Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage

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

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

Cancer statistics: Baseline statistics

C33, C34: Small cell LC

Year of diagnosis	1998-2011
Patients	3865
Diseases	3866
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C34s_E.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, April 2013

[#] 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 2011 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.

INCIDENCE

Table 1

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

Year of diagnosis	Cases # n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	178	1	0.6	12.4	93.8	97.2
1999	175			13.7	94.3	98.9
2000	156			15.4	94.2	100.0
2001	183			12.6	94.0	100.0
2002	282			13.5	94.3	97.9
2003	283			18.0	96.1	100.0
2004	292			14.7	96.6	99.0
2005	305	1	0.3	19.3	95.7	99.0
2006	296			16.9	92.9	97.6
2007	357			17.1	93.6	98.9 ##
2008	338			16.3	90.8	94.1
2009	364			16.2	90.1	95.3
2010	356			19.1	86.8	96.6
2011	301			22.3	64.1	80.7 ###
1998-2011	3866	2	0.1	16.7	90.8	96.5

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 1a

Patient cohorts by year of diagnosis and gender
including DCO cases

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	178	113	65	63.5
1999	175	120	55	68.6
2000	156	108	48	69.2
2001	183	125	58	68.3
2002	282	194	88	68.8
2003	283	181	102	64.0
2004	292	189	103	64.7
2005	305	210	95	68.9
2006	296	188	108	63.5
2007	357	220	137	61.6
2008	338	214	124	63.3
2009	364	233	131	64.0
2010	356	232	124	65.2
2011	301	191	110	63.5
1998-2011	3866	2518	1348	65.1

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 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	113	65	10.2	5.5	6.2	3.0	9.0	4.2	11.3	5.0
1999	120	55	10.7	4.6	6.6	2.6	9.5	3.6	11.4	4.1
2000	108	48	9.5	4.0	5.7	2.3	8.3	3.2	10.2	3.6
2001	125	58	10.8	4.8	6.5	2.6	9.4	3.7	11.3	4.4
2002	194	88	10.4	4.5	6.1	2.5	8.9	3.5	11.0	4.1
2003	181	102	9.7	5.2	5.5	2.9	8.0	4.0	10.0	4.6
2004	189	103	10.0	5.2	5.7	2.9	8.2	4.0	9.9	4.6
2005	210	95	11.1	4.8	6.2	2.6	8.9	3.6	10.9	4.2
2006	188	108	9.8	5.4	5.5	2.9	8.0	4.1	9.6	4.7
2007	220	137	9.9	5.9	5.6	3.2	7.9	4.5	9.5	5.3
2008	214	124	9.6	5.3	5.2	2.8	7.6	4.0	9.4	4.6
2009	233	131	10.4	5.6	5.6	2.9	8.1	4.1	10.1	4.8
2010	232	124	10.3	5.3	5.3	2.9	7.7	3.9	9.8	4.6
2011	191	110	8.5	4.7	4.5	2.4	6.5	3.3	8.0	3.9
1998-2011	2518	1348	10.0	5.1	5.6	2.7	8.1	3.9	9.9	4.5

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)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	178	64.8	10.0	31.5	84.4	53.5	57.6	65.1	72.6	77.1
1999	175	64.7	10.4	36.4	94.7	52.7	57.6	64.6	71.2	78.6
2000	156	64.5	11.1	30.9	90.5	49.8	58.1	64.4	71.7	79.3
2001	183	65.8	9.5	42.7	91.7	53.7	59.2	65.7	73.1	78.1
2002	282	64.8	10.8	32.2	89.4	51.0	57.9	64.8	73.8	78.2
2003	283	65.8	10.3	39.5	88.7	52.6	58.9	66.1	73.2	79.3
2004	292	65.2	10.0	39.6	85.6	51.1	59.9	64.9	72.9	78.0
2005	305	66.1	9.9	40.5	93.7	53.3	59.2	66.9	72.4	79.5
2006	296	66.3	9.3	42.9	97.5	55.1	59.2	65.4	72.7	78.9
2007	357	65.7	9.6	36.8	91.2	52.7	59.5	66.2	72.2	78.2
2008	338	66.4	10.1	39.0	89.2	53.7	59.2	66.5	74.0	79.8
2009	364	67.2	9.9	37.0	91.2	53.7	60.6	67.7	74.0	80.0
2010	356	67.3	9.6	31.8	88.4	53.6	61.2	67.5	73.9	80.2
2011	301	67.4	9.6	42.7	93.7	53.4	62.3	68.0	72.9	79.6
1998-2011	3866	66.0	10.0	30.9	97.5	52.9	59.3	66.1	73.1	79.1

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	113	64.9	10.0	31.5	83.1	54.5	57.7	65.1	72.6	77.1
1999	120	64.9	10.2	36.4	94.7	53.2	58.0	65.1	70.4	78.5
2000	108	65.0	10.8	30.9	90.5	50.8	58.3	64.6	72.3	78.9
2001	125	66.0	9.1	44.1	91.7	54.6	60.3	65.7	72.4	77.9
2002	194	64.9	10.6	32.2	86.1	52.0	57.9	65.1	74.1	78.2
2003	181	66.5	10.2	39.9	84.2	52.9	60.8	67.8	74.2	79.3
2004	189	65.7	10.0	39.6	85.4	50.5	60.8	66.2	73.0	77.9
2005	210	66.2	9.8	40.5	93.7	54.1	59.7	66.9	72.4	79.1
2006	188	66.3	9.1	42.9	87.1	53.5	59.4	66.2	72.8	78.6
2007	220	65.9	9.4	43.1	91.2	53.2	59.7	66.3	71.7	77.2
2008	214	66.7	10.1	42.9	87.1	53.7	59.3	67.3	74.5	79.7
2009	233	67.3	10.2	37.0	91.2	52.6	60.8	68.1	75.0	80.0
2010	232	68.0	10.2	31.8	88.4	53.6	61.1	68.0	75.4	81.1
2011	191	67.5	9.7	42.7	93.7	55.1	62.1	68.1	74.3	79.7
1998-2011	2518	66.3	10.0	30.9	94.7	53.1	59.6	66.7	73.4	79.1

