Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C00-C97: All cancers (excl. C44)

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	312,947
Diseases	343,595
Creation date	04/13/2016
Export date	12/23/2015
Population	4.64 m

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
Munich, 81377
Germany

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

http://www.tumorregister-muenchen.de/en/facts/base/bC0097E-ICD-10-C00-C97-All-cancers-excl.-C44-incidence-and-mortality.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 4.64 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.

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, April 2016

[#] 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).

[##] 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.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C00-C97	Malignant neoplasms Excl.: C44.- Other malignant neoplasms of skin

INCIDENCE

Table 1

All patients with invasive cancer by year of diagnosis, proportions of DCO, multiple primaries, deaths, and active follow-up (incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %	
1998	12231	1331	10.9	23.9	71.0	97.8	
1999	12173	1256	10.3	24.2	68.6	97.7	
2000	12184	1403	11.5	24.6	66.7	97.9	
2001	12626	1407	11.1	25.1	64.7	97.2	
2002	21737	3157	14.5	25.3	65.7	97.4	#
2003	21273	2633	12.4	25.0	62.9	96.8	
2004	21472	2447	11.4	25.0	60.1	96.5	
2005	21441	2147	10.0	25.8	58.1	95.5	
2006	21522	1873	8.7	26.0	55.5	93.0	
2007	24834	2264	9.1	24.8	54.0	78.8	#
2008	25206	2096	8.3	25.5	51.2	72.4	
2009	24842	1966	7.9	25.8	49.0	71.8	
2010	24600	2016	8.2	25.8	46.6	71.2	
2011	24735	1921	7.8	25.4	43.6	71.1	
2012	24617	1853	7.5	24.8	38.8	74.8	
2013	22837	1862	8.2	24.8	33.6	99.1	
2014	15265	1761	11.5	24.6	23.4	96.8	##
1998-2014	343595	33393	9.7	25.2	52.3	86.6	

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

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be found in the respective headings.

Table 1a

All patients with invasive cancer
by year of diagnosis and gender
(incl. DCO)

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	12231	6050	6181	49.5
1999	12173	6029	6144	49.5
2000	12184	6190	5994	50.8
2001	12626	6374	6252	50.5
2002	21737	11281	10456	51.9
2003	21273	11100	10173	52.2
2004	21472	11132	10340	51.8
2005	21441	11038	10403	51.5
2006	21522	11151	10371	51.8
2007	24834	13024	11810	52.4
2008	25206	12839	12367	50.9
2009	24842	12582	12260	50.6
2010	24600	12345	12255	50.2
2011	24735	12570	12165	50.8
2012	24617	12542	12075	50.9
2013	22837	11554	11283	50.6
2014	15265	7116	8149	46.6
1998-2014	343595	174917	168678	50.9

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	6050	6181	546.0	525.4	341.1	273.0	496.8	381.4	636.3	459.1
1999	6029	6144	538.7	517.8	330.6	269.6	482.6	375.3	613.0	451.1
2000	6190	5994	543.5	499.0	331.2	258.9	483.7	361.4	615.9	433.6
2001	6374	6252	550.0	513.9	332.7	267.4	484.7	373.5	612.0	447.0
2002	11281	10456	605.5	534.0	351.0	265.5	513.8	373.9	654.0	453.5
2003	11100	10173	592.1	516.4	339.3	259.2	495.0	362.5	627.9	436.2
2004	11132	10340	591.7	523.1	333.9	265.0	484.2	367.7	613.4	441.3
2005	11038	10403	582.7	522.8	325.5	260.6	468.9	363.3	592.3	436.6
2006	11151	10371	582.3	516.3	318.8	258.0	462.3	358.8	584.8	429.6
2007	13024	11810	588.0	511.4	322.2	255.9	464.4	356.1	585.7	425.7
2008	12839	12367	576.9	532.9	308.8	266.3	445.9	369.5	562.4	441.6
2009	12582	12260	563.7	527.2	296.8	262.7	429.1	364.9	540.8	435.5
2010	12345	12255	547.7	523.6	288.3	256.6	414.8	356.9	520.2	426.7
2011	12570	12165	550.2	515.5	283.8	253.9	409.0	351.3	515.9	418.3
2012	12542	12075	549.0	511.7	283.0	252.6	408.3	349.6	517.2	418.4
2013	11554	11283	505.7	478.2	260.0	236.2	376.2	327.4	478.0	391.2
2014	7116	8149	311.5	345.3	156.0	167.9	230.2	235.5	294.7	281.7
1998-2014	174917	168678	546.3	504.7	298.5	252.2	432.1	351.0	545.9	420.5

The computation of the incidence measures includes all primaries, irrespective of first or subsequent malignancy.

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	12231	65.9	14.8	0.1	107	47.4	57.0	67.0	76.7	84.4
1999	12173	66.0	14.7	0.3	104	47.5	57.5	67.0	76.7	84.3
2000	12184	66.0	14.8	0.2	103	47.3	57.7	66.8	76.9	84.4
2001	12626	66.0	14.4	0.1	103	47.5	57.9	66.6	76.3	83.5
2002	21737	67.3	14.4	0.0	104	48.4	59.4	68.2	77.6	84.3
2003	21273	67.0	14.4	0.2	105	48.5	59.3	67.9	77.3	83.7
2004	21472	66.8	14.4	0.0	103	47.6	59.1	67.6	77.1	83.9
2005	21441	67.0	14.5	0.0	103	48.2	59.4	68.0	77.2	84.0
2006	21522	67.1	14.2	0.2	103	48.2	59.3	68.1	77.1	84.1
2007	24834	66.9	14.5	0.0	103	47.5	59.1	68.3	77.2	84.2
2008	25206	67.2	14.3	0.0	109	47.8	59.4	68.7	77.2	84.1
2009	24842	67.2	14.3	0.2	109	48.0	59.1	68.9	77.2	84.2
2010	24600	67.3	14.5	0.0	105	47.9	59.1	69.2	77.5	84.7
2011	24735	67.4	14.6	0.0	109	47.7	59.0	69.6	77.4	84.7
2012	24617	67.5	14.5	0.0	103	48.3	59.3	69.7	77.3	84.2
2013	22837	67.4	14.7	0.0	108	47.8	58.7	69.8	77.4	84.5
2014	15265	68.0	14.2	0.4	107	48.7	59.1	70.0	77.7	85.2
1998-2014	343595	67.1	14.5	0.0	109	47.9	58.9	68.6	77.2	84.3

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6050	65.7	14.1	0.4	99.8	49.0	57.9	66.8	75.4	82.7
1999	6029	66.0	13.5	0.3	99.5	50.5	58.6	66.9	74.9	82.2
2000	6190	66.2	13.7	0.2	99.7	50.2	59.0	67.0	75.5	82.1
2001	6374	66.0	13.2	0.1	102	50.4	59.3	66.6	75.0	81.4
2002	11281	67.1	13.3	0.1	102	51.2	60.6	68.0	75.8	82.2
2003	11100	67.0	13.1	0.3	101	51.6	60.6	67.9	75.7	82.2
2004	11132	66.9	13.2	0.0	101	50.6	60.6	67.7	75.9	82.2
2005	11038	67.0	13.4	0.0	102	51.0	60.9	68.0	75.8	82.3
2006	11151	67.4	13.0	0.2	102	51.7	61.2	68.3	76.0	82.2
2007	13024	67.1	13.5	0.0	101	50.1	60.7	68.4	76.1	82.2
2008	12839	67.6	13.2	0.0	105	51.4	61.3	69.1	76.2	82.5
2009	12582	67.7	13.1	0.2	105	50.6	61.1	69.3	76.3	82.6
2010	12345	67.7	13.5	0.0	102	50.7	60.8	69.5	76.5	83.1
2011	12570	68.0	13.4	0.0	109	50.6	61.4	70.1	76.6	83.3
2012	12542	68.2	13.3	0.0	103	51.8	61.7	70.3	76.8	83.0
2013	11554	68.1	13.8	0.0	103	50.5	61.1	70.6	77.0	83.3
2014	7116	69.2	13.1	0.5	104	52.5	62.1	71.0	77.7	84.3
1998-2014	174917	67.4	13.4	0.0	109	50.9	60.6	68.8	76.2	82.6

