Munich Cancer Registry

- Survival
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- *Deutsch*

ICD-10 C34: Small cell LC

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	6,109
Diseases	6,113
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC34S_E-ICD-10-C34-Small-cell-LC-incidence-and-mortality.pdf

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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, January 2021

[#] 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 2016) used for specifying cancer site

Code	Description
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	168	9.5	2.6	94.6	97.6
1999	166	10.8	2.6	98.2	99.4
2000	152	11.3	2.6	96.1	99.3
2001	175	10.7	2.6	95.4	98.9
2002	273	11.1	2.5	95.2	97.8 #
2003	267	12.1	2.4	97.8	99.6
2004	276	12.3	2.4	98.2	98.9
2005	291	13.1	2.4	97.9	99.3
2006	277	13.3	2.3	94.9	97.5
2007	345	13.2	2.4	95.4	98.8 #
2008	337	13.3	2.3	94.4	99.7
2009	363	13.5	2.3	95.3	98.9
2010	361	13.7	2.2	96.4	99.7
2011	378	14.2	2.1	95.8	99.5
2012	331	14.3	2.0	93.7	99.7
2013	358	14.8	1.9	93.3	99.4
2014	342	15.3	1.8	92.1	98.5
2015	341	15.7	1.5	91.2	99.4
2016	318	15.7	1.2	88.4	100.0
2017	253	16.0	0.8	81.0	99.6
2018	190	16.4	0.9	66.8	99.5
2019	151	16.5	0.0	51.7	90.7 ##
1998–2019	6113	16.5	2.6	92.2	98.9

6,113 cases diagnosed 1998-2019 are related to a total of 6,109 patients. Currently, in 1,193 (19.5 %) of these 6,109 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 965 / 180 / 48 (15.8 % / 2.9 % / 0.8 %) 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 2017, a subgroup of 253 cases has been diagnosed, of which 16.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.8 % 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	107	63.7	10.3	2.8	94.4	97.2
1999	115	69.3	10.8	2.7	97.4	99.1
2000	105	69.1	11.3	2.7	99.0	99.0
2001	119	68.0	11.0	2.7	93.3	98.3
2002	190	69.6	11.6	2.6	94.2	97.4 #
2003	172	64.4	13.0	2.6	97.1	100.0
2004	174	63.0	12.8	2.6	99.4	100.0
2005	199	68.4	13.5	2.7	98.0	99.5
2006	176	63.5	13.6	2.6	94.9	97.2
2007	215	62.3	13.5	2.7	95.3	98.6 #
2008	215	63.8	13.4	2.7	94.4	100.0
2009	231	63.6	13.7	2.5	96.1	98.3
2010	235	65.1	13.8	2.4	97.0	99.6
2011	235	62.2	14.3	2.3	97.0	100.0
2012	193	58.3	14.3	2.0	94.8	100.0
2013	218	60.9	14.9	1.8	95.4	100.0
2014	212	62.0	15.5	2.1	93.9	97.6
2015	197	57.8	15.7	1.8	90.9	99.0
2016	201	63.2	15.7	1.1	89.6	100.0
2017	138	54.5	16.0	0.6	80.4	99.3
2018	108	56.8	16.5	0.5	66.7	100.0
2019	78	51.7	16.7	0.0	53.8	89.7 ##
1998-2019	3833	62.7	16.7	2.8	93.1	98.9

3,833 cases diagnosed 1998-2019 are related to a total of 3,830 patients. Currently, in 763 (19.9 %) of these 3,830 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 614 / 120 / 29 (16.0 % / 3.1 % / 0.8 %) 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 2017, a subgroup of 138 cases has been diagnosed, of which 16.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.6 % 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	61	36.3	8.2	2.3	95.1	98.4
1999	51	30.7	10.7	2.4	100.0	100.0
2000	47	30.9	11.3	2.3	89.4	100.0
2001	56	32.0	10.2	2.3	100.0	100.0
2002	83	30.4	10.1	2.2	97.6	98.8 #
2003	95	35.6	10.2	2.2	98.9	98.9
2004	102	37.0	11.1	2.0	96.1	97.1
2005	92	31.6	12.3	2.0	97.8	98.9
2006	101	36.5	12.5	1.8	95.0	98.0
2007	130	37.7	12.7	1.8	95.4	99.2 #
2008	122	36.2	13.1	1.7	94.3	99.2
2009	132	36.4	13.1	1.9	93.9	100.0
2010	126	34.9	13.6	2.0	95.2	100.0
2011	143	37.8	14.0	1.9	93.7	98.6
2012	138	41.7	14.3	1.9	92.0	99.3
2013	140	39.1	14.7	2.0	90.0	98.6
2014	130	38.0	15.0	1.4	89.2	100.0
2015	144	42.2	15.6	1.1	91.7	100.0
2016	117	36.8	15.7	1.3	86.3	100.0
2017	115	45.5	15.9	1.1	81.7	100.0
2018	82	43.2	16.1	1.3	67.1	98.8
2019	73	48.3	16.3	0.0	49.3	91.8 ##
1998-2019	2280	37.3	16.3	2.3	90.8	99.0