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	65	64.8	10.2	38.9	84.4	49.3	57.6	64.6	72.1	75.7
1999	55	64.2	10.9	41.5	87.3	49.0	57.4	63.4	72.9	78.6
2000	48	63.3	11.9	41.1	89.0	46.2	53.9	63.2	70.4	80.8
2001	58	65.5	10.4	42.7	84.7	52.8	56.9	65.1	74.6	80.5
2002	88	64.7	11.2	35.2	89.4	47.7	57.6	64.0	73.4	79.4
2003	102	64.5	10.5	39.5	88.7	52.6	57.5	63.9	71.3	79.0
2004	103	64.3	9.8	42.6	85.6	51.9	58.4	63.2	70.8	78.3
2005	95	65.9	10.1	41.8	85.6	53.0	58.8	65.8	72.7	80.0
2006	108	66.2	9.7	42.9	97.5	55.7	59.2	64.5	71.7	80.4
2007	137	65.3	10.1	36.8	87.2	50.7	59.0	66.0	72.4	78.4
2008	124	66.1	10.2	39.0	89.2	54.6	59.1	65.8	72.7	80.2
2009	131	67.1	9.2	48.1	89.9	55.0	60.4	67.1	73.1	79.7
2010	124	66.0	8.1	48.1	85.6	54.0	61.6	65.7	71.5	75.6
2011	110	67.3	9.5	44.3	89.3	53.0	62.8	67.4	72.6	78.6
1998-2011	1348	65.6	10.0	35.2	97.5	52.6	58.9	65.3	72.4	79.1

Table 4

Age distribution by 5-year age group and gender for period 1998-2011 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
30-34	5	0.1	0.1	5	0.2	0.2			0.0
35-39	13	0.3	0.5	8	0.3	0.5	5	0.4	0.4
40-44	65	1.7	2.1	45	1.8	2.3	20	1.5	1.9
45-49	162	4.2	6.3	96	3.8	6.1	66	4.9	6.8
50-54	281	7.3	13.6	178	7.1	13.2	103	7.6	14.4
55-59	525	13.6	27.2	330	13.1	26.3	195	14.5	28.9
60-64	700	18.1	45.3	431	17.1	43.4	269	20.0	48.8
65-69	736	19.0	64.3	490	19.5	62.9	246	18.2	67.1
70-74	614	15.9	80.2	422	16.8	79.6	192	14.2	81.3
75-79	455	11.8	92.0	310	12.3	91.9	145	10.8	92.1
80-84	241	6.2	98.2	161	6.4	98.3	80	5.9	98.0
85+	69	1.8	100.0	42	1.7	100.0	27	2.0	100.0
All ages	3866	100.0		2518	100.0		1348	100.0	

Included in the statistics are 20.6% multiple primaries in males and 18.9% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2011

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=2 %	Females DCO rate n=0 %	Males Prop.all cancers n=132509 %	Females Prop.all cancers n=129521 %
0- 4			0.0	0.0				
5- 9			0.0	0.0				
10-14			0.0	0.0				
15-19			0.0	0.0				
20-24			0.0	0.0				
25-29			0.0	0.0				
30-34	5		0.3	0.0			0.4	
35-39	8	5	0.4	0.2			0.4	0.2
40-44	45	20	2.0	0.9			1.6	0.4
45-49	96	66	4.9	3.4			2.1	0.9
50-54	178	103	10.7	6.0			2.4	1.1
55-59	330	195	21.2	11.9			2.6	1.7
60-64	430	269	28.3	16.8			2.3	1.8
65-69	490	246	36.0	16.5			2.1	1.5
70-74	422	192	40.9	15.6			1.9	1.3
75-79	310	145	45.9	14.6	0.6		1.8	1.0
80-84	161	80	39.6	10.1			1.5	0.6
85+	42	27	15.1	3.6			0.5	0.2
All ages	2517	1348			0.1	0.0	1.9	1.0
Incidence								
Raw			10.0	5.1				
WS			5.6	2.7				
ES			8.1	3.9				
BRD-S			9.9	4.5				

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 6a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2011
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C09-C10	Oropharynx	4	0.4	10.6	2.9	27.2	#	18.4	
C15	Oesophagus	2	0.6	3.6	0.4	13.0		7.3	100.0
C18	Colon	4	2.9	1.4	0.4	3.5		5.4	
C19-C20	Rectum	3	1.8	1.7	0.3	4.9		6.1	33.3
C22	Liver	3	0.8	3.6	0.7	10.6		11.0	33.3
C25	Pancreas	8	1.0	8.1	3.5	16.0	#	35.5	62.5
C32	Larynx	4	0.4	11.1	3.0	28.3	#	18.4	25.0
C33-C34	Lung	15	3.8	4.0	2.2	6.6	#	57.0	13.3
C61	Prostate	9	9.2	1.0	0.4	1.9		-1.1	11.1
C64	Kidney	5	1.1	4.5	1.5	10.4	#	19.7	20.0
C70-C72	CNS cancer	2	0.4	4.8	0.6	17.4		8.0	100.0
C82-C85	NHL	3	1.1	2.6	0.5	7.7		9.4	
C91-C96	Leukaemia	2	0.4	4.8	0.6	17.2		8.0	50.0
Other primaries		6	3.4	1.8	0.6	3.8		13.0	33.3
Not observed		0	3.4	0.0	0.0	1.1		-17.1	
All mult. primaries		70	30.7	2.3	1.8	2.9	#	199.1	27.1

Patients	1913
Mean age at second malignancy (years)	69.1
Person-years	1974
Mean observation time (years)	1.0
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 6b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2011
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C25	Pancreas	2	0.4	4.8	0.6	17.2		12.4	50.0
C33-C34	Lung	9	0.9	9.7	4.4	18.4	#	63.1	22.2
C50	Breast	3	4.3	0.7	0.1	2.0		-10.2	33.3
C67	Bladder	2	0.2	12.2	1.5	44.1	#	14.4	
C70-C72	CNS cancer	2	0.2	11.1	1.3	40.0	#	14.2	
C91-C96	Leukaemia	2	0.2	12.7	1.5	45.9	#	14.4	
Other primaries		10	3.0	3.3	1.6	6.1	#	54.5	50.0
Not observed		0	3.2	0.0	0.0	1.1		-25.4	
All mult. primaries		30	12.4	2.4	1.6	3.4	#	137.4	30.0

Patients	1025
Mean age at second malignancy (years)	66.0
Person-years	1279
Mean observation time (years)	1.2
Median observation time (years)	0.8

The occurrence of second malignancy is statistically significant.