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6181	66.2	15.6	0.1	107	46.1	56.0	67.2	77.9	85.5
1999	6144	66.0	15.7	0.7	104	45.2	56.2	67.1	77.9	85.6
2000	5994	65.9	15.8	0.4	103	44.5	55.9	66.7	78.3	85.8
2001	6252	66.0	15.5	0.5	103	45.1	56.4	66.6	78.0	85.8
2002	10456	67.4	15.4	0.0	104	46.5	58.0	68.5	79.4	86.6
2003	10173	67.0	15.6	0.2	105	45.8	57.3	67.9	79.2	85.8
2004	10340	66.7	15.6	0.0	103	45.6	57.0	67.5	78.8	85.0
2005	10403	67.1	15.5	0.3	103	45.9	57.6	68.0	79.1	85.5
2006	10371	66.8	15.5	0.2	103	45.3	57.1	67.9	78.8	85.5
2007	11810	66.8	15.6	0.2	103	45.2	57.0	68.2	78.7	85.7
2008	12367	66.7	15.5	0.1	109	45.5	56.9	68.2	78.6	85.8
2009	12260	66.7	15.4	0.2	109	45.8	56.7	68.2	78.5	85.8
2010	12255	67.0	15.5	0.2	105	45.9	56.8	68.8	78.7	86.1
2011	12165	66.8	15.7	0.0	102	45.7	56.2	68.9	78.3	86.1
2012	12075	66.7	15.5	0.0	102	46.0	56.5	68.9	77.9	85.6
2013	11283	66.6	15.5	0.0	108	45.9	55.9	68.7	78.0	85.7
2014	8149	66.9	15.1	0.4	107	46.6	56.1	68.8	77.7	85.9
1998-2014	168678	66.7	15.5	0.0	109	45.7	56.7	68.2	78.5	85.7

Table 4

Age distribution by 5-year age group and gender for period 2007-2014
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	321	0.2	0.2	182	0.2	0.2	139	0.2	0.2
5-9	174	0.1	0.3	96	0.1	0.3	78	0.1	0.2
10-14	189	0.1	0.4	100	0.1	0.4	89	0.1	0.3
15-19	381	0.2	0.6	216	0.2	0.6	165	0.2	0.5
20-24	686	0.4	0.9	375	0.4	1.0	311	0.3	0.8
25-29	1235	0.7	1.6	567	0.6	1.6	668	0.7	1.6
30-34	1955	1.0	2.6	784	0.8	2.5	1171	1.3	2.8
35-39	3178	1.7	4.3	1167	1.2	3.7	2011	2.2	5.0
40-44	5661	3.0	7.4	1853	2.0	5.6	3808	4.1	9.1
45-49	8884	4.8	12.1	3292	3.5	9.1	5592	6.1	15.2
50-54	11965	6.4	18.5	5019	5.3	14.4	6946	7.5	22.7
55-59	15193	8.1	26.7	7548	8.0	22.4	7645	8.3	31.0
60-64	20578	11.0	37.7	11095	11.7	34.1	9483	10.3	41.3
65-69	28044	15.0	52.7	16223	17.2	51.3	11821	12.8	54.1
70-74	29947	16.0	68.7	17689	18.7	70.0	12258	13.3	67.3
75-79	23492	12.6	81.2	13032	13.8	83.8	10460	11.3	78.7
80-84	18104	9.7	90.9	8992	9.5	93.3	9112	9.9	88.5
85+	16949	9.1	100.0	6342	6.7	100.0	10607	11.5	100.0
All ages	186936	100.0		94572	100.0		92364	100.0	

Included in the statistics are 26.5% multiple primaries in males and 22.4% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2014

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=7173 %	Females DCO rate n=7878 %	Males Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	178	138	20.4	16.7	1.7	4.3	100.0	100.0
5- 9	96	78	11.0	9.4	1.0		100.0	100.0
10-14	100	89	10.8	10.2			100.0	100.0
15-19	216	165	22.3	18.0	0.9		100.0	100.0
20-24	373	311	33.5	28.5	0.8	1.3	100.0	100.0
25-29	559	661	46.3	53.7	0.4	0.3	100.0	100.0
30-34	773	1157	61.9	92.7	0.5	0.3	100.0	100.0
35-39	1154	1984	88.6	157.4	0.6	1.0	100.0	100.0
40-44	1827	3754	112.3	245.4	1.0	0.7	100.0	100.0
45-49	3220	5456	203.6	359.8	1.2	1.0	100.0	100.0
50-54	4877	6774	376.7	529.2	3.0	1.3	100.0	100.0
55-59	7322	7452	689.5	663.2	2.6	1.7	100.0	100.0
60-64	10766	9207	1096.0	868.3	3.5	2.3	100.0	100.0
65-69	15630	11438	1624.6	1095.8	3.9	3.2	100.0	100.0
70-74	16964	11849	1864.4	1133.4	5.3	5.2	100.0	100.0
75-79	12466	10044	2263.7	1408.1	8.9	8.7	100.0	100.0
80-84	8569	8792	2453.3	1567.9	17.1	18.3	100.0	100.0
85+	6093	10247	2631.7	1773.2	37.8	37.6	100.0	100.0
All ages	91183	89596			7.9	8.8	100.0	100.0
Incidence								
Raw			504.7	478.2				
WS			265.2	237.4				
ES			382.5	329.2				
BRD-S			482.1	392.7				

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).