2,280 cases diagnosed 1998-2019 are related to a total of 2,279 patients. Currently, in 430 (18.9 %) of these 2,279 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 351 / 60 / 19 (15.4 % / 2.6 % / 0.8 %) 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 2017, a subgroup of 115 cases has been diagnosed, of which 15.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.1 % 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 4.92 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	107	61	9.7	5.2	5.8	2.8	8.5	3.9	10.7	4.7
1999	115	51	10.3	4.3	6.3	2.3	9.1	3.3	10.9	3.8
2000	105	47	9.2	3.9	5.5	2.3	8.1	3.1	10.0	3.5
2001	119	56	10.3	4.6	6.2	2.5	8.9	3.6	10.8	4.2
2002	190	83	10.2	4.2	6.0	2.3	8.7	3.3	10.8	3.8
2003	172	95	9.2	4.8	5.2	2.7	7.6	3.7	9.5	4.3
2004	174	102	9.2	5.2	5.2	2.8	7.4	3.9	9.1	4.5
2005	199	92	10.5	4.6	5.9	2.5	8.4	3.5	10.3	4.1
2006	176	101	9.2	5.0	5.1	2.7	7.5	3.8	9.0	4.5
2007	215	130	9.7	5.6	5.4	3.0	7.7	4.3	9.3	5.0
2008	215	122	9.7	5.3	5.2	2.8	7.7	3.9	9.5	4.6
2009	231	132	10.4	5.7	5.6	2.9	8.1	4.1	10.0	4.8
2010	235	126	10.4	5.4	5.4	2.9	7.9	4.0	9.9	4.6
2011	235	143	10.5	6.1	5.4	3.0	7.9	4.2	9.7	5.1
2012	193	138	8.5	5.8	4.4	3.0	6.3	4.2	7.7	4.9
2013	218	140	9.5	5.9	4.8	2.8	7.0	4.0	8.6	4.8
2014	212	130	9.1	5.4	4.5	2.9	6.6	4.0	8.2	4.5
2015	197	144	8.3	5.9	4.2	2.8	6.1	4.0	7.5	4.8
2016	201	117	8.4	4.8	4.4	2.3	6.3	3.3	7.6	3.9
2017	138	115	5.7	4.7	2.8	2.3	4.1	3.3	5.1	3.9
2018	108	82	4.4	3.3	2.1	1.6	3.1	2.3	4.0	2.7
2019	78	73	3.2	2.9	1.6	1.4	2.3	2.0	2.8	2.4
1998–2019	3833	2280	8.7	5.0	4.6	2.6	6.7	3.6	8.2	4.2

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	168	65.1	9.9	31.5	84.4	53.5	57.8	65.3	72.7	77.1
1999	166	64.9	10.3	36.4	94.7	52.9	57.7	64.9	71.3	78.7
2000	152	64.7	11.0	30.9	90.5	50.9	58.1	64.4	72.0	79.3
2001	175	65.9	9.5	42.7	91.7	53.7	59.2	65.7	73.1	78.1
2002	273	64.8	10.8	32.2	89.4	51.0	57.9	64.8	73.8	78.2
2003	267	65.9	10.3	39.5	88.7	52.9	59.5	66.2	73.3	79.3
2004	276	65.4	10.0	39.6	88.4	51.9	60.1	65.0	73.0	78.2
2005	291	66.1	9.9	40.5	93.7	53.7	59.3	66.7	71.9	79.6
2006	277	66.4	9.2	42.9	97.5	55.2	59.6	65.4	72.8	78.8
2007	345	65.8	9.6	36.8	91.2	52.9	59.6	66.3	72.2	78.2
2008	337	66.5	10.1	39.0	89.2	53.7	59.2	66.5	74.0	80.2
2009	363	67.3	9.9	37.0	91.2	53.7	60.5	67.8	74.7	80.0
2010	361	67.2	9.6	31.8	88.4	53.4	61.1	67.5	73.8	80.1
2011	378	67.9	9.5	42.7	93.7	55.1	63.0	68.4	74.0	79.7
2012	331	67.1	9.7	42.7	93.2	53.3	60.8	68.1	73.9	78.4
2013	358	68.1	9.6	39.7	91.5	54.3	61.7	69.4	74.8	79.5
2014	342	67.6	10.0	31.2	94.5	54.0	60.9	68.0	74.7	80.7
2015	341	68.2	9.9	36.3	94.5	53.4	61.5	68.6	75.3	80.3
2016	318	68.0	9.7	37.9	95.4	55.3	61.2	68.1	75.6	79.8
2017	253	68.0	9.6	45.7	89.6	55.5	60.3	68.6	75.7	81.0
2018	190	68.4	9.9	41.4	87.2	55.3	61.1	68.6	76.8	80.1
2019	151	67.8	9.5	41.9	85.4	54.6	60.4	69.2	76.1	79.1
1998–2019	6113	66.8	9.9	30.9	97.5	53.7	60.1	67.2	74.0	79.4

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	107	64.8	10.0	31.5	82.5	53.6	57.2	65.1	72.8	77.1
1999	115	64.9	10.3	36.4	94.7	53.0	58.3	64.9	70.5	78.7
2000	105	65.2	10.7	30.9	90.5	50.9	58.2	64.8	72.6	78.9
2001	119	66.0	9.1	44.1	91.7	54.6	60.3	65.7	72.4	77.9
2002	190	64.8	10.6	32.2	86.1	52.1	57.9	65.1	73.9	77.9
2003	172	66.5	10.2	39.9	84.2	52.9	60.6	67.7	74.2	78.8
2004	174	65.9	9.9	39.6	84.3	51.9	61.5	66.3	73.0	77.9
2005	199	66.3	9.8	40.5	93.7	54.1	59.9	66.9	71.9	79.3
2006	176	66.6	8.9	46.3	87.1	54.5	59.7	66.3	73.1	78.6
2007	215	65.9	9.4	43.1	91.2	53.2	59.5	66.4	71.8	77.3
2008	215	66.7	10.1	42.9	87.1	53.7	59.3	67.3	74.6	79.8
2009	231	67.3	10.3	37.0	91.2	52.6	60.6	68.1	75.2	80.0
2010	235	67.9	10.2	31.8	88.4	53.1	60.8	68.0	75.2	81.1
2011	235	68.0	9.6	42.7	93.7	55.6	62.8	68.6	74.9	79.7
2012	193	67.6	9.7	42.7	92.8	53.8	61.5	68.1	74.5	79.1
2013	218	67.8	10.0	39.7	91.5	53.6	61.6	69.3	74.7	80.5
2014	212	69.0	9.3	47.5	94.5	56.5	62.1	69.9	75.6	80.9
2015	197	68.1	10.3	36.3	92.3	53.2	61.0	68.7	75.8	81.2
2016	201	68.3	9.8	41.3	95.4	55.3	61.2	68.3	75.0	80.4
2017	138	68.5	10.1	46.0	89.6	54.3	60.1	68.8	76.5	82.3
2018	108	69.9	9.8	41.4	87.2	57.9	62.3	70.4	77.6	81.8
2019	78	68.0	10.1	41.9	85.4	53.9	59.4	69.9	76.1	79.7
1998–2019	3833	67.1	10.0	30.9	95.4	53.7	60.4	67.6	74.4	79.6