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

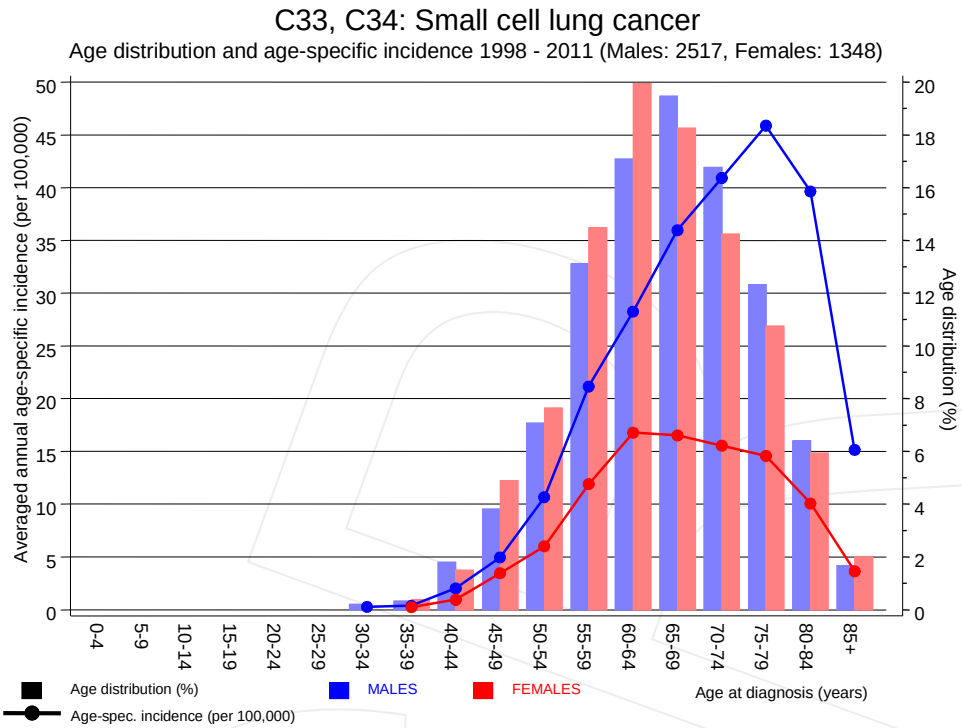


Figure 7. Age distribution and age-specific incidence

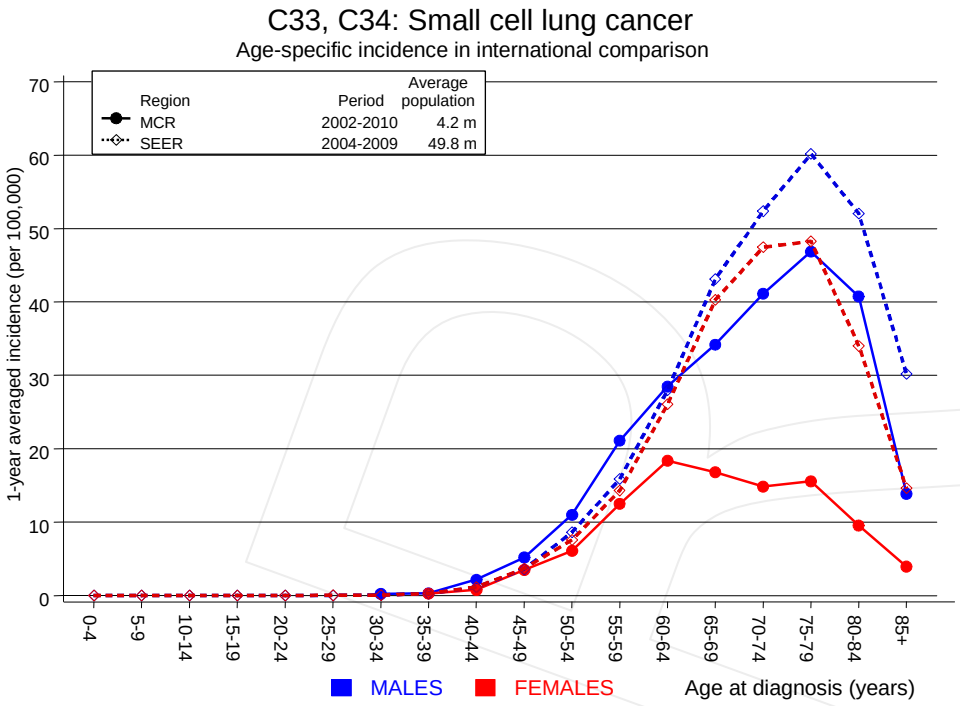


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

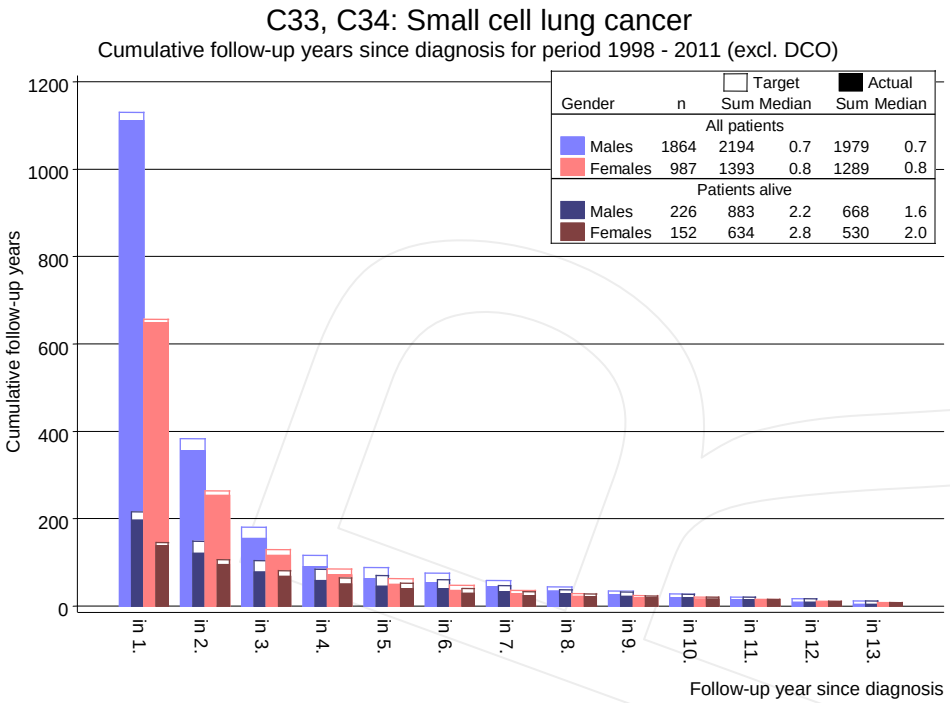
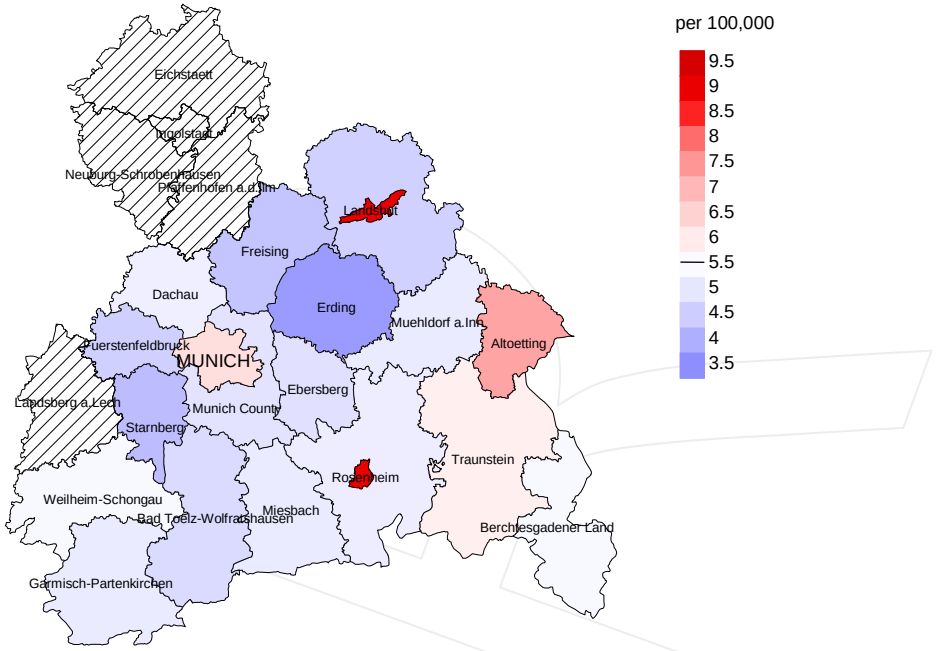


