Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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Munich Cancer Registry at Munich Cancer Center Marchioninistr. 15 Munich, 81377 Germany

http://www.tumorregister-muenchen.de/en

Cancer statistics: Baseline statistics

C51-C58: Fem. genitale cancer

Year of diagnosis	1998-2012
Patients	18,204
Diseases	18,569
Creation date	03/20/2014
Export date	02/12/2014
Population (females)	2.3 m



http://www.tumorregister-muenchen.de/en/facts/base/base_C5158E.pdf

Global Statements about the statistics on the Internet – Baseline Statistics (grey button —), Survival (red button —)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.5 million inhabitants, account for the frequency of cancer diseases^{##} and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases**** are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR. The time-delayed acquisition of data and the occasionally high DCO-rates indicate optimizing reserves, among others, because of current financial and legal conditions that hinder the analyses.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, March 2014

- Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.51 million to 3.96 in 2002, and to 4.52 million in 2007). Death certificates from 2013 are incorporated into these analyses.
- Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.
- ^{###} DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.



base_C5158E.pdf

INCIDENCE

Table 1

Patient cohorts by year of diagnosis including DCO cases and multiple primaries, and with proportion of deaths and active follow-up

				Prop.		Prop.
		DCO	Prop.	mult.	Prop.	actively
Year of	Cases	cases	DCO	primaries	deaths	followed
diagnosis	n	'n	%	%	%	%
1998	833	62	7.4	22.7	62.8	96.5
1999	820	51	6.2	21.8	59.1	97.2
2000	807	61	7.6	23.5	56.0	98.0
2001	805	67	8.3	23.4	56.9	96.0
2002	1336	156	11.7	23.7	58.8	97.6 #
2003	1338	134	10.0	24.0	57.2	96.0 #
2004	1277	124	9.7	23.3	56.9	96.3 #
2005	1304	102	7.8	22.2	51.4	95.2 #
2006	1294	77	6.0	19.8	48.2	93.5 #
2007	1548	127	8.2	22.9	48.4	83.4 # ##
2008	1552	107	6.9	20.9	44.9	67.1
2009	1432	85	5.9	20.4	39.2	62.8
2010	1472	109	7.4	22.1	37.1	64.9
2011	1442	91	6.3	20.5	30.2	68.4
2012	1309	93	7.1	22.2	23.2	95.9 ###
1998-2012	18569	1446	7.8	22.1	47.3	85.4

[#] The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

^{##} Since 2007 the percentage of actively followed patients sharply declined compared to the previous years. This is a consequence of ambiguous data protection rules that currently forbid cancer registries in Bavaria to obtain the essential life status informations from competent registration offices.

^{###} Please be aware that data of recent annual patient cohorts may not yet be fully processed. Therefore, the presented figures and tables are potentially related to different time periods as pointed out in the respective headlines or legends.

Table 2

Incidence measures by year of diagnosis and gender including DCO cases (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

Year of	Cases	Incidence	Incidence	Incidence	Incidence
diagnosis	n	raw	WS	ES	BRD-S
1998	833	70.8	38.4	53.0	62.8
1999	820	69.1	36.3	50.4	60.0
2000	807	67.2	35.7	49.5	59.1
2001	805	66.2	35.2	48.5	57.6
2002	1336	68.2	34.7	48.5	58.2
2003	1338	67.9	34.4	48.3	57.8
2004	1277	64.6	33.2	46.2	54.8
2005	1304	65.5	33.0	45.9	54.6
2006	1294	64.4	32.4	45.1	53.6
2007	1548	67.0	33.6	47.2	56.1
2008	1552	66.9	33.8	47.0	55.7
2009	1432	61.6	31.2	43.4	51.4
2010	1472	62.9	30.7	43.2	51.7
2011	1442	61.1	30.2	42.2	50.3
2012	1309	55.5	27.0	37.7	45.2
1998-2012	18569	64.7	32.8	45.7	54.4



Table 3

Age distribution parameters by year of diagnosis (incl. DCO)