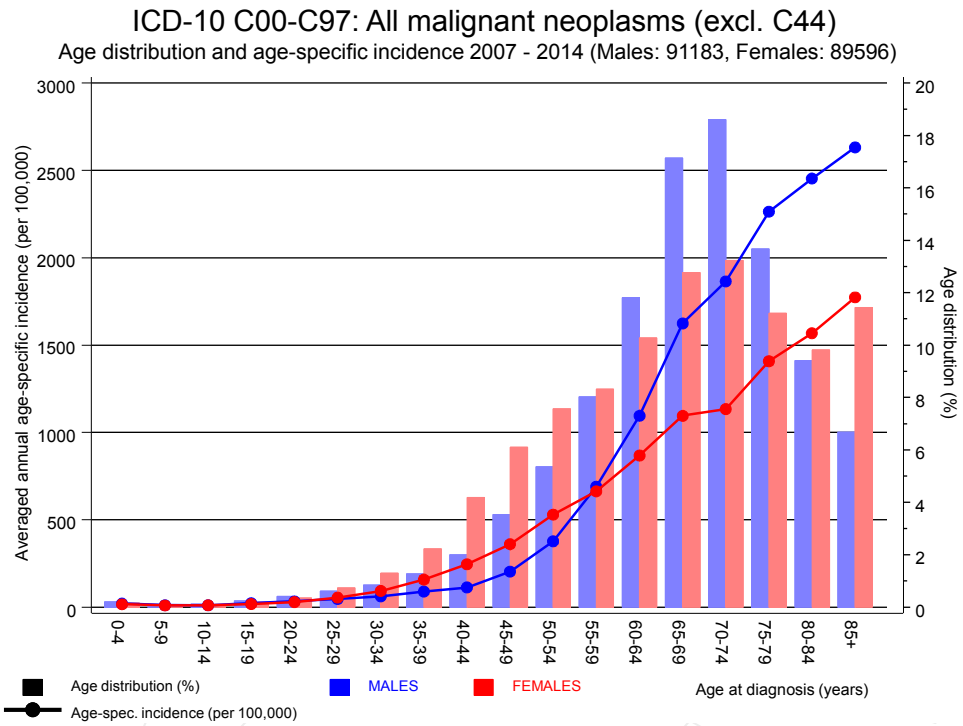


Figure 6. Age distribution and age-specific incidence

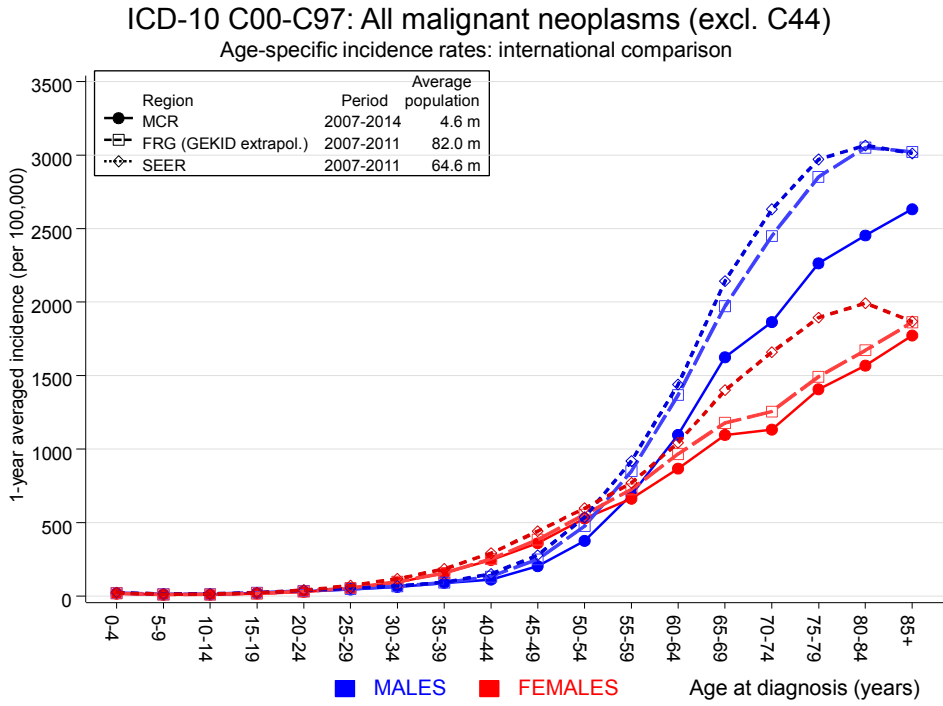


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. http://www.gekid.de. Last access: 02/11/2015

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. http://www.seer.cancer.gov.

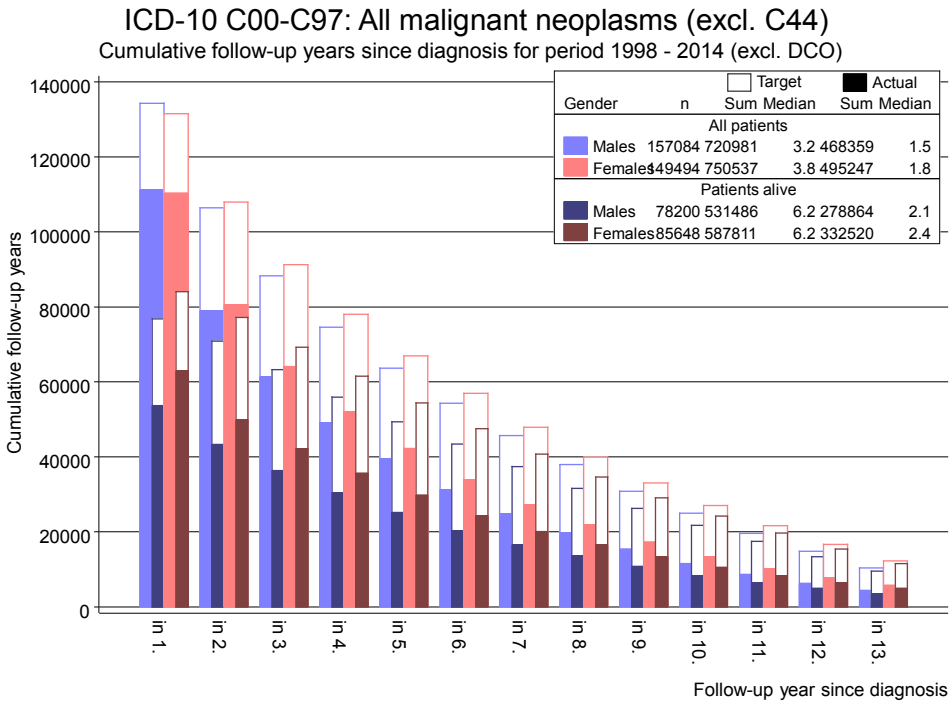


Figure 7. Cumulative follow-up years depending on time since diagnosis

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

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C00	Lip	27	9.2	2.9	1.9	4.3	#	0.4	7.4
C03-C06	Oral cavity	193	59.3	3.3	2.8	3.7	#	3.1	6.7
C07-C08	Salivary gland	38	16.8	2.3	1.6	3.1	#	0.5	7.9
C09-C10	Oropharynx	248	72.5	3.4	3.0	3.9	#	4.0	2.8
C12-C13	Hypopharynx	137	39.9	3.4	2.9	4.1	#	2.2	9.5
C15	Oesophagus	403	132.7	3.0	2.7	3.3	#	6.2	10.7
C16	Stomach	632	316.8	2.0	1.8	2.2	#	7.2	8.4
C17	Small intestine	167	37.5	4.5	3.8	5.2	#	3.0	3.6
C18	Colon	1704	759.0	2.2	2.1	2.4	#	21.6	5.3
C19-C20	Rectum	801	413.1	1.9	1.8	2.1	#	8.9	3.5
C21	Anus/canal	48	15.4	3.1	2.3	4.1	#	0.7	4.2
C22	Liver	420	208.0	2.0	1.8	2.2	#	4.9	17.4
C23-C24	Bile	130	74.6	1.7	1.5	2.1	#	1.3	16.9
C25	Pancreas	618	276.6	2.2	2.1	2.4	#	7.8	25.9
C26	GI cancer	22	9.6	2.3	1.4	3.5	#	0.3	31.8
C30-C31	Sinuses	31	12.6	2.5	1.7	3.5	#	0.4	6.5
C32	Larynx	206	74.9	2.8	2.4	3.2	#	3.0	16.5
C33-C34	Lung	2200	892.6	2.5	2.4	2.6	#	29.9	12.3
C38,C45	Mesothelioma	96	50.4	1.9	1.5	2.3	#	1.0	7.3
C43	Malign. melanoma	1120	310.0	3.6	3.4	3.8	#	18.5	1.5
C46,C49	Soft tissue	104	40.4	2.6	2.1	3.1	#	1.5	2.9
C50	Breast	45	19.7	2.3	1.7	3.1	#	0.6	17.8
C60	Penis	35	17.4	2.0	1.4	2.8	#	0.4	
C61	Prostate	2893	2267.1	1.3	1.2	1.3	#	14.3	6.6
C62	Testis	108	19.0	5.7	4.7	6.9	#	2.0	3.7
C64	Kidney	900	262.6	3.4	3.2	3.7	#	14.6	7.1
C65	Renal pelvis	153	32.3	4.7	4.0	5.5	#	2.8	0.7
C66	Ureter	96	18.3	5.2	4.2	6.4	#	1.8	
C67	Bladder	890	348.9	2.6	2.4	2.7	#	12.4	6.9
C68	Urethra	61	5.5	11.1	8.5	14.2	#	1.3	
C70-C72	CNS cancer	209	98.0	2.1	1.9	2.4	#	2.5	17.7
C73	Thyroid	150	46.2	3.2	2.8	3.8	#	2.4	3.3
C76-C79	CUP	254	129.1	2.0	1.7	2.2	#	2.9	3.1
C81	Hodgkin lymphoma	50	16.0	3.1	2.3	4.1	#	0.8	4.0
C82-C85	NHL	720	305.5	2.4	2.2	2.5	#	9.5	6.7
C90	Mult. myeloma	203	98.1	2.1	1.8	2.4	#	2.4	14.3
C91-C96	Leukaemia	339	126.8	2.7	2.4	3.0	#	4.9	31.6
Other primaries		142	64.2	2.2	1.9	2.6	#	1.8	23.2
Not observed		0	0.6	0.0	0.0	6.0		-0.0	

Table 8a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
MALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
All mult. primaries	16593	7697.2	2.2	2.1	2.2	#	203.5	8.8

Patients	143932
Median age at second malignancy (years)	72.2
Person-years	437105
Mean observation time (years)	3.0
Median observation time (years)	1.5

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 20 are pooled in category “Other primaries”

