (5.8-6.5)	13.4 (11.5-15.4)

* per 100,000 resident population

Figure 3.1.2 Crude and age-standardised incidence rate (per 100,000 population), crude and age-standardised mortality rate (per 100,000 population) and five-year age-standardised relative survival rate (%) of selected cancers in females, 1968-2022

Cervix

Rate (per 100,000 population)

Survival (%)

1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020

— — CMR — — ASMR ········ 5-year ASRS

Table 3.1.2 Incidence number, crude and age-standardised incidence rate (per 100,000 population), crude and age-standardised mortality rate (per 100,000 population) and five-year age-standardised relative survival rate (%) of selected cancers in females, 1968-2022
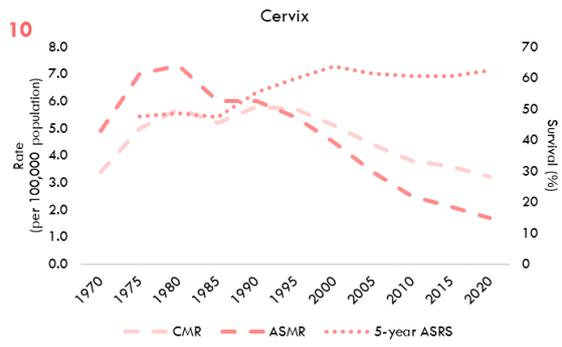
Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Breast	1968-1972	672	13.7 (12.7-14.8)	20.1 (18.5-21.6)	3.9 (3.4-4.5)	5.7 (4.9-6.6)	
	1973-1977	863	16.6 (15.5-17.7)	22.1 (20.6-23.6)	6.2 (5.5-6.8)	8.5 (7.5-9.4)	49.9 (45.2-54.6)
	1978-1982	1238	22.0 (20.8-23.2)	26.9 (25.4-28.4)	9.2 (8.4-10.0)	11.6 (10.6-12.6)	50.8 (46.7-54.9)
	1983-1987	1740	28.5 (27.1-29.8)	31.2 (29.7-32.7)	7.9 (7.2-8.6)	8.6 (7.8-9.4)	55.4 (52.0-58.8)
	1988-1992	2637	39.2 (37.7-40.7)	38.6 (37.1-40.2)	12.6 (11.8-13.4)	12.9 (12.0-13.8)	63.7 (61.1-66.2)
	1993-1997	3609	48.1 (46.6-49.7)	43.6 (42.1-45.1)	13.5 (12.6-14.3)	12.6 (11.8-13.3)	75.0 (72.9-77.0)
	1998-2002	5585	68.0 (66.3-69.8)	55.7 (54.2-57.2)	16.4 (15.5-17.3)	13.9 (13.1-14.7)	76.6 (75.0-78.1)
	2003-2007	6863	78.5 (76.6-80.4)	59.0 (57.6-60.4)	17.9 (17.0-18.8)	13.6 (12.9-14.3)	76.1 (74.8-77.4)
	2008-2012	8573	90.3 (88.3-92.2)	63.1 (61.7-64.4)	20.8 (19.9-21.8)	14.2 (13.6-14.9)	79.4 (78.3-80.5)
	2013-2017	10925	110.0 (107.9-112.0)	70.5 (69.1-71.8)	21.9 (21.0-22.9)	13.0 (12.4-13.5)	80.8 (79.9-81.7)
	2018-2022	**13193**	**128.4 (126.2-130.5)**	**76.2 (74.9-77.6)**	**22.6 (21.7-23.5)**	**11.6 (11.1-12.1)**	**83.1 (82.3-83.9)**
Colon & rectum	1968-1972	478	9.8 (8.9-10.6)	15.4 (14.0-16.8)	4.2 (3.7-4.8)	6.7 (5.7-7.6)	
	1973-1977	715	13.8 (12.7-14.8)	19.6 (18.1-21.1)	7.0 (6.3-7.7)	10.1 (9.0-11.1)	26.2 (21.9-30.8)
	1978-1982	1085	19.3 (18.1-20.4)	24.6 (23.2-26.1)	10.4 (9.6-11.3)	13.4 (12.3-14.5)	28.3 (24.8-32.0)
	1983-1987	1392	22.8 (21.6-24.0)	26.1 (24.7-27.5)	9.9 (9.1-10.7)	11.4 (10.4-12.3)	36.4 (33.1-39.8)
	1988-1992	1848	27.5 (26.2-28.7)	28.2 (26.9-29.5)	14.0 (13.1-14.9)	14.0 (13.1-14.9)	43.6 (40.5-46.6)
	1993-1997	2300	30.7 (29.4-31.9)	29.5 (28.2-30.7)	14.0 (13.2-14.9)	13.0 (12.2-13.8)	54.3 (51.6-56.9)
	1998-2002	2796	34.1 (32.8-35.3)	29.1 (28.0-30.3)	16.5 (15.6-17.4)	13.9 (13.1-14.6)	52.5 (50.3-54.7)
	2003-2007	3351	38.3 (37.0-39.6)	28.8 (27.8-29.8)	16.8 (15.9-17.6)	12.0 (11.4-12.7)	57.0 (54.9-59.0)
	2008-2012	3921	41.3 (40.0-42.6)	27.1 (26.2-27.9)	17.2 (16.4-18.0)	10.5 (10.0-11.1)	60.6 (58.8-62.5)
	2013-2017	4861	48.9 (47.6-50.3)	27.3 (26.5-28.1)	19.4 (18.5-20.3)	9.9 (9.4-10.3)	60.6 (58.9-62.2)
	2018-2022	**5741**	**55.9 (54.4-57.3)**	**27.0 (26.3-27.8)**	**20.7 (19.8-21.5)**	**8.8 (8.4-9.2)**	**63.3 (61.8-64.8)**
Lung	1968-1972	489	10.0 (9.1-10.9)	16.2 (14.7-17.6)	5.8 (5.1-6.4)	9.2 (8.1-10.2)	
	1973-1977	663	12.8 (11.8-13.7)	18.5 (17.1-19.9)	9.1 (8.3-9.9)	13.2 (12.0-14.4)	5.3 (3.6-7.4)
	1978-1982	893	15.9 (14.8-16.9)	20.8 (19.4-22.2)	12.2 (11.3-13.1)	15.9 (14.7-17.1)	4.1 (2.8-5.8)
	1983-1987	1072	17.5 (16.5-18.6)	20.4 (19.2-21.6)	16.0 (15.0-17.0)	18.5 (17.3-19.7)	5.1 (3.7-6.7)
	1988-1992	1174	17.4 (16.4-18.4)	18.0 (16.9-19.1)	15.5 (14.6-16.5)	15.9 (14.9-16.9)	5.9 (4.5-7.6)
	1993-1997	1444	19.3 (18.3-20.3)	18.3 (17.3-19.2)	15.8 (14.9-16.7)	14.9 (14.0-15.7)	8.1 (6.5-9.9)
	1998-2002	1602	19.5 (18.6-20.5)	16.4 (15.6-17.2)	17.4 (16.5-18.3)	14.6 (13.8-15.4)	11.0 (9.4-12.7)
	2003-2007	1906	21.8 (20.8-22.8)	16.3 (15.6-17.1)	17.8 (16.9-18.7)	13.0 (12.3-13.7)	13.9 (12.1-15.8)
	2008-2012	2264	23.8 (22.9-24.8)	15.4 (14.8-16.1)	19.4 (18.5-20.3)	12.2 (11.7-12.8)	16.2 (14.5-18.1)
	2013-2017	2845	28.6 (27.6-29.7)	15.6 (15.0-16.2)	20.3 (19.4-21.2)	10.5 (10.0-10.9)	24.7 (22.8-26.6)
	2018-2022	**3534**	**34.4 (33.2-35.5)**	**16.4 (15.9-17.0)**	**20.0 (19.1-20.8)**	**8.7 (8.3-9.0)**	**37.8 (35.9-39.7)**

Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Uterus	1968-1972	159	3.2 (2.7-3.8)	4.9 (4.1-5.7)	0.9 (0.6-1.1)	1.3 (0.9-1.7)	
	1973-1977	154	3.0 (2.5-3.4)	4.1 (3.5-4.8)	1.0 (0.7-1.2)	1.4 (1.0-1.8)	48.3 (37.8-58.7)
	1978-1982	217	3.9 (3.3-4.4)	4.9 (4.3-5.6)	0.4 (0.3-0.6)	0.5 (0.3-0.8)	59.1 (49.7-68.1)
	1983-1987	315	5.2 (4.6-5.7)	6.0 (5.3-6.7)	0.4 (0.3-0.6)	0.5 (0.3-0.7)	64.9 (57.2-72.1)
	1988-1992	437	6.5 (5.9-7.1)	6.9 (6.2-7.5)	1.3 (1.0-1.5)	1.4 (1.1-1.6)	56.8 (51.2-62.2)
	1993-1997	609	8.1 (7.5-8.8)	7.8 (7.2-8.4)	1.3 (1.0-1.6)	1.3 (1.1-1.6)	66.3 (61.3-71.0)
	1998-2002	909	11.1 (10.4-11.8)	9.5 (8.9-10.1)	1.2 (1.0-1.5)	1.1 (0.9-1.3)	66.4 (62.7-70.0)
	2003-2007	1358	15.5 (14.7-16.4)	11.9 (11.3-12.6)	1.4 (1.1-1.6)	1.1 (0.9-1.3)	68.0 (65.0-71.0)
	2008-2012	1788	18.8 (18.0-19.7)	13.1 (12.5-13.7)	2.1 (1.8-2.4)	1.5 (1.3-1.7)	72.7 (70.2-75.1)
	2013-2017	2623	26.4 (25.4-27.4)	17.0 (16.3-17.7)	3.2 (2.9-3.6)	1.8 (1.6-2.0)	68.9 (66.8-70.9)
	2018-2022	3310	32.2 (31.1-33.3)	19.7 (19.0-20.4)	3.5 (3.1-3.9)	1.8 (1.6-2.0)	74.0 (72.3-75.6)
Lymphoid neoplasms	1968-1972	153	3.1 (2.6-3.6)	3.8 (3.1-4.4)	1.4 (1.1-1.8)	1.7 (1.3-2.2)	
	1973-1977	191	3.7 (3.2-4.2)	4.5 (3.8-5.2)	1.3 (1.0-1.6)	1.6 (1.2-2.0)	21.0 (12.1-32.0)
	1978-1982	231	4.1 (3.6-4.6)	4.9 (4.3-5.6)	1.7 (1.3-2.0)	2.0 (1.6-2.4)	18.6 (12.5-25.8)
	1983-1987	355	5.8 (5.2-6.4)	6.6 (5.9-7.3)	2.0 (1.7-2.4)	2.2 (1.8-2.6)	32.1 (25.6-39.0)
	1988-1992	453	6.7 (6.1-7.4)	7.2 (6.5-7.9)	3.4 (2.9-3.8)	3.5 (3.0-4.0)	26.3 (21.5-31.5)
	1993-1997	557	7.4 (6.8-8.0)	7.2 (6.6-7.9)	3.3 (2.8-3.7)	3.1 (2.7-3.5)	36.2 (31.3-41.3)
	1998-2002	724	8.8 (8.2-9.5)	8.2 (7.6-8.9)	3.6 (3.2-4.0)	3.1 (2.7-3.5)	43.6 (39.3-47.8)
	2003-2007	1013	11.6 (10.9-12.3)	10.3 (9.7-11.0)	3.8 (3.4-4.2)	3.0 (2.7-3.4)	48.4 (44.6-52.1)
	2008-2012	1260	13.3 (12.5-14.0)	10.6 (9.9-11.2)	4.0 (3.6-4.4)	2.7 (2.4-3.0)	58.1 (54.9-61.2)
	2013-2017	1787	18.0 (17.2-18.8)	12.7 (12.0-13.4)	4.9 (4.5-5.4)	2.7 (2.5-3.0)	59.8 (57.0-62.5)
	2018-2022	2318	22.6 (21.6-23.5)	13.8 (13.1-14.4)	5.7 (5.2-6.2)	2.5 (2.3-2.7)	61.9 (59.5-64.2)
