

Chapter 31

Cancer survival in Harare, Zimbabwe, 1993–1997

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Abstract

The Zimbabwe national cancer registry was established in 1985 as a population-based cancer registry covering Harare city. Cancer is not a notifiable disease, and registration of cases is done by active methods. The registry contributed data on randomly drawn sub-samples of Harare resident cases among 17 common cancer sites or types registered during 1993–1997 from black and white populations. Follow-up was carried out predominantly by active methods with median follow-up ranging from 1–54 months for different cancers. The proportion with histologically verified diagnosis for various cancers ranged from 20–100%; death certificate only (DCO) cases comprised 0–34%; 58–97% of total registered cases were included for survival analysis. Complete follow-up at five years ranged from 94–100%. Five-year age-standardized relative survival rates of selected cancers among both races combined were cervix (42%), breast (68%), Kaposi sarcoma (4%), liver (3%), oesophagus (12%), stomach (20%) and lung (14%). Survival was markedly higher among white than black populations for most cancers with adequate cases. Five-year relative survival by age group was fluctuating, with no definite pattern or trend.

Zimbabwe cancer registry

The Zimbabwe national cancer registry was established in 1985 as a population-based cancer registry at the Parirenyatwa Hospital, Medical School of the University of Zimbabwe, Harare, under the support of the Ministry of Health and Child Welfare, IARC and other organizations. It contributed data to the quinquennial IARC publication *Cancer Incidence in Five Continents* in volumes VII (for African (black) and European (white) populations) and VIII (for black population only) [1]. Cancer is not a notifiable disease, and registration of cases is done by active methods. The principal sources of data are the medical records in the cancer departments, hospitals, pathology laboratories in the public and private sectors and specific clinical research studies. The registry covers the Harare city and caters to a population of about 1.5 million in 1997 with a sex ratio of 943 females to 1000 males. The average annual age-standardized incidence rate (ASR) of all cancers except non-melanoma skin among the black population was 223 per 100 000 among males and 219 per 100 000 among females in 1993–1997; the corresponding figures for the white population in 1990–1992 are 291 per 100 000 males and 298 per 100 000 females [1,2,3].

The registry has contributed data on survival from 17 cancer sites or types in this volume of the IARC publication on *Cancer Survival in Africa, Asia, the Caribbean and Central America*. For this study, only sub-samples of Harare resident cases among the 17 common cancers are included. For most cancers, it was intended that a minimum of 150 cases be randomly selected. For cervix and breast cancers and Kaposi sarcoma, the number intended is 300. For breast cancer, it is equally distributed among minority (white) and (black) races. For the rest of cancers, the inclusion of the minority races (other than white) is only by chance [4].

Data quality indices (Table 1)

The proportion of cases with histological confirmation of cancer diagnosis in this series is 65%, varying between 20% for liver cancer and 100% for Hodgkin lymphoma. The proportion of cases registered based on a death certificate only is 10%, ranging from nil to 34%. The exclusion of cases without any follow-up information or other inconsistencies ranged from 1–8%. Thus, 58–97% in the series among different cancers are included in the estimation of the survival probability.

Outcome of follow-up (Table 2)

Follow-up has been carried out predominantly by active methods. Cancer mortality information obtained from accessible death certificates in greater Harare is matched with the registry database. The vital status of the unmatched incident cases is then ascertained by repeated scrutiny of hospital records, postal enquiries and house visits.

The closing date of follow-up was 31st December 1999. The median follow-up varied from 1 month in liver cancer to 54 months for melanoma skin cancer. Complete follow-up at five years from the incidence date ranged from 95% in cancer of the larynx to 100% for many cancers.

Survival statistics (Tables 3a-3c)

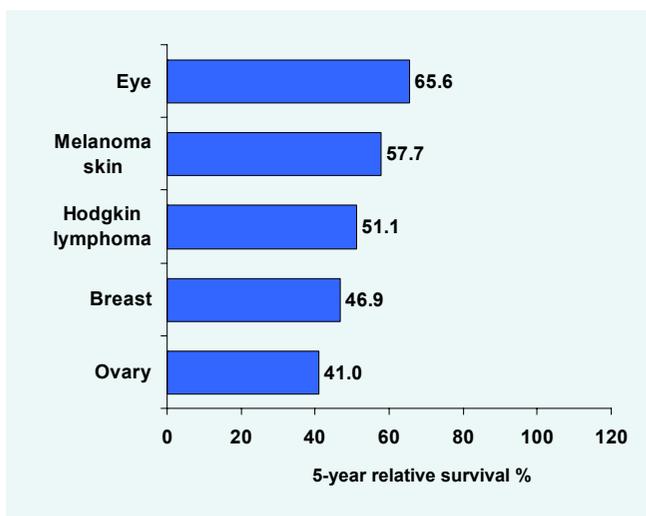
All ages and both sexes together

The survival estimates for different cancers were tabulated separately for the black, white and all races together.