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	74	29.6	2.5	2.0	3.1	#	1.0	
C07-C08	Salivary gland	25	8.0	3.1	2.0	4.6	#	0.4	8.0
C09-C10	Oropharynx	96	20.4	4.7	3.8	5.8	#	1.6	2.1
C12-C13	Hypopharynx	27	5.5	4.9	3.3	7.2	#	0.5	22.2
C15	Oesophagus	93	29.1	3.2	2.6	3.9	#	1.4	10.8
C16	Stomach	372	174.1	2.1	1.9	2.4	#	4.2	14.0
C17	Small intestine	96	23.4	4.1	3.3	5.0	#	1.6	3.1
C18	Colon	1113	484.4	2.3	2.2	2.4	#	13.5	8.4
C19-C20	Rectum	388	208.5	1.9	1.7	2.1	#	3.8	6.7
C21	Anus/canal	61	25.9	2.4	1.8	3.0	#	0.8	1.6
C22	Liver	129	56.4	2.3	1.9	2.7	#	1.6	27.9
C23-C24	Bile	138	69.6	2.0	1.7	2.3	#	1.5	24.6
C25	Pancreas	468	213.8	2.2	2.0	2.4	#	5.4	25.6
C26	GI cancer	26	9.0	2.9	1.9	4.2	#	0.4	50.0
C32	Larynx	29	9.2	3.2	2.1	4.5	#	0.4	17.2
C33-C34	Lung	1028	352.8	2.9	2.7	3.1	#	14.5	13.8
C38,C45	Mesothelioma	23	8.8	2.6	1.7	3.9	#	0.3	4.3
C43	Malign. melanoma	582	184.1	3.2	2.9	3.4	#	8.5	2.6
C46,C49	Soft tissue	83	27.8	3.0	2.4	3.7	#	1.2	6.0
C48	Peritoneal	56	18.3	3.1	2.3	4.0	#	0.8	7.1
C50	Breast	4082	1516.5	2.7	2.6	2.8	#	55.0	3.0
C51	Vulva	112	48.8	2.3	1.9	2.8	#	1.4	5.4
C52	Vagina	31	9.5	3.3	2.2	4.6	#	0.5	3.2
C53	Cervix uteri	163	69.5	2.3	2.0	2.7	#	2.0	17.2
C54	Corpus uteri	619	273.4	2.3	2.1	2.4	#	7.4	5.8
C55,C57	Fem. genitals un	26	11.7	2.2	1.5	3.3	#	0.3	38.5
C56	Ovary	631	201.9	3.1	2.9	3.4	#	9.2	20.6
C64	Kidney	373	120.7	3.1	2.8	3.4	#	5.4	11.5
C65	Renal pelvis	70	15.0	4.7	3.6	5.9	#	1.2	1.4
C66	Ureter	42	7.5	5.6	4.0	7.5	#	0.7	2.4
C67	Bladder	253	91.8	2.8	2.4	3.1	#	3.5	11.5
C70-C72	CNS cancer	121	68.0	1.8	1.5	2.1	#	1.1	27.3
C73	Thyroid	223	89.7	2.5	2.2	2.8	#	2.9	5.4
C76-C79	CUP	137	87.6	1.6	1.3	1.8	#	1.1	7.3
C82-C85	NHL	454	188.4	2.4	2.2	2.6	#	5.7	7.5
C90	Mult. myeloma	111	59.3	1.9	1.5	2.3	#	1.1	21.6
C91-C96	Leukaemia	267	78.4	3.4	3.0	3.8	#	4.0	20.2
Other primaries		141	61.8	2.3	1.9	2.7	#	1.7	16.3
Not observed		0	0.0	0.0	0.0	136.3		-0.0	

Table 8b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014
FEMALES

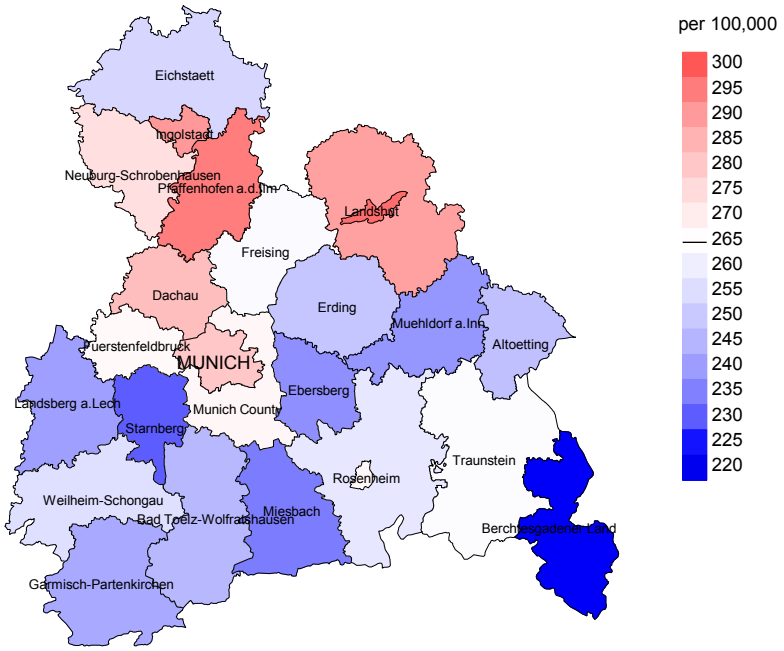
Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
All mult. primaries	12763	4958.2	2.6	2.5	2.6	#	167.2	9.2

Patients	140619
Median age at second malignancy (years)	71.0
Person-years	466872
Mean observation time (years)	3.3
Median observation time (years)	1.8

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 20 are pooled in category “Other primaries”

Average incidence (world standard population) 2007 - 2014: Males



Average incidence (world standard population) 2007 - 2014: Females

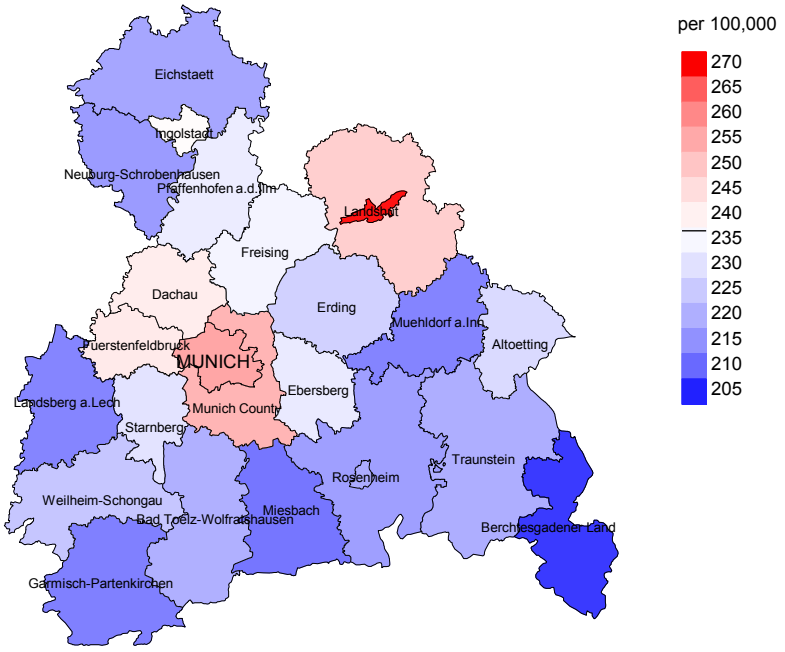
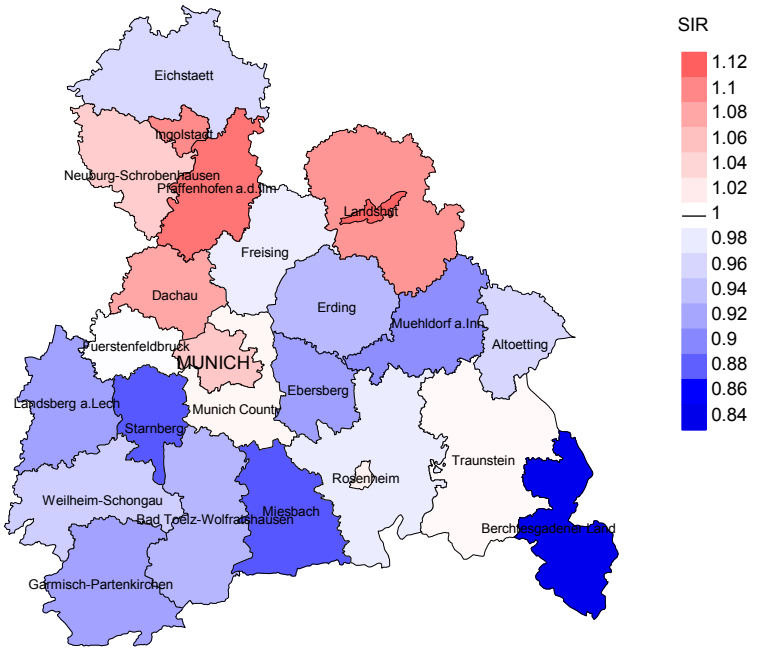


