Munich Cancer Registry

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ICD-10 C33, C34: Non-small cell LC

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	20,239
Diseases	20,433
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/bC34n_E-ICD-10-C33-C34-Non-small-cell-LC-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
C33	Malignant neoplasm of trachea
C34.-	Malignant neoplasm of bronchus and lung
C34.0	Main bronchus
C34.1	Upper lobe, bronchus or lung
C34.2	Middle lobe, bronchus or lung
C34.3	Lower lobe, bronchus or lung
C34.8	Overlapping lesion of bronchus and lung
C34.9	Bronchus or lung, unspecified

... if morphology recorded and not existing any of ...

Morphology codes (ICD-O-3 2011) used for specifying cancer site

Code	Description
8002/3	Malignant tumor, small cell type
8041/3	Small cell carcinoma, NOS
8042/3	Oat cell carcinoma
8043/3	Small cell carcinoma, fusiform cell
8044/3	Small cell carcinoma, intermediate cell
8045/3	Combined small cell carcinoma

INCIDENCE

Table 1

All patients with invasive cancer by year of diagnosis, proportions of multiple primaries, deaths, and active follow-up

Year of diagnosis	Cases n	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	616	15.9	92.2	99.5
1999	679	19.6	90.6	98.7
2000	659	20.3	89.4	98.6
2001	687	21.5	91.1	98.5
2002	1060	22.5	89.9	98.8 #
2003	1148	23.3	88.9	98.8
2004	1146	22.9	88.7	99.0
2005	1151	23.8	89.0	97.9
2006	1199	24.7	85.5	97.6
2007	1475	23.0	83.9	92.5 #
2008	1566	26.5	82.8	90.3
2009	1566	25.7	81.1	90.5
2010	1598	26.8	79.9	89.9
2011	1637	26.7	77.7	91.1
2012	1662	27.1	70.9	88.6
2013	1584	24.3	59.4	99.1
2014	1000	26.9	32.0	95.8 ##
1998-2014	20433	24.4	79.4	94.7

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

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	616	424	192	68.8
1999	679	471	208	69.4
2000	659	460	199	69.8
2001	687	484	203	70.5
2002	1060	727	333	68.6
2003	1148	759	389	66.1
2004	1146	767	379	66.9
2005	1151	775	376	67.3
2006	1199	804	395	67.1
2007	1475	971	504	65.8
2008	1566	1025	541	65.5
2009	1566	1002	564	64.0
2010	1598	1015	583	63.5
2011	1637	1025	612	62.6
2012	1662	1020	642	61.4
2013	1584	977	607	61.7
2014	1000	568	432	56.8
1998-2014	20433	13274	7159	65.0

Table 2

Incidence measures by year of diagnosis
(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	424	192	38.3	16.3	23.5	8.6	34.1	12.3	41.9	14.7
1999	471	208	42.1	17.5	26.0	9.1	37.4	13.0	45.7	16.1
2000	460	199	40.4	16.6	24.7	9.2	35.4	12.9	42.7	15.2
2001	484	203	41.8	16.7	25.6	9.1	36.7	12.8	44.2	15.3
2002	727	333	39.0	17.0	22.6	9.1	33.0	13.0	41.4	15.4
2003	759	389	40.5	19.7	23.2	10.5	33.9	14.9	41.7	17.6
2004	767	379	40.8	19.2	22.6	10.1	33.3	14.2	41.8	16.9
2005	775	376	40.9	18.9	22.6	10.1	32.8	14.3	40.7	16.6
2006	804	395	42.0	19.7	22.8	10.1	33.2	14.3	41.4	17.0
2007	971	504	43.8	21.8	23.1	11.5	34.0	16.2	44.0	19.2
2008	1025	541	46.1	23.3	24.0	12.2	35.3	17.2	44.8	20.3
2009	1002	564	44.9	24.3	23.8	12.2	34.6	17.2	42.7	20.6
2010	1015	583	45.0	24.9	23.3	12.6	33.8	17.8	42.3	21.2
2011	1025	612	44.9	25.9	23.0	12.6	33.4	17.9	41.9	21.5
2012	1020	642	44.6	27.2	22.5	13.2	33.0	18.9	42.2	22.6
2013	977	607	42.8	25.7	21.4	12.8	31.6	18.1	40.1	21.4
2014	568	432	24.9	18.3	12.1	8.9	18.1	12.7	23.3	15.3
1998-2014	13274	7159	41.5	21.4	22.4	10.9	32.6	15.5	40.9	18.4

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)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	616	65.2	10.4	28.1	91.7	51.7	57.7	65.5	73.2	77.9
1999	679	65.7	10.3	32.0	93.0	51.8	58.4	66.7	73.1	78.5
2000	659	64.7	10.7	15.8	88.6	51.1	57.7	65.1	72.7	78.4
2001	687	65.0	10.9	17.0	93.6	50.3	58.4	65.6	72.4	78.3
2002	1060	66.2	10.5	27.5	91.7	52.3	59.3	66.6	74.2	79.3
2003	1148	66.3	10.4	17.5	95.0	52.7	59.3	66.9	73.7	79.5
2004	1146	66.6	10.6	24.4	92.2	53.1	59.7	66.6	74.8	80.2
2005	1151	66.2	10.8	18.1	92.7	52.6	59.5	66.6	74.2	79.5
2006	1199	66.9	10.5	27.5	92.7	53.4	60.3	67.0	74.7	80.3
2007	1475	67.2	10.9	7.5	97.2	53.2	60.5	67.8	75.4	80.5
2008	1566	67.4	10.6	22.3	95.7	53.8	60.9	68.3	75.1	80.3
2009	1566	67.4	10.5	20.3	95.2	53.7	60.6	68.2	74.6	80.9
2010	1598	67.6	10.4	3.5	97.8	53.9	61.3	68.5	75.0	80.3
2011	1637	67.9	10.8	22.2	94.7	53.2	60.8	68.9	75.6	81.8
2012	1662	68.5	10.7	22.9	96.6	54.1	61.8	69.1	76.2	82.2
2013	1584	68.3	10.4	27.9	97.7	53.7	61.7	69.3	75.7	81.1
2014	1000	68.5	10.5	30.5	96.0	53.6	62.2	70.2	75.6	80.7
1998-2014	20433	67.1	10.6	3.5	97.8	53.1	60.2	67.8	74.8	80.4

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	424	64.9	9.8	28.1	91.7	52.6	58.0	65.0	72.3	77.0
1999	471	65.1	9.9	32.0	90.6	52.1	58.2	65.7	72.2	77.7
2000	460	64.7	10.0	28.1	88.6	52.0	58.2	64.8	71.6	77.9
2001	484	64.9	10.2	17.0	93.6	52.0	58.9	65.3	71.6	77.6
2002	727	66.4	10.0	34.2	91.7	52.6	60.2	66.4	73.9	79.3
2003	759	66.6	9.6	36.8	93.5	53.7	60.2	66.8	73.6	78.9
2004	767	67.1	10.1	37.2	92.2	54.0	60.5	67.0	74.6	80.2
2005	775	66.9	10.2	18.1	92.7	54.6	61.0	67.3	74.3	79.3
2006	804	67.2	9.9	28.7	92.1	54.1	61.2	67.2	74.5	79.5
2007	971	68.0	10.3	7.5	94.1	54.7	61.8	68.4	75.8	80.6
2008	1025	68.2	10.1	22.3	90.2	55.0	61.8	68.9	75.3	80.2
2009	1002	67.8	10.0	30.8	93.1	55.2	61.0	68.2	74.5	80.5
2010	1015	67.9	10.2	3.5	93.2	54.3	61.8	69.2	75.0	80.2
2011	1025	68.0	10.5	28.9	94.3	53.5	61.5	69.3	75.4	81.4
2012	1020	68.9	10.6	22.9	96.6	55.2	63.0	69.7	76.4	82.3
2013	977	69.0	9.8	27.9	92.5	55.4	62.1	70.1	75.9	80.9
2014	568	69.6	10.2	33.7	96.0	55.2	63.0	71.1	76.4	82.4
1998-2014	13274	67.4	10.2	3.5	96.6	54.1	60.9	68.1	74.7	80.1