Black population (Table 3a)

The 5-year relative survival estimate was the highest in cancer of the eye (66%). The corresponding figures for melanoma skin and Hodgkin lymphoma are 58% and 51%, respectively. The lowest survival rate was encountered with liver cancer (4%).

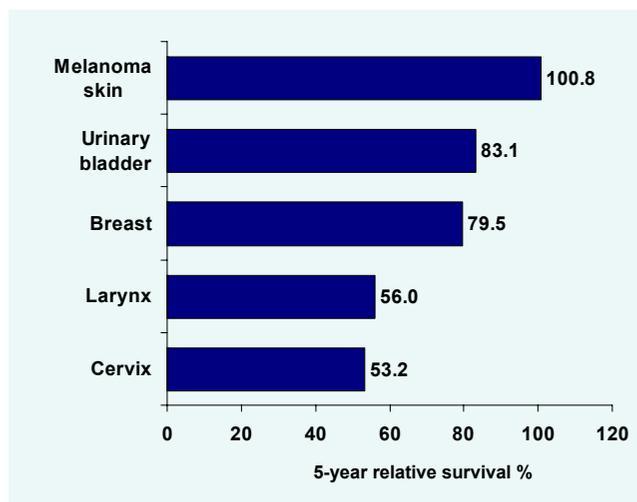
Figure 1a. Top ten cancers (ranked by survival), Black, Harare, Zimbabwe, 1993–1997



White population (Table 3b)

The top ranking cancers on 5-year relative survival estimate are melanoma skin (101%), urinary bladder (83%) and breast (79%). There are very few cases in half the number of cancers under study.

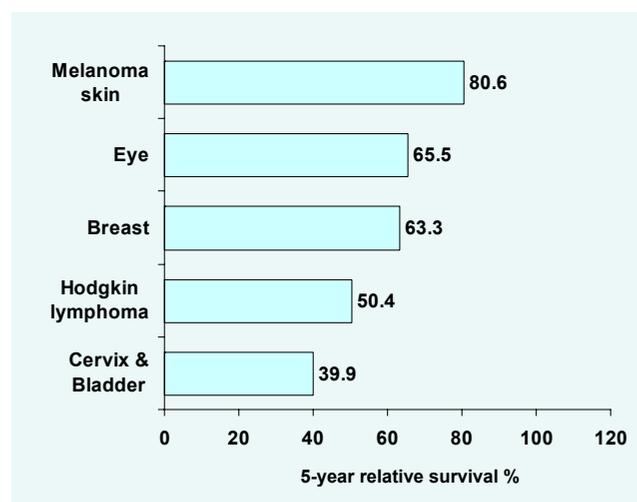
Figure 1b. Top five cancers (ranked by survival), White, Harare, Zimbabwe, 1993–1997



All races together (Table 3c)

For both races together, the 5-year age-standardized relative survival (ASRS) probability for all ages together is either greater than or similar to the corresponding unadjusted one for a majority of cancers. The 5-year ASRS (0–74 years of age) was observed to be either less than or similar to the corresponding ASRS (all ages) for all cancers.