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 264.8/100,000 WS N=91,183, females 236.9/100,000 WS N=89,596).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 2,362 women were identified with newly diagnosed all cancers (excl. C44). Therefore, the mean incidence rate for this cancer type in this area can be calculated at 231.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 218.3 and 246.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

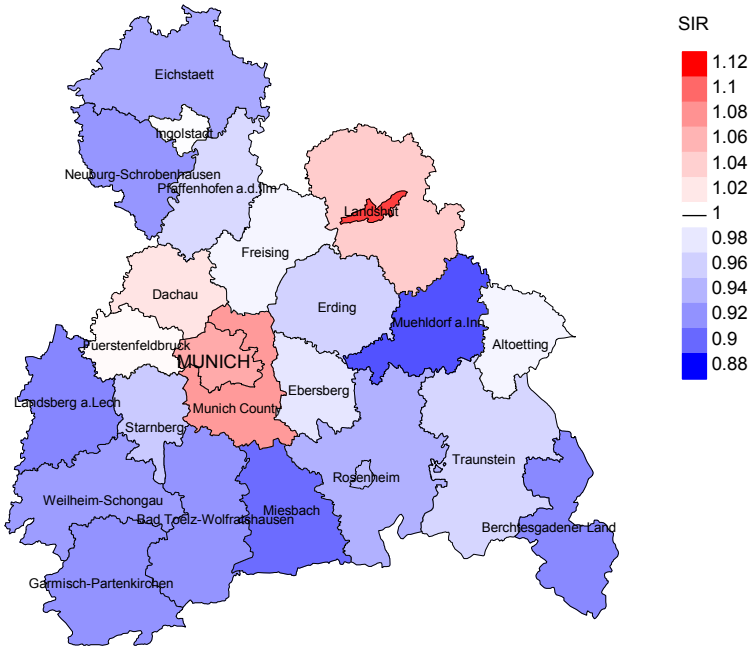


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=91,183, females N=89,596).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 2,362 women were identified with newly diagnosed all cancers (excl. C44). Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.98. Though, the value of this parameter may vary with an underlying probability of 99% between 0.93 and 1.03, 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 4.64 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	12231	97.8	10.9	8684	71.0	94.1
1999	12173	97.7	10.3	8352	68.6	94.9
2000	12184	97.9	11.5	8129	66.7	96.1
2001	12626	97.2	11.1	8166	64.7	96.2
2002	21737	97.4	14.5	14271	65.7	97.6
2003	21273	96.8	12.4	13376	62.9	97.8
2004	21472	96.5	11.4	12898	60.1	97.9
2005	21441	95.5	10.0	12456	58.1	98.3
2006	21522	93.0	8.7	11954	55.5	98.6
2007	24834	78.8	9.1	13420	54.0	98.4
2008	25206	72.4	8.3	12894	51.2	98.6
2009	24842	71.8	7.9	12172	49.0	98.6
2010	24600	71.2	8.2	11474	46.6	98.5
2011	24735	71.1	7.8	10783	43.6	98.2
2012	24617	74.8	7.5	9545	38.8	97.8
2013	22837	99.1	8.2	7662	33.6	96.9
2014	15265	96.8	11.5	3567	23.4	95.3
1998-2014	343595	86.6	9.7	179803	52.3	97.6

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	12231	6516	92.0	2680	21.9
1999	12173	6607	92.0	2569	21.1
2000	12184	6605	94.1	2523	20.7
2001	12626	6805	93.9	2597	20.6
2002	21737	9826	97.1	5204	23.9
2003	21273	10383	97.2	4711	22.1
2004	21472	10579	97.5	4510	21.0
2005	21441	10782	97.0	4372	20.4
2006	21522	11147	97.3	4261	19.8
2007	24834	12235	97.9	4896	19.7
2008	25206	12567	98.6	4889	19.4
2009	24842	12832	98.6	4660	18.8
2010	24600	13284	98.6	4805	19.5
2011	24735	13579	98.5	4881	19.7
2012	24617	13625	98.2	4762	19.3
2013	22837	13871	98.3	4656	20.4
2014	15265	12060	98.6	3187	20.9
1998-2014	343595	183303	97.3	70163	20.4

Table 10c

Annual cohorts of deaths, proportion of cancer-related and non-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 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	6516	72.5	27.5	89.0
1999	6607	76.6	23.4	89.2
2000	6605	77.8	22.2	88.6
2001	6805	74.9	25.1	88.4
2002	9826	78.8	21.2	89.1
2003	10383	78.5	21.5	88.4
2004	10579	80.0	20.0	88.2
2005	10782	78.5	21.5	86.5
2006	11147	78.0	22.0	86.4
2007	12235	78.1	21.9	86.0
2008	12567	77.5	22.5	84.6
2009	12832	76.6	23.4	84.3
2010	13284	76.3	23.7	84.2
2011	13579	75.3	24.7	83.3
2012	13625	74.8	25.2	82.6
2013	13871	72.6	27.4	80.8
2014	12060	70.7	29.3	79.7
1998-2014	183303	76.3	23.7	85.2

Table 11a

Medians of age at death according to the grouping in Table 10
MALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	3271	72.4	70.0	78.0	71.8
1999	3403	72.1	70.3	78.4	71.4
2000	3352	72.5	70.3	79.2	71.5
2001	3457	72.0	69.9	78.8	71.3
2002	5024	72.5	70.7	79.0	71.6
2003	5348	72.6	70.8	79.0	71.7
2004	5394	73.3	71.3	80.2	72.3
2005	5532	73.5	71.2	80.5	72.0
2006	5840	73.1	71.3	79.7	72.0
2007	6459	73.5	71.9	80.0	72.5
2008	6627	74.0	72.0	80.9	72.6
2009	6798	74.2	72.0	81.0	72.8
2010	6992	74.5	72.6	81.1	73.3
2011	7195	74.9	72.7	81.5	73.3
2012	7212	75.4	73.4	81.5	73.9
2013	7262	76.0	73.7	82.3	74.4
2014	6321	76.6	74.5	82.8	75.1
1998-2014	95487	74.1	72.1	80.7	72.9

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 11b

Medians of age at death according to the grouping in Table 10
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	3245	76.8	74.3	83.0	76.7
1999	3204	77.1	75.0	84.0	76.8
2000	3253	77.1	74.9	84.0	76.2
2001	3348	77.6	74.6	84.1	76.5
2002	4802	77.6	75.1	84.5	76.5
2003	5035	77.1	74.2	84.2	75.6
2004	5185	77.4	75.0	84.1	76.2
2005	5250	77.8	74.3	84.7	75.7
2006	5307	77.9	75.1	84.9	76.1
2007	5776	77.9	74.3	85.6	75.8
2008	5940	78.2	74.6	85.9	75.8
2009	6034	78.0	74.1	85.9	75.4
2010	6292	78.2	74.6	85.8	75.9
2011	6384	78.0	74.4	86.4	75.6
2012	6413	78.0	74.7	86.8	75.8
2013	6609	78.6	75.0	86.7	76.3
2014	5739	78.6	75.1	86.6	76.3
1998-2014	87816	77.8	74.7	85.4	76.0