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	192	65.9	11.6	35.8	89.6	50.3	56.8	66.8	75.2	79.9
1999	208	67.1	11.2	32.9	93.0	51.5	58.9	68.7	76.1	79.6
2000	199	64.7	12.3	15.8	87.6	49.2	55.9	66.6	74.1	78.7
2001	203	65.3	12.4	24.4	92.6	48.1	56.8	66.7	74.6	80.4
2002	333	65.6	11.6	27.5	89.7	50.9	57.9	67.3	75.1	79.2
2003	389	65.8	11.8	17.5	95.0	50.6	57.5	67.2	74.3	80.2
2004	379	65.5	11.4	24.4	92.1	50.3	57.8	65.3	74.9	80.2
2005	376	64.7	11.6	21.6	89.3	49.9	56.6	65.2	73.5	79.8
2006	395	66.4	11.6	27.5	92.7	51.7	59.1	66.1	75.2	81.7
2007	504	65.6	11.7	22.3	97.2	50.2	57.4	65.9	74.5	80.3
2008	541	66.0	11.4	29.4	95.7	51.9	58.6	66.3	74.3	80.4
2009	564	66.8	11.5	20.3	95.2	51.8	59.7	68.2	74.9	81.5
2010	583	66.9	10.8	33.2	97.8	52.7	60.1	67.2	75.0	80.5
2011	612	67.8	11.5	22.2	94.7	51.9	59.7	68.0	76.3	82.8
2012	642	67.7	10.9	33.3	91.8	52.9	59.9	68.5	75.7	81.6
2013	607	67.3	11.1	30.6	97.7	52.2	59.9	67.3	75.1	81.6
2014	432	67.1	10.7	30.5	87.7	51.0	60.8	69.2	74.7	80.1
1998-2014	7159	66.5	11.4	15.8	97.8	51.3	58.9	67.2	75.0	80.8

Table 4

Age distribution by 5-year age group and gender for period 2007-2014

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	1	0.0	0.0	1	0.0	0.0			0.0
10-14	0	0.0	0.0			0.0			0.0
15-19	2	0.0	0.0	2	0.0	0.1			0.0
20-24	5	0.0	0.1	2	0.0	0.1	3	0.1	0.1
25-29	10	0.1	0.2	6	0.1	0.2	4	0.1	0.2
30-34	28	0.2	0.4	11	0.1	0.3	17	0.4	0.5
35-39	70	0.6	1.0	40	0.5	0.8	30	0.7	1.2
40-44	164	1.4	2.3	74	1.0	1.8	90	2.0	3.2
45-49	414	3.4	5.7	238	3.1	4.9	176	3.9	7.1
50-54	769	6.4	12.1	409	5.4	10.3	360	8.0	15.2
55-59	1214	10.0	22.2	728	9.6	19.9	486	10.8	26.0
60-64	1746	14.4	36.6	1074	14.1	34.0	672	15.0	41.0
65-69	2265	18.7	55.3	1462	19.2	53.2	803	17.9	58.9
70-74	2214	18.3	73.7	1497	19.7	72.9	717	16.0	74.9
75-79	1698	14.0	87.7	1136	14.9	87.9	562	12.5	87.4
80-84	1062	8.8	96.5	681	9.0	96.8	381	8.5	95.9
85+	425	3.5	100.0	241	3.2	100.0	184	4.1	100.0
All ages	12088	100.0		7603	100.0		4485	100.0	

Included in the statistics are 34.4% multiple primaries in males and 30.0% in females.

Table 5

Age-specific incidence 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 Prop.all cancers n=91183 %	Females Prop.all cancers n=89596 %
0- 4	1		0.1	0.0	0.6	
5- 9	1		0.1	0.0	1.0	
10-14			0.0	0.0		
15-19	2		0.2	0.0	0.9	
20-24	2	3	0.2	0.3	0.5	1.0
25-29	6	4	0.5	0.3	1.1	0.6
30-34	11	17	0.9	1.4	1.4	1.5
35-39	40	30	3.1	2.4	3.5	1.5
40-44	74	90	4.5	5.9	4.1	2.4
45-49	236	175	14.9	11.5	7.3	3.2
50-54	407	359	31.4	28.0	8.3	5.3
55-59	724	480	68.2	42.7	9.9	6.4
60-64	1069	662	108.8	62.4	9.9	7.2
65-69	1449	800	150.6	76.6	9.3	7.0
70-74	1487	714	163.4	68.3	8.8	6.0
75-79	1129	560	205.0	78.5	9.1	5.6
80-84	677	381	193.8	67.9	7.9	4.3
85+	241	184	104.1	31.8	4.0	1.8
All ages	7556	4459			8.3	5.0
Incidence						
Raw			41.8	23.8		
WS			21.5	11.9		
ES			31.5	16.9		
BRD-S			39.8	20.1		

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).