Figure 8. Cumulative follow-up years depending on time since diagnosis

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: Males



Average incidence (world standard population) 2003 - 2008: Females

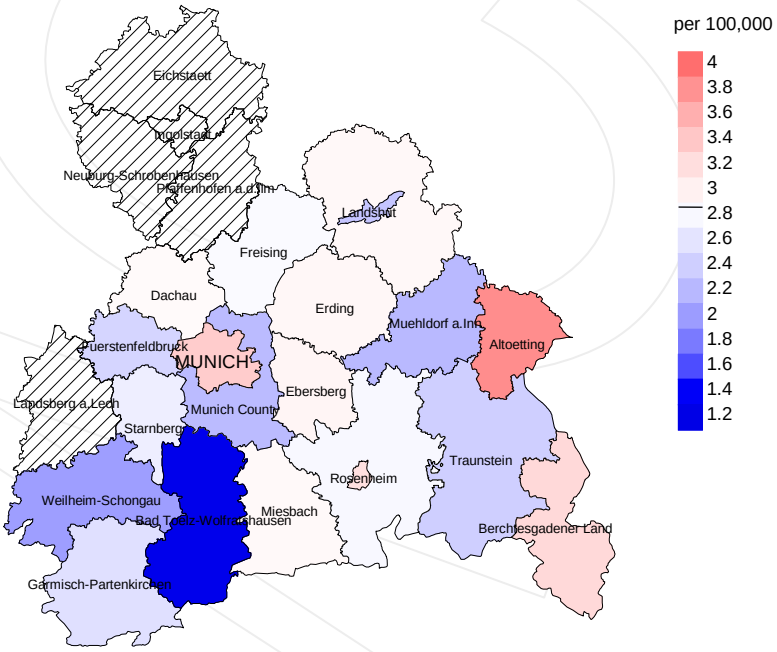
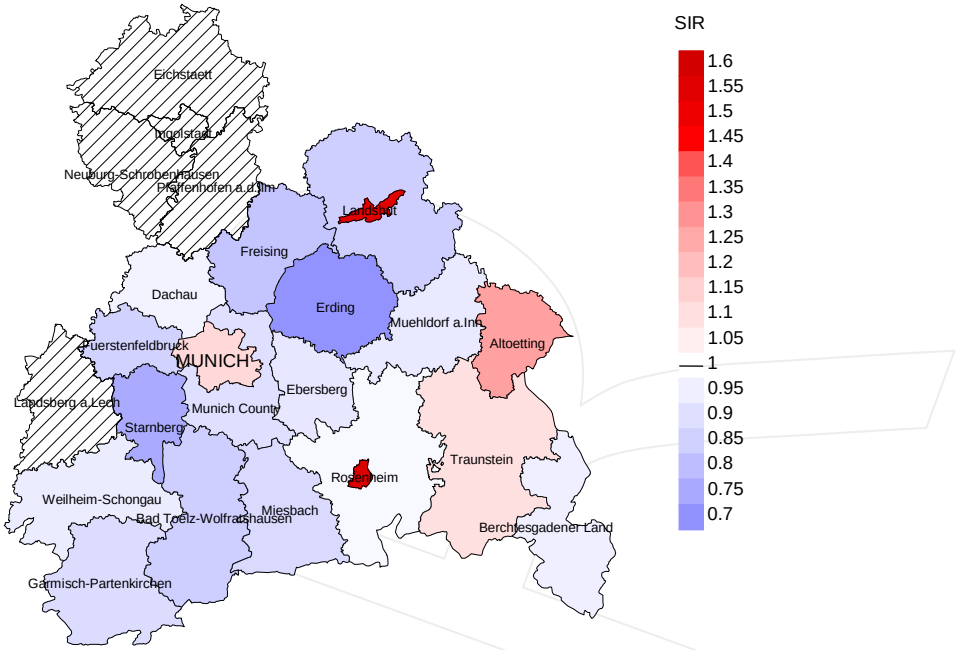


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 5.6/100,000 WS N=1,143, females 2.9/100,000 WS N=642). 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 20 women were identified with newly diagnosed small cell LC. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 3.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.5 and 5.4/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