Year of	Cases		Std.					Median		
diagnosis	n	Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	833	64.6	15.3	14.6	97.0	43.5	54.6	65.6	76.3	84.5
1999	820	65.0	15.7	0.7	99.9	42.4	55.8	65.6	77.0	84.7
2000	807	64.6	15.0	19,9	98.0	42.6	55.0	65.2	76.6	82.9
2001	805	64.9	15.3	14.7	98.8	42.3	55.3	65.3	76.2	83.8
2002	1336	66.2	15.0	13.2	99.4	44.4	57.9	67.1	77.7	83.9
2003	1338	66.5	14.9	7.6	99.4	46.1	57.1	66.9	78.4	84.2
2004	1277	66.0	15.1	1.2	99.8	44.7	56.2	66.7	77.7	84.3
2005	1304	66.3	15.2	1.7	103	43.7	57.2	67.5	77.6	84.9
2006	1294	66.3	15.1	22.9	99.4	44.4	56.2	67.4	77.8	85.2
2007	1548	66.2	14.9	18.3	100	44.3	56.8	67.8	77.3	85.0
2008	1552	66.0	14.8	11.1	102	44.9	56.6	67.8	77.2	84.8
2009	1432	66.0	15.1	11.2	102	44.4	55.9	67.7	77.2	84.6
2010	1472	66.8	14.8	17.0	98.7	46.1	57.0	68.6	77.3	85.4
2011	1442	66.3	14.7	4.1	98.5	45.6	56.5	68.8	77.0	84.2
2012	1309	66.9	15.0	0.3	101	45.7	57.6	69.2	77.4	84.9
1998-2012	18569	66.0	15.0	0.3	103	44.5	56.5	67.5	77.3	84.6

Table 4 $\label{eq:Age_distribution} \mbox{Age distribution by 5-year age group for period 1998-2012} \mbox{(incl. DCO)}$

Age at			
diagnosis	Cases		
Years	n	%	Cum.%
0-4	7	0.0	0.0
5-9	/ 1	0.0	0.0
10-14	/ 10	0.1	0.1
15-19	20	0.1	0.2
20-24	35	0.2	0.4
25-29	139	0.7	1.1
30-34	313	1.7/	2.8
35-39	575	3.1	5.9
40-44	840	4.5	10.4
45-49	962	5.2	15.6
50-54	1326	7.1	22.8
55-59	1707	9.2	32.0
60-64	2156	11.6	43.6
65-69	2424	13.1	56.6
70-74	2418	13.0	69.6
75-79	2083	11.2	80.9
80-84	1826	9.8	90.7
85+	1727	9.3	100.0
All ages	18569	100.0	

Included in the statistics are 24.7% multiple primaries.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 1998-2012

Age at			DCO rate	Prop. all cancers	
diagnosis	Cases	Age-spec.	n=1432	n=142297	
Years	n	incidence	%	%	
		/		•	
0- 4	7 /	0.5	28.6	3.1	
5- 9	1/	0.1		0.9	
10-14	10	0.7		6.2	
15-19	20	1.5		7.5	
20-24	35	2.1		7.2	
25-29	136	7.2	0.7	13.3	
30-34	312	15.2		16.5	
35-39	568	25.6	0.5	16.2	
40-44	830	36.1	1.3	14.3	
45-49	940	44.4	2.3	11.8	
50-54	1298	68.7	1.4	12.7	
55-59	1677	94.1	2.1	13.1	
60-64	2121	121.9	1.8	13.1	
65-69	2389	149.0	2.9	13.5	
70-74	2386	173.0	5.4	14.1	
75-79	2055	187.9	10.3	12.6	
80-84	1801	208.5	17.0	12.2	
85+	1715	209.4	34.2	10.7	
All ages	18301		7.8	12.9	
Incidence					
Raw		63.8			
WS		32.3			
ES		45.0			
BRD-S		53.6			