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

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 12a

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	2365	213.5	0.40	127.7	0.38	195.5	0.40	261.8	0.42
1999	2628	234.8	0.45	138.4	0.43	212.8	0.45	285.4	0.48
2000	2605	228.7	0.43	132.9	0.41	205.1	0.44	274.4	0.46
2001	2642	228.0	0.43	131.9	0.41	202.7	0.43	268.3	0.45
2002	3985	213.9	0.37	118.5	0.35	181.9	0.37	241.4	0.38
2003	4268	227.7	0.40	123.2	0.37	189.1	0.39	252.5	0.42
2004	4330	230.1	0.40	121.6	0.37	187.2	0.40	251.7	0.42
2005	4383	231.4	0.41	119.1	0.38	182.5	0.40	246.8	0.43
2006	4586	239.5	0.43	121.9	0.39	186.9	0.42	249.8	0.44
2007	5124	231.3	0.41	115.4	0.37	178.0	0.40	239.7	0.42
2008	5208	234.0	0.42	114.6	0.38	176.2	0.41	237.1	0.44
2009	5234	234.5	0.43	112.9	0.39	172.9	0.42	230.6	0.44
2010	5359	237.8	0.45	111.8	0.40	171.6	0.43	230.3	0.46
2011	5493	240.4	0.45	111.7	0.41	171.6	0.43	229.0	0.46
2012	5399	236.3	0.45	108.4	0.40	167.1	0.42	225.3	0.45
2013	5329	233.3	0.48	106.5	0.42	165.0	0.46	222.8	0.49
2014	4472	195.7	0.65	87.5	0.58	137.4	0.62	187.1	0.66
1998-2014	73410	229.3	0.43	114.9	0.40	176.8	0.42	237.0	0.45

Table 12b

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	2369	201.4	0.39	86.6	0.32	129.5	0.35	168.2	0.38
1999	2444	206.0	0.41	86.7	0.33	130.5	0.36	171.4	0.39
2000	2545	211.9	0.44	89.9	0.35	134.8	0.38	174.2	0.41
2001	2468	202.9	0.40	86.2	0.33	129.4	0.35	168.1	0.39
2002	3762	192.1	0.37	79.9	0.31	119.6	0.33	154.8	0.35
2003	3893	197.6	0.39	83.6	0.33	124.9	0.35	160.4	0.38
2004	4148	209.8	0.41	85.5	0.33	128.2	0.36	167.0	0.39
2005	4096	205.8	0.41	84.6	0.33	126.3	0.36	162.2	0.38
2006	4122	205.2	0.41	81.6	0.32	122.8	0.35	160.7	0.38
2007	4459	193.1	0.39	77.5	0.31	116.4	0.33	150.9	0.36
2008	4552	196.2	0.38	78.0	0.30	116.8	0.32	151.2	0.35
2009	4612	198.3	0.39	78.9	0.31	117.9	0.33	152.0	0.36
2010	4802	205.2	0.41	79.5	0.32	119.1	0.34	155.0	0.38
2011	4751	201.3	0.40	78.3	0.32	116.9	0.34	151.0	0.37
2012	4806	203.7	0.41	78.2	0.32	117.7	0.35	152.6	0.38
2013	4768	202.1	0.44	77.3	0.34	116.3	0.37	151.6	0.40
2014	4093	173.5	0.52	65.8	0.40	99.2	0.43	129.8	0.48
1998-2014	66690	199.6	0.41	79.9	0.33	119.8	0.35	155.4	0.38

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	27	0.0	0.0	12	0.0	0.0	15	0.0	0.0
5-9	39	0.0	0.1	21	0.0	0.1	18	0.0	0.1
10-14	38	0.0	0.1	18	0.0	0.1	20	0.0	0.1
15-19	58	0.1	0.2	36	0.1	0.2	22	0.1	0.2
20-24	76	0.1	0.3	48	0.1	0.3	28	0.1	0.2
25-29	126	0.1	0.4	62	0.1	0.4	64	0.1	0.4
30-34	198	0.2	0.6	88	0.2	0.6	110	0.3	0.6
35-39	435	0.5	1.1	177	0.4	0.9	258	0.6	1.2
40-44	1092	1.2	2.2	460	0.9	1.8	632	1.4	2.7
45-49	2243	2.4	4.6	1025	2.1	3.9	1218	2.8	5.5
50-54	3650	3.9	8.5	1867	3.7	7.6	1783	4.1	9.5
55-59	5707	6.1	14.6	3092	6.2	13.8	2615	6.0	15.5
60-64	8338	8.9	23.5	4776	9.6	23.4	3562	8.2	23.7
65-69	12371	13.2	36.8	7157	14.3	37.7	5214	11.9	35.6
70-74	15707	16.8	53.5	9133	18.3	56.0	6574	15.1	50.7
75-79	14797	15.8	69.4	8514	17.1	73.1	6283	14.4	65.1
80-84	13941	14.9	84.3	7378	14.8	87.9	6563	15.0	80.1
85+	14726	15.7	100.0	6044	12.1	100.0	8682	19.9	100.0
All ages	93569	100.0		49908	100.0		43661	100.0	

Included in the statistics are 26.5% multiple primaries in males and 22.4% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	12	15	1.4	0.07	1.8	0.11	100.0	100.0
5- 9	21	18	2.4	0.22	2.2	0.23	100.0	100.0
10-14	18	20	1.9	0.18	2.3	0.22	100.0	100.0
15-19	36	22	3.7	0.17	2.4	0.13	100.0	100.0
20-24	48	28	4.3	0.13	2.6	0.09	100.0	100.0
25-29	62	64	5.1	0.11	5.2	0.10	100.0	100.0
30-34	88	110	7.1	0.11	8.8	0.09	100.0	100.0
35-39	177	258	13.6	0.15	20.5	0.13	100.0	100.0
40-44	460	632	28.3	0.25	41.3	0.17	100.0	100.0
45-49	1025	1218	64.8	0.31	80.3	0.22	100.0	100.0
50-54	1867	1783	144.2	0.37	139.3	0.26	100.0	100.0
55-59	3092	2615	291.2	0.41	232.7	0.34	100.0	100.0
60-64	4776	3562	486.2	0.43	335.9	0.38	100.0	100.0
65-69	7157	5214	743.9	0.44	499.5	0.44	100.0	100.0
70-74	9133	6574	1003.8	0.52	628.9	0.54	100.0	100.0
75-79	8514	6283	1546.0	0.65	880.8	0.60	100.0	100.0
80-84	7378	6563	2112.3	0.82	1170.4	0.72	100.0	100.0
85+	6044	8682	2610.5	0.95	1502.4	0.82	100.0	100.0
All ages	49908	43661					100.0	100.0
Mortality								
Raw			276.3	0.53	233.0	0.47		
WS			128.3	0.47	90.0	0.37		
ES			199.2	0.50	135.4	0.40		
BRD-S			270.5	0.54	176.6	0.44		
PYLL-70								
per 100,000			1121.8		1069.8			
ES			996.5		922.7			
AYLL-70			9.5		10.9			

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

Table 15a

Multiple primaries in deaths in period 1998-2014
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	230	1.2			16	7.0	214	93.0
C09-C10 Oropharynx	277	1.4			40	14.4	237	85.6
C12-C13 Hypopharynx	177	0.9			27	15.3	150	84.7
C15 Oesophagus	462	2.4			36	7.8	426	92.2
C16 Stomach	710	3.7			61	8.6	649	91.4
C17 Small intestine	107	0.6			18	16.8	89	83.2
C18 Colon	1407	7.3			219	15.6	1188	84.4
C19-C20 Rectum	770	4.0			158	20.5	612	79.5
C22 Liver	544	2.8			61	11.2	483	88.8
C23-C24 Bile	188	1.0			19	10.1	169	89.9
C25 Pancreas	827	4.3			69	8.3	758	91.7
C32 Larynx	225	1.2			24	10.7	201	89.3
C33-C34 Lung	3079	15.9			287	9.3	2792	90.7
C38,C45 Mesothelioma	126	0.7			4	3.2	122	96.8
C43 Malign. melanoma	561	2.9			70	12.5	491	87.5
C44 Skin others	1889	9.8	664	35.2	187	9.9	1038	54.9
C46,C49 Soft tissue	114	0.6			8	7.0	106	93.0
C61 Prostate	2093	10.8			332	15.9	1761	84.1
C64 Kidney	586	3.0			133	22.7	453	77.3
C65 Renal pelvis	216	1.1			22	10.2	194	89.8
C66 Ureter	164	0.8			27	16.5	137	83.5
C67 Bladder	1415	7.3			272	19.2	1143	80.8
C70-C72 CNS cancer	394	2.0			39	9.9	355	90.1
C76-C79 CUP	378	2.0			50	13.2	328	86.8
C82-C85 NHL	716	3.7			143	20.0	573	80.0
C90 Mult. myeloma	305	1.6			37	12.1	268	87.9
C91-C96 Leukaemia	746	3.9			114	15.3	632	84.7
Other primaries	660	3.4			58	8.8	602	91.2
All mult. primaries	19366	100.0	664	3.4	2531	13.1	16171	83.5