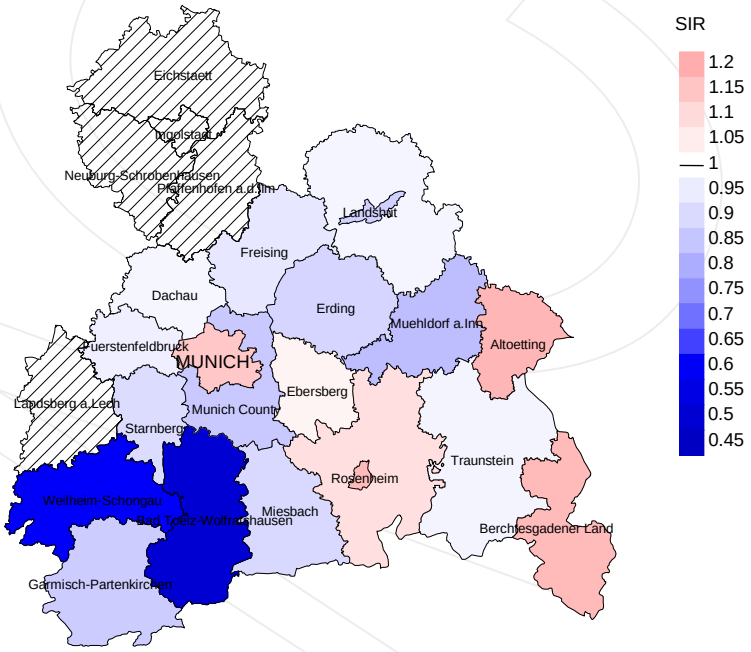


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,143, females N=642). 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 20 women were identified with newly diagnosed small cell LC. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.03. Though, the value of this parameter may vary with an underlying probability of 99% between 0.53 and 1.78, 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)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	178	97.2	0.6	167	93.8	91.0
1999	175	98.9		165	94.3	95.2
2000	156	100.0		147	94.2	93.2
2001	183	100.0		172	94.0	94.2
2002	282	97.9		266	94.3	95.9
2003	283	100.0		272	96.1	97.4
2004	292	99.0		282	96.6	95.4
2005	305	99.0	0.3	292	95.7	98.6
2006	296	97.6		275	92.9	98.9
2007	357	98.9		334	93.6	99.4
2008	338	94.1		307	90.8	98.7
2009	364	95.3		328	90.1	98.5
2010	356	96.6		309	86.8	99.0
2011	301	80.7		193	64.1	97.4
1998-2011	3866	96.5	0.1	3509	90.8	97.2

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 4.52 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	178	142	89.4	57	32.0
1999	175	156	91.7	65	37.1
2000	156	159	95.6	60	38.5
2001	183	156	90.4	61	33.3
2002	282	242	96.3	109	38.7
2003	283	249	98.8	107	37.8
2004	292	284	97.2	116	39.7
2005	305	278	96.8	123	40.3
2006	296	289	97.9	115	38.9
2007	357	332	98.5	144	40.3
2008	338	326	99.7	124	36.7
2009	364	341	98.8	138	37.9
2010	356	350	98.9	153	43.0
2011	301	310	99.7	111	36.9
1998-2011	3866	3614	97.2	1483	38.4

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)

Year of death	Deaths n	Prop. cancer-related %	Prop. not cancer-related %	Prop. cancer recorded on death certificate %
1998	142	95.8	4.2	99.2
1999	156	94.9	5.1	99.3
2000	159	96.2	3.8	98.7
2001	156	93.6	6.4	97.9
2002	242	96.3	3.7	99.1
2003	249	98.8	1.2	99.2
2004	284	98.9	1.1	99.3
2005	278	97.5	2.5	99.3
2006	289	96.5	3.5	97.9
2007	332	97.3	2.7	98.2
2008	326	98.5	1.5	99.1
2009	341	98.2	1.8	99.7
2010	350	98.9	1.1	98.8
2011	310	98.1	1.9	99.4
1998-2011	3614	97.5	2.5	98.9

Table 11a

Means 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 (not cancer-related) Years	Age at death (according to death certificate) Years
1998	95	65.7	65.6	68.9	66.3
1999	105	66.2	66.3	63.9	67.0
2000	109	67.3	67.2	69.6	67.5
2001	110	66.9	67.2	61.8	67.6
2002	164	67.0	67.0	67.5	67.0
2003	175	66.9	67.0	49.4	67.0
2004	185	67.1	67.0	74.6	67.1
2005	189	67.7	67.9	62.3	67.8
2006	200	66.9	66.4	78.2	66.7
2007	216	67.8	67.8	67.9	67.9
2008	202	67.6	67.6	68.6	67.7
2009	213	67.8	67.7	71.8	67.8
2010	238	69.3	69.2	73.3	69.2
2011	191	68.7	68.7	65.5	68.5
1998-2011	2392	67.5	67.5	68.5	67.6

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

Means 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 (not cancer-related) Years	Age at death (according to death certificate) Years
1998	47	65.2	64.9	69.8	65.5
1999	51	67.6	67.6	67.7	67.3
2000	50	64.3	64.3		64.5
2001	46	66.6	65.6	74.4	65.4
2002	78	65.8	65.6	71.0	65.7
2003	74	67.1	66.8	77.9	66.9
2004	99	66.6	66.4	89.3	66.3
2005	89	65.5	65.4	81.4	65.3
2006	89	66.1	65.9	74.7	65.8
2007	116	67.3	67.4	61.8	67.5
2008	124	67.5	67.5		67.5
2009	128	68.0	67.9	78.7	67.9
2010	112	67.0	67.0		67.0
2011	119	66.7	66.7	67.2	66.7
1998-2011	1222	66.7	66.6	72.0	66.6

By 2010, life expectancy for a newborn male in Germany is 77.5 years compared with 82.6 years for his female counterpart.

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	92	8.3	0.81	5.1	0.83	7.4	0.82	9.2	0.82
1999	99	8.8	0.83	5.3	0.80	7.8	0.82	9.8	0.87
2000	103	9.0	0.95	5.4	0.94	8.0	0.96	10.0	0.98
2001	105	9.1	0.84	5.4	0.83	7.9	0.84	9.8	0.87
2002	159	8.5	0.82	4.9	0.80	7.2	0.81	9.0	0.81
2003	174	9.3	0.96	5.2	0.94	7.6	0.95	9.7	0.97
2004	183	9.7	0.97	5.4	0.94	7.9	0.97	9.9	1.00
2005	183	9.7	0.87	5.2	0.83	7.6	0.85	9.7	0.89
2006	192	10.0	1.02	5.5	1.00	7.9	0.99	9.7	1.01
2007	210	9.5	0.96	5.0	0.90	7.4	0.94	9.4	0.99
2008	197	8.9	0.92	4.7	0.90	6.9	0.90	8.6	0.91
2009	209	9.4	0.90	5.0	0.89	7.2	0.89	8.9	0.88
2010	234	10.4	1.01	5.2	0.97	7.6	0.99	9.9	1.02
2011	189	8.4	0.99	4.3	0.95	6.3	0.97	7.9	1.00
1998-2011	2329	9.3	0.93	5.0	0.90	7.4	0.91	9.3	0.94