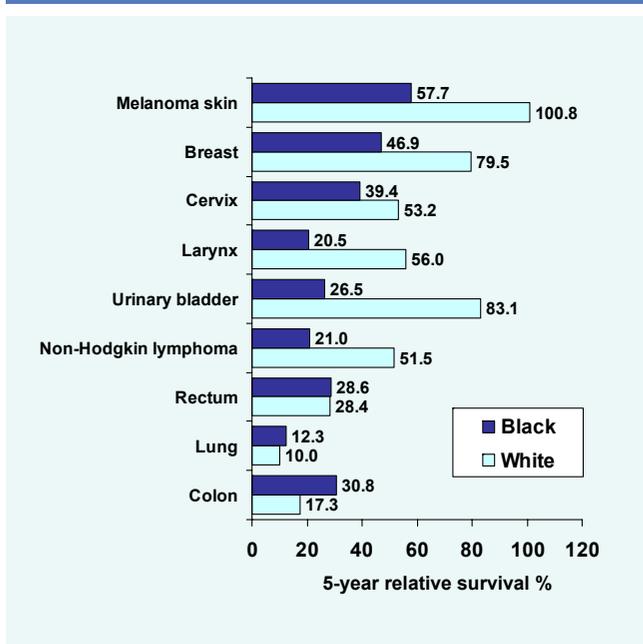
Figure 1c. Top five cancers (ranked by survival), all races, Harare, Zimbabwe, 1993–1997



Black vs white populations

In most cancers where there was an adequate number of cases, the 5-year relative survival was markedly higher among the white than the black population. However, for colon cancer, a higher survival among black than white population was found. There is not much of a difference in survival from cancers of the rectum and lung between the two populations.

Figure 1d. Comparison of 5-year relative survival (%), Harare, Zimbabwe, 1993–1997



Sex

Male (Table 4a)

The 5-year relative survival was distinctly higher among males than females in cancers of the colon, rectum, larynx, breast and urinary bladder.

Female (Table 4a)

The highest 5-year relative survival is observed in melanoma skin (83%) followed by cancers of the eye (74%) and breast (62%). Survival rates from cervix and ovarian cancers were 40% and 37%, respectively. Survival is markedly higher among females than males in cancers of the oesophagus, eye and Hodgkin lymphoma.

Age group (Table 4b)

The 5-year relative survival by age group is seen to fluctuate, with no definite pattern or trend.

References

1. Parkin DM, Whelan SL, Ferlay J and Storm H. *Cancer Incidence in Five Continents, Vol I to VIII: IARC Cancerbase No. 7*. IARC Press, Lyon, 2005.
2. Chokunonga E, Levy LM, Bassett MT, Mauchaza BG, Thomas DB, Parkin DM. Cancer incidence in the African population of Harare, Zimbabwe: Second results from the cancer registry 1993–1995. *Int J Cancer*. 2000; 85: 54–59.
3. Bassett MT, Levy L, Chokunonga E, Mauchaza B, Ferlay J, Parkin DM. Cancer in the European population of Harare, Zimbabwe, 1990–1992. *Int J Cancer*. 1995; 63: 24–28.
4. Gondos A, Chokunonga E, Brenner H, Parkin DM, Sankila R, Borok MZ, Chirenje ZM, Nyakabau AM, Bassett MT. Cancer survival in a southern African urban population. *Int J Cancer*. 2004; 112(5):860–864.

Table 1. Data quality indices - Proportion of histologically verified and death certificate only cases, number and proportion of included and excluded cases by site: Harare, Zimbabwe, 1993–1997 cases* followed-up until 1999, all races together

Site	ICD-10	Total registered	%		Excluded cases					Included cases	
			HV	DCO	DCO	Follow-up	Others	Total	%	No.	%
Oesophagus	C15	146	51.4	8.9	13	0	2	15	10.3	131	89.7
Stomach	C16	144	67.4	9.0	13	2	0	15	10.4	129	89.6
Colon	C18	68	64.7	11.8	8	1	2	11	16.2	57	83.8
Rectum	C19-20	76	76.3	10.5	8	1	0	9	11.8	67	88.2
Liver	C22	149	20.1	10.7	16	1	0	17	11.4	132	88.6
Larynx	C32	80	73.8	7.5	6	1	0	7	8.8	73	91.3
Lung	C33-34	148	40.5	20.9	31	0	1	32	21.6	116	78.4
Melanoma of skin	C43	106	91.5	0.0	0	1	4	5	4.7	101	95.3
Kaposi sarcoma	C46	258	47.3	33.7	87	0	20	107	41.5	151	58.5
Breast	C50	287	77.7	7.7	22	5	2	29	10.1	258	89.9
Cervix	C53	284	72.5	2.1	6	9	5	20	7.0	264	93.0
Ovary	C56	66	62.1	4.5	3	0	0	3	4.5	63	95.5
Prostate	C61	73	57.5	9.6	7	2	0	9	12.3	64	87.7
Urinary bladder	C67	142	59.2	7.0	10	1	1	12	8.5	130	91.5
Eye	C69	130	90.8	0.0	0	6	8	14	10.8	116	89.2
Hodgkin lymphoma	C81	40	100.0	0.0	0	1	0	1	2.5	39	97.5
Non-Hodgkin lymphoma	C82-85+C96	103	91.3	1.0	1	3	0	4	3.9	99	96.1