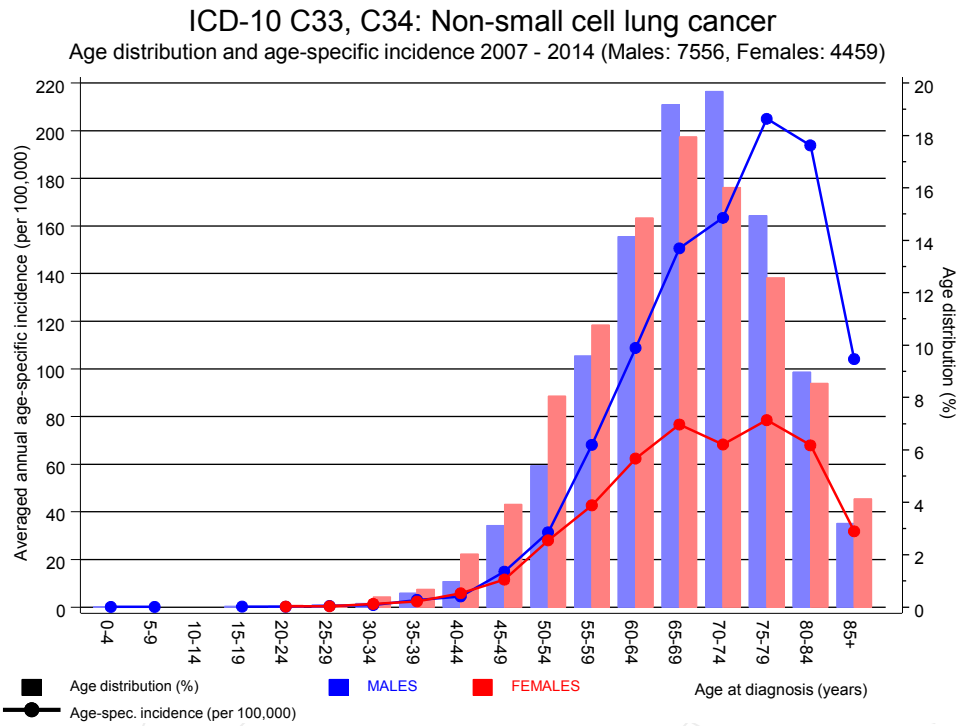


Figure 6. Age distribution and age-specific incidence

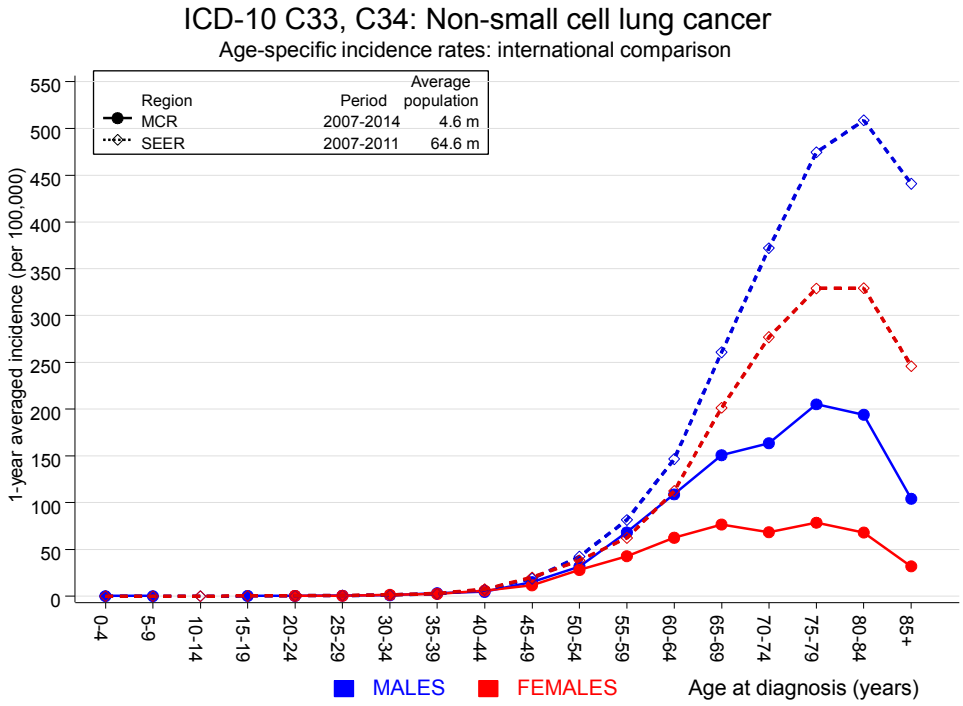


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

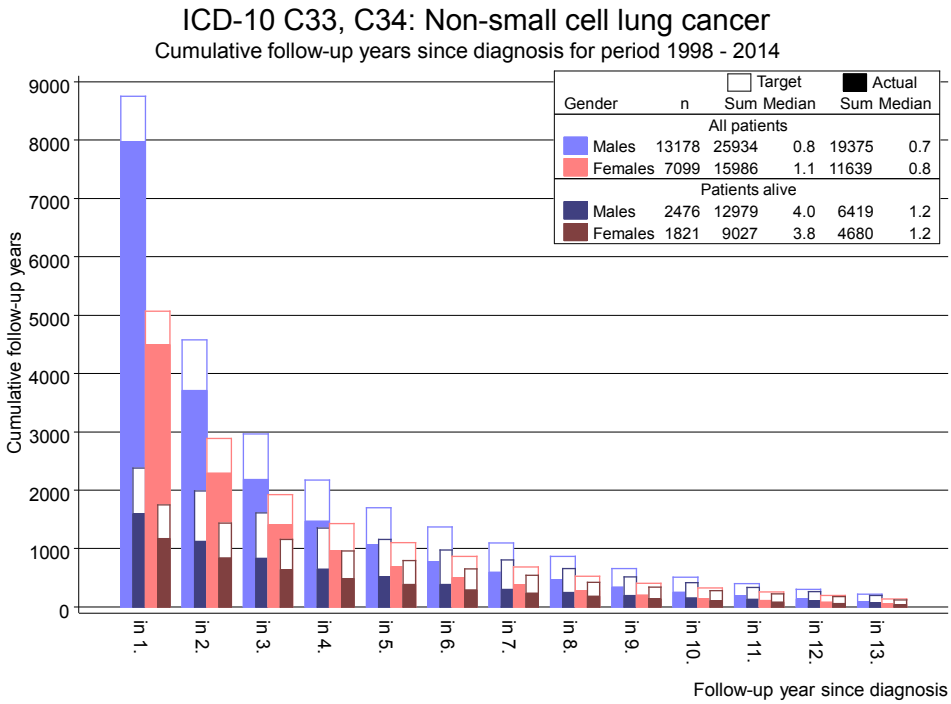


Figure 7. Cumulative follow-up years depending on time since diagnosis

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	3	0.4	8.1	1.7	23.6	#	1.4	33.3
C03–C06	Oral cavity	20	2.8	7.2	4.4	11.1	#	9.1	20.0
C09–C10	Oropharynx	27	3.5	7.7	5.1	11.2	#	12.4	7.4
C12–C13	Hypopharynx	15	1.9	7.8	4.4	12.9	#	6.9	6.7
C15	Oesophagus	34	6.0	5.7	4.0	8.0	#	14.8	2.9
C16	Stomach	48	12.6	3.8	2.8	5.1	#	18.7	12.5
C17	Small intestine	5	1.6	3.1	1.0	7.2	#	1.8	
C18	Colon	59	30.7	1.9	1.5	2.5	#	14.9	18.6
C19–C20	Rectum	33	17.7	1.9	1.3	2.6	#	8.0	6.1
C21	Anus/canal	2	0.7	3.0	0.4	10.7		0.7	
C22	Liver	32	8.9	3.6	2.5	5.1	#	12.2	15.6
C23–C24	Bile	7	3.1	2.3	0.9	4.7		2.1	14.3
C25	Pancreas	26	11.4	2.3	1.5	3.4	#	7.7	34.6
C26	GI cancer	2	0.3	6.2	0.7	22.3		0.9	
C32	Larynx	45	3.4	13.1	9.5	17.5	#	21.9	13.3
C33–C34	Lung	177	38.5	4.6	3.9	5.3	#	73.0	1.7
C43	Malign. melanoma	20	13.5	1.5	0.9	2.3		3.4	10.0
C46,C49	Soft tissue	6	1.6	3.7	1.3	8.0	#	2.3	
C48	Peritoneal	2	0.2	8.3	1.0	29.9	#	0.9	
C61	Prostate	112	95.9	1.2	1.0	1.4		8.5	17.0
C62	Testis	2	0.7	2.8	0.3	10.2		0.7	50.0
C64	Kidney	41	11.4	3.6	2.6	4.9	#	15.6	14.6
C65	Renal pelvis	7	1.3	5.3	2.1	10.9	#	3.0	
C67	Bladder	43	13.6	3.2	2.3	4.3	#	15.5	9.3
C70–C72	CNS cancer	4	4.2	0.9	0.3	2.4		−0.1	25.0
C73	Thyroid	9	2.1	4.3	2.0	8.1	#	3.6	
C74–C80	Cancer others	2	0.8	2.6	0.3	9.3		0.6	50.0
C76–C79	CUP	8	5.2	1.5	0.7	3.0		1.5	12.5
C82–C85	NHL	37	12.5	3.0	2.1	4.1	#	12.9	10.8
C90	Mult. myeloma	6	4.0	1.5	0.6	3.3		1.1	33.3
C91–C96	Leukaemia	19	5.0	3.8	2.3	5.9	#	7.4	36.8
Other primaries		9	5.1	1.8	0.8	3.4		2.1	44.4
Not observed		0	3.0	0.0	0.0	1.2		−1.6	
All mult. primaries		862	323.6	2.7	2.5	2.8	#	283.6	12.1

Patients	12975
Median age at second malignancy (years)	71.0
Person-years	18985
Mean observation time (years)	1.5
Median observation time (years)	0.7

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 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

