Munich Cancer Registry

- Survival
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- *Deutsch*

ICD-10 C33, C34: Small cell LC

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	5,504
Diseases	5,505
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bC34s_E-ICD-10-C33-C34-Small-cell-LC-incidence-and-mortality.pdf

Index of figures and tables

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 4.69 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, August 2018

[#] 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 2.65 million to 4.10 in 2002, and to 4.69 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

... in case of coexisting one of the following ...

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

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	180	9.4	2.7	93.9	97.2
1999	173	10.5	2.7	97.7	99.4
2000	157	11.4	2.7	95.5	99.4
2001	183	10.7	2.6	95.1	98.9
2002	280	11.1	2.5	95.4	97.9 #
2003	281	11.9	2.5	97.2	99.6
2004	288	12.0	2.4	98.3	99.0
2005	301	12.8	2.5	97.3	99.0
2006	293	13.1	2.4	94.9	97.6
2007	354	13.1	2.4	94.4	97.7 #
2008	338	13.2	2.4	92.9	94.4
2009	371	13.3	2.4	94.1	96.0
2010	367	13.7	2.3	95.1	97.8
2011	380	14.1	2.3	95.3	96.8
2012	336	14.2	2.1	90.8	95.8
2013	364	14.8	2.0	90.7	95.1
2014	338	15.2	1.8	88.5	98.2
2015	286	15.5	1.2	81.5	98.6
2016	235	15.5	0.4	38.7	65.5 ##
1998-2016	5505	15.5	2.7	91.2	96.1

5,505 cases diagnosed 1998-2016 are related to a total of 5,504 patients. Currently, in 1,025 (18.6 %) of these 5,504 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 836 / 150 / 39 (15.2 % / 2.7 % / 0.7 %) patients exist having 2 / 3 / 4+ malignancies.

\# 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 338 cases has been diagnosed, of which 15.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	114	63.3	9.6	2.8	94.7	97.4
1999	119	68.8	10.3	2.8	96.6	99.2
2000	109	69.4	11.4	2.8	98.2	99.1
2001	125	68.3	10.9	2.8	93.6	98.4
2002	194	69.3	11.6	2.7	94.3	97.4 #
2003	180	64.1	12.8	2.7	96.7	100.0
2004	184	63.9	12.6	2.7	99.5	100.0
2005	206	68.4	13.2	2.8	97.1	99.0
2006	187	63.8	13.5	2.8	95.2	97.3
2007	219	61.9	13.4	2.9	94.5	97.7 #
2008	215	63.6	13.4	2.9	92.6	94.4
2009	237	63.9	13.6	2.7	95.4	95.8
2010	239	65.1	13.8	2.6	95.8	97.9
2011	236	62.1	14.3	2.6	96.2	97.5
2012	195	58.0	14.3	2.2	91.8	95.9
2013	218	59.9	14.8	1.9	94.5	97.2
2014	207	61.2	15.4	2.3	89.9	99.0
2015	162	56.6	15.5	1.9	84.6	98.1
2016	156	66.4	15.5	0.6	40.4	66.7 ##
1998-2016	3502	63.6	15.5	2.8	92.1	96.3

3,502 cases diagnosed 1998-2016 are related to a total of 3,501 patients. Currently, in 658 (18.8 %) of these 3,501 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 536 / 97 / 25 (15.3 % / 2.8 % / 0.7 %) patients exist having 2 / 3 / 4+ malignancies.

\# 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 207 cases has been diagnosed, of which 15.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	66	36.7	9.1	2.4	92.4	97.0
1999	54	31.2	10.8	2.4	100.0	100.0
2000	48	30.6	11.3	2.4	89.6	100.0
2001	58	31.7	10.2	2.3	98.3	100.0
2002	86	30.7	9.9	2.2	97.7	98.8 #
2003	101	35.9	9.9	2.2	98.0	99.0
2004	104	36.1	10.8	2.0	96.2	97.1
2005	95	31.6	11.9	2.0	97.9	98.9
2006	106	36.2	12.3	1.7	94.3	98.1
2007	135	38.1	12.4	1.7	94.1	97.8 #
2008	123	36.4	12.8	1.7	93.5	94.3
2009	134	36.1	12.8	1.9	91.8	96.3
2010	128	34.9	13.4	1.9	93.8	97.7
2011	144	37.9	13.9	1.9	93.8	95.8
2012	141	42.0	14.2	2.0	89.4	95.7
2013	146	40.1	14.6	2.1	84.9	91.8
2014	131	38.8	14.9	0.9	86.3	96.9
2015	124	43.4	15.4	0.0	77.4	99.2
2016	79	33.6	15.6	0.0	35.4	63.3 ##
1998-2016	2003	36.4	15.6	2.4	89.8	95.7

2,003 cases diagnosed 1998-2016 are related to a total of 2,003 patients. Currently, in 367 (18.3 %) of these 2,003 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 300 / 53 / 14 (15.0 % / 2.6 % / 0.7 %) patients exist having 2 / 3 / 4+ malignancies.

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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 131 cases has been diagnosed, of which 14.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	114	66	10.3	5.6	6.2	3.0	9.1	4.3	11.4	5.1
1999	119	54	10.6	4.6	6.5	2.5	9.4	3.5	11.3	4.1
2000	109	48	9.6	4.0	5.8	2.3	8.4	3.2	10.3	3.6
2001	125	58	10.8	4.8	6.5	2.6	9.4	3.7	11.3	4.4
2002	194	86	10.4	4.4	6.1	2.4	8.9	3.4	11.0	4.0
2003	180	101	9.6	5.1	5.4	2.9	7.9	4.0	10.0	4.6
2004	184	104	9.8	5.3	5.5	2.9	7.9	4.0	9.7	4.6
2005	206	95	10.9	4.8	6.1	2.6	8.7	3.6	10.6	4.2
2006	187	106	9.8	5.3	5.5	2.8	7.9	4.0	9.5	4.6
2007	219	135	9.9	5.8	5.5	3.2	7.9	4.5	9.5	5.2
2008	215	123	9.7	5.3	5.2	2.8	7.7	4.0	9.5	4.6
2009	237	134	10.6	5.8	5.7	2.9	8.3	4.2	10.3	4.9
2010	239	128	10.6	5.5	5.5	2.9	8.0	4.1	10.0	4.7
2011	236	144	10.5	6.2	5.5	3.1	7.9	4.3	9.8	5.1
2012	195	141	8.6	6.0	4.4	3.1	6.3	4.3	7.8	5.0
2013	218	146	9.5	6.1	4.8	2.9	7.0	4.2	8.6	5.0
2014	207	131	8.9	5.4	4.4	2.9	6.4	4.0	8.0	4.6
2015	162	124	6.8	5.1	3.5	2.4	5.1	3.4	6.2	4.1
2016	156	79	6.5	3.2	3.3	1.7	4.8	2.3	5.9	2.7
1998-2016	3502	2003	9.5	5.2	5.2	2.7	7.4	3.8	9.1	4.5