HV: histologically verified; DCO: death certificate only; * random sample of total incident cases

Table 2. Number and proportion of cases with complete/incomplete follow-up (in years) and median follow-up (in months) by site: Harare, Zimbabwe, 1993–1997 cases* followed-up until 1999, all races together

Site	ICD-10	Cases included	Complete FU		Incomplete FU: lost to FU						% with complete FU at 5 years	Median FU (in months)
			Alive/dead at end of FU		% lost to FU: years from diagnosis							
			No.	%	No.	%	< 1	1-3	3-5	> 5		
Oesophagus	C15	131	131	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	2.3
Stomach	C16	129	127	98.4	2	1.6	1.6	0.0	0.0	0.0	98.4	4.8
Colon	C18	57	57	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	14.6
Rectum	C19-20	67	65	97.0	2	3.0	1.5	1.5	0.0	0.0	97.0	16.1
Liver	C22	132	131	99.2	1	0.8	0.8	0.0	0.0	0.0	99.2	1.0
Larynx	C32	73	69	94.5	4	5.5	5.5	0.0	0.0	0.0	94.5	14.1
Lung	C33-34	116	116	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	2.0
Melanoma of skin	C43	101	100	99.0	1	1.0	1.0	0.0	0.0	0.0	99.0	54.2
Kaposi sarcoma	C46	151	151	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	3.4
Breast	C50	258	250	96.9	8	3.1	2.7	0.4	0.0	0.0	96.9	39.3
Cervix	C53	264	260	98.5	4	1.5	1.1	0.4	0.0	0.0	98.5	26.2
Ovary	C56	63	63	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	18.7
Prostate	C61	64	61	95.3	3	4.7	4.7	0.0	0.0	0.0	95.3	16.6
Urinary bladder	C67	130	127	97.7	3	2.3	1.5	0.8	0.0	0.0	97.7	11.8
Eye	C69	116	114	98.3	2	1.7	0.9	0.9	0.0	0.0	98.3	42.1
Hodgkin lymphoma	C81	39	39	100.0	0	0.0	0.0	0.0	0.0	0.0	100.0	30.6
Non-Hodgkin lymphoma	C82-85+C96	99	97	98.0	2	2.0	2.0	0.0	0.0	0.0	98.0	7.8

FU: follow-up; * from a random sample of total cases

Table 3a. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: Harare, Zimbabwe, Black, 1993–1997 cases* followed-up until 1999

Site	ICD-10	Cases included	% Absolute survival			% Relative survival			% ASRS at 5-years	
			1-year	3-year	5-year	1-year	3-year	5-year	all ages	0-74 years
Oesophagus	C15	124	24.2	13.7	9.0	25.4	15.5	11.1	9.2	12.1
Stomach	C16	110	34.9	16.8	15.7	36.4	19.4	19.8	18.6	19.1
Colon	C18	30	53.3	29.7	25.7	55.4	33.1	30.8	24.9	40.6
Rectum	C19-20	43	55.3	22.6	22.6	57.3	25.3	28.6	66.3	40.3
Liver	C22	131	8.0	3.9	3.0	8.4	4.5	3.7	3.0	3.7
Larynx	C32	48	55.3	35.0	16.2	57.8	39.9	20.5	17.7	22.5
Lung	C33-34	91	14.3	9.8	9.8	14.9	11.2	12.3	16.0	10.8
Melanoma of skin	C43	45	68.9	50.8	47.1	71.4	57.1	57.7	55.6	54.1
Kaposi sarcoma	C46	150	20.7	8.3	5.0	21.0	8.7	5.4	4.4	4.4
Breast	C50	128	71.5	50.6	40.2	73.6	55.4	46.9	54.8	42.9
Cervix	C53	254	67.5	45.2	33.9	69.5	49.3	39.4	44.1	38.7
Ovary	C56	51	56.9	42.8	36.4	58.2	46.0	41.0	39.1	39.1
Prostate	C61	35	42.9	24.8		46.4	30.4			
Urinary bladder	C67	99	41.1	26.3	20.7	42.8	30.1	26.5	35.0	27.4
Eye	C69	115	83.4	71.5	58.3	85.5	76.9	65.6	69.9	69.9
Hodgkin lymphoma	C81	37	67.6	56.6	46.6	68.8	59.5	51.1	46.1	46.1
Non-Hodgkin lymphoma	C82-85+C96	89	39.8	22.8	18.3	40.9	25.0	21.0	31.4	18.0