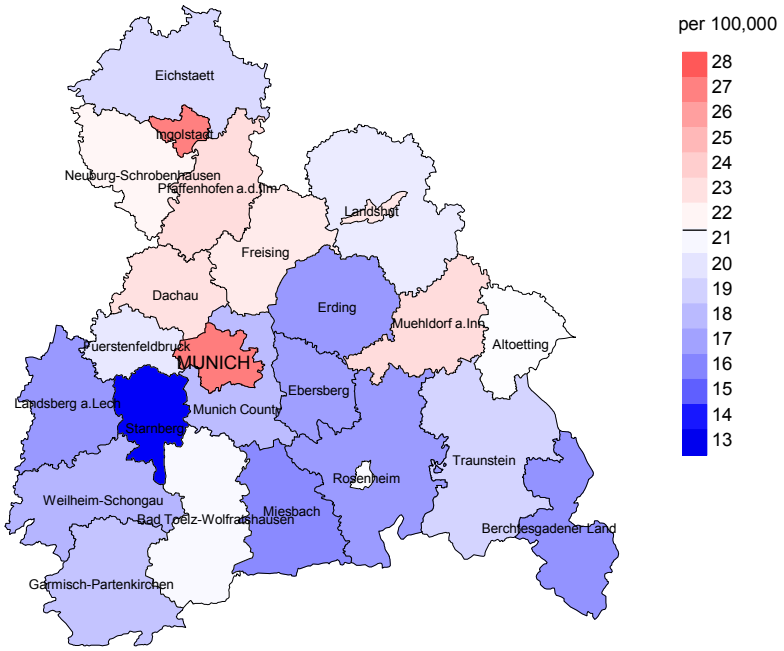
Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03–C06	Oral cavity	2	0.8	2.6	0.3	9.4		1.1	
C09–C10	Oropharynx	5	0.5	9.1	3.0	21.2	#	3.9	
C15	Oesophagus	4	0.8	5.2	1.4	13.2	#	2.8	
C16	Stomach	14	4.0	3.5	1.9	5.9	#	8.8	28.6
C17	Small intestine	5	0.6	8.0	2.6	18.6	#	3.8	
C18	Colon	29	11.4	2.6	1.7	3.7	#	15.4	13.8
C19–C20	Rectum	7	5.1	1.4	0.6	2.8		1.7	14.3
C21	Anus/canal	3	0.6	4.7	1.0	13.7		2.1	
C22	Liver	3	1.4	2.1	0.4	6.2		1.4	33.3
C23–C24	Bile	3	1.6	1.8	0.4	5.3		1.2	66.7
C25	Pancreas	20	5.2	3.8	2.3	5.9	#	13.0	25.0
C32	Larynx	4	0.2	16.1	4.4	41.2	#	3.3	25.0
C33–C34	Lung	74	9.5	7.8	6.1	9.8	#	56.5	1.4
C43	Malign. melanoma	10	4.7	2.1	1.0	3.9	#	4.7	10.0
C50	Breast	82	39.0	2.1	1.7	2.6	#	37.7	12.2
C51	Vulva	6	1.2	5.2	1.9	11.2	#	4.2	
C53	Cervix uteri	6	1.6	3.7	1.3	8.0	#	3.8	33.3
C54	Corpus uteri	9	7.3	1.2	0.6	2.4		1.5	11.1
C55,C57	Fem. genitals un	2	0.2	9.3	1.1	33.4	#	1.6	100.0
C56	Ovary	10	5.1	1.9	0.9	3.6		4.2	30.0
C57.9	Fem. urogen.	2	0.0	195.2	23.6	705.1	#	1.7	
C64	Kidney	11	3.1	3.5	1.8	6.3	#	6.9	45.5
C65	Renal pelvis	6	0.4	15.6	5.7	34.0	#	4.9	
C67	Bladder	6	2.1	2.8	1.0	6.2	#	3.4	16.7
C70–C72	CNS cancer	3	1.7	1.7	0.4	5.1		1.1	66.7
C73	Thyroid	11	2.3	4.9	2.4	8.7	#	7.7	9.1
C76–C79	CUP	9	2.0	4.5	2.1	8.5	#	6.1	11.1
C82–C85	NHL	10	4.7	2.1	1.0	3.9	#	4.7	10.0
C90	Mult. myeloma	6	1.5	4.1	1.5	8.9	#	4.0	50.0
C91–C96	Leukaemia	5	1.9	2.6	0.9	6.2		2.7	20.0
Other primaries		8	1.5	5.3	2.3	10.4	#	5.7	50.0
Not observed		0	2.3	0.0	0.0	1.6		-2.0	
All mult. primaries		375	124.3	3.0	2.7	3.3	#	219.7	15.2

Patients	6993
Median age at second malignancy (years)	69.4
Person-years	11414
Mean observation time (years)	1.6
Median observation time (years)	0.8

The occurrence of second malignancy is statistically significant.

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

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



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

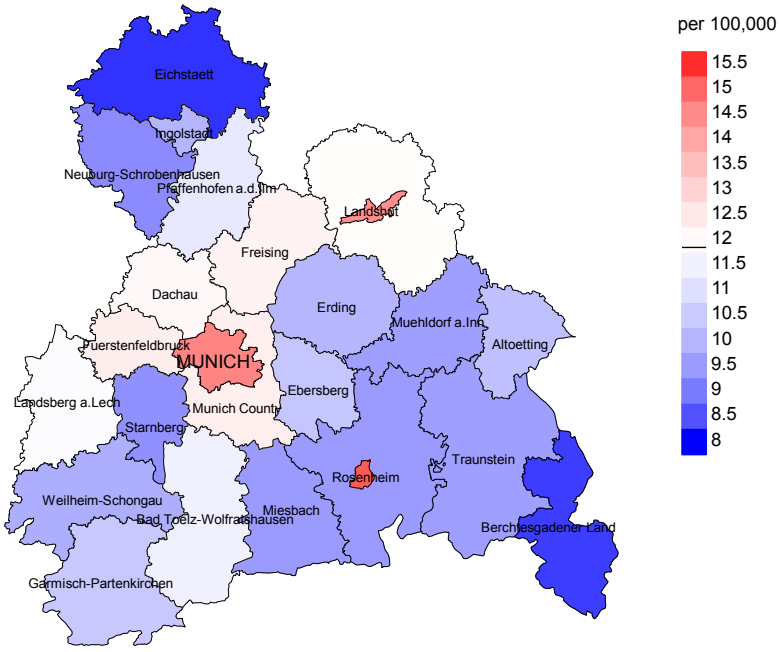
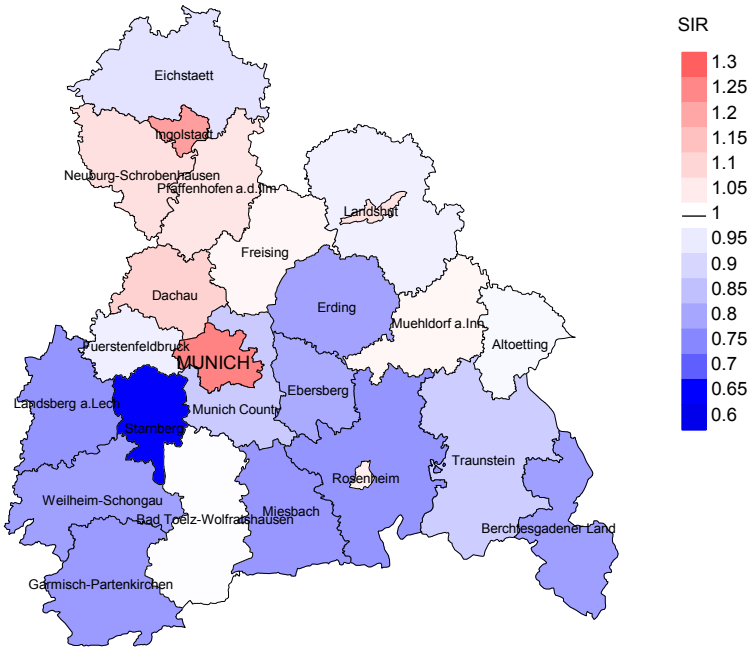


Figure 9a. Map of cancer incidence (world standard population) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 21.4/100,000 WS N=7,556, females 11.9/100,000 WS N=4,459).