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	44	3.7	0.68	2.0	0.65	2.8	0.68	3.3	0.66
1999	49	4.1	0.89	2.1	0.79	2.9	0.82	3.7	0.89
2000	50	4.2	1.04	2.4	1.02	3.3	1.03	3.8	1.06
2001	41	3.4	0.71	1.9	0.73	2.6	0.70	3.0	0.70
2002	74	3.8	0.84	2.0	0.81	2.9	0.83	3.4	0.84
2003	72	3.7	0.71	1.9	0.66	2.7	0.68	3.2	0.69
2004	98	5.0	0.95	2.6	0.90	3.6	0.90	4.4	0.95
2005	88	4.4	0.93	2.4	0.94	3.3	0.93	3.8	0.92
2006	87	4.3	0.81	2.3	0.80	3.2	0.79	3.8	0.81
2007	113	4.9	0.82	2.5	0.77	3.6	0.79	4.3	0.80
2008	124	5.3	1.00	2.7	0.96	3.8	0.96	4.6	0.98
2009	126	5.4	0.96	2.7	0.93	3.8	0.93	4.6	0.96
2010	112	4.8	0.90	2.5	0.87	3.5	0.87	4.0	0.88
2011	115	4.9	1.05	2.6	1.10	3.6	1.09	4.2	1.06
1998-2011	1193	4.5	0.89	2.4	0.86	3.3	0.86	3.9	0.87

Table 13

Age distribution of age at death (cancer-related) for period 1998-2011
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
30-34	1	0.0	0.0	1	0.0	0.0			0.0
35-39	10	0.3	0.3	6	0.3	0.3	4	0.3	0.3
40-44	39	1.1	1.4	27	1.2	1.5	12	1.0	1.3
45-49	124	3.5	4.9	75	3.2	4.7	49	4.1	5.4
50-54	209	5.9	10.9	132	5.7	10.3	77	6.5	11.9
55-59	444	12.6	23.5	283	12.1	22.5	161	13.5	25.4
60-64	590	16.7	40.2	362	15.5	38.0	228	19.1	44.5
65-69	716	20.3	60.5	482	20.7	58.7	234	19.6	64.1
70-74	595	16.9	77.4	416	17.8	76.5	179	15.0	79.1
75-79	433	12.3	89.7	306	13.1	89.6	127	10.6	89.8
80-84	284	8.1	97.7	192	8.2	97.9	92	7.7	97.5
85+	80	2.3	100.0	50	2.1	100.0	30	2.5	100.0
All ages	3525	100.0		2332	100.0		1193	100.0	

Included in the statistics are 20.6% multiple primaries in males and 18.9% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2011
(**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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	1		0.1	0.20	0.0		0.6	
35-39	6	4	0.3	0.75	0.2	0.80	1.6	0.9
40-44	27	12	1.2	0.60	0.6	0.60	3.6	1.2
45-49	75	49	3.9	0.78	2.6	0.74	4.9	2.8
50-54	132	77	7.9	0.74	4.5	0.75	4.7	2.9
55-59	283	161	18.1	0.86	9.8	0.83	5.5	4.0
60-64	362	228	23.8	0.84	14.2	0.85	4.7	4.1
65-69	482	234	35.4	0.98	15.7	0.95	4.6	3.3
70-74	416	179	40.3	0.99	14.5	0.93	3.8	2.2
75-79	306	127	45.3	0.99	12.8	0.88	2.8	1.4
80-84	192	92	47.3	1.19	11.6	1.15	2.2	1.0
85+	50	30	18.0	1.19	4.0	1.11	0.7	0.3
All ages	2332	1193					3.5	2.0
Mortality								
Raw			9.3	0.93	4.5	0.89		
WS			5.0	0.90	2.4	0.86		
ES			7.4	0.91	3.3	0.86		
BRD-S			9.3	0.94	3.9	0.87		
PYLL-70								
per 100,000			54.7		32.0			
ES			48.3		27.2			
AYLL-70			9.1		9.4			

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

Table 15a

Multiple primaries in deaths in period 1998-2011
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	21	4.3	19	90.5	1	4.8	1	4.8
C09-C10 Oropharynx	14	2.8	10	71.4	2	14.3	2	14.3
C12-C13 Hypopharynx	8	1.6	6	75.0			2	25.0
C15 Oesophagus	8	1.6	2	25.0	1	12.5	5	62.5
C16 Stomach	11	2.2	7	63.6	2	18.2	2	18.2
C18 Colon	30	6.1	20	66.7	5	16.7	5	16.7
C19-C20 Rectum	16	3.3	13	81.3	2	12.5	1	6.3
C22 Liver	5	1.0	1	20.0	1	20.0	3	60.0
C25 Pancreas	9	1.8			2	22.2	7	77.8
C32 Larynx	26	5.3	20	76.9	4	15.4	2	7.7
C33-C34 Lung	49	10.0			17	34.7	32	65.3
C43 Malign. melanoma	8	1.6	8	100.0				
C44 Skin others	30	6.1	23	76.7	1	3.3	6	20.0
C50 Breast	4	0.8	2	50.0	1	25.0	1	25.0
C61 Prostate	83	16.9	70	84.3	5	6.0	8	9.6
C62 Testis	6	1.2	6	100.0				
C64 Kidney	18	3.7	12	66.7	3	16.7	3	16.7
C65 Renal pelvis	5	1.0	4	80.0			1	20.0
C67 Bladder	60	12.2	52	86.7	4	6.7	4	6.7
C70-C72 CNS cancer	13	2.6	5	38.5	5	38.5	3	23.1
C76-C79 CUP	5	1.0	3	60.0	1	20.0	1	20.0
C81 Hodgkin lymphoma	4	0.8	3	75.0	1	25.0		
C82-C85 NHL	23	4.7	17	73.9	2	8.7	4	17.4
C90 Mult. myeloma	7	1.4	3	42.9	1	14.3	3	42.9
C91-C96 Leukaemia	7	1.4	3	42.9	1	14.3	3	42.9
Other primaries	22	4.5	18	81.8	2	9.1	2	9.1
All mult. primaries	492	100.0	327	66.5	64	13.0	101	20.5

Multiple primaries with number of cases n<4 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 1998-2011
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	5	2.3	4	80.0	1	20.0		
C09-C10 Oropharynx	3	1.4	3	100.0				
C15 Oesophagus	2	0.9	1	50.0			1	50.0
C16 Stomach	2	0.9	2	100.0				
C18 Colon	11	5.1	6	54.5	2	18.2	3	27.3
C19-C20 Rectum	3	1.4	3	100.0				
C23-C24 Bile	2	0.9	2	100.0				
C25 Pancreas	3	1.4			2	66.7	1	33.3
C33-C34 Lung	15	6.9			2	13.3	13	86.7
C43 Malign. melanoma	5	2.3	5	100.0				
C44 Skin others	4	1.9	4	100.0				
C50 Breast	70	32.4	63	90.0	4	5.7	3	4.3
C51 Vulva	5	2.3	4	80.0			1	20.0
C53 Cervix uteri	16	7.4	15	93.8			1	6.3
C54 Corpus uteri	11	5.1	10	90.9			1	9.1
C56 Ovary	7	3.2	7	100.0				
C64 Kidney	6	2.8	5	83.3	1	16.7		
C67 Bladder	15	6.9	13	86.7	1	6.7	1	6.7
C70-C72 CNS cancer	5	2.3	1	20.0			4	80.0
C73 Thyroid	2	0.9	2	100.0				
C76-C79 CUP	3	1.4	3	100.0				
C82-C85 NHL	10	4.6	8	80.0	1	10.0	1	10.0
C91-C96 Leukaemia	3	1.4			1	33.3	2	66.7
Other primaries	8	3.7	6	75.0	1	12.5	1	12.5
All mult. primaries	216	100.0	167	77.3	16	7.4	33	15.3