ASRS: age-standardized relative survival; * random sample of total incident cases

Table 3b. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: Harare, Zimbabwe, White, 1993–1997 cases* followed-up until 1999

Site	ICD-10	Cases included	% Absolute survival			% Relative survival			% ASRS at 5-years	
			1-year	3-year	5-year	1-year	3-year	5-year	all ages	0-74 years
Oesophagus	C15	6	33.3	33.3	33.3	34.9	39.5	45.8	67.8	24.2
Stomach	C16	19	52.6	31.6	31.6	55.4	35.9	38.3	33.7	47.0
Colon	C18	25	56.0	20.0	12.0	60.6	25.2	17.3	13.1	20.1
Rectum	C19-20	24	83.3	37.5	21.9	87.9	44.3	28.4	40.5	34.0
Liver	C22	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Larynx	C32	23	64.4	41.4	36.6	69.4	52.0	56.0	59.3	65.8
Lung	C33-34	24	25.0	7.5	7.5	26.3	8.6	10.0	6.7	10.4
Melanoma of skin	C43	54	92.5	86.9	81.4	96.2	98.0	100.8	105.3	96.2
Kaposi sarcoma	C46	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Breast	C50	116	91.4	75.7	61.9	95.6	87.1	79.5	81.1	74.2
Cervix	C53	9	66.7	44.4	44.4	69.4	50.6	53.2	60.9	65.8
Ovary	C56	11	63.6	36.4	18.2	66.8	43.0	25.0	17.2	9.8
Prostate	C61	28	77.8	64.0		85.3	83.8			
Urinary bladder	C67	29	79.3	72.4	53.0	86.0	93.1	83.1	82.7	67.1
Eye	C69	1	100.0	0.0	0.0	131.5	0.0	0.0	0.0	0.0
Hodgkin lymphoma	C81	2	100.0	33.3		101.1	34.3			
Non-Hodgkin lymphoma	C82-85+C96	8	62.5	37.5	37.5	65.2	43.0	51.5	31.3	17.9

ASRS: age-standardized relative survival; * random sample of total incident cases

Table 3c. Comparison of 1-, 3- and 5-year absolute and relative survival and 5-year age-standardized relative survival by site: Harare, Zimbabwe, all races, 1993–1997 cases* followed-up until 1999

Site	ICD-10	Cases included	% Absolute survival			% Relative survival			% ASRS at 5-years	
			1-year	3-year	5-year	1-year	3-year	5-year	all ages	0-74 years
Oesophagus	C15	131	24.4	14.5	10.1	25.6	16.4	12.7	12.3	12.3
Stomach	C16	129	37.5	19.0	18.1	39.2	21.9	22.6	20.5	22.8
Colon	C18	57	54.4	26.1	18.3	57.5	30.7	23.8	18.8	28.6
Rectum	C19-20	67	65.4	28.0	21.5	68.2	32.2	27.4	45.3	30.3
Liver	C22	132	8.0	3.9	2.9	8.4	4.5	3.7	3.0	3.7
Larynx	C32	73	57.7	36.8	22.8	60.9	43.3	31.1	28.1	29.7
Lung	C33-34	116	17.2	9.3	9.3	18.0	10.7	11.8	13.6	11.4
Melanoma of skin	C43	101	82.1	70.0	65.5	85.2	78.8	80.6	82.7	77.4
Kaposi sarcoma	C46	151	20.5	8.3	5.0	20.9	8.7	5.4	4.4	4.4
Breast	C50	258	81.1	62.7	51.2	84.2	70.5	63.3	67.7	57.8
Cervix	C53	264	67.2	44.9	34.3	69.2	49.1	39.9	42.2	39.1
Ovary	C56	63	57.1	40.9	31.4	58.8	44.7	36.8	38.6	34.0
Prostate	C61	64	58.4	41.9		63.6	53.4			
Urinary bladder	C67	130	50.4	37.5	28.9	53.0	44.6	39.9	55.5	37.2
Eye	C69	116	83.6	70.8	57.7	85.8	76.7	65.5	64.5	69.9
Hodgkin lymphoma	C81	39	69.2	55.9	46.1	70.5	58.7	50.4	46.5	46.5
Non-Hodgkin lymphoma	C82-85+C96	99	41.8	23.6	19.8	43.1	26.0	23.6	41.1	26.0