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	61	65.6	9.9	45.9	84.4	52.1	58.1	65.4	72.6	78.1
1999	51	65.0	10.6	41.5	87.3	51.6	57.5	64.6	73.8	78.6
2000	47	63.7	11.6	41.1	89.0	49.0	54.1	63.3	71.0	80.8
2001	56	65.5	10.4	42.7	84.7	52.8	57.0	65.1	74.0	80.5
2002	83	64.8	11.3	35.2	89.4	47.7	57.9	63.4	73.7	79.4
2003	95	64.9	10.6	39.5	88.7	53.3	58.4	64.5	71.8	79.3
2004	102	64.6	10.1	42.6	88.4	51.9	58.4	63.3	72.3	79.2
2005	92	65.7	10.2	41.8	85.6	53.0	58.4	65.4	72.0	80.0
2006	101	65.9	9.6	42.9	97.5	55.7	59.2	64.4	70.2	79.1
2007	130	65.5	9.8	36.8	87.2	52.1	59.6	66.1	72.4	78.4
2008	122	65.9	10.2	39.0	89.2	54.0	59.0	65.8	72.4	80.2
2009	132	67.2	9.3	48.1	89.9	55.0	60.4	67.3	73.2	80.0
2010	126	66.0	8.3	46.5	85.6	53.4	61.4	65.9	71.6	76.4
2011	143	67.8	9.4	44.3	92.6	54.8	63.0	67.6	73.4	78.1
2012	138	66.3	9.8	43.6	93.2	52.4	59.5	67.6	73.0	77.6
2013	140	68.4	9.0	48.2	91.0	55.2	62.9	69.5	74.9	78.4
2014	130	65.4	10.8	31.2	88.5	51.0	56.5	65.9	73.0	79.4
2015	144	68.3	9.3	45.3	94.5	54.9	63.1	68.5	74.1	79.9
2016	117	67.5	9.5	37.9	89.2	55.3	60.9	67.6	75.9	79.2
2017	115	67.5	9.0	45.7	86.8	56.3	60.6	68.4	74.4	79.9
2018	82	66.5	9.8	43.9	85.6	54.4	59.1	67.1	74.7	78.6
2019	73	67.6	8.8	47.2	82.1	55.8	60.4	67.9	75.5	78.8
1998–2019	2280	66.4	9.8	31.2	97.5	53.4	59.7	66.3	73.4	79.1

Table 4

Age distribution by 5-year age group and sex for period 2007–2019

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0–4									
5–9									
10–14									
15–19									
20–24									
25–29									
30–34	2	0.0	0.0	1	0.0	0.0	1	0.1	0.1
35–39	6	0.1	0.2	3	0.1	0.2	3	0.2	0.3
40–44	32	0.8	1.0	23	0.9	1.1	9	0.6	0.8
45–49	127	3.1	4.1	75	3.0	4.1	52	3.3	4.1
50–54	309	7.6	11.7	180	7.3	11.4	129	8.1	12.2
55–59	446	11.0	22.7	264	10.7	22.1	182	11.4	23.6
60–64	640	15.7	38.4	372	15.0	37.1	268	16.8	40.5
65–69	809	19.9	58.3	474	19.1	56.2	335	21.0	61.5
70–74	736	18.1	76.4	455	18.4	74.6	281	17.7	79.1
75–79	573	14.1	90.5	362	14.6	89.2	211	13.3	92.4
80–84	285	7.0	97.5	200	8.1	97.3	85	5.3	97.7
85+	103	2.5	100.0	67	2.7	100.0	36	2.3	100.0
All ages	4068	100.0		2476	100.0		1592	100.0	

Table 5

Age-specific incidence and proportion of all cancers
for period 2007-2019

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1	1	0.0	0.0	0.1	0.1
35-39	3	3	0.1	0.1	0.2	0.1
40-44	23	9	1.0	0.4	0.9	0.2
45-49	75	52	3.0	2.1	1.6	0.6
50-54	180	129	7.7	5.6	2.3	1.1
55-59	264	182	13.6	9.1	2.2	1.5
60-64	371	267	22.7	15.2	2.3	1.8
65-69	474	335	31.2	19.9	2.1	1.9
70-74	454	281	32.4	17.5	1.8	1.5
75-79	362	211	32.7	15.3	1.6	1.2
80-84	200	85	30.5	8.7	1.4	0.6
85+	67	36	15.7	3.7	0.7	0.2
All ages	2474	1591			1.7	1.1
Incidence						
Raw			8.2	5.1		
WS			4.2	2.6		
ES			6.1	3.6		
BRD-S			7.5	4.3		

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).