Multiple primaries with number of cases 1 to 88 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 15b

Multiple primaries in deaths in period 1998–2014
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	154	1.0			5	3.2	149	96.8
C16	Stomach	553	3.6			44	8.0	509	92.0
C18	Colon	1189	7.7			141	11.9	1048	88.1
C19–C20	Rectum	505	3.3			78	15.4	427	84.6
C22	Liver	191	1.2			15	7.9	176	92.1
C23–C24	Bile	219	1.4			20	9.1	199	90.9
C25	Pancreas	795	5.1			53	6.7	742	93.3
C33–C34	Lung	1537	9.9			101	6.6	1436	93.4
C43	Malign. melanoma	354	2.3			35	9.9	319	90.1
C44	Skin others	849	5.5	330	38.9	87	10.2	432	50.9
C46,C49	Soft tissue	108	0.7			6	5.6	102	94.4
C50	Breast	3361	21.7			787	23.4	2574	76.6
C51	Vulva	130	0.8			10	7.7	120	92.3
C53	Cervix uteri	206	1.3			40	19.4	166	80.6
C54	Corpus uteri	469	3.0			64	13.6	405	86.4
C56	Ovary	865	5.6			180	20.8	685	79.2
C64	Kidney	305	2.0			77	25.2	228	74.8
C67	Bladder	502	3.2			46	9.2	456	90.8
C70–C72	CNS cancer	388	2.5			55	14.2	333	85.8
C73	Thyroid	122	0.8			6	4.9	116	95.1
C76–C79	CUP	270	1.7			39	14.4	231	85.6
C82–C85	NHL	489	3.2			76	15.5	413	84.5
C90	Mult. myeloma	242	1.6			24	9.9	218	90.1
C91–C96	Leukaemia	611	4.0			82	13.4	529	86.6
Other primaries		1040	6.7			147	14.1	893	85.9
All mult. primaries		15454	100.0	330	2.1	2218	14.4	12906	83.5

Multiple primaries with number of cases 1 to 96 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 2007-2014
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	10	13	1.1	0.06	1.6	0.09	100.0	100.0
5- 9	20	18	2.3	0.21	2.2	0.24	100.0	100.0
10-14	18	19	1.9	0.19	2.2	0.22	100.0	100.0
15-19	33	20	3.4	0.16	2.2	0.13	100.0	100.0
20-24	43	26	3.9	0.12	2.4	0.09	100.0	100.0
25-29	55	59	4.6	0.10	4.8	0.09	100.0	100.0
30-34	86	95	6.9	0.12	7.6	0.09	100.0	100.0
35-39	165	227	12.7	0.15	18.0	0.12	100.0	100.0
40-44	424	555	26.1	0.25	36.3	0.16	100.0	100.0
45-49	919	1025	58.1	0.31	67.6	0.21	100.0	100.0
50-54	1598	1485	123.4	0.36	116.0	0.25	100.0	100.0
55-59	2611	2147	245.9	0.40	191.1	0.33	100.0	100.0
60-64	3923	2844	399.4	0.42	268.2	0.37	100.0	100.0
65-69	5652	4101	587.5	0.44	392.9	0.44	100.0	100.0
70-74	6967	5074	765.7	0.52	485.4	0.55	100.0	100.0
75-79	6238	4862	1132.7	0.67	681.6	0.62	100.0	100.0
80-84	5339	5038	1528.6	0.87	898.5	0.72	100.0	100.0
85+	4410	6784	1904.8	1.00	1174.0	0.82	100.0	100.0
All ages	38511	34392					100.0	100.0
Mortality								
Raw			213.2	0.52	183.6	0.46		
WS			101.2	0.45	72.0	0.36		
ES			155.3	0.49	107.8	0.39		
BRD-S			207.8	0.53	139.6	0.43		
PYLL-70								
per 100,000			962.0		893.8			
ES			855.5		773.6			
AYLL-70			9.9		11.2			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	10	13	1.1	0.06	1.6	0.10	100.0	100.0
5- 9	20	18	2.3	0.21	2.2	0.24	100.0	100.0
10-14	18	18	1.9	0.19	2.1	0.21	100.0	100.0
15-19	33	18	3.4	0.16	2.0	0.11	100.0	100.0
20-24	39	24	3.5	0.11	2.2	0.08	100.0	100.0
25-29	51	56	4.2	0.10	4.5	0.09	100.0	100.0
30-34	85	83	6.8	0.12	6.7	0.08	100.0	100.0
35-39	158	205	12.1	0.15	16.3	0.11	100.0	100.0
40-44	397	509	24.4	0.24	33.3	0.15	100.0	100.0
45-49	861	914	54.5	0.30	60.3	0.19	100.0	100.0
50-54	1435	1327	110.8	0.34	103.7	0.23	100.0	100.0
55-59	2326	1878	219.0	0.38	167.1	0.31	100.0	100.0
60-64	3407	2422	346.8	0.39	228.4	0.33	100.0	100.0
65-69	4753	3394	494.0	0.40	325.2	0.39	100.0	100.0
70-74	5652	4136	621.2	0.46	395.6	0.48	100.0	100.0
75-79	4832	3975	877.4	0.57	557.3	0.54	100.0	100.0
80-84	4064	4088	1163.5	0.72	729.0	0.62	100.0	100.0
85+	3415	5624	1475.0	0.81	973.2	0.70	100.0	100.0
All ages	31556	28702					100.0	100.0
Mortality								
Raw			174.7	0.46	153.2	0.41		
WS			84.7	0.41	61.1	0.32		
ES			128.6	0.44	90.9	0.34		
BRD-S			169.5	0.47	116.9	0.37		
PYLL-70								
per 100,000			867.1		790.4			
ES			772.6		686.3			
AYLL-70			10.2		11.5			

* See corresponding tables with multiple primaries.

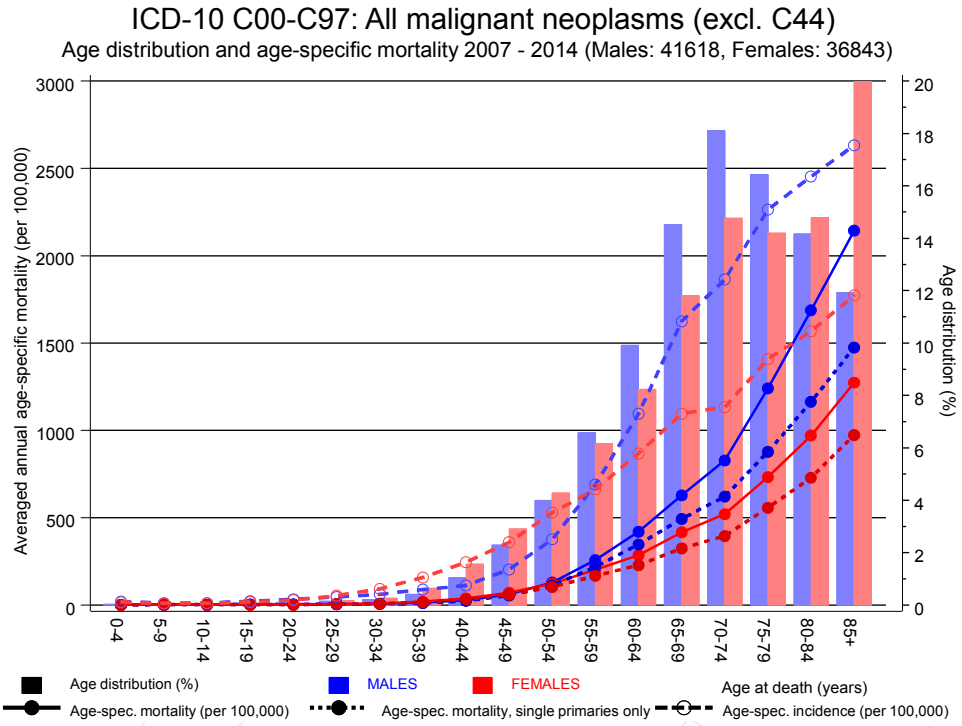
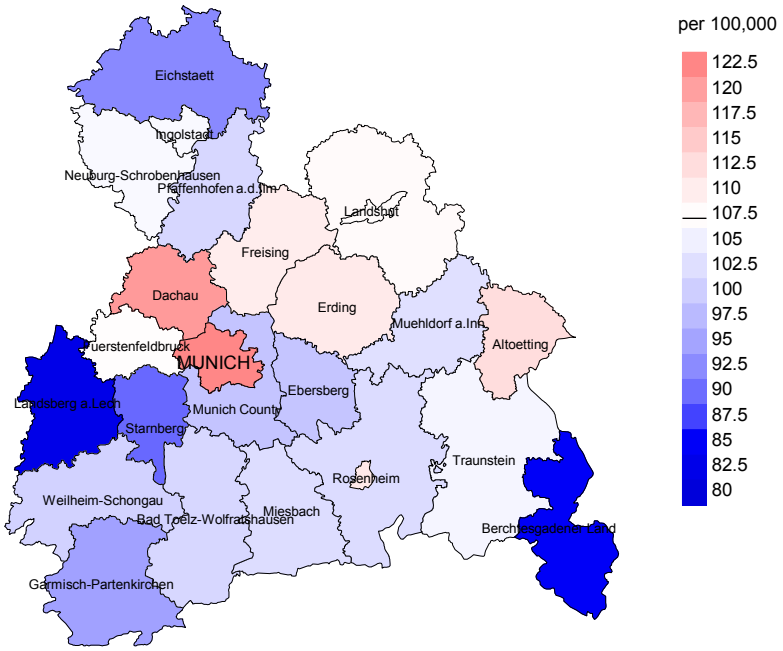