Ovary	1968-1972	217	4.4 (3.8-5.0)	5.9 (5.1-6.7)	1.1 (0.8-1.4)	1.4 (1.0-1.8)	
	1973-1977	258	5.0 (4.4-5.6)	6.1 (5.4-6.9)	1.8 (1.4-2.1)	2.3 (1.8-2.7)	34.1 (26.8-41.6)
	1978-1982	410	7.3 (6.6-8.0)	8.6 (7.7-9.4)	3.1 (2.6-3.5)	3.9 (3.3-4.4)	33.4 (27.6-39.4)
	1983-1987	497	8.1 (7.4-8.8)	8.6 (7.9-9.4)	3.0 (2.5-3.4)	3.3 (2.8-3.8)	30.0 (25.0-35.2)
	1988-1992	692	10.3 (9.5-11.0)	10.2 (9.4-11.0)	3.4 (3.0-3.9)	3.5 (3.1-4.0)	39.6 (34.9-44.2)
	1993-1997	867	11.6 (10.8-12.3)	10.7 (9.9-11.4)	4.1 (3.6-4.5)	4.0 (3.6-4.5)	44.9 (40.8-48.9)
	1998-2002	1035	12.6 (11.8-13.4)	10.8 (10.1-11.5)	4.6 (4.2-5.1)	4.0 (3.6-4.5)	43.3 (40.1-46.5)
	2003-2007	1321	15.1 (14.3-15.9)	12.0 (11.3-12.6)	5.4 (4.9-5.9)	4.1 (3.7-4.5)	42.8 (39.9-45.7)
	2008-2012	1611	17.0 (16.1-17.8)	12.6 (11.9-13.2)	5.8 (5.4-6.3)	3.9 (3.5-4.2)	42.2 (39.6-44.8)
	2013-2017	1850	18.6 (17.8-19.5)	12.9 (12.3-13.5)	6.5 (6.0-7.0)	3.8 (3.5-4.1)	42.5 (40.2-44.9)
	2018-2022	1886	18.3 (17.5-19.2)	12.2 (11.6-12.8)	7.1 (6.6-7.6)	3.7 (3.4-3.9)	43.2 (41.0-45.4)
Thyroid	1968-1972	163	3.3 (2.8-3.8)	4.4 (3.7-5.1)	0.5 (0.3-0.7)	0.8 (0.5-1.1)	
	1973-1977	169	3.3 (2.8-3.7)	3.8 (3.2-4.4)	0.5 (0.3-0.6)	0.6 (0.4-0.9)	56.8 (46.7-66.3)
	1978-1982	227	4.0 (3.5-4.6)	4.2 (3.6-4.7)	0.7 (0.5-0.9)	0.9 (0.6-1.2)	54.1 (46.0-61.8)
	1983-1987	371	6.1 (5.4-6.7)	5.8 (5.2-6.4)	0.5 (0.3-0.7)	0.6 (0.4-0.8)	70.9 (64.8-76.5)
	1988-1992	437	6.5 (5.9-7.1)	6.0 (5.4-6.5)	0.9 (0.7-1.1)	0.9 (0.7-1.2)	67.9 (62.9-72.5)
	1993-1997	493	6.6 (6.0-7.2)	5.7 (5.2-6.2)	0.7 (0.5-0.9)	0.7 (0.5-0.9)	81.9 (77.6-85.8)
	1998-2002	658	8.0 (7.4-8.6)	6.7 (6.2-7.2)	0.8 (0.6-1.0)	0.7 (0.6-0.9)	76.6 (72.8-80.1)
	2003-2007	665	7.6 (7.0-8.2)	6.0 (5.5-6.5)	0.8 (0.6-1.0)	0.6 (0.5-0.8)	78.4 (75.0-81.6)
	2008-2012	995	10.5 (9.8-11.1)	7.9 (7.4-8.4)	0.9 (0.7-1.0)	0.5 (0.4-0.6)	84.0 (81.3-86.4)
	2013-2017	1440	14.5 (13.7-15.2)	10.4 (9.8-10.9)	0.8 (0.6-1.0)	0.4 (0.3-0.5)	89.7 (87.7-91.6)
	2018-2022	1791	17.4 (16.6-18.2)	12.1 (11.5-12.7)	0.9 (0.7-1.1)	0.4 (0.3-0.4)	88.7 (86.9-90.4)