The computation of the incidence measures includes all cancers, 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.	10%	25%	Median 50%	75%	90%
1998	180	64.9	10.0	31.5	84.4	53.6	57.7	65.2	72.7	77.1
1999	173	64.7	10.4	36.4	94.7	52.7	57.6	64.9	71.2	78.6
2000	157	64.4	11.1	30.9	90.5	49.8	58.1	64.3	71.4	79.3
2001	183	65.8	9.5	42.7	91.7	53.7	59.2	65.7	73.1	78.1
2002	280	64.8	10.8	32.2	89.4	50.4	57.7	64.8	73.8	78.2
2003	281	65.8	10.3	39.5	88.7	52.6	59.1	66.1	73.2	79.3
2004	288	65.4	10.0	39.6	88.4	51.9	60.1	64.9	73.0	78.2
2005	301	66.2	9.9	40.5	93.7	54.1	59.4	66.9	72.4	79.5
2006	293	66.2	9.3	42.9	97.5	55.1	59.3	65.4	72.7	78.9
2007	354	65.7	9.7	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	80.2
2009	371	67.3	9.9	37.0	91.2	53.7	60.6	67.7	74.7	80.0
2010	367	67.2	9.6	31.8	88.4	53.4	61.1	67.5	73.8	80.1
2011	380	67.8	9.6	42.7	93.7	55.0	62.8	68.4	74.0	79.7
2012	336	67.2	9.7	42.7	93.2	53.3	60.9	68.1	74.0	78.7
2013	364	68.0	9.7	39.7	91.5	54.2	61.6	69.4	74.8	79.7
2014	338	67.5	10.0	31.2	94.5	54.0	60.8	68.0	74.6	80.7
2015	286	68.4	9.8	36.3	94.5	54.9	61.8	68.6	75.1	80.3
2016	235	67.9	9.6	41.3	95.4	55.3	61.3	67.9	75.0	79.6
1998-2016	5505	66.6	10.0	30.9	97.5	53.3	59.9	66.9	73.7	79.3

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	114	64.9	9.9	31.5	83.1	54.5	57.7	65.2	72.7	77.1
1999	119	65.0	10.2	36.4	94.7	53.0	58.3	65.3	70.5	78.7
2000	109	64.9	10.8	30.9	90.5	50.8	58.2	64.5	72.1	78.9
2001	125	66.0	9.1	44.1	91.7	54.6	60.3	65.7	72.4	77.9
2002	194	64.8	10.6	32.2	86.1	52.0	57.6	65.1	74.1	78.2
2003	180	66.6	10.2	39.9	84.2	52.7	60.8	67.8	74.3	79.3
2004	184	66.0	9.9	39.6	85.4	51.9	61.5	66.3	73.1	77.9
2005	206	66.3	9.8	40.5	93.7	54.2	59.9	67.0	72.4	79.2
2006	187	66.3	9.1	42.9	87.1	53.5	59.3	66.2	72.9	78.6
2007	219	66.0	9.4	43.1	91.2	53.2	59.9	66.4	71.8	77.7
2008	215	66.7	10.1	42.9	87.1	53.7	59.3	67.3	74.6	79.8
2009	237	67.3	10.3	37.0	91.2	52.5	60.8	68.1	75.2	80.0
2010	239	67.9	10.2	31.8	88.4	53.1	61.0	68.0	75.2	81.1
2011	236	67.9	9.6	42.7	93.7	55.6	62.7	68.6	74.7	79.7
2012	195	67.7	9.7	42.7	92.8	53.8	61.5	68.2	74.5	79.4
2013	218	67.9	10.0	39.7	91.5	53.6	61.6	69.3	74.8	80.7
2014	207	69.0	9.3	47.5	94.5	56.5	62.1	70.1	75.7	80.9
2015	162	68.0	10.3	36.3	92.3	53.3	61.1	68.1	75.4	80.3
2016	156	68.5	9.9	41.3	95.4	55.3	61.3	68.2	76.2	80.4
1998-2016	3502	66.9	10.0	30.9	95.4	53.5	60.4	67.4	74.1	79.5

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	66	65.0	10.2	38.9	84.4	49.3	57.6	65.0	72.6	78.1
1999	54	64.3	11.0	41.5	87.3	49.0	57.4	64.0	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	86	64.7	11.3	35.2	89.4	47.7	57.9	64.0	73.5	79.4
2003	101	64.4	10.5	39.5	88.7	52.6	57.5	63.7	71.3	79.0
2004	104	64.5	10.0	42.6	88.4	51.9	58.7	63.3	71.6	79.2
2005	95	65.9	10.1	41.8	85.6	53.0	58.8	65.8	72.7	80.0
2006	106	66.2	9.7	42.9	97.5	55.7	59.2	64.5	71.4	80.4
2007	135	65.2	10.1	36.8	87.2	50.7	58.3	66.0	72.4	78.4
2008	123	65.9	10.2	39.0	89.2	54.0	59.0	65.6	72.4	80.2
2009	134	67.2	9.2	48.1	89.9	55.0	60.4	67.3	73.1	80.0
2010	128	65.9	8.3	46.5	85.6	53.4	61.3	65.7	71.5	76.4
2011	144	67.7	9.4	44.3	92.6	54.5	62.9	67.6	73.2	78.1
2012	141	66.4	9.8	43.6	93.2	52.7	59.7	68.0	73.0	77.6
2013	146	68.2	9.2	45.5	91.0	55.0	62.3	69.5	74.8	78.5
2014	131	65.2	10.7	31.2	88.5	51.4	56.4	65.8	71.4	79.4
2015	124	68.8	9.1	45.3	94.5	55.0	63.5	69.3	74.6	80.3
2016	79	66.6	8.9	42.5	89.2	54.7	60.9	66.8	73.8	78.9
1998-2016	2003	66.1	9.9	31.2	97.5	53.0	59.3	66.1	73.1	79.1

Table 4

Age distribution by 5-year age group and sex for period 2007-2016

Age at diagnosis Years	Cases n	%	Males Cum.%	n	%	Females Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34	2	0.1	0.1	1	0.0	0.0	1	0.1	0.1
35-39	5	0.1	0.2	3	0.1	0.2	2	0.2	0.2
40-44	28	0.8	1.0	20	1.0	1.2	8	0.6	0.9
45-49	114	3.4	4.4	68	3.3	4.4	46	3.6	4.4
50-54	259	7.7	12.1	147	7.1	11.5	112	8.7	13.2
55-59	349	10.4	22.5	216	10.4	21.8	133	10.4	23.5
60-64	552	16.4	38.9	327	15.7	37.5	225	17.5	41.0
65-69	681	20.2	59.1	405	19.4	57.0	276	21.5	62.5
70-74	622	18.5	77.5	390	18.7	75.7	232	18.1	80.5
75-79	442	13.1	90.7	289	13.9	89.5	153	11.9	92.5
80-84	231	6.9	97.5	167	8.0	97.6	64	5.0	97.4
85+	84	2.5	100.0	51	2.4	100.0	33	2.6	100.0
All ages	3369	100.0		2084	100.0		1285	100.0	