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

Table 6

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2012

		Observed 1	Expected		LCL	UCL		DCO
Diagnos	is	n	n	SIR	95%	95%	EAR	%
C03-C06	Oral cavity	/ 7	3.1	2.3	0.9	4.7	0.8	
C09-C10	Oropharynx	4	2.1	1.9	0.5	4.8	0.4	
C15	Oesophagus	/ 2 /	2.8	0.7	0.1	2.6	-0.2	
C16	Stomach	27/	18.7	1.4	0.9	2.1	1.7	14.8
C17	Small intestine	/ 11	2.3	4.8	2.4	8.6 #	1.8	9.1
C18	Colon	133	51.5	2.6	2.2	3.1 #	16.8	16.5
C19-C20	Rectum	51	22.7	2.2	1.7	3.0 #	5.8	11.8
C21	Anus/canal	14	2.7	5.2	2.8	8.7 #	2.3	7.1
C22	Liver	12	5.7	2.1	/ 1.1	3.7 #	1.3	25.0
C23-C24	Bile	14	7.4	1.9/	1.0	3.2 #	1.4	21.4
C25	Pancreas	40	21.6	1.9	1.3	2.5 #	3.8	35.0
C26	GI cancer	4	0.9	4.5	1.2	11.6 #	0.6	50.0
C33-C34	Lung	106	35.3	3.0	2.5	3.6 #	14.5	14.2
C38,C45	Mesothelioma	3	0.9	3.2	0.7	9.5	0.4	
C43	Malign. melanoma	26	18.2	1.4	0.9	2.1	1.6	3.8
C46,C49	Soft tissue	10	2.8	3.5	1.7	6.5 #	1.5	
C48	Peritoneal	10	1.7	6.0	2.9	11.1 #	1.7	
C50	Breast	342	157.3	2.2	1.9	2.4 #	38.0	5.3
C51	Vulva	20	4.8	4.2	2.5	6.4 #	3.1	5.0
C52	Vagina	10	1.0	10.3	5.0	19.0 #	1.9	
C53	Cervix uteri	18	7.5	2.4	1.4	3.8 #	2.2	33.3
C54	Corpus uteri	90	28.7	3.1	2.5	3.9 #	12.6	11.1
C55,C57	Fem. genitals un	2	1.2	1.7	0.2	6.0	0.2	100.0
C56	Ovary	131	21.7	6.1	5.1	7.2 #	22.5	16.8
C64	Kidney	21	12.7	1.7	1.0	2.5 #	1.7	4.8
C65	Renal pelvis	10	1.5	6.7	3.2	12.2 #	1.7	10.0
C67	Bladder	23	9.3	2.5	1.6	3.7/#	2.8	8.7
C68	Urethra	3	0.2	18.6	3.8	54.4 #	0.6	
C70-C72	CNS cancer	12	7.3	1.6	0.8	2.9	1.0	25.0
C73	Thyroid	23	9.8	2.4	1.5	3.5 #	2.7	
C76-C79	CUP	18	8.9	2.0	1.2	3.2 #	1.9	16.7
C81	Hodgkin lymphoma	4	1.0	4.0	1.1	10.2 #	0.6	
C82-C85		40	19.5	2.1	1.5	2.8 #	4.2	2.5
C90	Mult. myeloma	8	6.3	1.3	0.6	2.5	0.4	25.0
C91-C96	Leukaemia	19	8.0	2.4	1.4	3.7 #	2.3	36.8
Other p	rimaries	7	3.1	2.3	0.9	4.7	0.8	14.3
Not obse		Ó	5.4	0.0	0.0	0.7 #	-1.1	5
		, and the second	7	3.0	3.0	∵, п		
All mult	t. primaries	1275	515.3	2.5	2.3	2.6 #	156.4	11.9

Patients	12473
Mean age at second malignancy (years)	69.5
Person-years	48587
Mean observation time (years)	3.9
Median observation time (years)	2.8

The occurrence of second malignancy is statistically significant.

Observed second malignancies with count 1 are pooled in category "Other primaries".



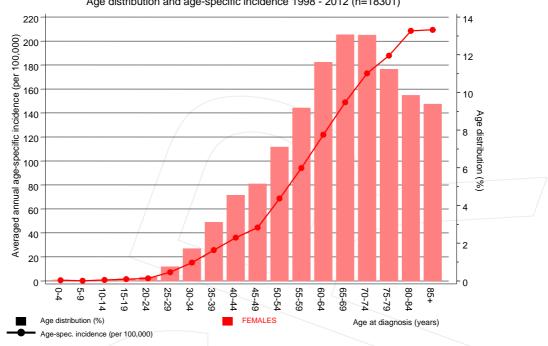


Figure 7. Age distribution and age-specific incidence



C51-C58: Malignant neoplasms of female genital organs

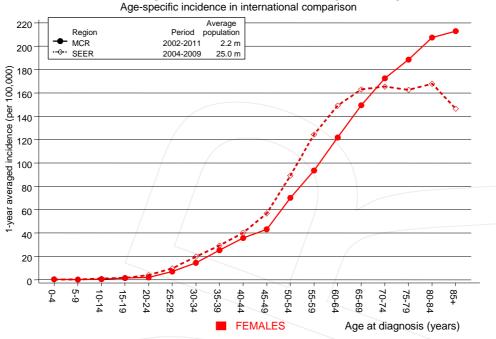


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).



Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2012, based on the November 2011 submission. http://www.seer.cancer.gov.

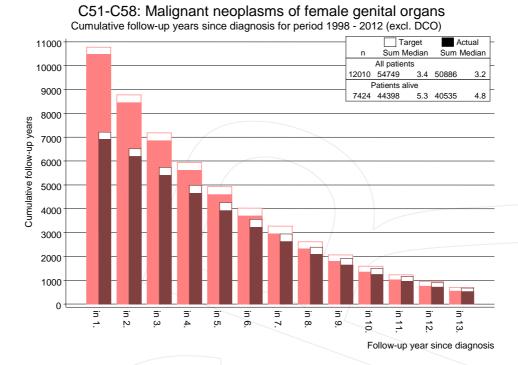


Figure 8. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.



Average incidence (world standard population) 2003 - 2008

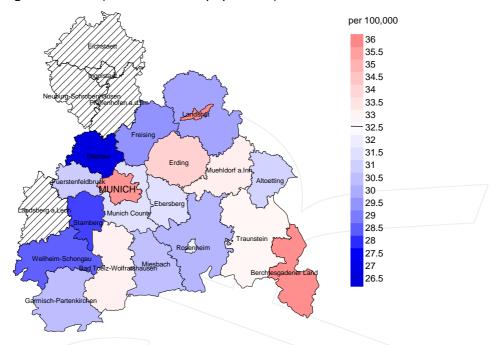
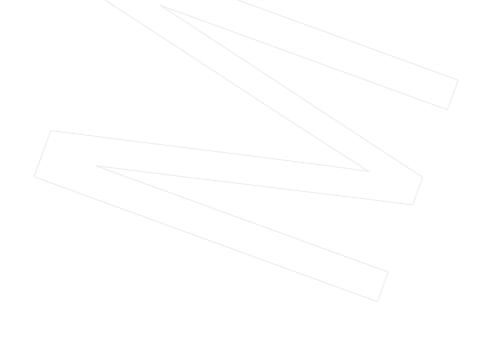


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (32.6/100,000 WS N=7,793). Since cancer data are not available in some counties until 2007, the local incidence rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 230 women were identified with newly diagnosed fem. genitale cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 31.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 26.0 and 38.7/100,000.



Standardized incidence ratio (SIR) 2003 - 2008

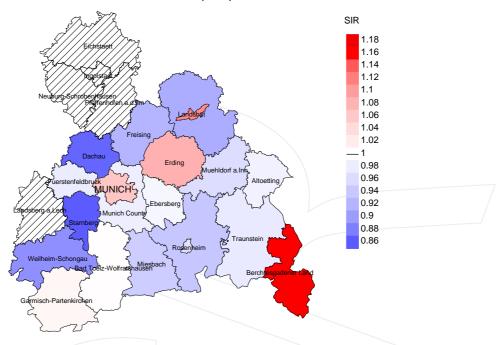
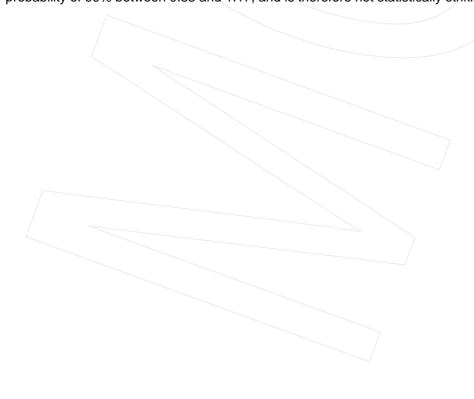


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (N=7,793). Since cancer data are not available in some counties until 2007, the local SIR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 230 women were identified with newly diagnosed fem. genitale cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.99. Though, the value of this parameter may vary with an underlying probability of 99% between 0.83 and 1.17, and is therefore not statistically striking.



MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts, and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

		Prop.				Prop. deaths
	Incident	actively	Prop.		Prop.	with death
Year of	cases	followed	DCO	Deaths	deaths	certific.
diagnosis	n	96	%	n	%	%
1998	833	96.5	7.4	523	62.8	89.9
1999	820	97.2	6.2	485	59.1	94.0
2000	807	98.0	7.6	452	56.0	94.0
2001	805	96.0	8.3	458	56.9	96.3
2002	1336	97.6	11.7	786	58.8	96.8
2003	1338	96.0	10.0	765	57.2	97.1
2004	1277	96.3	9.7	726	56.9	97.7
2005	1304	95.2	7.8	670	51.4	97.5
2006	1294	93.5	6.0	624	48.2	98.7
2007	1548	83.4	8.2	749	48.4	98.3
2008	1552	67.1	6.9	697	44.9	97.8
2009	1432	62.8	5.9	561	39.2	97.3
2010	1472	64.9	7.4	546	37.1	97.4
2011	1442	68.4	6.3	435	30.2	97.2
2012	1309	95.9	7.1	304	23.2	94.1
1998-2012	18569	85.4	7.8	8781	47.3	96.6

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis (incl. DCO)

			Prop. deaths		Prop.
Year of	Incident		with death	Deaths in	deaths in
diagnosis/	cases	Deaths	certific.	same year	same year
death	n	n	%	n	%
1998	833	463	88.6	122	14.6
1999	820	495	88.9	117	14.3
2000	807	481	92.3	117	14.5
2001	805	481	92.5	112	13.9
2002	1336	781	95.6	270	20.2
2003	1338	805	97.3	228	17.0
2004	1277	796	97.5	217	17.0
2005	1304	823	96.6	192	14.7
2006	1294	778	96.7	181	14.0
2007	1548	914	97.7	251	16.2
2008	1552	928	99.4	219	14.1
2009	1432	936	99.1	181	12.6
2010	1472	957	98.9	229	15.6
2011	1442	1009	97.8	211	14.6
2012	1309	909	98.0	206	15.7
1998-2012	18569	11556	96.6	2853	15.4

Table 10c

Annual cohorts of deaths, proportion of cancer-related and not cancer-related deaths, and cancer recorded on death certificates (incl. DCO)

(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.52 m as of 2007, respectively)

				Prop.	
				cancer	
		Prop.	Prop.	recorded	
		cancer-	not cancer-	on death	
Year of	Deaths	related	related	certificate	
death	n	%	%	90	
1998	463	68.0	32.0	84.6	
1999	495	71.1	28.9	83.9	
2000	481	71.1	28.9	80.9	
2001	481	68.0	32.0	82.9	
2002	781	73.9	26.1	84.5	
2003	805	73.8	26.2	82.9	
2004	796	75.5	24.5	82.9	
2005	823	75.2	24.8	82.9	
2006	778	70.6	29.4	80.9	
2007	914	73.5	26.5	80.5	
2008	928	74.8	25.2	80.0	
2009	936	70.8	29.2	78.0	
2010	957	75.1	24.9	81.3	
2011	1009	70.8	29.2	78.2	
2012	909	68.6	31.4	77.4	
1998-2012	11556	72.4	27.6	81.1	

Table 11

Means of age at death according to the grouping in Table 10

					Age at
		Age at	Age at	Age at	death
		death	death	death	(according
		(all	(cancer-	(not cancer-	to death
Year of	Deaths	causes)	related)	related)	certificate)
death	n	Years	Years	Years	Years
1998	463	74.2	71.5	80.0	73.8
1999	495	75.1	72.8	80.5	74.9
2000	481	75.6	73.4	80.8	74.5
2001	481	74.9	71.7	81.6	73.6
2002	781	74.7	71.9	82.7	73.1
2003	805	74.8	72.0	82.6	73.2
2004	796	75.1	72.5	83.0	73.5
2005	823	75.3	72.6	83.5	73.5
2006	778	75.7	72.7	82.8	74.1
2007	914	76.1	73.2	84.1	74.4
2008	928	75.5	72.4	84.6	73.2
2009	936	75.4	72.0	83.9	72.8
2010	957	75.9	73.3	83.9	74.1
2011	1009	76.0	72.8	83.8	73.8
2012	909	77.3	74.1	84.2	74.7
1998-2012	11556	75.5	72.6	83.1	73.8



Deaths of patients are considered to be cancer-related, in case that fact was recorded on the death certificate, or patients had suffered from metastasis or recurrence.