Site	Year	Number	CIR (95% CI)*	ASIR (95% CI)*	CMR (95% CI)*	ASMR (95% CI)*	ASRS (95% CI)
Non-melanoma skin	1968-1972	153	3.1 (2.6-3.6)	5.2 (4.3-6.0)	0.1 (0.0-0.2)	0.2 (0.1-0.4)	
	1973-1977	198	3.8 (3.3-4.3)	5.4 (4.7-6.2)	0.2 (0.1-0.3)	0.3 (0.1-0.5)	104.0 (93.6-112.1)
	1978-1982	328	5.8 (5.2-6.5)	7.3 (6.5-8.1)	0.3 (0.1-0.4)	0.4 (0.2-0.5)	92.2 (83.3-99.9)
	1983-1987	375	6.1 (5.5-6.8)	6.9 (6.2-7.6)	0.3 (0.2-0.4)	0.3 (0.2-0.4)	91.3 (83.7-98.0)
	1988-1992	526	7.8 (7.1-8.5)	7.7 (7.0-8.3)	0.4 (0.2-0.5)	0.4 (0.2-0.5)	89.7 (83.7-94.9)
	1993-1997	666	8.9 (8.2-9.6)	8.1 (7.5-8.7)	0.3 (0.2-0.5)	0.3 (0.2-0.4)	101.6 (96.8-105.8)
	1998-2002	790	9.6 (9.0-10.3)	7.9 (7.4-8.5)	0.3 (0.2-0.5)	0.3 (0.2-0.4)	92.7 (88.7-96.2)
	2003-2007	803	9.2 (8.6-9.8)	6.7 (6.2-7.2)	0.1 (0.1-0.2)	0.1 (0.0-0.1)	96.0 (92.2-99.4)
	2008-2012	1218	12.8 (12.1-13.5)	8.0 (7.5-8.5)	0.2 (0.1-0.3)	0.1 (0.1-0.1)	97.5 (94.4-100.3)
	2013-2017	1519	15.3 (14.5-16.1)	8.0 (7.6-8.5)	0.3 (0.2-0.4)	0.1 (0.1-0.2)	97.8 (95.1-100.2)
	2018-2022	**1767**	**17.2 (16.4-18.0)**	**7.6 (7.2-8.0)**	**0.3 (0.2-0.4)**	**0.1 (0.1-0.1)**	**97.5 (95.1-99.7)**
Pancreas	1968-1972	50	1.0 (0.7-1.3)	1.6 (1.2-2.1)	0.5 (0.3-0.7)	0.8 (0.4-1.1)	
	1973-1977	78	1.5 (1.2-1.8)	2.1 (1.6-2.6)	1.1 (0.8-1.3)	1.5 (1.1-1.9)	0.7 (0.1-3.7)
	1978-1982	116	2.1 (1.7-2.4)	2.7 (2.2-3.2)	1.6 (1.3-1.9)	2.1 (1.6-2.5)	4.4 (1.8-9.0)
	1983-1987	174	2.8 (2.4-3.3)	3.2 (2.7-3.7)	2.2 (1.9-2.6)	2.5 (2.1-2.9)	4.5 (1.9-8.9)
	1988-1992	193	2.9 (2.5-3.3)	3.0 (2.5-3.4)	2.9 (2.5-3.4)	3.1 (2.6-3.5)	2.1 (0.8-4.7)
	1993-1997	244	3.3 (2.8-3.7)	3.2 (2.8-3.6)	3.1 (2.7-3.5)	3.0 (2.6-3.4)	4.1 (2.1-7.1)
	1998-2002	345	4.2 (3.8-4.6)	3.5 (3.2-3.9)	4.1 (3.7-4.6)	3.4 (3.1-3.8)	4.4 (2.5-7.0)
	2003-2007	484	5.5 (5.0-6.0)	4.2 (3.8-4.5)	5.1 (4.6-5.6)	3.8 (3.4-4.2)	7.5 (5.1-10.5)
	2008-2012	679	7.1 (6.6-7.7)	4.7 (4.3-5.0)	6.5 (5.9-7.0)	4.0 (3.7-4.3)	7.4 (5.3-10.0)
	2013-2017	965	9.7 (9.1-10.3)	5.4 (5.1-5.8)	7.7 (7.1-8.2)	4.1 (3.8-4.4)	13.0 (10.6-15.6)
	2018-2022	**1291**	**12.6 (11.9-13.2)**	**5.9 (5.5-6.2)**	**9.9 (9.3-10.6)**	**4.3 (4.1-4.6)**	**13.7 (11.7-15.8)**