Table 5

Age-specific incidence and proportion of all cancers
for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males Prop.all cancers n=113978 %	Females Prop.all cancers n=112253 %
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1	1	0.1	0.1	0.1	0.1
35-39	3	2	0.2	0.1	0.2	0.1
40-44	20	8	1.1	0.4	0.9	0.2
45-49	68	46	3.4	2.4	1.7	0.7
50-54	147	112	8.5	6.5	2.4	1.3
55-59	216	133	15.3	9.0	2.3	1.4
60-64	326	225	26.6	16.9	2.5	2.0
65-69	405	276	34.2	21.2	2.2	2.0
70-74	390	232	35.3	18.3	1.9	1.6
75-79	289	153	36.3	15.3	1.7	1.1
80-84	167	64	36.3	9.0	1.5	0.6
85+	51	33	16.7	4.5	0.6	0.3
All ages	2083	1285			1.8	1.1
Incidence						
Raw			9.1	5.4		
WS			4.7	2.8		
ES			6.9	3.9		
BRD-S			8.5	4.6		

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

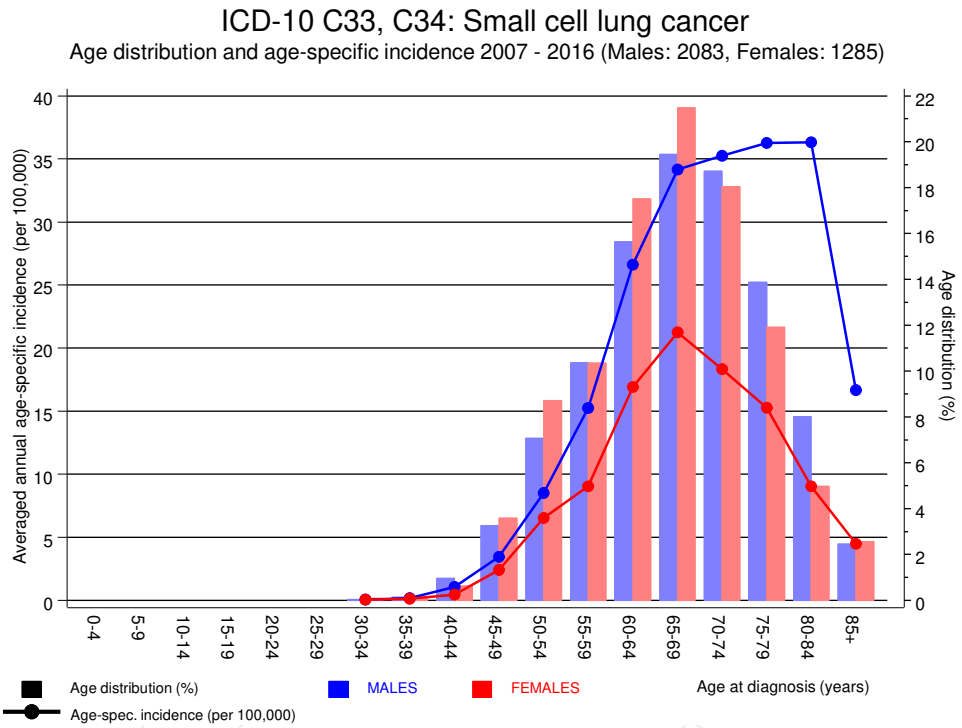


Figure 6. Age distribution (males: mean=67.7 yrs, median=68.1 yrs; females: mean=66.7 yrs, median=67.0 yrs) and age-specific incidence.

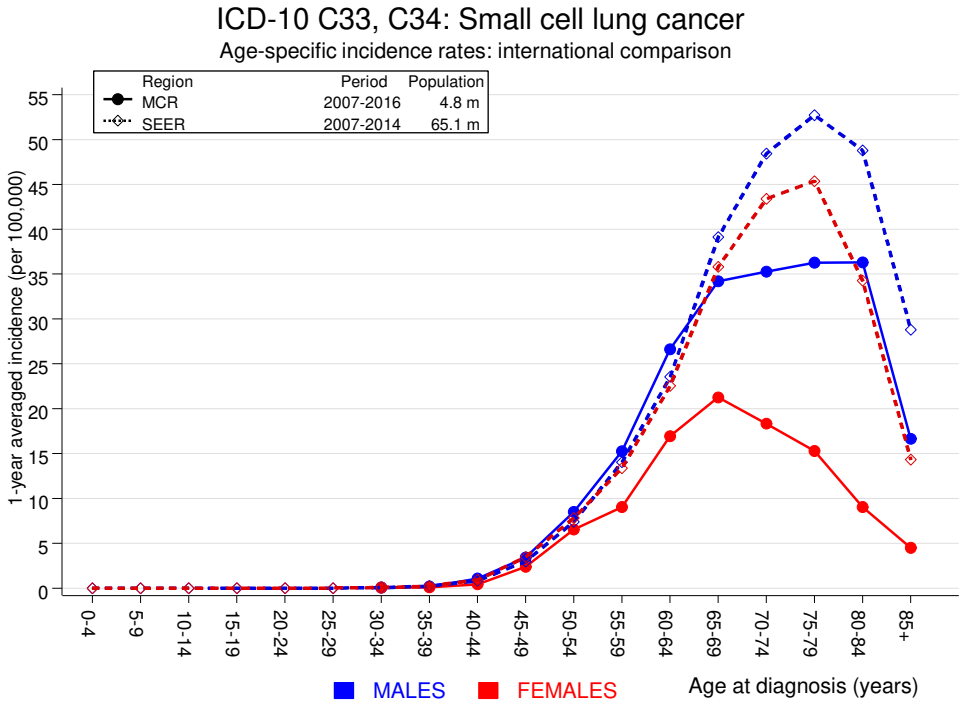


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

Table 7a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2016

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C09–C10 Oropharynx	8	0.6	12.6	5.5	24.9	#	22.0	
C15 Oesophagus	5	1.0	4.9	1.6	11.4	#	11.9	80.0
C16 Stomach	2	1.9	1.0	0.1	3.7		0.2	
C18 Colon	13	4.7	2.7	1.5	4.7	#	24.6	30.8
C19–C20 Rectum	6	2.9	2.1	0.8	4.6		9.4	16.7
C22 Liver	6	1.5	4.0	1.5	8.8	#	13.5	33.3
C25 Pancreas	12	1.8	6.6	3.4	11.6	#	30.4	66.7
C32 Larynx	5	0.6	8.4	2.7	19.6	#	13.2	20.0
C33–C34 Lung	28	6.3	4.4	3.0	6.4	#	64.8	10.7
C61 Prostate	19	15.3	1.2	0.7	1.9		10.9	15.8
C64 Kidney	7	1.9	3.7	1.5	7.7	#	15.3	28.6
C67 Bladder	5	2.1	2.4	0.8	5.6		8.7	40.0
C70–C72 CNS cancer	4	0.7	5.8	1.6	14.9	#	9.9	100.0
C82–C85 NHL	6	2.0	3.0	1.1	6.5	#	11.9	16.7
C91–C96 Leukaemia	5	0.8	6.6	2.1	15.3	#	12.7	60.0
Others, specified	9	3.0	3.0	1.4	5.6	#	17.8	33.3
Not observed	0	4.9	0.0	0.0	0.8	#	-14.6	
All further malignancies	140	52.1	2.7	2.3	3.2	#	262.5	29.3

Patients	3340
Median age at next malignancy (years)	70.4
Person-years	3350
Mean observation time (years)	1.0
Median observation time (years)	0.6

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category “Others, specified”.