Table 12

Mortality measures (cancer-related death) and mortality-incidence-index by year of death

Year of	Deaths	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index	Mort.	MI-Index
death	n	raw	raw	WS	WS	ES	ES	BRD-S	BRD-S
1998	315	26.8	0.39	11.8	0.32	17.6	0.34	22.4	0.36
1999	352	29.7	0.43	12.3	0.34	18.7	0.38	24.9	0.42
2000	343	28.6	0.43	11/.5	0.33	17.6	0.36	23.5	0.40
2001	327	26.9	0.41	11.6	0.33	17.2	0.36	22.2	0.39
2002	577	29.5	0.44	12.5	0.37	18.6	0.39	24.2	0.42
2003	594	30.2	0.45	12.6	0.37	18.9	0.40	24.6	0.43
2004	601	30.4	0.48	12.5	0.38	18.7	0.41	24.2	0.45
2005	619	31.1	0.48	12.6	0.39	18.9	0.42	24.3	0.45
2006	549	27.3	0.43	10.9	0.34	16.4	0.37	21.6	0.41
2007	672	29.1	0.44	11.2	0.34	16.9	0.37	22.3	0.41
2008	694	29.9	0.45	11.9	0.36	17.8	0.38	23.0	0.42
2009	663	28.5	0.47	11.6	0.38	17.2	0.40	22.1	0.43
2010	719	30.7	0.49	11.8	0.39	17.7	0.41	23.2	0.45
2011	715	30.3	0.50	11.9	0.40	17.9	0.43	22.9	0.46
2012	624	26.4	0.48	9.7	0.36	14.9	0.40	19.9	0.45
1998-2012	8364	29.1	0.46	11.7	0.36	17.6	0.39	22.9	0.43

Table 13

Age distribution of age at death (cancer-related) for period 1998-2012 (incl. multiple primaries)

Age at					
death	Cases				
Years	n	%	Cum.%		
0-4	1	0.0	0.0		
5-9	/ 1	0.0	0.0		
10-14	/ 0	0.0	0.0		
15-19	/ 1	0.0	0.0		
20-24	4	0.0	0.1		
25-29	/ 11	0.1	0.2		
30-34	35	0.4	0.6		
35-39	76	0.9	1.5		
40-44	165	1.9	3.4		
45-49	260	3.0	6.4		
50-54	349	4.0	10.5		
55-59	553	6.4	16.9		
60-64	738	8.5	25.4		
65-69	1076	12.5	37.9		
70-74	1224	14.2	52.0		
75-79	1265	14.6	66.7		
80-84	1389	16.1	82.8		
85+	1489	17.2	100.0		
All ages	8637	100.0			

Included in the statistics are 24.7% multiple primaries.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2012 (incl. multiple primaries)

Age at				Prop. all	
death	Cases	Age-spec.		cancers	
Years	n /	mortality	MI-index	%	
0- 4	1	0.1	0.14	4.3	
5- 9	/1	0.1	1.00	2.6	
10-14		0.0			
15-19	/ 1 /	0.1	0.05	2.9	
20-24	/ 4 /	0.2	0.11	8.5	
25-29	/ 11 /	0.6	0.08	10.1	
30-34	35	1.7	0.11	16.4	
35-39	76	3.4	0.13	15.3	
40-44	165	7.2	0.20	15.4	
45-49	260	12.3	0.27	13.8	
50-54	349	18.5	0.26	12.1	
55-59	553	31.0	0.32	12.4	
60-64	738	42.4	0.34	12.2	
65-69	1076	67.1	0.44	14.0	
70-74	1224	88.8	0.51	13.6	
75-79	1265	115.6	0.61	12.8	
80-84	1389	160.8	0.76	13.3	
85+	1489	181.8	0.86	11.8	
051	1407	101.0	0.00	11.0	
All ages	8637			12.9	
Mortality					
Raw		30.1	0.47		
WS		12.1	0.37		
ES C		18.2	0.40		
BRD-S		23.7	0.44		
PYLL-70					
per 100,000		147.7			
ES		126.4			
AYLL-70		11.1			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15