Stomach	1968-1972	542	11.1 (10.1-12.0)	17.4 (15.9-18.8)	7.6 (6.8-8.3)	11.9 (10.6-13.1)	
	1973-1977	610	11.7 (10.8-12.7)	16.6 (15.3-18.0)	9.3 (8.5-10.2)	13.3 (12.1-14.5)	6.4 (4.3-9.1)
	1978-1982	643	11.4 (10.6-12.3)	14.6 (13.4-15.7)	9.1 (8.3-9.9)	11.5 (10.5-12.5)	11.0 (8.4-14.1)
	1983-1987	772	12.6 (11.7-13.5)	14.3 (13.3-15.4)	8.4 (7.6-9.1)	9.4 (8.6-10.2)	13.6 (10.9-16.7)
	1988-1992	826	12.3 (11.4-13.1)	12.5 (11.6-13.3)	9.5 (8.7-10.2)	9.6 (8.8-10.4)	17.2 (14.4-20.2)
	1993-1997	917	12.2 (11.4-13.0)	11.4 (10.7-12.2)	8.6 (8.0-9.3)	8.1 (7.4-8.7)	22.6 (19.5-26.0)
	1998-2002	968	11.8 (11.0-12.5)	10.0 (9.3-10.6)	8.5 (7.9-9.1)	7.0 (6.5-7.6)	24.4 (21.5-27.3)
	2003-2007	888	10.2 (9.5-10.8)	7.4 (6.9-7.9)	7.1 (6.6-7.7)	5.0 (4.6-5.4)	25.5 (22.4-28.8)
	2008-2012	1079	11.4 (10.7-12.0)	7.1 (6.7-7.6)	7.2 (6.7-7.8)	4.4 (4.0-4.7)	26.6 (23.6-29.7)
	2013-2017	1156	11.6 (11.0-12.3)	6.3 (5.9-6.6)	6.8 (6.3-7.3)	3.5 (3.2-3.8)	35.9 (32.7-39.2)
	2018-2022	**1135**	**11.0 (10.4-11.7)**	**5.2 (4.9-5.5)**	**5.9 (5.4-6.4)**	**2.5 (2.3-2.8)**	**42.4 (39.2-45.7)**
Cervix	1968-1972	603	12.3 (11.3-13.3)	18.0 (16.6-19.5)	3.4 (2.9-3.9)	4.9 (4.2-5.7)	
	1973-1977	676	13.0 (12.0-14.0)	17.6 (16.3-18.9)	5.0 (4.4-5.6)	7.0 (6.2-7.9)	47.7 (43.2-52.2)
	1978-1982	752	13.4 (12.4-14.3)	16.6 (15.4-17.8)	5.7 (5.1-6.3)	7.3 (6.5-8.1)	48.5 (44.2-52.7)
	1983-1987	899	14.7 (13.7-15.7)	16.2 (15.2-17.3)	5.2 (4.6-5.7)	6.0 (5.4-6.7)	47.4 (43.4-51.3)
	1988-1992	1002	14.9 (14.0-15.8)	15.3 (14.3-16.2)	5.8 (5.3-6.4)	6.0 (5.4-6.6)	55.5 (52.0-58.9)
	1993-1997	1128	15.0 (14.2-15.9)	13.9 (13.0-14.7)	5.7 (5.1-6.2)	5.4 (4.9-6.0)	59.8 (56.6-63.0)
	1998-2002	1040	12.7 (11.9-13.4)	10.7 (10.1-11.4)	5.1 (4.6-5.6)	4.5 (4.0-4.9)	63.7 (60.6-66.7)
	2003-2007	1015	11.6 (10.9-12.3)	8.9 (8.3-9.5)	4.4 (3.9-4.8)	3.4 (3.1-3.8)	61.4 (58.3-64.5)
	2008-2012	928	9.8 (9.1-10.4)	6.8 (6.4-7.3)	3.8 (3.4-4.2)	2.5 (2.2-2.8)	60.5 (57.3-63.6)
	2013-2017	1085	10.9 (10.3-11.6)	7.1 (6.7-7.6)	3.6 (3.2-4.0)	2.1 (1.9-2.3)	60.5 (57.4-63.5)
	2018-2022	**1120**	**10.9 (10.3-11.5)**	**6.8 (6.4-7.2)**	**3.2 (2.8-3.5)**	**1.7 (1.5-1.9)**	**62.5 (59.6-65.3)**