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2016

FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C18	Colon	5	1.9	2.7	0.9	6.3		13.3	40.0
C25	Pancreas	4	0.9	4.6	1.2	11.7	#	13.2	75.0
C33–C34	Lung	15	1.9	7.7	4.3	12.8	#	55.4	6.7
C50	Breast	12	8.0	1.5	0.8	2.6		17.1	50.0
C67	Bladder	3	0.3	8.8	1.8	25.7	#	11.3	
C70–C72	CNS cancer	2	0.3	6.2	0.7	22.4		7.1	
C82–C85	NHL	3	0.8	3.6	0.7	10.4		9.2	33.3
C91–C96	Leukaemia	2	0.3	6.3	0.8	22.9		7.1	
Others, specified		16	6.6	2.4	1.4	3.9	#	39.8	31.3
Not observed		0	2.4	0.0	0.0	1.5		−10.3	
All further malignancies		62	23.5	2.6	2.0	3.4	#	163.2	29.0

Patients	1912
Median age at next malignancy (years)	65.8
Person-years	2359
Mean observation time (years)	1.2
Median observation time (years)	0.8

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category “Others, specified”.

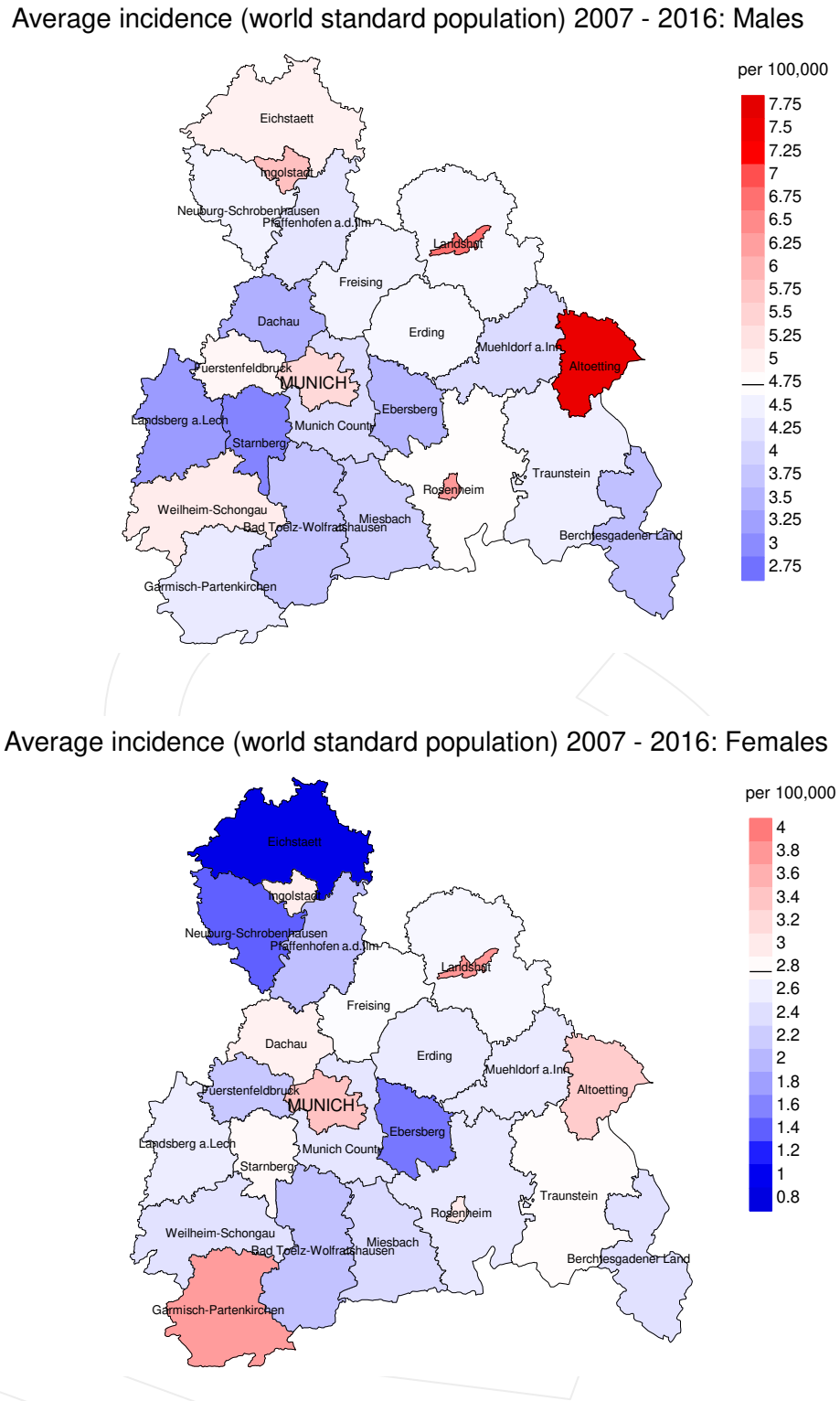


Figure 8a. Map of cancer incidence (world standard population) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 4.7/100,000 WS N=2,083, females 2.8/100,000 WS N=1,285).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 21 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 1.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.8 and 2.9/100,000.