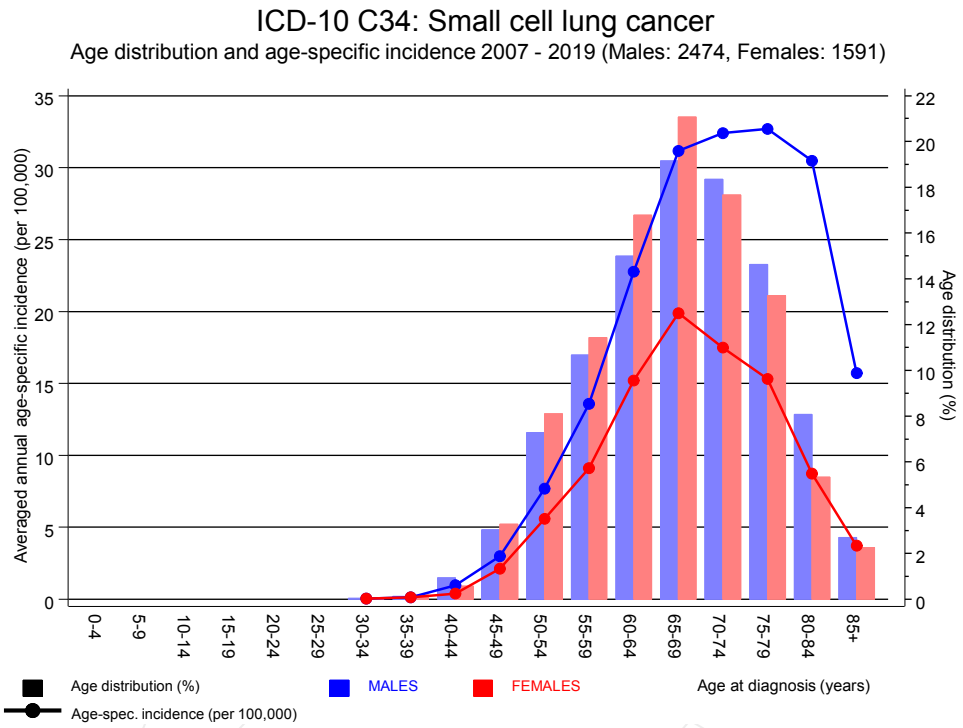


Figure 6. Age distribution (males: mean=67.8 yrs, median=68.3 yrs; females: mean=66.9 yrs, median=67.4 yrs) and age-specific incidence.

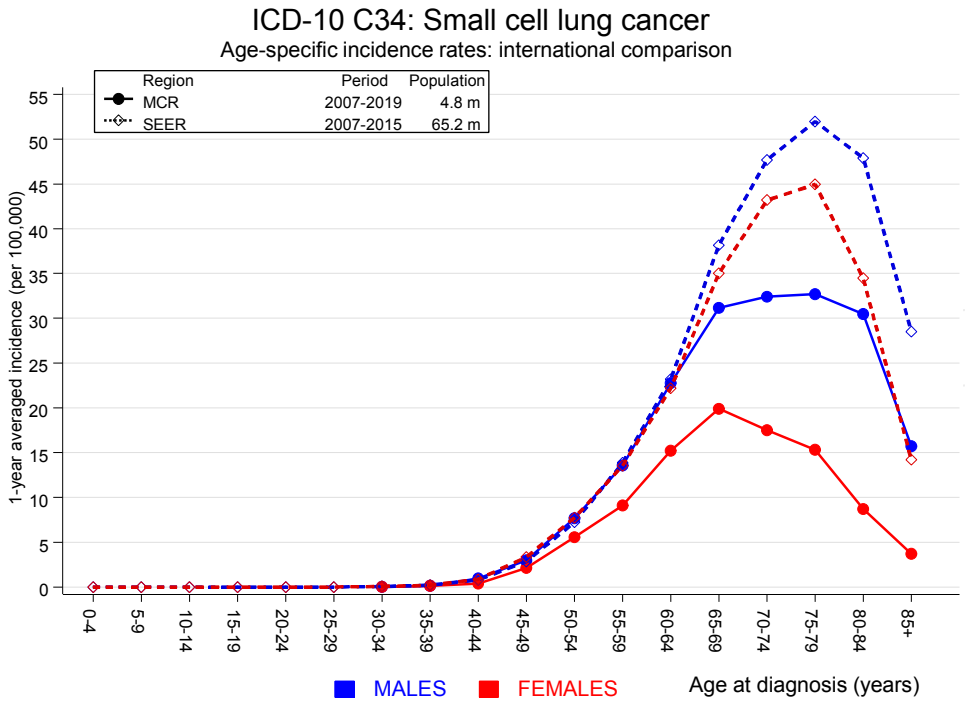


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 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 1998–2019
MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	2	0.6	3.6	0.4	13.1		3.8	50.0
C09–C10	Oropharynx	8	0.7	11.4	4.9	22.5	#	19.1	
C12–C13	Hypopharynx	1	0.4	2.6	0.1	14.7		1.6	
C15	Oesophagus	6	1.2	5.1	1.9	11.0	#	12.6	66.7
C16	Stomach	2	2.1	0.9	0.1	3.4		−0.4	
C17	Small intestine	1	0.3	3.1	0.1	17.1		1.8	
C18	Colon	14	5.3	2.7	1.5	4.5	#	22.8	28.6
C19–C20	Rectum	7	3.2	2.2	0.9	4.6		10.0	14.3
C22	Liver	6	1.7	3.6	1.3	7.8	#	11.3	50.0
C25	Pancreas	15	2.1	7.3	4.1	12.0	#	33.8	53.3
C26	GI cancer	1	0.0	20.6	0.5	114.8		2.5	
C32	Larynx	5	0.6	7.8	2.5	18.1	#	11.4	20.0
C33–C34	Lung	32	7.0	4.6	3.1	6.5	#	65.3	9.4
C37	Thymus	1	0.0	30.3	0.8	168.7		2.5	
C38,C45	Mesothelioma	1	0.4	2.7	0.1	15.0		1.6	
C43	Malign. melanoma	2	2.5	0.8	0.1	2.9		−1.3	50.0
C48	Peritoneal	1	0.0	21.5	0.5	119.8		2.5	
C50	Breast	1	0.2	6.5	0.2	36.2		2.2	100.0
C61	Prostate	22	16.9	1.3	0.8	2.0		13.4	13.6
C64	Kidney	7	2.1	3.4	1.4	7.0	#	12.9	28.6
C65	Renal pelvis	1	0.2	4.3	0.1	23.7		2.0	
C67	Bladder	5	2.3	2.1	0.7	5.0		6.9	40.0
C70–C72	CNS cancer	4	0.8	5.3	1.5	13.7	#	8.5	100.0
C76–C79	CUP	1	0.9	1.1	0.0	6.1		0.2	
C82–C85	NHL	7	2.3	3.0	1.2	6.3	#	12.3	14.3
C90	Mult. myeloma	1	0.7	1.4	0.0	7.8		0.7	100.0
C91–C96	Leukaemia	3	0.8	3.8	0.8	11.2		5.8	66.7
Not observed		0	2.7	0.0	0.0	1.4		−7.0	
All further malignancies		157	57.9	2.7	2.3	3.2	#	258.8	26.8