*per 100,000 resident population

3.1 Trends in incidence, mortality, and survival of selected cancers in males and females, 1968-2022

KEY POINTS

- From 1968-1972 to 2018-2022, the crude incidence and mortality rates increased for all common cancers in both males and females, with the exception of stomach cancer for both sexes and cervical cancer in females. Crude mortality rates for non-melanoma skin cancer in both sexes and thyroid cancer in females remained low and saw little change throughout the years.

- While five-year age-standardised survival rates (ASRS) had increased across the board for all the top ten common cancers diagnosed in males and females; differing trends were observed for their age-standardised incidence and mortality rates.

- From 1968-1972 to 2018-2022, in males, there were notable rises in the age-standardised incidence rates of prostate and colorectal cancers (4.0 to 38.2, and 19.4 to 37.9 per 100,000 population respectively); but also significant decreases in that of lung, liver, and stomach cancers (47.3 to 30.0, 28.7 to 16.2, and 37.7 to 9.0 per 100,000 population respectively).

- While there was a noteworthy fall in the age-standardised mortality rate of stomach cancer in males (from 26.2 to 4.5 per 100,000 population), those of pancreatic and colorectal cancers had risen (from 1.7 to 6.1 and 8.9 to 12.2 per 100,000 respectively).

- In females, while the age-standardised incidence rates of breast, uterine, and ovarian cancers had risen significantly (from 20.1 to 76.2, 4.9 to 19.7, 5.9 to 12.2 per 100,000 population respectively), there were significant declines in the age-standardised incidence rates of stomach and cervical cancers (from 17.4 to 5.2, and 18.0 to 6.8 per 100,000 population respectively).

- In conjunction with the changes in the corresponding incidence rates over the years, age-standardised mortality rates for breast and ovarian cancers had risen significantly (from 5.7 to 11.6 and 1.4 to 3.7 per 100,000 population respectively), whereas that of stomach and cervical cancers had fallen (11.9 to 2.5, and 4.9 to 1.7 per 100,000 population respectively).

- The ASRS for prostate and breast cancers - the most common diagnosis in males and females respectively - had each increased significantly over 1973-1977 to 2018-2022 (from 47.3% to 89.2% for the former, and 49.9% to 83.1% for the latter).

3.2 Stage distribution for selected cancers, 2003-2022

The SCR began comprehensive collection of staging information in 2003. From 2003-2007 to 2013-2017, many commonly diagnosed cancers had experienced a shift towards being diagnosed at earlier stages (Stages I-II)[9].

Among males, liver, pancreatic and prostate cancers registered the biggest changes in the proportion of early-stage (stages I and II) versus late-stage (stages III and IV) diagnoses (20.8, 14.3, and 11.9 percentage points respectively) (Table 3.2.1). The proportion of early-stage diagnoses for liver cancer rose from 23.8% in 2003-2007 to 44.6% in 2013-2017; while that for pancreatic cancer rose from 16.5% to 30.8% during the same period. However, the proportion of prostate cancers diagnosed at an early stage fell from 63.5% in 2003-2007 to 51.6% in 2013-2017.

In 2018-2022, lung, pancreatic, and stomach cancers had the highest proportions of late-stage diagnoses among males (78.7%, 74.2%, and 63.4% respectively), and this pattern was also seen across earlier years (Figure 3.2.1, Table 3.2.1). This could partly explain the higher mortality rates for lung, stomach, and pancreatic cancers relative to their respective incidence rates, as well as lower survival rates (Table 3.1.1).

Among females, the biggest changes in the proportion of early- and late-stage diagnoses occurred in lung, stomach, and pancreatic cancers (Table 3.2.2). 13.8% of lung cancers in females were diagnosed at Stages I and II in 2003-2007, and this increased to 23.2% in 2013-2017. For stomach cancer, 26.9% of diagnoses were made at earlier stages in 2003-2007, and this had increased to 37.8% in 2013-2017. Similarly, the proportion of pancreatic cancers diagnosed at Stage I or II registered a nearly twofold increase from 16.4% in 2003-2007 to 31.3% in 2013-2017.

While the proportion of early-stage diagnoses for pancreatic, lung, and stomach cancers among females had increased, these cancers still had the highest proportions of late-stage diagnoses in 2018-2022 (71.0%, 70.5%, and 60.7% respectively), and similar to that of males, this pattern was also observed for earlier years (Figure 3.2.2, Table 3.2.2). This could partly account for the higher mortality rates vis-à-vis the respective incidence rates, as well as the lower survival rates in contrast to breast and thyroid cancers, which consistently had a higher proportion of early-stage diagnoses (Table 3.1.2).

In 2018-2022, for cancers that were common to both sexes, such as colorectal, lung, stomach and pancreatic cancers, women were also slightly more likely to be diagnosed at earlier stages compared to males.

Table 3.2.1 Stage distribution (%) of selected cancers in males, 2003-2022^

	2003-2007 (AJCC 6)				2008-2012 (AJCC 6 & 7)				2013-2017 (AJCC 7)				2018-2022 (AJCC 8)			
	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV
Prostate	1.0	62.5	11.4	25.0	10.0	53.6	9.8	26.7	15.3	36.3	16.6	31.8	15.0	29.3	25.5	30.2
Colon & rectum	12.5	27.9	36.6	23.0	16.0	27.0	33.1	23.9	18.1	24.7	32.8	24.4	19.5	21.5	33.3	25.7
Lung	9.7	4.6	26.8	58.9	9.2	4.9	24.0	61.9	11.0	4.9	18.4	65.7	16.0	5.3	17.2	61.5
Liver	11.4	12.4	32.5	43.7	22.6	19.5	30.5	27.5	26.8	17.8	28.6	26.8	36.1	14.6	24.7	24.7
Non-melanoma skin*	81.3	7.5	7.5	3.8	76.7	18.2	2.3	2.8	75.7	21.3	1.2	1.9				
Kidney	38.9	10.1	19.2	31.7	43.4	11.2	16.4	28.9	50.4	8.1	16.5	25.1	47.7	6.1	18.2	28.0
Stomach	17.3	11.0	17.9	53.8	17.0	11.3	24.8	46.8	22.0	12.4	23.1	42.5	26.2	10.4	20.4	43.0
Pancreas	2.9	13.6	8.9	74.5	5.7	15.4	14.0	64.9	8.3	22.5	11.7	57.5	12.6	13.3	16.4	57.8

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[9] The AJCC 6 & 7 are based on anatomic staging and are thus relatively comparable. In contrast, AJCC 8 is based on prognostic staging and is therefore not comparable to the AJCC 6 & 7 systems.