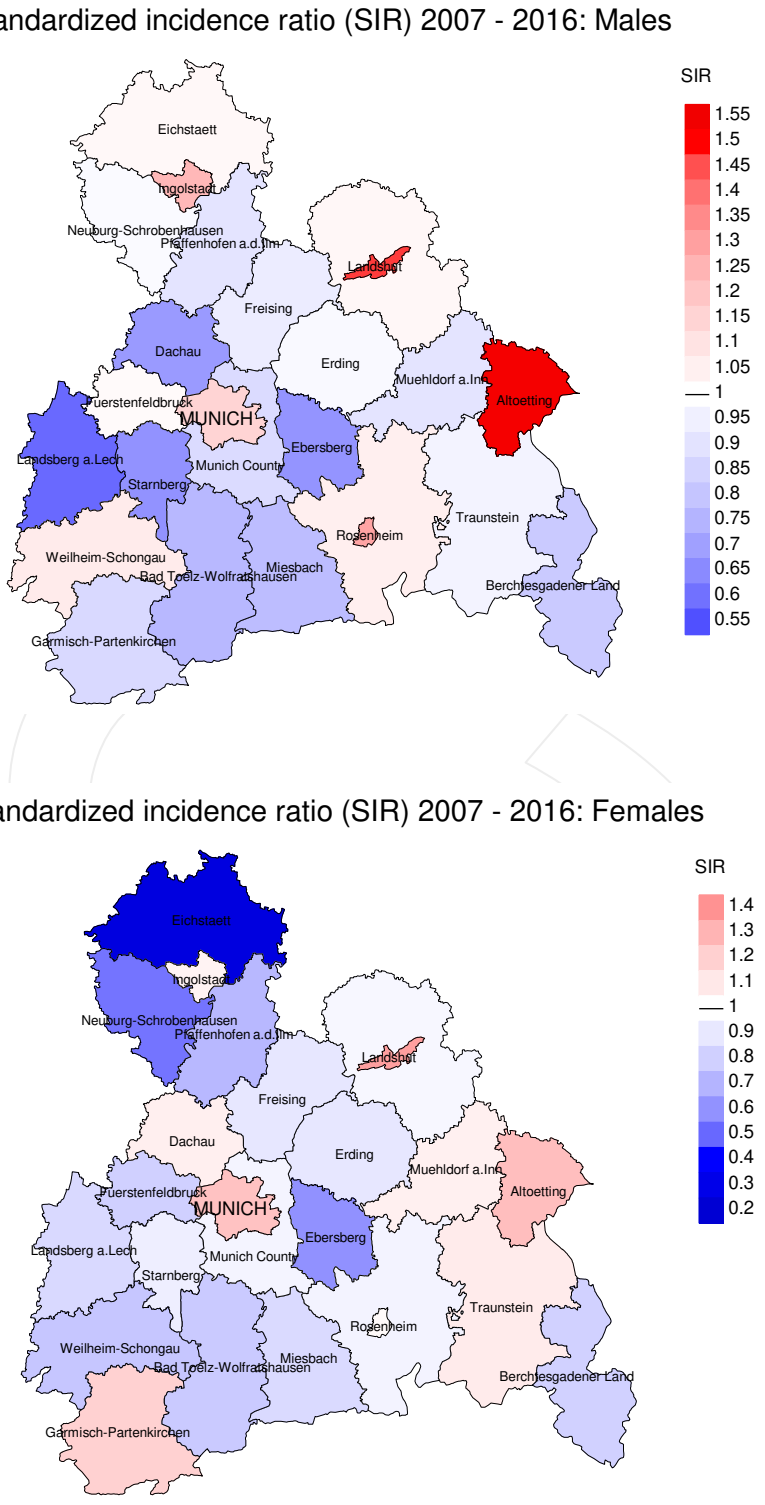


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,083, females N=1,285).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 21 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 0.59. Though, the value of this parameter may vary with an underlying probability of 99% between 0.31 and 1.02, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	180	97.2	169	93.9	91.1
1999	173	99.4	169	97.7	95.3
2000	157	99.4	150	95.5	92.7
2001	183	98.9	174	95.1	94.3
2002	280	97.9	267	95.4	95.9
2003	281	99.6	273	97.2	97.4
2004	288	99.0	283	98.3	95.4
2005	301	99.0	293	97.3	98.6
2006	293	97.6	278	94.9	98.9
2007	354	97.7	334	94.4	99.4
2008	338	94.4	314	92.9	98.4
2009	371	96.0	349	94.1	98.6
2010	367	97.8	349	95.1	99.4
2011	380	96.8	362	95.3	99.7
2012	336	95.8	305	90.8	98.4
2013	364	95.1	330	90.7	98.2
2014	338	98.2	299	88.5	98.0
2015	286	98.6	233	81.5	97.0
2016	235	65.5	91	38.7	85.7
1998–2016	5505	96.1	5022	91.2	97.3

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 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	180	141	59	32.8
1999	173	156	66	38.2
2000	157	156	60	38.2
2001	183	156	61	33.3
2002	280	241	108	38.6
2003	281	246	106	37.7
2004	288	282	115	39.9
2005	301	276	122	40.5
2006	293	283	113	38.6
2007	354	331	141	39.8
2008	338	323	126	37.3
2009	371	344	140	37.7
2010	367	352	155	42.2
2011	380	366	159	41.8
2012	336	329	120	35.7
2013	364	344	144	39.6
2014	338	326	113	33.4
2015	286	348	132	46.2
2016	235	250	80	34.0
1998–2016	5505	5250	2120	38.5

Table 9c

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	141	95.7	4.3	99.2
1999	156	94.2	5.8	99.3
2000	156	95.5	4.5	98.7
2001	156	92.9	7.1	97.9
2002	241	96.3	3.7	99.1
2003	246	98.8	1.2	99.2
2004	282	98.9	1.1	99.3
2005	276	97.8	2.2	99.3
2006	283	96.8	3.2	98.2
2007	331	97.3	2.7	98.2
2008	323	98.5	1.5	99.1
2009	344	98.3	1.7	99.7
2010	352	98.9	1.1	98.9
2011	366	98.4	1.6	99.5
2012	329	97.6	2.4	98.8
2013	344	98.3	1.7	99.1
2014	326	96.9	3.1	98.4
2015	348	98.3	1.7	98.6
2016	250	94.0	6.0	96.7
1998-2016	5250	97.4	2.6	98.8

Table 10a

Medians of age at death according to the grouping in Table 9
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	94	65.3	65.2	70.4	66.6
1999	105	65.8	66.2	58.6	67.0
2000	108	67.4	67.5	66.2	68.1
2001	110	66.4	66.6	62.4	67.4
2002	164	66.8	66.7	71.7	66.9
2003	172	67.7	67.9	49.4	67.9
2004	182	67.9	67.2	74.6	67.9
2005	188	68.6	68.7	66.2	68.7
2006	196	67.3	67.2	81.0	67.3
2007	217	68.0	68.3	66.0	68.4
2008	199	67.6	67.6	68.0	67.6
2009	216	68.0	67.8	71.7	68.1
2010	240	69.9	69.8	72.2	69.9
2011	226	68.8	68.8	65.5	68.8
2012	208	69.0	68.8	74.4	68.9
2013	202	70.1	70.0	86.7	70.0
2014	196	70.4	70.3	78.2	70.3
2015	217	70.8	70.8	71.8	70.8
2016	146	71.6	71.1	75.9	71.6
1998-2016	3386	68.6	68.5	71.3	68.8

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 10b

Medians of age at death according to the grouping in Table 9
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	47	64.2	64.1	75.6	64.2
1999	51	67.1	67.1	67.7	66.7
2000	48	65.6	65.6		65.8
2001	46	67.8	65.9	75.5	66.0
2002	77	65.1	64.3	72.0	64.3
2003	74	66.0	65.8	77.9	65.8
2004	100	66.6	66.4	89.3	66.2
2005	88	64.3	64.1	81.4	63.8
2006	87	65.1	65.1	74.7	65.0
2007	114	67.1	67.9	60.9	68.1
2008	124	67.2	67.2		67.2
2009	128	68.1	67.9	78.7	68.0
2010	112	67.2	67.2		67.4
2011	140	67.0	67.0	67.7	67.1
2012	121	68.0	68.2	67.4	68.3
2013	142	70.3	70.3	72.9	70.3
2014	130	69.7	70.1	66.3	69.3
2015	131	70.4	70.4	72.2	70.4
2016	104	68.1	68.1	68.9	68.0
1998-2016	1864	67.5	67.4	73.5	67.4