Patients	3760
Median age at next malignancy (years)	70.6
Person-years	3831
Mean observation time (years)	1.0
Median observation time (years)	0.6

The occurrence of further specified malignancy is statistically significant.

Table 7b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2019
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	1	0.2	5.6	0.1	31.2		3.0	
C07–C08	Salivary gland	1	0.0	26.4	0.7	147.1		3.5	
C09–C10	Oropharynx	1	0.2	6.5	0.2	36.2		3.0	100.0
C15	Oesophagus	2	0.2	10.0	1.2	36.3	#	6.5	
C16	Stomach	1	0.7	1.4	0.0	7.6		1.0	100.0
C17	Small intestine	2	0.2	12.2	1.5	44.0	#	6.6	50.0
C18	Colon	5	2.2	2.3	0.7	5.4		10.2	40.0
C19–C20	Rectum	2	1.0	2.0	0.2	7.2		3.6	50.0
C25	Pancreas	4	1.1	3.8	1.0	9.6	#	10.6	75.0
C33–C34	Lung	17	2.3	7.2	4.2	11.6	#	52.8	5.9
C46,C49	Soft tissue	1	0.1	6.8	0.2	37.8		3.1	
C50	Breast	15	9.5	1.6	0.9	2.6		19.9	40.0
C51	Vulva	1	0.2	4.1	0.1	23.1		2.7	100.0
C53	Cervix uteri	1	0.4	2.6	0.1	14.3		2.2	
C54	Corpus uteri	1	1.7	0.6	0.0	3.3		−2.5	100.0
C56	Ovary	2	1.1	1.8	0.2	6.3		3.1	
C64	Kidney	1	0.6	1.6	0.0	9.0		1.4	
C67	Bladder	4	0.4	9.7	2.6	24.9	#	12.9	25.0
C70–C72	CNS cancer	2	0.4	5.5	0.7	20.0		5.9	
C73	Thyroid	1	0.6	1.8	0.0	9.9		1.6	
C76–C79	CUP	1	0.4	2.6	0.1	14.5		2.2	
C82–C85	NHL	3	1.0	3.0	0.6	8.8		7.2	33.3
C91–C96	Leukaemia	2	0.3	5.9	0.7	21.2		6.0	
Not observed		0	2.9	0.0	0.0	1.3		−10.6	
All further malignancies		71	27.8	2.6	2.0	3.2	#	155.6	28.2

Patients	2225
Median age at next malignancy (years)	66.5
Person-years	2776
Mean observation time (years)	1.2
Median observation time (years)	0.8

The occurrence of further specified malignancy is statistically significant.