Multiple primaries in deaths in period 1998-2012

				_	_	Syn- chron	Syn- chron		
		Total	Total	Pre	Pre	±30d	±30d	Post	Post
Diagnosis		n	%↓	n	-%	n	←%	n	-%
G1.6	1.	100	2.4	1.0	15.5	1.0	0 0	0.1	75.0
C16 Stom		108	3.4	17	15.7	10	9.3	81	75.0
C18 Colo		335	10.5	105	31.3	52	15.5	178	53.1
C19-C20 Rect	um	179	5.6	62	34.6	16	8.9	101	56.4
C23-C24 Bile		39	1.2	9	23.1	2	5.1	28	71.8
C25 Panc		101	3.2	8	7.9	7	6.9	86	85.1
C33-C34 Lung		256	8.0	27	10.5	21	8.2	208	81.3
	gn. melanoma	87	2.7	48	55.2	1	1.1	38	43.7
	others	85	2.7	34	40.0	12	14.1	39	45.9
	toneal	39	1.2	14	35.9	12	30.8	13	33.3
C50 Brea	st	850	26.6	481	56.6	78	9.2	291	34.2
C51 Vulv	a	48	1.5			3	6.3	45	93.8
C52 Vagi	na	33	1.0			7	21.2	26	78.8
C53 Cerv	ix uteri	33	1.0			6	18.2	27	81.8
C54 Corp	us uteri	52	1.6			16	30.8	36	69.2
C56 Ovar	У	185	5.8			83	44.9	102	55.1
C64 Kidn	ey	62	1.9	21	33.9	6	9.7	35	56.5
C67 Blad	der	136	4.3	37	27.2	_ 11	8.1	88	64.7
C70-C72 CNS	cancer	58	1.8	17	29.3	5	8.6	36	62.1
C73 Thyr		33	1.0	20	60.6	1	3.0	12	36.4
C76-C79 CUP		64	2.0	17	26.6	7	10.9	40	62.5
C82-C85 NHL		73	2.3	25	34.2	6	8.2	42	57.5
C91-C96 Leuk	aemia	69	2.2	7	10.1	5	7.2	57	82.6
0,1 0,0 100.1				•			/\-	.	02.0
Other primar	ies	271	8.5	72	26.6	20	7.4	179	66.1
All mult. pr	imaries	3196	100.0	1021	31.9	387	12.1	1788	55.9
						/			

Multiple primaries with number of cases n<30 are pooled in category "Other primaries".

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2012

(Singular primaries only *)

Age at				Prop. all	
death	Cases	Age-spec.		cancers	
Years	n /	mortality	MI-index	%	
0 - 4	1	0.1	0.14	4.3	
5- 9	/1	0.1	1.00	2.8	
10-14		0.0			
15-19	/ 1	0.1	0.05	3.2	
20-24	4	0.2	0.11	9.3	
25-29	9 /	0.5	0.07	8.7	
30-34	29	1.4	0.10	15.5	
35-39	72	3.2	0.13	16.0	
40-44	144	6.3	0.19	15.4	
45-49	220	10.4	0.26	13.5	
50-54	283	15.0	0.25	11.7	
55-59	471	26.4	0.32	12.5	
60-64	623	35.8	0.34	12.6	
65-69	855	53.3	0.42	13.7	
70-74	1003	72.7	0.52	14.0	
75-79	1027	93.9	0.61	13.0	
80-84	1123	130.0	0.77	13.5	
85+	1218	148.7	0.88	12.0	
	1110		3.00		
All ages	7084			13.0	
mil ages	, 001			\ 13.0	
Mortality					
Raw		24.7	0.45		
WS		10.0	0.36		
ES		15.0	0.39		
BRD-S		19.4	0.42		
BRD B		17.1	0.12		
PYLL-70					
per 100,000		125.3			
ES ES		107.2			
AYLL-70		11.3			
AIDD-10		11.3			

^{*} See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers for period 1998-2012

(Single primaries only *)