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 100 women were identified with newly diagnosed non-small cell LC. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 10.4/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 7.8 and 13.7/100,000.

Standardized incidence ratio (SIR) 2007 - 2014: Males



Standardized incidence ratio (SIR) 2007 - 2014: Females

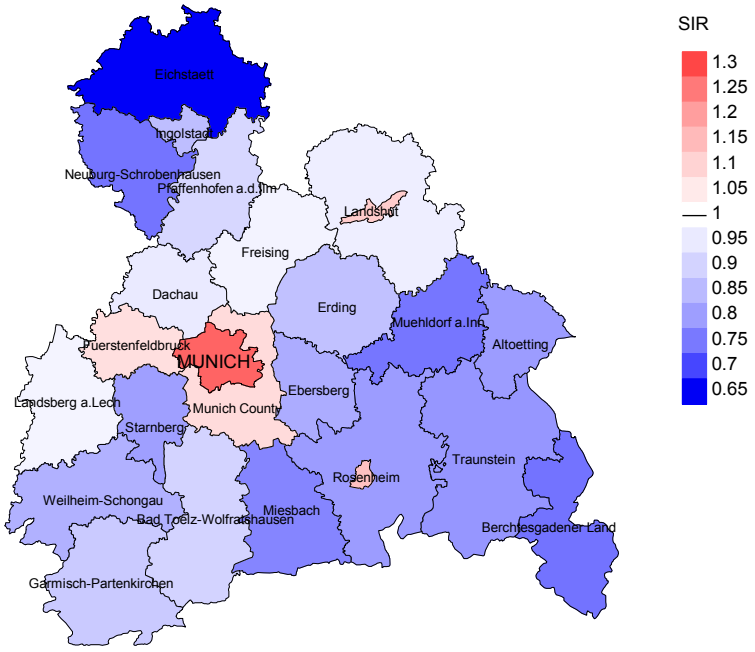


Figure 9b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=7,556, females N=4,459).

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 100 women were identified with newly diagnosed non-small cell LC. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.83. Though, the value of this parameter may vary with an underlying probability of 99% between 0.63 and 1.06, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, and deaths among the annual cohorts

(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 %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	616	99.5	568	92.2	91.0
1999	679	98.7	615	90.6	93.3
2000	659	98.6	589	89.4	94.4
2001	687	98.5	626	91.1	93.8
2002	1060	98.8	953	89.9	97.0
2003	1148	98.8	1021	88.9	96.8
2004	1146	99.0	1016	88.7	97.9
2005	1151	97.9	1024	89.0	98.2
2006	1199	97.6	1025	85.5	98.4
2007	1475	92.5	1237	83.9	98.5
2008	1566	90.3	1297	82.8	99.3
2009	1566	90.5	1270	81.1	99.1
2010	1598	89.9	1277	79.9	98.6
2011	1637	91.1	1272	77.7	98.7
2012	1662	88.6	1179	70.9	97.1
2013	1584	99.1	941	59.4	96.1
2014	1000	95.8	320	32.0	91.9
1998-2014	20433	94.7	16230	79.4	97.2

Table 10b

Annual cohorts of incident cancers and deaths,
and cases deceased the same year of cancer diagnosis

(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	Deaths in same year n	Prop. deaths in same year %
1998	616	497	201	32.6
1999	679	521	206	30.3
2000	659	549	208	31.6
2001	687	563	212	30.9
2002	1060	841	341	32.2
2003	1148	960	394	34.3
2004	1146	1003	374	32.6
2005	1151	989	396	34.4
2006	1199	1053	383	31.9
2007	1475	1171	457	31.0
2008	1566	1232	476	30.4
2009	1566	1293	473	30.2
2010	1598	1375	503	31.5
2011	1637	1414	543	33.2
2012	1662	1409	517	31.1
2013	1584	1447	521	32.9
2014	1000	1127	249	24.9
1998-2014	20433	17444	6454	31.6

Table 10c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(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	497	84.7	15.3	95.7
1999	521	88.9	11.1	96.1
2000	549	90.3	9.7	97.6
2001	563	88.3	11.7	96.0
2002	841	91.6	8.4	95.6
2003	960	92.4	7.6	96.6
2004	1003	94.2	5.8	97.2
2005	989	92.4	7.6	96.0
2006	1053	92.1	7.9	96.6
2007	1171	93.1	6.9	96.7
2008	1232	93.5	6.5	96.5
2009	1293	93.0	7.0	96.6
2010	1375	92.7	7.3	96.5
2011	1414	93.2	6.8	95.8
2012	1409	92.1	7.9	96.0
2013	1447	93.3	6.7	95.9
2014	1127	91.7	8.3	95.2
1998-2014	17444	92.2	7.8	96.3

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	347	67.8	67.4	70.5	67.9
1999	368	68.4	68.3	69.3	68.6
2000	381	67.0	66.5	70.4	67.1
2001	398	67.1	66.5	71.2	67.5
2002	601	67.1	66.6	74.5	66.7
2003	685	67.9	67.8	70.3	67.9
2004	697	68.8	68.6	71.7	68.9
2005	676	69.2	69.0	75.3	69.2
2006	735	69.7	69.5	71.9	69.6
2007	800	69.4	69.0	74.8	69.4
2008	837	69.7	69.1	76.1	69.4
2009	887	70.5	70.2	74.6	70.1
2010	896	70.9	70.5	75.6	70.7
2011	928	71.1	70.7	74.8	70.8
2012	885	71.5	70.6	79.8	71.2
2013	924	72.2	72.1	76.7	72.2
2014	694	72.7	72.4	74.9	72.6
1998-2014	11739	70.0	69.6	74.0	69.8

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 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	150	66.6	67.1	63.4	68.0
1999	153	70.9	70.8	72.7	70.9
2000	168	68.8	68.3	74.3	68.8
2001	165	70.7	69.7	73.2	70.5
2002	240	69.1	68.6	72.8	69.1
2003	275	69.4	68.9	72.2	69.1
2004	306	70.1	69.1	78.6	69.7
2005	313	66.7	66.1	77.5	66.7
2006	318	70.0	69.7	77.4	69.3
2007	371	69.0	68.3	77.4	68.4
2008	395	69.2	68.2	78.6	68.3
2009	406	68.7	68.3	79.3	68.5
2010	479	69.8	69.6	76.0	69.8
2011	486	69.8	69.3	77.0	69.6
2012	524	71.1	70.7	79.0	71.0
2013	523	71.3	70.5	81.6	70.7
2014	433	71.1	70.6	82.7	70.7
1998-2014	5705	69.8	69.2	76.9	69.5