Table 3.2.2 Stage distribution (%) of selected cancers in females, 2003-2022^

	2003-2007 (AJCC 6)				2008-2012 (AJCC 6 & 7)				2013-2017 (AJCC 7)				2018-2022 (AJCC 8)			
	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV	Stage I	Stage II	Stage III	Stage IV
Breast	33.0	37.9	20.4	8.6	33.0	38.3	19.0	9.7	33.6	39.0	16.7	10.7	57.7	19.0	12.1	11.2
Colon & rectum	12.5	29.4	36.2	21.9	14.5	26.0	34.7	24.8	16.9	23.8	34.0	25.3	19.2	23.7	30.6	26.5
Lung	10.6	3.2	23.2	63.0	13.2	3.0	15.5	68.3	18.1	5.1	10.1	66.7	24.8	4.6	9.6	60.9
Uterus	66.4	9.1	16.2	8.2	67.2	8.5	14.5	9.8	68.3	6.6	14.4	10.7	66.1	6.4	14.8	12.7
Ovary	41.9	10.3	31.5	16.3	36.5	9.5	35.6	18.4	40.8	9.6	31.8	17.9	46.5	7.9	24.9	20.7
Thyroid	46.3	15.6	12.6	25.5	62.3	8.9	13.8	15.1	57.5	6.0	21.8	14.6	77.6	13.8	2.5	6.1
Non-melanoma skin*	84.2	11.3	4.5	0.0	82.6	16.2	0.9	0.4	81.1	16.5	0.4	2.0				
Pancreas	4.8	11.6	12.9	70.7	7.5	17.6	14.6	60.4	8.8	22.5	14.0	54.6	13.6	15.4	17.7	53.3
Stomach	16.1	10.8	19.6	53.6	18.5	10.8	22.7	48.0	24.9	12.9	21.0	41.2	29.3	10.0	15.6	45.1
Cervix	46.0	26.0	18.6	9.4	44.6	25.8	15.1	14.6	41.7	22.9	18.9	16.4	35.8	24.7	21.0	18.4

^ TNM staging is only available for some lymphoid and myeloid neoplasms
* Under the AJCC 8 staging system, only non-melanoma of the head & neck and trunk are staged; therefore, staging information for non-melanoma skin in 2018-2022 is omitted

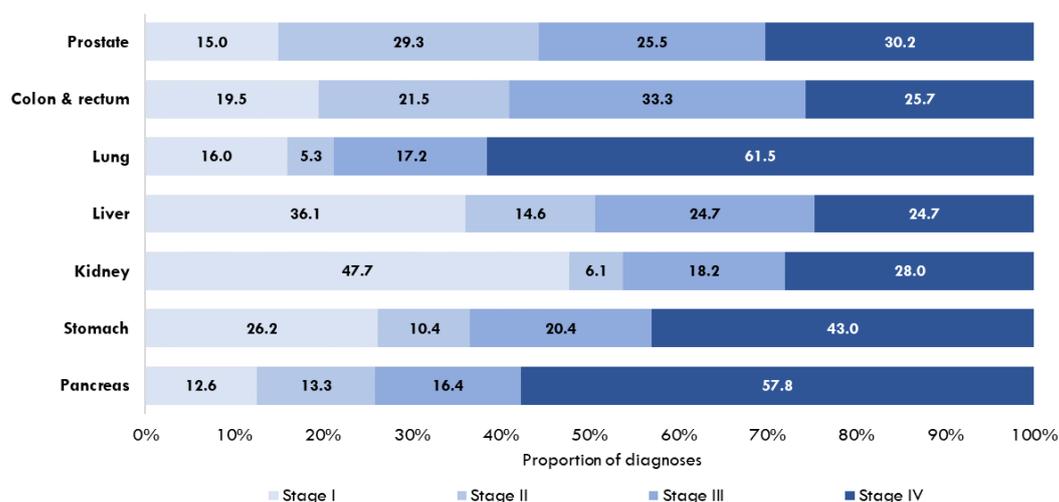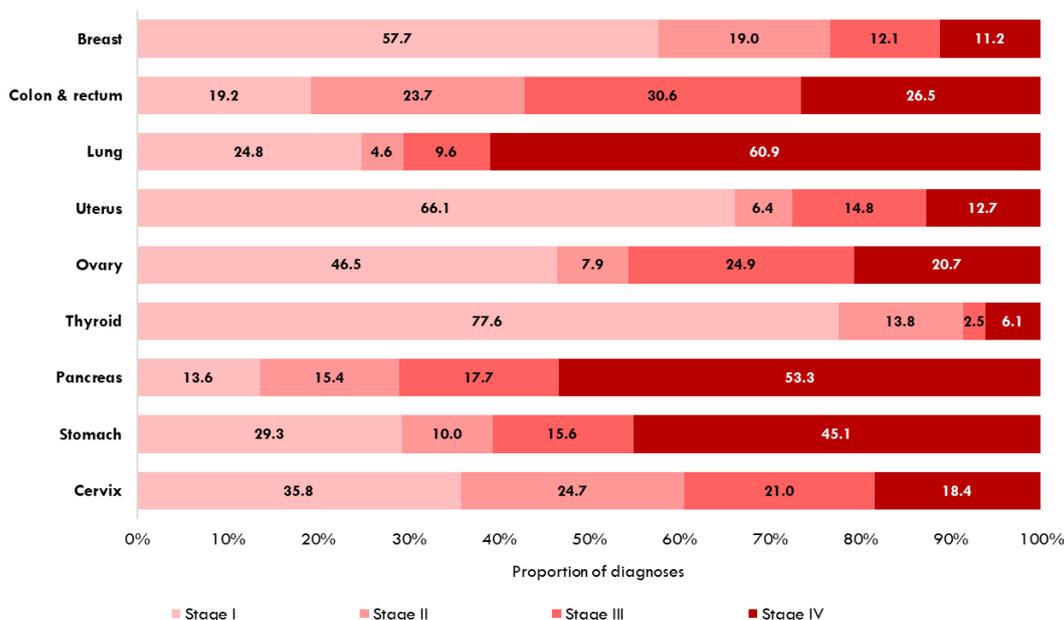**Figure 3.2.1** Stage distribution (%) of selected cancers in males, 2018-2022