Multiple primaries with number of cases n<2 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 1998-2011
(**Singular 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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	1		0.1	0.20	0.0		0.6	
35-39	6	4	0.3	0.75	0.2	0.80	1.8	1.0
40-44	26	12	1.2	0.62	0.6	0.63	3.7	1.4
45-49	72	43	3.7	0.79	2.2	0.74	5.2	2.8
50-54	127	69	7.6	0.74	4.0	0.76	5.1	3.1
55-59	263	146	16.9	0.88	8.9	0.84	5.9	4.2
60-64	330	196	21.7	0.88	12.2	0.85	5.1	4.3
65-69	402	203	29.5	0.97	13.6	0.98	4.8	3.5
70-74	336	153	32.6	1.00	12.4	0.93	3.8	2.4
75-79	229	101	33.9	0.98	10.2	0.90	2.7	1.4
80-84	153	79	37.7	1.21	9.9	1.16	2.3	1.0
85+	39	23	14.1	1.18	3.1	1.15	0.7	0.2
All ages	1984	1029					3.7	2.1
Mortality								
Raw			7.9	0.93	3.9	0.89		
WS			4.4	0.90	2.1	0.86		
ES			6.3	0.92	2.9	0.87		
BRD-S			7.9	0.94	3.4	0.88		
PYLL-70								
per 100,000			50.8		28.5			
ES			45.0		24.3			
AYLL-70			9.4		9.6			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2011
(**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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	1		0.1	0.20	0.0		0.6	
35-39	6	4	0.3	0.75	0.2	0.80	1.8	1.0
40-44	26	12	1.2	0.63	0.6	0.63	3.9	1.5
45-49	71	41	3.7	0.80	2.1	0.76	5.4	3.0
50-54	125	68	7.5	0.74	4.0	0.77	5.5	3.4
55-59	259	144	16.6	0.88	8.8	0.84	6.3	4.7
60-64	321	193	21.1	0.87	12.0	0.85	5.6	4.8
65-69	391	201	28.7	0.97	13.5	0.98	5.4	4.1
70-74	326	147	31.6	0.99	11.9	0.91	4.4	2.7
75-79	219	98	32.4	0.96	9.9	0.89	3.2	1.6
80-84	147	77	36.2	1.17	9.7	1.15	2.7	1.2
85+	38	23	13.7	1.15	3.1	1.15	0.8	0.3
All ages	1930	1008					4.2	2.3
Mortality								
Raw			7.7	0.92	3.8	0.89		
WS			4.3	0.90	2.0	0.87		
ES			6.2	0.91	2.8	0.87		
BRD-S			7.6	0.93	3.3	0.88		
PYLL-70								
per 100,000			49.9		28.0			
ES			44.3		23.9			
AYLL-70			9.5		9.5			

* See corresponding tables with multiple primaries.

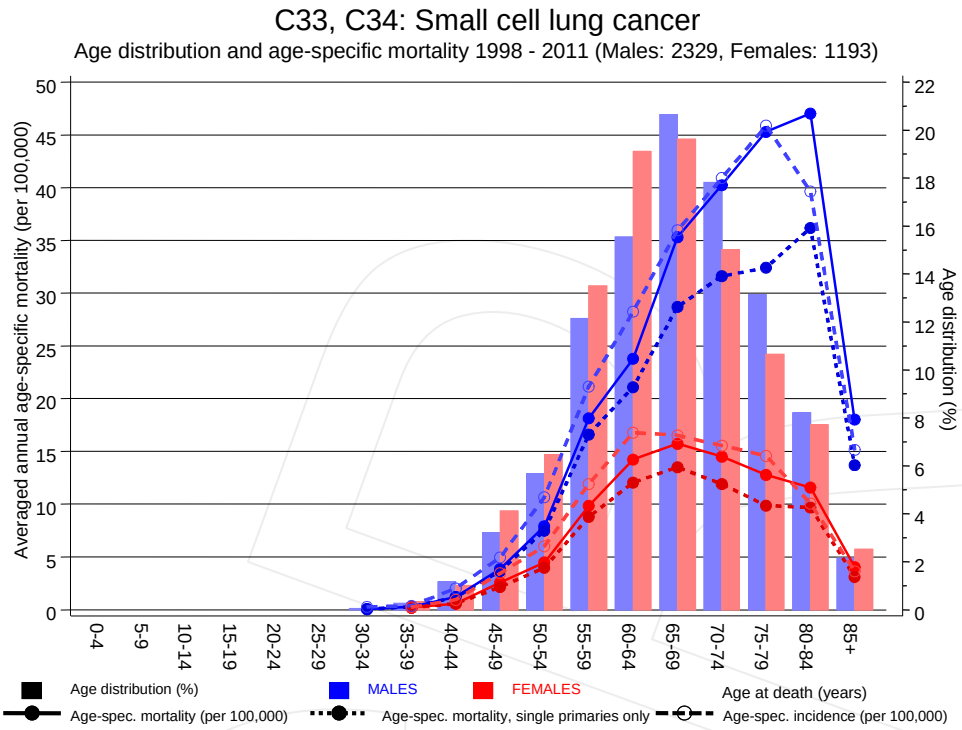
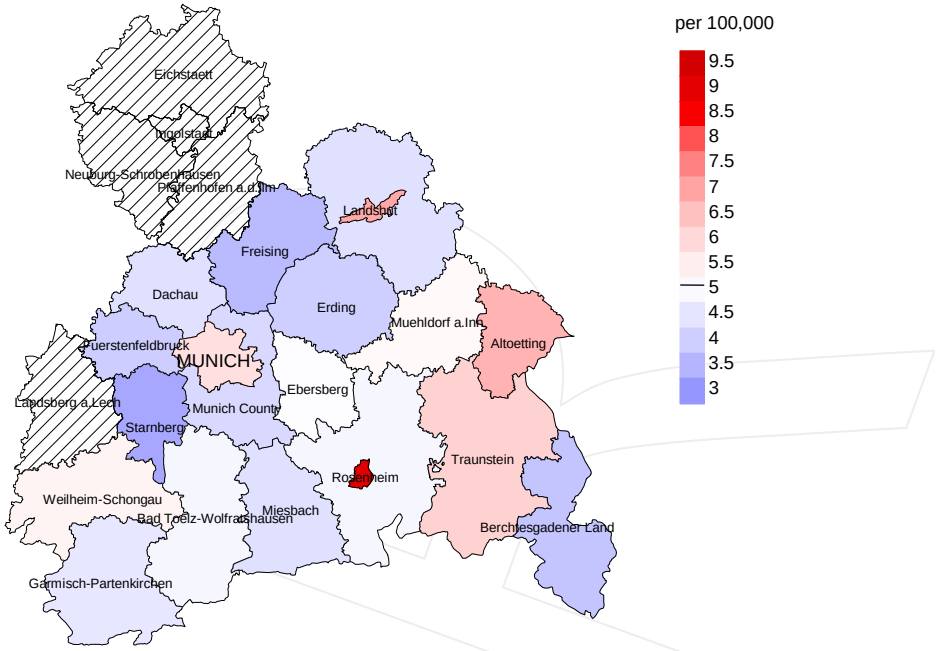