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	291	26.3	0.69	16.0	0.68	23.6	0.69	29.8	0.71
1999	328	29.3	0.70	17.5	0.67	26.1	0.70	34.1	0.75
2000	340	29.9	0.74	17.9	0.73	26.2	0.74	33.0	0.78
2001	350	30.2	0.73	17.9	0.70	26.3	0.72	33.2	0.76
2002	544	29.2	0.75	16.7	0.74	24.5	0.74	31.1	0.75
2003	630	33.6	0.83	18.9	0.82	27.8	0.82	35.0	0.84
2004	659	35.0	0.86	19.1	0.85	28.5	0.86	36.5	0.88
2005	614	32.4	0.80	17.1	0.76	25.4	0.78	32.9	0.81
2006	673	35.1	0.84	18.1	0.80	27.2	0.82	35.5	0.86
2007	739	33.4	0.77	17.1	0.75	25.6	0.76	33.6	0.77
2008	779	35.0	0.77	18.0	0.76	26.7	0.76	34.7	0.78
2009	817	36.6	0.82	18.2	0.77	27.2	0.79	35.4	0.83
2010	816	36.2	0.81	17.9	0.77	26.6	0.79	34.4	0.82
2011	857	37.5	0.84	18.4	0.81	27.4	0.83	35.6	0.86
2012	803	35.1	0.79	17.2	0.77	25.4	0.77	33.2	0.79
2013	861	37.7	0.89	17.9	0.84	26.9	0.86	35.7	0.89
2014	627	27.4	1.11	12.9	1.07	19.6	1.09	25.8	1.12
1998-2014	10728	33.5	0.81	17.4	0.78	26.0	0.80	33.6	0.83

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	130	11.1	0.68	5.8	0.67	8.2	0.67	9.8	0.66
1999	135	11.4	0.66	5.5	0.62	8.1	0.63	10.3	0.65
2000	156	13.0	0.78	6.8	0.73	9.7	0.75	11.7	0.77
2001	148	12.2	0.73	6.2	0.67	8.9	0.70	11.0	0.72
2002	226	11.5	0.68	5.9	0.65	8.4	0.65	10.3	0.67
2003	257	13.0	0.66	6.5	0.62	9.5	0.64	11.6	0.66
2004	286	14.5	0.76	7.0	0.69	10.2	0.72	12.8	0.76
2005	300	15.1	0.80	7.7	0.76	11.0	0.77	13.1	0.79
2006	297	14.8	0.75	7.0	0.70	10.2	0.71	12.6	0.74
2007	351	15.2	0.70	7.5	0.66	10.8	0.67	13.1	0.69
2008	373	16.1	0.69	7.6	0.63	11.1	0.65	13.6	0.67
2009	386	16.6	0.69	8.2	0.68	11.7	0.68	13.9	0.68
2010	458	19.6	0.79	9.1	0.73	13.1	0.74	16.1	0.77
2011	461	19.5	0.75	9.0	0.71	12.9	0.72	15.9	0.74
2012	494	20.9	0.77	9.3	0.71	13.5	0.72	16.8	0.75
2013	490	20.8	0.81	9.3	0.73	13.4	0.74	16.5	0.77
2014	406	17.2	0.95	7.7	0.87	11.2	0.90	14.0	0.92
1998-2014	5354	16.0	0.75	7.6	0.70	11.0	0.71	13.5	0.73

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.%
15-19	1	0.0	0.0	1	0.0	0.0			0.0
20-24	3	0.0	0.0	2	0.0	0.0	1	0.0	0.0
25-29	3	0.0	0.1	3	0.0	0.1			0.0
30-34	9	0.1	0.2	3	0.0	0.1	6	0.2	0.2
35-39	39	0.4	0.6	21	0.3	0.5	18	0.5	0.7
40-44	107	1.1	1.6	55	0.9	1.3	52	1.5	2.2
45-49	259	2.6	4.3	154	2.4	3.7	105	3.0	5.3
50-54	512	5.2	9.5	296	4.6	8.4	216	6.2	11.5
55-59	834	8.5	17.9	507	7.9	16.3	327	9.4	20.9
60-64	1319	13.4	31.3	852	13.3	29.6	467	13.5	34.4
65-69	1730	17.6	48.9	1132	17.7	47.3	598	17.3	51.7
70-74	1868	19.0	67.8	1272	19.9	67.2	596	17.2	68.9
75-79	1508	15.3	83.1	1050	16.4	83.7	458	13.2	82.1
80-84	1107	11.2	94.3	735	11.5	95.2	372	10.7	92.8
85+	557	5.7	100.0	309	4.8	100.0	248	7.2	100.0
All ages	9856	100.0		6392	100.0		3464	100.0	

Included in the statistics are 34.4% multiple primaries in males and 30.0% 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19	1		0.1	0.50	0.0		2.8	
20-24	2	1	0.2	1.00	0.1	0.33	4.2	3.6
25-29	3		0.2	0.50	0.0		4.8	
30-34	3	6	0.2	0.27	0.5	0.35	3.4	5.5
35-39	21	18	1.6	0.53	1.4	0.60	11.9	7.0
40-44	55	52	3.4	0.74	3.4	0.58	12.0	8.2
45-49	154	105	9.7	0.65	6.9	0.60	15.0	8.6
50-54	296	216	22.9	0.72	16.9	0.60	15.9	12.1
55-59	507	327	47.7	0.70	29.1	0.67	16.4	12.5
60-64	852	467	86.7	0.79	44.0	0.69	17.8	13.1
65-69	1132	598	117.7	0.77	57.3	0.74	15.8	11.5
70-74	1272	596	139.8	0.85	57.0	0.83	13.9	9.1
75-79	1050	458	190.7	0.92	64.2	0.81	12.3	7.3
80-84	735	372	210.4	1.08	66.3	0.98	10.0	5.7
85+	309	248	133.5	1.28	42.9	1.35	5.1	2.9
All ages	6392	3464					12.8	7.9
Mortality								
Raw			35.4	0.84	18.5	0.77		
WS			17.4	0.81	8.6	0.72		
ES			26.0	0.82	12.4	0.73		
BRD-S			34.0	0.85	15.2	0.75		
PYLL-70								
per 100,000			167.2		110.6			
ES			146.2		93.6			
AYLL-70			8.9		9.8			

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	118	3.7	93	78.8	11	9.3	14	11.9
C09-C10 Oropharynx	95	2.9	65	68.4	11	11.6	19	20.0
C12-C13 Hypopharynx	55	1.7	36	65.5	8	14.5	11	20.0
C15 Oesophagus	68	2.1	24	35.3	21	30.9	23	33.8
C16 Stomach	114	3.5	53	46.5	25	21.9	36	31.6
C18 Colon	247	7.7	156	63.2	38	15.4	53	21.5
C19-C20 Rectum	135	4.2	95	70.4	18	13.3	22	16.3
C22 Liver	40	1.2	12	30.0	11	27.5	17	42.5
C25 Pancreas	40	1.2	9	22.5	9	22.5	22	55.0
C32 Larynx	147	4.6	99	67.3	22	15.0	26	17.7
C33-C34 Lung	223	6.9			67	30.0	156	70.0
C43 Malign. melanoma	105	3.3	86	81.9	9	8.6	10	9.5
C44 Skin others	227	7.0	155	68.3	27	11.9	45	19.8
C61 Prostate	601	18.7	486	80.9	34	5.7	81	13.5
C62 Testis	32	1.0	29	90.6	1	3.1	2	6.3
C64 Kidney	124	3.8	82	66.1	18	14.5	24	19.4
C67 Bladder	365	11.3	289	79.2	23	6.3	53	14.5
C70-C72 CNS cancer	39	1.2	22	56.4	6	15.4	11	28.2
C76-C79 CUP	36	1.1	20	55.6	9	25.0	7	19.4
C81 Hodgkin lymphoma	32	1.0	32	100.0				
C82-C85 NHL	113	3.5	76	67.3	16	14.2	21	18.6
C90 Mult. myeloma	33	1.0	14	42.4	9	27.3	10	30.3
C91-C96 Leukaemia	49	1.5	25	51.0	6	12.2	18	36.7
Other primaries	184	5.7	115	62.5	19	10.3	50	27.2
All mult. primaries	3222	100.0	2073	64.3	418	13.0	731	22.7