Figure 3.2.2 Stage distribution (%) of selected cancers in females, 2018-2022

3.2 Stage distribution for selected cancers by sex, 2003-2022

KEY POINTS

- Staging distribution is linked in part to outcomes in terms of cancer mortality and survival.
- From 2003-2007 to 2013-2017, there had been a slight increase in the proportion of diagnoses at early stages (Stage I and II) for most of the common cancers diagnosed in males and females.
- In 2018-2022, among males, lung, pancreatic, and stomach cancers were more likely to be diagnosed at later stages (78.7%, 74.2%, 63.4% respectively). This pattern was consistent across time.
- Similarly, in 2018-2022, among females, pancreatic, lung, and stomach cancers were also more likely to be diagnosed at later stages (71.0%, 70.5%, and 60.7% respectively). This was seen across all time periods.

CONCLUSION

The World Health Organisation estimates that 30%-50% of all cancer cases are preventable through healthy lifestyle choices (32). It is important that individuals lead lifestyles that lower their risk of cancer, such as avoiding smoking and reducing alcohol intake, along with maintaining a healthy weight by engaging in regular physical activity and consuming healthy and balanced diets. Attending regular health screening for screenable cancers as recommended (based on one's age and sex profile) will also enable these cancers to be detected at early stages and facilitate timely intervention for better prognosis and outcomes. Preventive measures such as these could help individuals live well into old age healthily and reduce the burden of disease at both individual and societal levels.

The increasing trend of cancer incidence and decreasing mortality rates in our population suggest that more individuals diagnosed with cancer have better survival rates. However, the burden of disease posed by cancer will remain a challenge for Singapore's health system and society at large, and emphasises the need for effective measures across the cancer care continuum to improve population health outcomes.

APPENDIX 1

CANCER SITES AND GROUPS USED IN REPORT BY ICD-10 CODES

ICD-10 description	ICD 10 code	Label in report
Nasopharynx	C11	Nasopharynx
Oesophagus	C15	Oesophagus
Stomach	C16	Stomach
Colon	C18	Colon & rectum
Rectosigmoid & rectum	C19-C20	
Liver & intrahepatic bile ducts	C22	Liver
Gallbladder & other biliary tract	C23.9-C24	Gallbladder
Pancreas	C25	Pancreas
Lung (incl. trachea & bronchus)	C33-C34	Lung
Thymus, heart & mediastinum	C37.9-C38.3, C38.8	Heart, thymus & mediastinum
Bones, joints & articular cartilage	C40, C41	Bone
Connective & soft tissues (incl. peripheral nerves)	C47 & C49	Connective tissue
Other skin cancer	C44	Non-melanoma skin
Breast	C50	Breast
Cervix uteri	C53	Cervix
Corpus uteri	C54	Uterus
Ovary	C56.9	Ovary
Prostate	C61	Prostate
Urinary bladder	C67	Bladder
Kidney & other urinary organs	C64 - C66 & C68	Kidney
Brain & Central Nervous System (CNS)	C70, C71-C72	Brain & Central Nervous System
Thyroid gland	C73	Thyroid
Other endocrine glands & related structures	C74-C75	Other endocrine

CLASSIFICATION OF NEOPLASMS OF HAEMATOPOETIC & LYMPHOID TISSUES IN THIS REPORT#

classified based on diagnosed cases with morphology codes ranging from 9590-9993

Lymphoid Neoplasms
Precursor Lymphoid Neoplasms
B Mature Neoplasms
T/NK Mature Neoplasms
Hodgkin's Lymphoma
Immunodeficiency-associated lymphoproliferative disorders
Histiocytic and Dendritic Cell Neoplasms
Malignant Lymphoma NOS
Myeloid Neoplasms and Acute Leukaemia
Acute leukaemia of ambiguous lineage
Acute Myeloid Leukaemia and related Precursor Neoplasms
Myeloproliferative Neoplasms
Myelodysplastic / Myeloproliferative Neoplasms

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