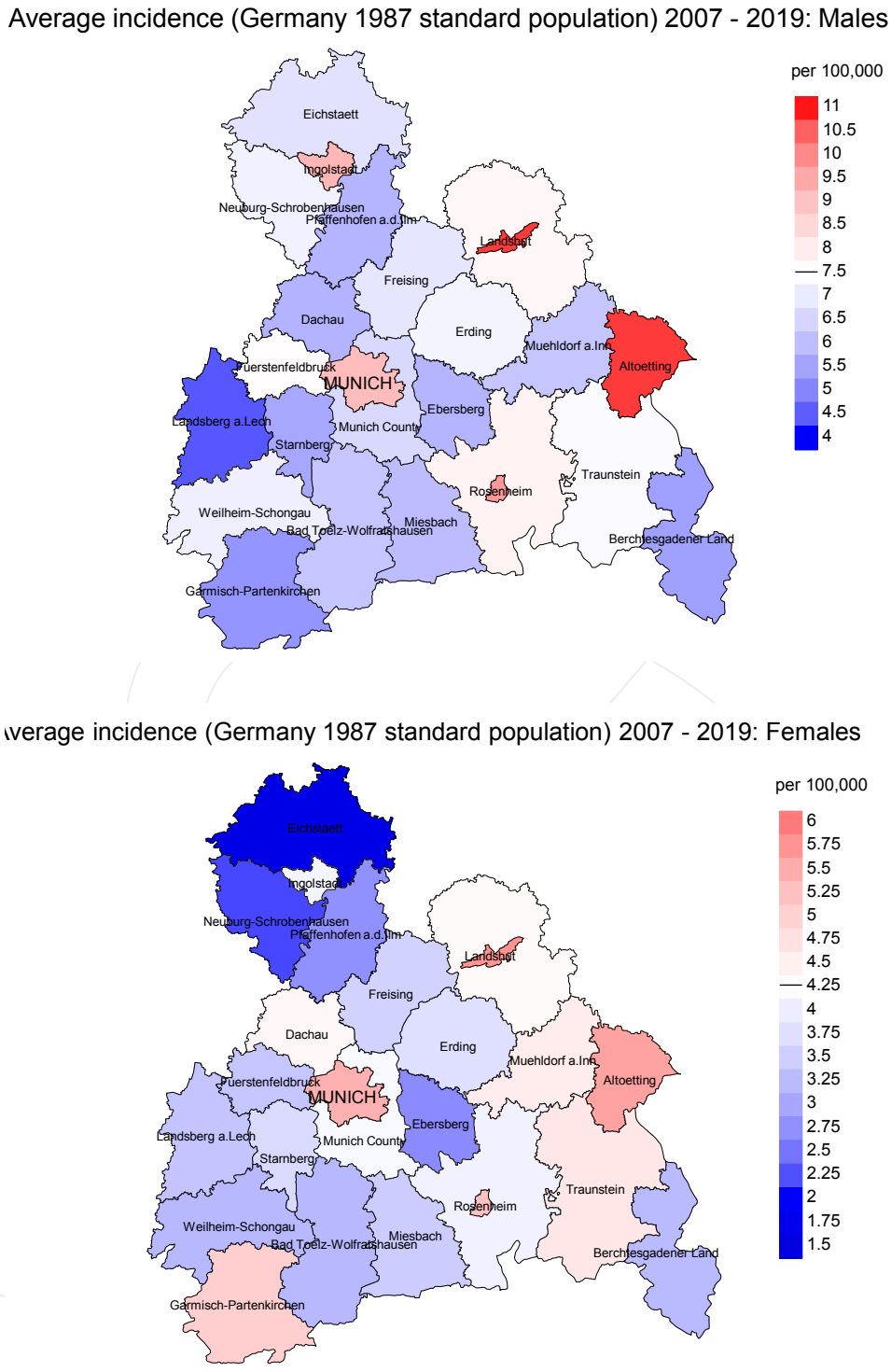


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.5/100,000 WS N=2,474, females 4.3/100,000 WS N=1,591).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 28 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 2.7/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.6 and 4.4/100,000.