Multiple primaries with number of cases 1 to 22 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 ←%
C03-C06	Oral cavity	31	2.1	26	83.9	3	9.7	2	6.5
C09-C10	Oropharynx	14	0.9	10	71.4	2	14.3	2	14.3
C16	Stomach	36	2.4	17	47.2	7	19.4	12	33.3
C18	Colon	106	7.1	73	68.9	12	11.3	21	19.8
C19-C20	Rectum	31	2.1	22	71.0	2	6.5	7	22.6
C21	Anus/canal	17	1.1	13	76.5	1	5.9	3	17.6
C25	Pancreas	31	2.1	9	29.0	5	16.1	17	54.8
C32	Larynx	13	0.9	8	61.5	2	15.4	3	23.1
C33-C34	Lung	92	6.2			24	26.1	68	73.9
C43	Malign. melanoma	41	2.7	36	87.8			5	12.2
C44	Skin others	59	3.9	31	52.5	4	6.8	24	40.7
C50	Breast	400	26.8	325	81.3	33	8.3	42	10.5
C51	Vulva	20	1.3	16	80.0	2	10.0	2	10.0
C53	Cervix uteri	78	5.2	66	84.6	6	7.7	6	7.7
C54	Corpus uteri	79	5.3	70	88.6	2	2.5	7	8.9
C55,C57	Fem. genitals un	13	0.9	11	84.6	1	7.7	1	7.7
C56	Ovary	35	2.3	24	68.6	3	8.6	8	22.9
C64	Kidney	39	2.6	24	61.5	7	17.9	8	20.5
C65	Renal pelvis	11	0.7	6	54.5	1	9.1	4	36.4
C67	Bladder	63	4.2	48	76.2	5	7.9	10	15.9
C70-C72	CNS cancer	54	3.6	23	42.6	11	20.4	20	37.0
C73	Thyroid	31	2.1	21	67.7	6	19.4	4	12.9
C76-C79	CUP	20	1.3	8	40.0	5	25.0	7	35.0
C81	Hodgkin lymphoma	11	0.7	11	100.0				
C82-C85	NHL	53	3.5	44	83.0	2	3.8	7	13.2
C90	Mult. myeloma	19	1.3	6	31.6	5	26.3	8	42.1
C91-C96	Leukaemia	21	1.4	8	38.1	3	14.3	10	47.6
Other primaries		76	5.1	39	51.3	12	15.8	25	32.9
All mult. primaries		1494	100.0	995	66.6	166	11.1	333	22.3

Multiple primaries with number of cases 1 to 10 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19	1		0.1	1.00	0.0		3.0	
20-24	1	1	0.1	1.00	0.1	0.33	2.3	3.8
25-29	3		0.2	0.50	0.0		5.5	
30-34	3	6	0.2	0.27	0.5	0.38	3.5	6.3
35-39	19	13	1.5	0.51	1.0	0.50	11.5	5.7
40-44	50	47	3.1	0.72	3.1	0.57	11.8	8.5
45-49	143	89	9.0	0.67	5.9	0.59	15.6	8.7
50-54	257	189	19.9	0.72	14.8	0.60	16.1	12.7
55-59	425	284	40.0	0.69	25.3	0.69	16.3	13.2
60-64	698	376	71.1	0.79	35.5	0.70	17.8	13.2
65-69	902	460	93.8	0.80	44.1	0.77	16.0	11.2
70-74	958	440	105.3	0.87	42.1	0.81	13.8	8.7
75-79	744	358	135.1	0.95	50.2	0.85	11.9	7.4
80-84	499	275	142.9	1.17	49.0	0.97	9.3	5.5
85+	197	186	85.1	1.28	32.2	1.35	4.5	2.7
All ages	4900	2724					12.7	7.9
Mortality								
Raw			27.1	0.85	14.5	0.77		
WS			13.7	0.81	6.9	0.72		
ES			20.2	0.83	9.9	0.73		
BRD-S			25.9	0.86	12.0	0.75		
PYLL-70								
per 100,000			142.6		93.6			
ES			124.6		79.4			
AYLL-70			9.1		10.1			

* 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19	1		0.1	1.00	0.0		3.0	
20-24		1	0.0		0.1	0.33		4.2
25-29	3		0.2	0.50	0.0		5.9	
30-34	3	6	0.2	0.27	0.5	0.38	3.5	7.2
35-39	19	13	1.5	0.51	1.0	0.52	12.0	6.3
40-44	50	46	3.1	0.72	3.0	0.58	12.6	9.0
45-49	142	87	9.0	0.67	5.7	0.58	16.5	9.5
50-54	248	187	19.2	0.71	14.6	0.61	17.3	14.1
55-59	415	274	39.1	0.69	24.4	0.69	17.8	14.6
60-64	663	362	67.5	0.79	34.1	0.71	19.5	14.9
65-69	856	427	89.0	0.80	40.9	0.74	18.0	12.6
70-74	898	412	98.7	0.85	39.4	0.79	15.9	10.0
75-79	676	336	122.8	0.91	47.1	0.83	14.0	8.5
80-84	454	261	130.0	1.10	46.5	0.95	11.2	6.4
85+	186	171	80.3	1.23	29.6	1.26	5.4	3.0
All ages	4614	2583					14.6	9.0
Mortality								
Raw			25.5	0.83	13.8	0.76		
WS			13.0	0.80	6.6	0.71		
ES			19.1	0.81	9.4	0.72		
BRD-S			24.3	0.84	11.4	0.74		
PYLL-70								
per 100,000			138.0		90.9			
ES			120.6		77.2			
AYLL-70			9.2		10.3			

* See corresponding tables with multiple primaries.

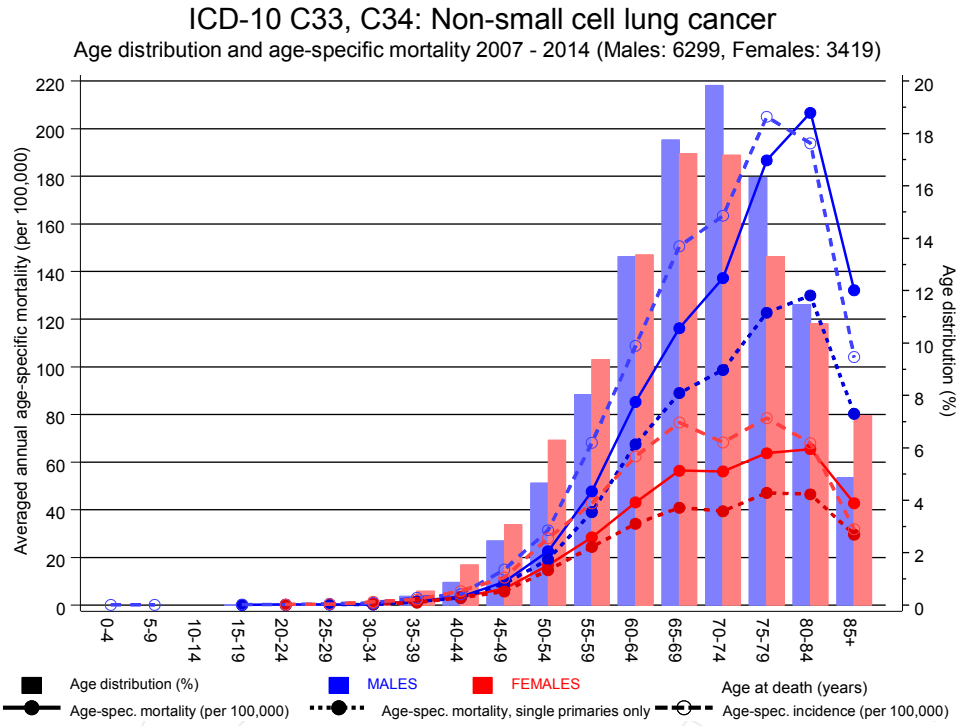


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at non-small cell LC-related death (see Table 10) should be considered.