Age at death Years	Cases n	Age-spec. mortality	MI-index	Prop. all cancers	
ICALD	11	morearrey	MI INGCX	0	
0- 4	1	0.1	0.14	4.3	
5- 9	$\sqrt{1}$	0.1	1.00	2.9	
10-14	/ =	0.0	1.00	2.5	
15-19	/ 1	0.1	0.05	3.8	
20-24	4	0.2	0.11	10.0	
25-29	9	0.5	0.07	9.3	
30-34	27	1.3	0.09	16.0	
35-39	65	2.9	0.12	15.8	
40-44	134	5.8	0.18	15.6	
45-49	197	9.3	0.25	13.5	
50-54	241	12.8	0.23	11.1	
55-59	405	22.7	0.30	12.1	
60-64	539	31.0	0.32	12.5	
65-69	698	43.5	0.38	13.1	
70-74	809	58.7	0.46	13.4	
75-79	794	72.6	0.52	11.9	
80-84	861	99.7	0.63	12.4	
85+	977	119.3	0.73	11.1	
031	211	117.5	0.75	11.1	
All ages	5763			12.3	
Mortality					
Raw		20.1	0.40		
WS		8.3	0.40		
ES		12.4	0.32		
BRD-S		15.9	0.34		
בעאם		15.9	0.37		
PYLL-70					
per 100,000		110.3			
ES ES		94.5			
AYLL-70					
AILL-/U		11.7			

^{*} See corresponding tables with multiple primaries.

C51-C58: Malignant neoplasms of female genital organs Age distribution and age-specific mortality 1998 - 2012 (n=8364)

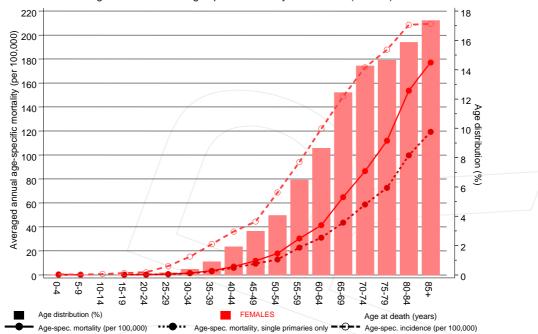


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at fem. genitale cancer-related death (see Table 10) should be considered.



Average mortality (world standard population) 2003 - 2008

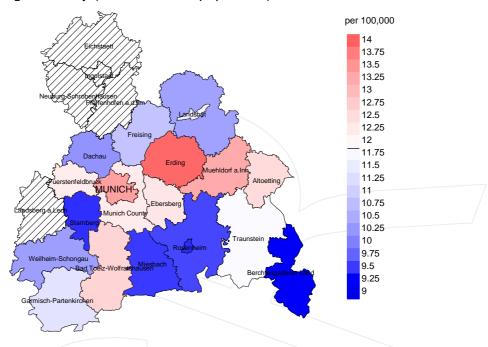


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (11.9/100,000 WS N=3,550). Since cancer data are not available in some counties until 2007, the local mortality rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 113 women died from fem. genitale cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 12.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 9.3 and 16.1/100,000.



Standardized mortality ratio (SMR) 2003 - 2008

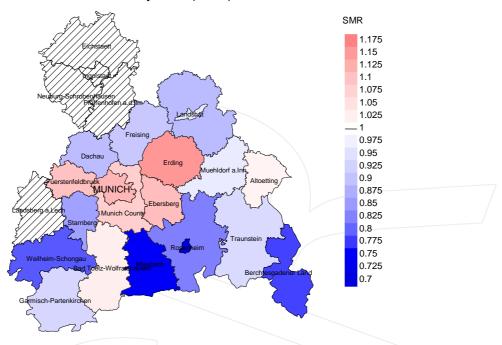


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (N=3,550). Since cancer data are not available in some counties until 2007, the local SMR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 113 women died from fem. genitale cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.11. Though, the value of this parameter may vary with an underlying probability of 99% between 0.86 and 1.40, and is therefore not statistically striking.



Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. All multiple primaries included

The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. First singular primary (no information about other prior or synchronous malignancy)

The mortality statistic describes the tumor-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. Single primary (no information about other prior, syn- or metachronous malignancy)

The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

AYLL-70 Average years of life lost prior to age 70 given a person dies before that age

BRD-S German standard population

DCO Death certificate only EAR Excess absolute risk

= excess cancer cases (O - E) per 10,000 person-years

ES European standard population (old) FRG Federal Republic of Germany

GEKID Association of Population-based Cancer Registries in Germany

(Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)

LCL Lower confidence limit

MI-index Ratio between mortality and incidence

MCR Munich Cancer Registry (Tumorregister München)

PYLL-70 Potential years of life lost prior to age 70 given a person dies before that age

SEER Surveillance, Epidemiology, and End Results (USA)

SIR Standardized incidence ratio
SMR Standardized mortality ratio
UCL Upper confidence limit
WS World standard population

Recommended Citation

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