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 11a

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	91	8.2	0.80	5.1	0.81	7.3	0.80	9.0	0.79
1999	98	8.8	0.82	5.2	0.80	7.7	0.82	9.8	0.86
2000	101	8.9	0.93	5.3	0.92	7.9	0.94	9.9	0.96
2001	104	9.0	0.83	5.3	0.82	7.8	0.83	9.8	0.86
2002	159	8.5	0.82	4.9	0.80	7.2	0.81	9.0	0.81
2003	171	9.1	0.95	5.1	0.93	7.4	0.94	9.6	0.96
2004	180	9.6	0.98	5.3	0.95	7.7	0.98	9.7	1.01
2005	183	9.7	0.89	5.2	0.85	7.6	0.87	9.7	0.91
2006	189	9.9	1.01	5.4	0.98	7.8	0.98	9.5	1.00
2007	211	9.5	0.97	5.0	0.91	7.4	0.95	9.4	1.00
2008	194	8.7	0.90	4.6	0.89	6.8	0.89	8.4	0.89
2009	212	9.5	0.89	5.1	0.89	7.3	0.88	9.0	0.88
2010	236	10.5	0.99	5.2	0.94	7.7	0.96	10.1	1.00
2011	224	10.0	0.95	5.0	0.92	7.4	0.93	9.3	0.96
2012	201	8.9	1.03	4.5	1.02	6.4	1.02	8.1	1.04
2013	200	8.7	0.92	4.3	0.90	6.3	0.91	7.9	0.92
2014	191	8.2	0.92	4.0	0.91	5.8	0.91	7.4	0.92
2015	215	9.0	1.33	4.4	1.25	6.5	1.27	8.2	1.32
2016	135	5.6	0.87	2.8	0.83	4.1	0.84	5.1	0.87
1998-2016	3295	9.0	0.94	4.7	0.91	6.9	0.93	8.7	0.95

Table 11b

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	0.67	2.0	0.65	2.8	0.67	3.3	0.65
1999	49	4.1	0.91	2.1	0.81	2.9	0.83	3.7	0.91
2000	48	4.0	1.00	2.3	0.97	3.1	0.98	3.7	1.02
2001	41	3.4	0.71	1.9	0.73	2.6	0.70	3.0	0.70
2002	73	3.7	0.85	2.0	0.82	2.9	0.84	3.4	0.85
2003	72	3.7	0.71	1.9	0.67	2.7	0.68	3.2	0.70
2004	99	5.0	0.95	2.6	0.90	3.6	0.91	4.4	0.95
2005	87	4.4	0.92	2.4	0.93	3.3	0.92	3.8	0.91
2006	85	4.2	0.80	2.3	0.80	3.1	0.79	3.7	0.80
2007	111	4.8	0.82	2.4	0.77	3.5	0.79	4.2	0.80
2008	124	5.3	1.01	2.7	0.96	3.8	0.97	4.6	0.99
2009	126	5.4	0.94	2.7	0.91	3.8	0.91	4.6	0.94
2010	112	4.8	0.88	2.5	0.84	3.5	0.85	4.0	0.86
2011	136	5.8	0.94	3.0	0.99	4.2	0.99	4.9	0.96
2012	120	5.1	0.85	2.6	0.83	3.6	0.83	4.2	0.84
2013	138	5.8	0.95	2.6	0.89	3.8	0.90	4.7	0.93
2014	125	5.2	0.95	2.4	0.82	3.4	0.85	4.2	0.91
2015	127	5.2	1.02	2.4	0.98	3.4	1.00	4.2	1.01
2016	100	4.1	1.27	2.0	1.17	2.8	1.20	3.3	1.24
1998-2016	1817	4.7	0.91	2.4	0.87	3.4	0.88	4.0	0.90

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(**incl. multiple malignancies**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34									
35-39	3	0.1	0.1	1	0.0	0.0	2	0.2	0.2
40-44	20	0.6	0.7	15	0.7	0.8	5	0.4	0.6
45-49	89	2.7	3.5	60	3.0	3.8	29	2.4	3.0
50-54	201	6.2	9.7	115	5.7	9.5	86	7.1	10.0
55-59	325	10.0	19.7	198	9.8	19.3	127	10.4	20.4
60-64	464	14.3	34.0	279	13.8	33.1	185	15.2	35.6
65-69	654	20.2	54.2	393	19.5	52.6	261	21.4	57.0
70-74	651	20.1	74.3	407	20.2	72.7	244	20.0	77.0
75-79	454	14.0	88.4	294	14.6	87.3	160	13.1	90.2
80-84	278	8.6	96.9	196	9.7	97.0	82	6.7	96.9
85+	99	3.1	100.0	61	3.0	100.0	38	3.1	100.0
All ages	3238	100.0		2019	100.0		1219	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**incl. multiple malignancies**)

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								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1	2	0.1	0.33	0.1	1.00	0.5	0.7
40-44	15	5	0.8	0.75	0.3	0.63	3.0	0.7
45-49	60	29	3.0	0.88	1.5	0.63	5.2	2.2
50-54	115	86	6.7	0.78	5.0	0.77	5.6	4.4
55-59	198	127	14.0	0.92	8.6	0.95	5.9	4.5
60-64	279	185	22.8	0.86	13.9	0.82	5.6	4.9
65-69	393	261	33.2	0.97	20.1	0.95	5.4	4.9
70-74	407	244	36.8	1.04	19.3	1.05	4.4	3.6
75-79	294	160	36.9	1.02	16.0	1.05	3.3	2.3
80-84	196	82	42.6	1.17	11.6	1.28	2.6	1.2
85+	61	38	19.9	1.20	5.2	1.15	0.9	0.4
All ages	2019	1219					3.9	2.6
Mortality								
Raw			8.8	0.97	5.1	0.95		
WS			4.4	0.94	2.5	0.90		
ES			6.5	0.95	3.6	0.92		
BRD-S			8.2	0.97	4.3	0.93		
PYLL-70								
per 100,000			46.4		30.0			
ES			39.8		24.8			
AYLL-70			8.8		8.6			

Table 14a

Further malignancies in deaths in period 1998–2016
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	24	3.6	22	91.7	1	4.2	1	4.2
C09–C10	Oropharynx	24	3.6	18	75.0	2	8.3	4	16.7
C12–C13	Hypopharynx	10	1.5	6	60.0	2	20.0	2	20.0
C15	Oesophagus	11	1.6	3	27.3	2	18.2	6	54.5
C16	Stomach	15	2.2	11	73.3	2	13.3	2	13.3
C18	Colon	40	5.9	25	62.5	7	17.5	8	20.0
C19–C20	Rectum	27	4.0	19	70.4	7	25.9	1	3.7
C22	Liver	9	1.3	2	22.2	3	33.3	4	44.4
C25	Pancreas	13	1.9			2	15.4	11	84.6
C32	Larynx	37	5.5	31	83.8	4	10.8	2	5.4
C33–C34	Lung	68	10.1			22	32.4	46	67.6
C43	Malign. melanoma	11	1.6	11	100.0				
C44	Skin others	57	8.5	44	77.2	2	3.5	11	19.3
C61	Prostate	142	21.1	119	83.8	11	7.7	12	8.5
C64	Kidney	30	4.5	23	76.7	3	10.0	4	13.3
C67	Bladder	46	6.8	36	78.3	4	8.7	6	13.0
C76–C79	CUP	8	1.2	6	75.0	1	12.5	1	12.5
C82–C85	NHL	33	4.9	25	75.8	3	9.1	5	15.2
C91–C96	Leukaemia	9	1.3	3	33.3	1	11.1	5	55.6
Others, specified		59	8.8	43	72.9	4	6.8	12	20.3
All further malignancies		673	100.0	447	66.4	83	12.3	143	21.2

Further malignancies with number of cases 1 to 6 are pooled in category “Others, specified”.

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 further malignancy.