ASRS: age-standardized relative survival; * random sample of total incident cases

Table 4a. Site-wise number of cases, 5-year absolute and relative survival by sex: Harare, Zimbabwe, 1993–1997 cases* followed-up until 1999, all races together

Site	ICD-10	Cases included	Male			Female		
			% 5-year survival			% 5-year survival		
			No.	Abs	Rel	No.	Abs	Rel
Oesophagus	C15	131	121	9.4	11.6	10	20.0	25.7
Stomach	C16	129	79	17.6	22.4	50	19.0	22.9
Colon	C18	57	47	20.2	26.5	10	10.0	12.6
Rectum	C19-20	67	25	29.4	37.8	42	16.3	20.5
Liver	C22	132	132	2.9	3.7	0		
Larynx	C32	73	64	24.6	33.9	9	12.7	15.8
Lung	C33-34	116	94	9.6	12.2	22		
Melanoma of skin	C43	101	51	61.6	78.1	50	69.9	83.4
Kaposi sarcoma	C46	151	110	5.0	5.3	41	6.5	7.3
Breast	C50	258	5	100.0	149.9	253	50.3	61.9
Cervix	C53	264				264	34.3	39.9
Ovary	C56	63				63	31.4	36.8
Prostate	C61	64	64					
Urinary bladder	C67	130	96	31.2	43.7	34	24.8	31.6
Eye	C69	116	57	48.7	55.4	59	65.2	73.6
Hodgkin lymphoma	C81	39	23	43.8	46.9	16	50.0	56.2
Non-Hodgkin lymphoma	C82-85+C96	99	73	19.0	22.9	26	21.6	24.9

*Abs: absolute survival; Rel: relative survival; * random sample of total cases; * random sample of total incident cases*

Table 4b. Site-wise number of cases and relative survival by age group: Harare, Zimbabwe, 1993–1997 cases* followed-up until 1999, all races together

Site	ICD-10	Cases included	Number of cases by age group					Relative survival by age group				
			% 5-year survival					% 5-year survival				
			< 45	45-54	55-64	65-74	> 75	< 45	45-54	55-64	65-74	> 75
Oesophagus	C15	131	19	32	40	25	15	21.3	10.9	11.9	10.5	12.6
Stomach	C16	129	18	22	43	33	13	23.5	25.7	27.6	15.8	
Colon	C18	57	9	11	13	15	9	12.8	21.0	37.0	31.9	0.0
Rectum	C19-20	67	13	12	22	12	8	25.7	12.0	10.6	64.9	71.0
Liver	C22	132	34	25	29	31	13	10.0		0.0	0.0	0.0
Larynx	C32	73	10	12	17	23	11	22.9	21.6	19.6	52.1	26.2
Lung	C33-34	116	14	21	35	37	9	8.3	16.5	12.9	7.7	19.4
Melanoma of skin	C43	101	29	26	24	13	9	93.0	69.2	82.5	54.3	104.9
Kaposi sarcoma	C46	151	147	4	0	0	0	5.2	0.0			
Breast	C50	258	70	69	51	37	31	51.2	62.2	52.8	66.9	122.8
Cervix	C53	264	109	67	52	27	9	41.5	40.5	24.8	49.2	76.5
Ovary	C56	63	27	12	14	7	3	30.4	39.4	56.5	0.0	64.4
Prostate	C61	64	0	2	11	31	20		0.0			
Urinary bladder	C67	130	22	22	37	28	21	34.0	15.7	22.7	61.4	88.7
Eye	C69	116	99	10	3	3	1	63.7	90.6		134.2	0.0
Hodgkin lymphoma	C81	39	35	3	1	0	0	50.4	73.9			
Non-Hodgkin lymphoma	C82-85+C96	99	63	19	12	3	2	17.7	19.8		42.1	246.1

** random sample of total incident cases*