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at all cancers (excl. C44)-related death (see Table 10) should be considered.

Average mortality (world standard population) 2007 - 2014: Males



Average mortality (world standard population) 2007 - 2014: Females

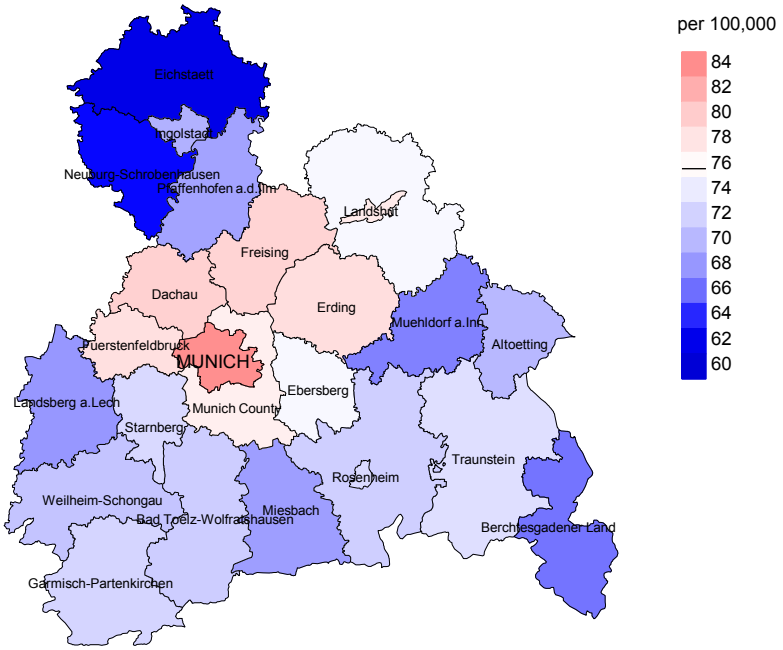


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 107.3/100,000 WS N=41,314, females 75.7/100,000 WS N=36,497).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 65,347 female residents (averaged) in the period from 2007 to 2014 a total of 973 women died from all cancers (excl. C44). Therefore, the mean mortality rate for this cancer type in this area can be calculated at 75.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 68.2 and 83.1/100,000.

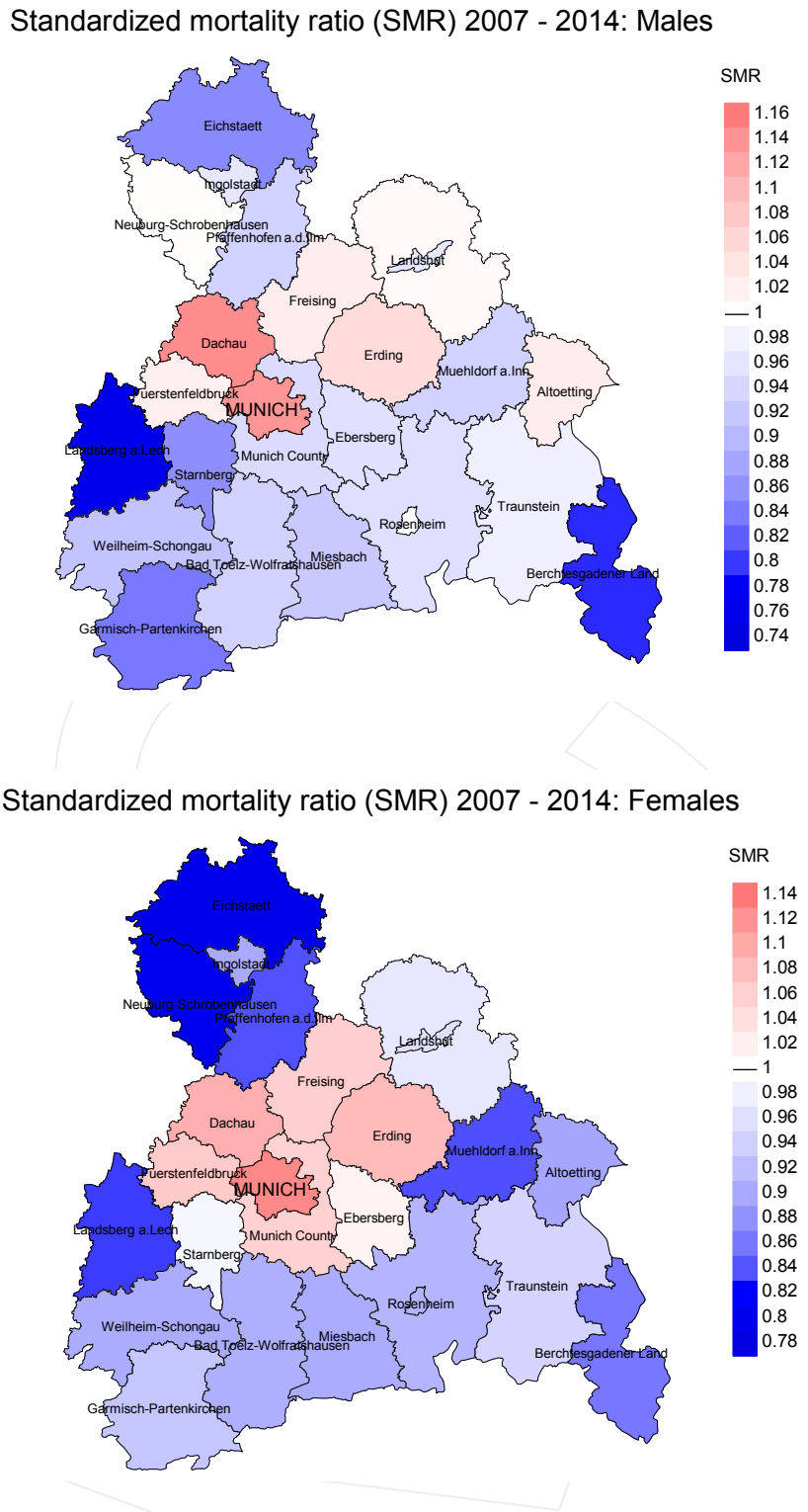


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=41,314, females N=36,497).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,924 female residents (averaged) in the period from 2007 to 2014 a total of 973 women died from all cancers (excl. C44). Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.02. Though, the value of this parameter may vary with an underlying probability of 99% between 0.93 and 1.10, 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, where applicable. 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 cancer-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

FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
MCR	Munich Cancer Registry (Tumorregister München)
SEER	Surveillance, Epidemiology, and End Results (USA)
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)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

Recommended Citation

Munich Cancer Registry. ICD-10 C00-C97: All cancers (excl. C44) - Incidence and Mortality [Internet]. 2016 [updated 2016 Apr 13; cited 2016 Jun 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/bC0097E-ICD-10-C00-C97-All-cancers-excl.-C44-incidence-and-mortality.pdf

Copyright

Disclaimer

Index of figures and tables