Table 14b

Further malignancies in deaths in period 1998-2016
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06	Oral cavity	10	2.9	8	80.0	1	10.0	1	10.0
C15	Oesophagus	4	1.2	1	25.0	1	25.0	2	50.0
C16	Stomach	4	1.2	2	50.0	2	50.0		
C18	Colon	15	4.4	9	60.0			6	40.0
C19-C20	Rectum	6	1.8	5	83.3			1	16.7
C21	Anus/canal	5	1.5	4	80.0	1	20.0		
C25	Pancreas	6	1.8	1	16.7	2	33.3	3	50.0
C32	Larynx	5	1.5	4	80.0			1	20.0
C33-C34	Lung	27	7.9			3	11.1	24	88.9
C43	Malign. melanoma	6	1.8	6	100.0				
C44	Skin others	17	5.0	15	88.2	1	5.9	1	5.9
C50	Breast	113	33.1	101	89.4	5	4.4	7	6.2
C53	Cervix uteri	23	6.7	22	95.7			1	4.3
C54	Corpus uteri	15	4.4	14	93.3			1	6.7
C56	Ovary	7	2.1	6	85.7			1	14.3
C64	Kidney	10	2.9	9	90.0	1	10.0		
C67	Bladder	14	4.1	11	78.6	2	14.3	1	7.1
C73	Thyroid	6	1.8	6	100.0				
C76-C79	CUP	4	1.2	4	100.0				
C82-C85	NHL	17	5.0	14	82.4	2	11.8	1	5.9
C91-C96	Leukaemia	5	1.5	2	40.0	1	20.0	2	40.0
Others, specified		22	6.5	17	77.3	1	4.5	4	18.2
All further malignancies		341	100.0	261	76.5	23	6.7	57	16.7

Further malignancies with number of cases 1 to 3 are pooled in category “Others, specified”.

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 further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1	2	0.1	0.33	0.1	1.00	0.5	0.8
40-44	15	5	0.8	0.79	0.3	0.71	3.3	0.8
45-49	57	23	2.9	0.88	1.2	0.61	5.4	2.0
50-54	113	71	6.5	0.81	4.1	0.77	6.3	4.2
55-59	179	107	12.6	0.93	7.3	0.96	6.1	4.5
60-64	244	155	19.9	0.87	11.7	0.82	5.8	5.1
65-69	328	219	27.7	0.96	16.9	0.96	5.6	5.2
70-74	317	195	28.7	1.07	15.4	1.03	4.4	3.7
75-79	216	126	27.1	1.03	12.6	1.14	3.3	2.3
80-84	145	68	31.5	1.20	9.6	1.28	2.6	1.3
85+	44	29	14.4	1.22	4.0	1.16	0.9	0.4
All ages	1659	1000					4.1	2.7
Mortality								
Raw			7.3	0.97	4.2	0.96		
WS			3.8	0.94	2.1	0.90		
ES			5.4	0.95	2.9	0.92		
BRD-S			6.7	0.97	3.5	0.94		
PYLL-70								
per 100,000			42.6		25.1			
ES			36.5		20.8			
AYLL-70			9.2		8.6			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**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								
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34								
35-39	1	2	0.1	0.33	0.1	1.00	0.5	0.8
40-44	15	5	0.8	0.79	0.3	0.83	3.3	0.8
45-49	55	22	2.8	0.87	1.2	0.58	5.3	2.0
50-54	110	70	6.4	0.81	4.1	0.76	6.2	4.2
55-59	175	104	12.4	0.92	7.1	0.96	6.0	4.4
60-64	233	152	19.0	0.87	11.4	0.81	5.7	5.1
65-69	313	216	26.4	0.97	16.6	0.97	5.5	5.2
70-74	306	189	27.7	1.07	14.9	1.02	4.4	3.7
75-79	207	121	26.0	1.00	12.1	1.11	3.3	2.3
80-84	139	66	30.2	1.16	9.3	1.27	2.7	1.3
85+	41	29	13.4	1.14	4.0	1.16	0.9	0.4
All ages	1595	976					4.1	2.7
Mortality								
Raw			7.0	0.96	4.1	0.95		
WS			3.6	0.94	2.0	0.90		
ES			5.2	0.95	2.9	0.91		
BRD-S			6.5	0.96	3.4	0.93		
PYLL-70								
per 100,000			41.3		24.6			
ES			35.4		20.3			
AYLL-70			9.2		8.6			

* See corresponding tables with multiple malignancies.

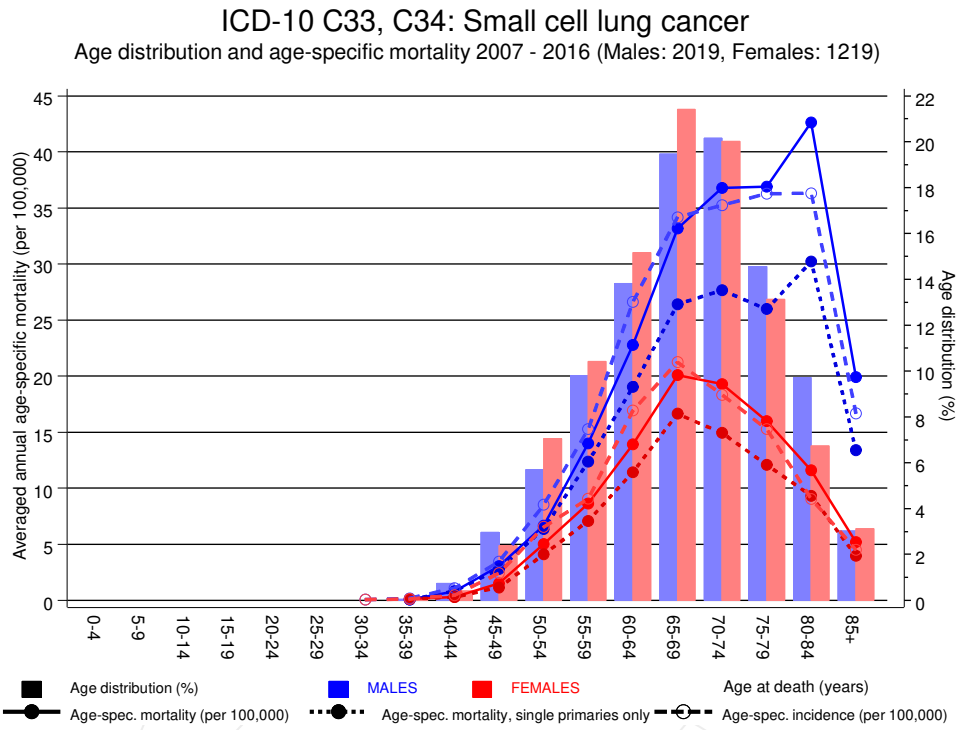


Figure 17. Distribution of age at death (bars; males: mean=67.7 yrs, median=68.1 yrs; females: mean=66.7 yrs, median=66.9 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