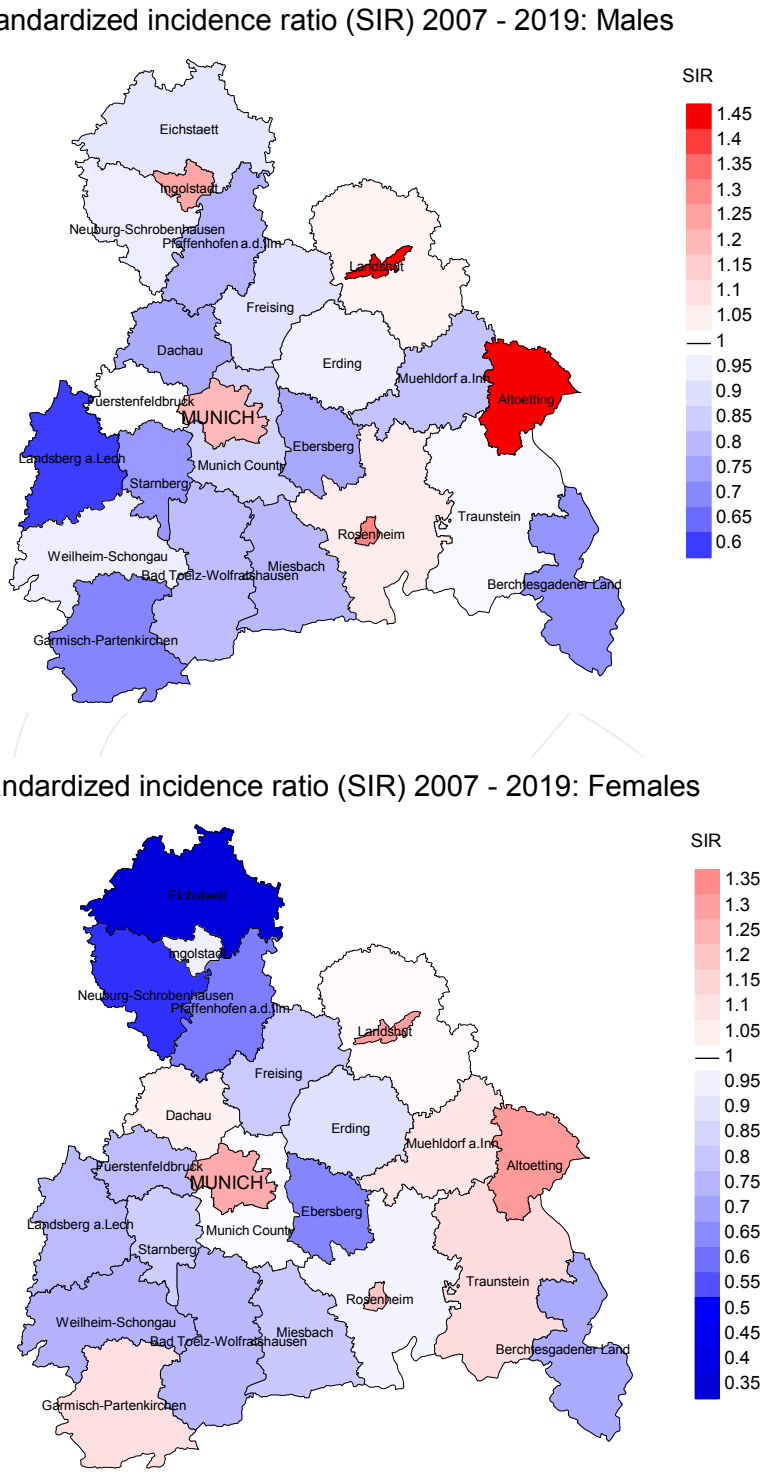


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,474, females N=1,591).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 28 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 0.64. Though, the value of this parameter may vary with an underlying probability of 99% between 0.37 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 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	168	97.6	159	94.6	92.5
1999	166	99.4	163	98.2	95.1
2000	152	99.3	146	96.1	92.5
2001	175	98.9	167	95.4	94.6
2002	273	97.8	260	95.2	95.8
2003	267	99.6	261	97.8	97.3
2004	276	98.9	271	98.2	95.6
2005	291	99.3	285	97.9	98.6
2006	277	97.5	263	94.9	98.9
2007	345	98.8	329	95.4	98.8
2008	337	99.7	318	94.4	97.8
2009	363	98.9	346	95.3	97.7
2010	361	99.7	348	96.4	98.9
2011	378	99.5	362	95.8	99.4
2012	331	99.7	310	93.7	97.7
2013	358	99.4	334	93.3	97.3
2014	342	98.5	315	92.1	95.9
2015	341	99.4	311	91.2	96.1
2016	318	100.0	281	88.4	87.5
2017	253	99.6	205	81.0	63.9
2018	190	99.5	127	66.8	33.9
2019	151	90.7	78	51.7	82.1
1998–2019	6113	98.9	5639	92.2	93.8

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 4.92 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	168	134	54	32.1
1999	166	149	64	38.6
2000	152	150	58	38.2
2001	175	151	58	33.1
2002	273	235	106	38.8
2003	267	237	100	37.5
2004	276	267	107	38.8
2005	291	265	117	40.2
2006	277	265	101	36.5
2007	345	327	140	40.6
2008	337	316	126	37.4
2009	363	336	138	38.0
2010	361	346	153	42.4
2011	378	364	159	42.1
2012	331	326	119	36.0
2013	358	338	143	39.9
2014	342	323	115	33.6
2015	341	348	135	39.6
2016	318	326	114	35.8
2017	253	263	92	36.4
2018	190	209	60	31.6
2019	151	143	40	26.5
1998–2019	6113	5818	2299	37.6

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 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	134	95.5	4.5	99.2
1999	149	94.0	6.0	99.3
2000	150	95.3	4.7	98.6
2001	151	93.4	6.6	97.8
2002	235	96.2	3.8	99.6
2003	237	98.7	1.3	99.1
2004	267	99.3	0.7	99.2
2005	265	98.1	1.9	99.2
2006	265	96.6	3.4	98.1
2007	327	97.2	2.8	98.1
2008	316	98.7	1.3	99.4
2009	336	98.2	1.8	99.7
2010	346	98.8	1.2	98.8
2011	364	98.4	1.6	99.4
2012	326	97.5	2.5	98.8
2013	338	98.5	1.5	99.1
2014	323	96.9	3.1	98.4
2015	348	98.6	1.4	98.6
2016	326	96.0	4.0	97.2
2017	263	98.1	1.9	99.2
2018	209	84.2	15.8	96.3
2019	143	84.6	15.4	100.0
1998-2019	5818	96.7	3.3	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	88	65.5	65.5	70.4	66.6
1999	102	65.8	66.4	58.6	67.0
2000	104	67.4	67.5	66.2	68.1
2001	107	66.5	66.6	62.4	67.5
2002	159	66.7	66.7	71.7	66.9
2003	166	67.4	67.5	49.4	67.5
2004	172	67.2	66.7	80.7	67.8
2005	180	68.6	68.6	67.7	68.7
2006	184	67.3	67.2	81.0	67.3
2007	214	68.4	68.4	66.0	68.5
2008	194	67.7	67.6	70.6	67.6
2009	213	68.1	67.9	71.7	68.3
2010	235	70.0	69.9	72.2	70.0
2011	224	68.9	68.9	65.5	68.8
2012	206	69.0	68.8	74.4	68.9
2013	198	70.0	69.9	91.5	69.9
2014	199	70.5	70.3	78.2	70.4
2015	221	70.8	70.8	67.8	70.8
2016	183	70.3	70.2	75.7	70.3
2017	160	70.4	70.3	74.3	70.4
2018	118	70.9	70.6	73.7	70.0
2019	77	71.6	71.5	76.2	72.3
1998–2019	3704	68.9	68.8	72.4	68.9

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

Table 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	46	64.4	64.2	75.6	64.2
1999	47	67.9	67.9	67.7	67.5
2000	46	65.8	65.8		65.9
2001	44	67.8	66.0	75.8	66.0
2002	76	65.3	64.7	72.0	64.7
2003	71	66.0	66.0	77.9	66.0
2004	95	67.3	67.1	89.3	66.8
2005	85	64.8	64.6	81.4	64.5
2006	81	65.0	64.7	74.7	64.7
2007	113	67.2	68.1	60.9	68.2
2008	122	67.3	67.3		67.4
2009	123	68.2	68.1	78.7	68.2
2010	111	67.4	67.4		67.4
2011	140	67.0	67.0	67.7	67.1
2012	120	68.2	68.3	67.4	68.6
2013	140	70.3	70.2	72.9	70.3
2014	124	70.2	70.3	66.3	70.1
2015	127	70.3	70.3	72.2	70.3
2016	143	68.9	68.8	72.0	68.8
2017	103	69.6	69.6	66.9	69.8
2018	91	69.7	68.5	76.6	68.8
2019	66	69.7	69.1	71.9	68.0
1998–2019	2114	67.9	67.7	73.8	67.7