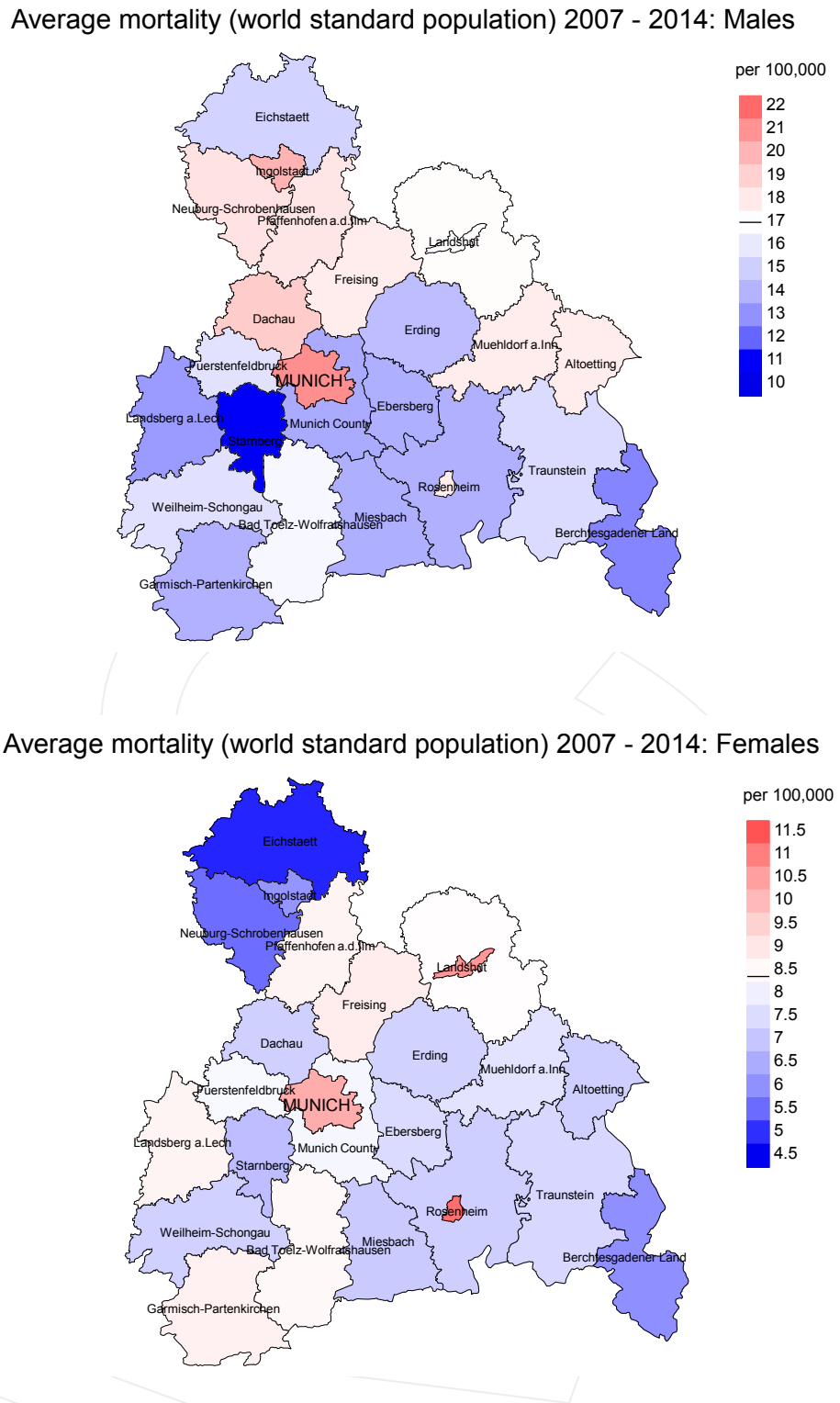
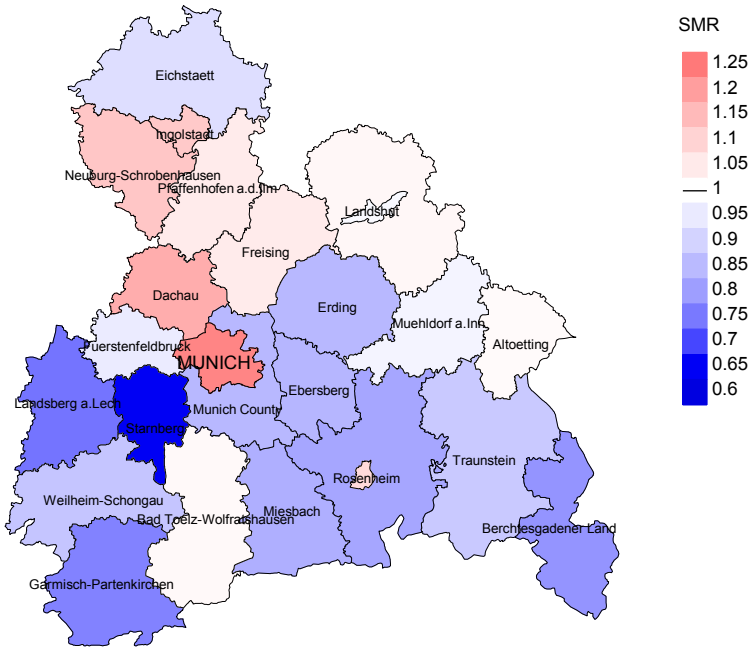


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 17.0/100,000 WS N=6,268, females 8.4/100,000 WS N=3,396).

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 80 women died from non-small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 7.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 5.4 and 10.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2014: Males



Standardized mortality ratio (SMR) 2007 - 2014: Females

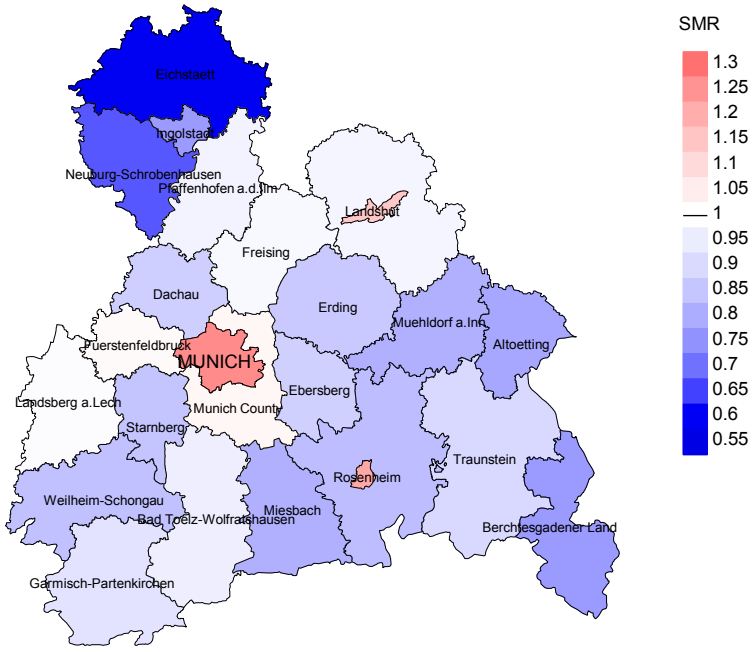


Figure 19b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=6,268, females N=3,396).

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 80 women died from non-small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.87. Though, the value of this parameter may vary with an underlying probability of 99% between 0.64 and 1.16, 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

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