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2003 - 2008: Males



Average mortality (world standard population) 2003 - 2008: Females

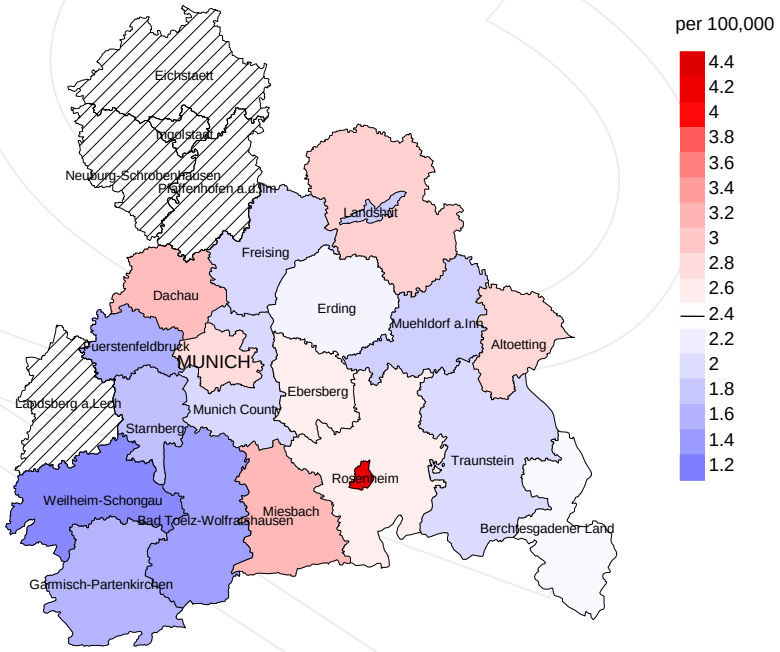
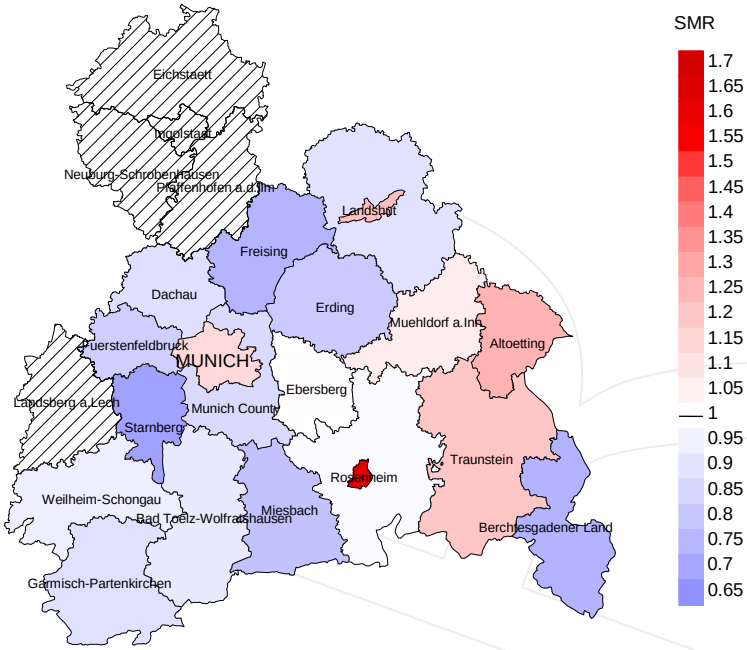


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 5.1/100,000 WS N=1,085, females 2.4/100,000 WS N=559). 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 19 women died from small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.3 and 4.8/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

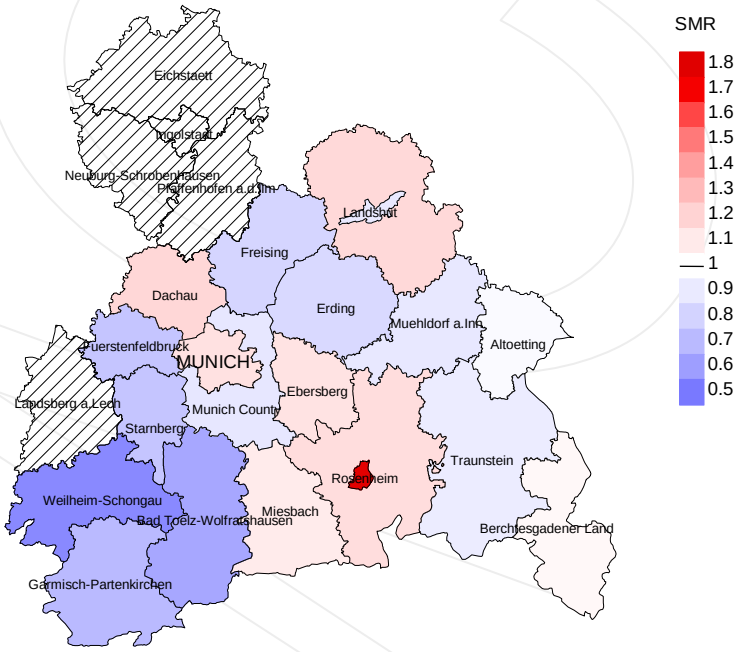


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,085, females N=559). 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 19 women died from small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.13. Though, the value of this parameter may vary with an underlying probability of 99% between 0.57 and 1.98, 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

Munich Cancer Registry. Baseline statistics C33, C34: Small cell LC [Internet]. 2013 [updated 2013 Apr 2; cited 2013 Jun 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base_C34s_E.pdf

Copyright

Disclaimer

Index of figures and tables