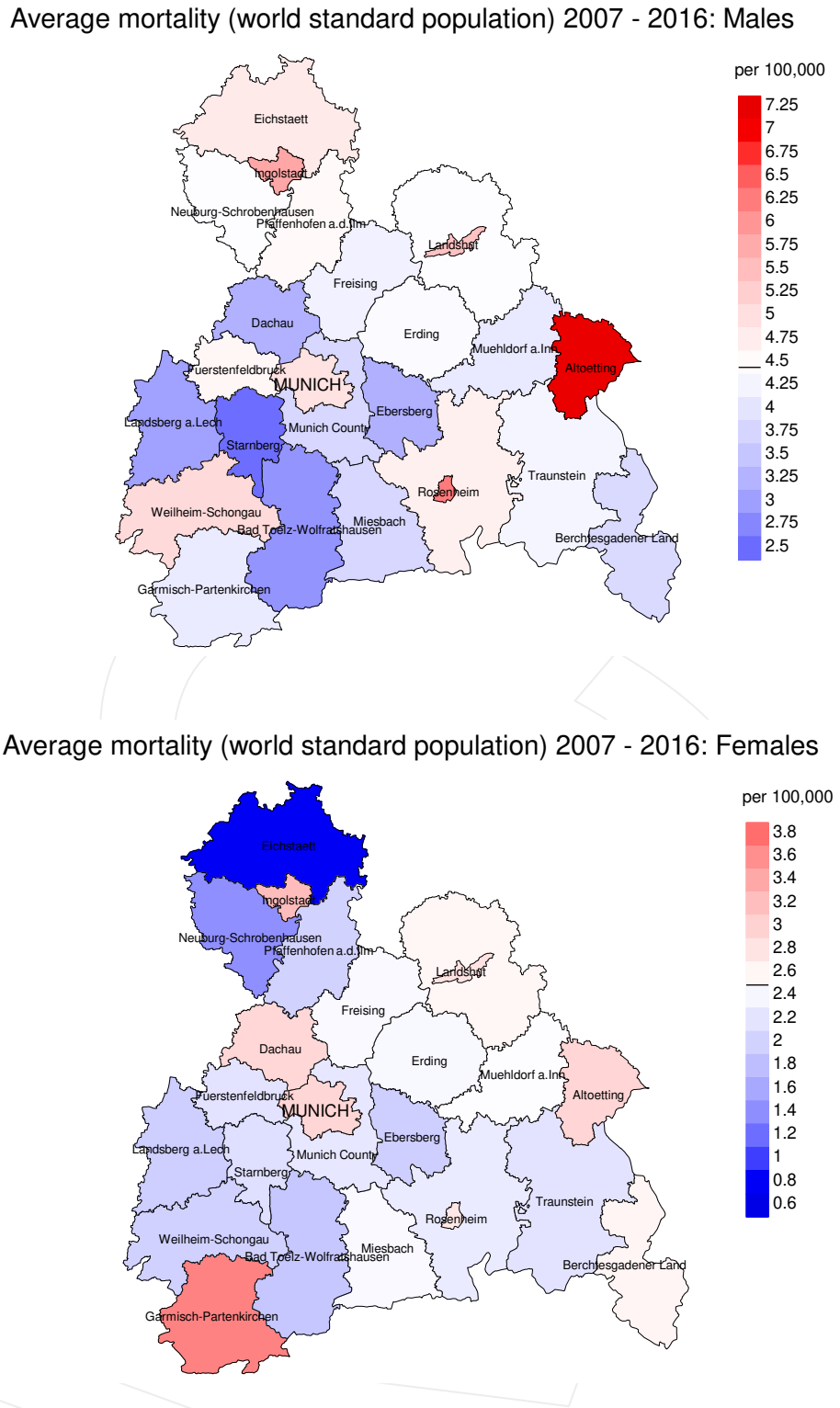
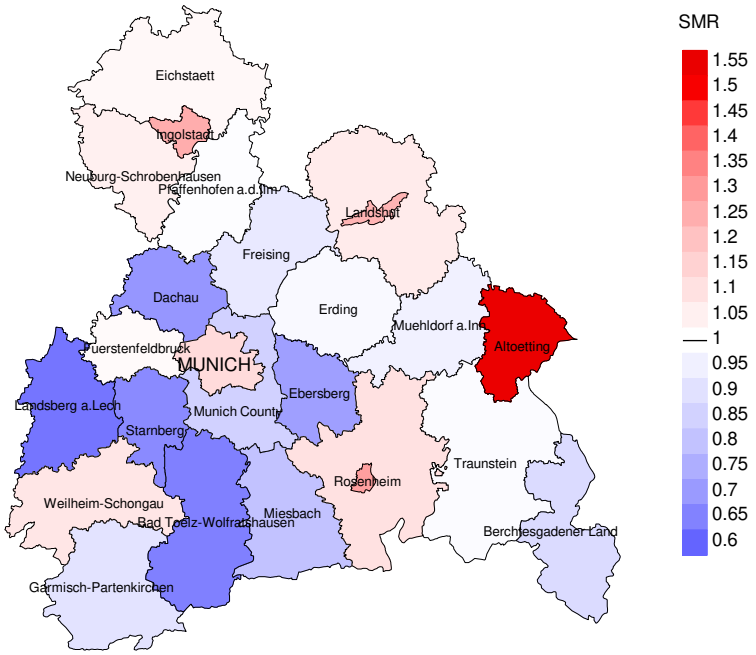


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 4.4/100,000 WS N=2,019, females 2.5/100,000 WS N=1,219).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 28 women died from small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.1 and 3.4/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

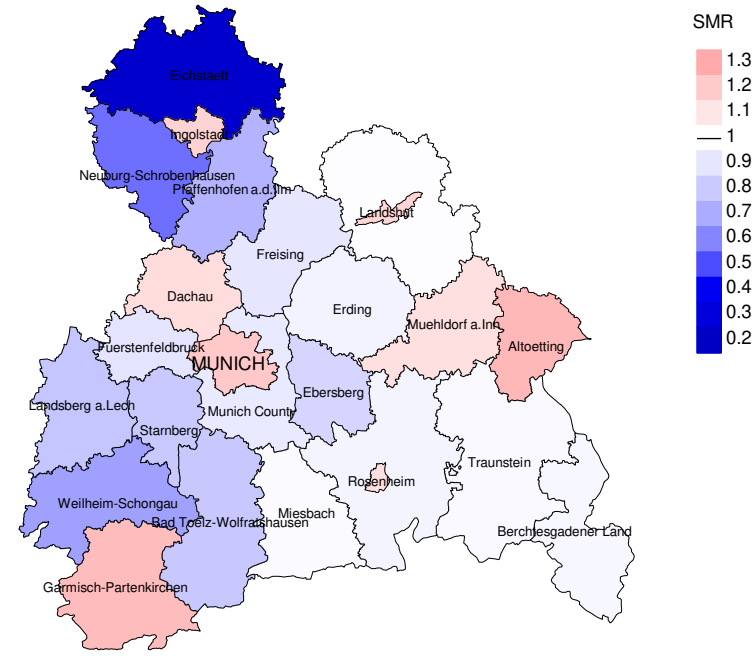


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,019, females N=1,219).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 28 women died from small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.84. Though, the value of this parameter may vary with an underlying probability of 99% between 0.49 and 1.34, 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

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio between mortality and incidence
FRG	Federal Republic of Germany

Recommended Citation

Munich Cancer Registry. ICD-10 C33, C34: Small cell LC - Incidence and Mortality [Internet]. 2018 [updated 2018 Aug 21; cited 2018 Oct 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC34s_E-ICD-10-C33-C34-Small-cell-LC-incidence-and-mortality.pdf

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