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 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	85	7.7	0.79	4.7	0.81	6.9	0.80	8.5	0.80
1999	95	8.5	0.83	5.1	0.81	7.5	0.82	9.5	0.87
2000	97	8.5	0.92	5.1	0.92	7.6	0.93	9.5	0.95
2001	101	8.7	0.85	5.2	0.84	7.6	0.85	9.5	0.88
2002	154	8.3	0.81	4.8	0.79	6.9	0.80	8.7	0.80
2003	165	8.8	0.96	4.9	0.94	7.2	0.95	9.2	0.97
2004	171	9.1	0.98	5.0	0.95	7.3	0.98	9.2	1.01
2005	176	9.3	0.88	5.0	0.85	7.3	0.87	9.3	0.91
2006	177	9.2	1.01	5.1	0.98	7.3	0.97	8.9	0.99
2007	208	9.4	0.97	4.9	0.91	7.3	0.95	9.3	1.00
2008	190	8.5	0.88	4.5	0.87	6.6	0.87	8.3	0.87
2009	209	9.4	0.90	5.0	0.90	7.2	0.89	8.9	0.89
2010	231	10.2	0.98	5.1	0.94	7.5	0.96	9.8	1.00
2011	222	9.9	0.94	5.0	0.92	7.3	0.93	9.3	0.95
2012	199	8.8	1.03	4.4	1.01	6.4	1.02	8.0	1.03
2013	197	8.6	0.90	4.3	0.89	6.2	0.89	7.8	0.91
2014	194	8.3	0.92	4.0	0.89	5.9	0.90	7.5	0.91
2015	220	9.2	1.12	4.5	1.06	6.6	1.08	8.3	1.12
2016	175	7.3	0.87	3.6	0.82	5.3	0.84	6.6	0.87
2017	157	6.5	1.15	3.1	1.12	4.6	1.12	5.8	1.16
2018	99	4.1	0.92	2.0	0.94	2.9	0.94	3.6	0.91
2019	67	2.8	0.86	1.3	0.84	1.9	0.84	2.5	0.88
1998-2019	3589	8.1	0.94	4.2	0.91	6.2	0.92	7.8	0.94

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	43	3.7	0.70	1.9	0.69	2.8	0.71	3.2	0.68
1999	45	3.8	0.88	1.9	0.79	2.7	0.81	3.4	0.89
2000	46	3.8	0.98	2.1	0.94	3.0	0.95	3.5	0.99
2001	40	3.3	0.71	1.8	0.72	2.5	0.71	2.9	0.70
2002	72	3.7	0.87	2.0	0.84	2.8	0.86	3.3	0.87
2003	69	3.5	0.73	1.8	0.68	2.6	0.70	3.0	0.72
2004	94	4.8	0.92	2.4	0.86	3.4	0.87	4.1	0.91
2005	84	4.2	0.91	2.3	0.91	3.2	0.90	3.7	0.90
2006	79	3.9	0.78	2.2	0.79	3.0	0.77	3.5	0.78
2007	110	4.8	0.85	2.4	0.79	3.5	0.81	4.2	0.82
2008	122	5.3	1.00	2.6	0.95	3.8	0.96	4.5	0.98
2009	121	5.2	0.92	2.5	0.88	3.6	0.88	4.4	0.91
2010	111	4.7	0.88	2.5	0.85	3.4	0.86	4.0	0.86
2011	136	5.8	0.95	3.0	1.00	4.2	1.00	4.9	0.97
2012	119	5.0	0.86	2.5	0.83	3.6	0.84	4.2	0.85
2013	136	5.7	0.97	2.6	0.92	3.7	0.94	4.6	0.96
2014	119	4.9	0.92	2.2	0.78	3.3	0.82	3.9	0.87
2015	123	5.1	0.86	2.3	0.83	3.3	0.84	4.1	0.85
2016	138	5.6	1.18	2.6	1.13	3.8	1.14	4.6	1.17
2017	101	4.1	0.88	1.9	0.81	2.7	0.83	3.3	0.85
2018	77	3.1	0.94	1.5	0.91	2.1	0.91	2.5	0.94
2019	54	2.2	0.74	1.0	0.74	1.5	0.73	1.8	0.73
1998-2019	2039	4.5	0.89	2.2	0.86	3.1	0.87	3.7	0.88

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019
(**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	4	0.1	0.1	1	0.0	0.0	3	0.2	0.2
40-44	21	0.5	0.7	16	0.7	0.7	5	0.3	0.5
45-49	98	2.6	3.2	67	2.8	3.5	31	2.1	2.7
50-54	240	6.3	9.5	140	5.9	9.5	100	6.8	9.5
55-59	376	9.8	19.3	220	9.3	18.8	156	10.6	20.1
60-64	547	14.3	33.5	325	13.7	32.5	222	15.1	35.2
65-69	762	19.9	53.4	453	19.1	51.6	309	21.1	56.3
70-74	763	19.9	73.3	472	19.9	71.5	291	19.8	76.1
75-79	576	15.0	88.3	371	15.7	87.2	205	14.0	90.1
80-84	328	8.6	96.9	225	9.5	96.7	103	7.0	97.1
85+	120	3.1	100.0	78	3.3	100.0	42	2.9	100.0
All ages	3835	100.0		2368	100.0		1467	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**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	3	0.0	0.33	0.1	1.00	0.4	0.8
40-44	16	5	0.7	0.70	0.2	0.56	2.8	0.6
45-49	67	31	2.7	0.89	1.3	0.60	5.0	2.0
50-54	140	100	6.0	0.78	4.3	0.78	5.6	4.1
55-59	220	156	11.3	0.83	7.8	0.86	5.3	4.4
60-64	325	222	19.9	0.88	12.6	0.83	5.4	4.8
65-69	453	309	29.8	0.96	18.3	0.92	5.3	4.8
70-74	472	291	33.7	1.04	18.1	1.04	4.3	3.6
75-79	371	205	33.5	1.02	14.9	0.97	3.2	2.3
80-84	225	103	34.3	1.13	10.6	1.21	2.4	1.2
85+	78	42	18.3	1.16	4.4	1.17	0.9	0.4
All ages	2368	1467					3.7	2.6
Mortality								
Raw			7.9	0.96	4.7	0.92		
WS			3.9	0.93	2.3	0.88		
ES			5.7	0.94	3.2	0.89		
BRD-S			7.2	0.96	3.9	0.91		
PYLL-70								
per 100,000			40.5		27.0			
ES			34.3		22.0			
AYLL-70			8.8		8.6			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	2	0.3	2	100.0				
C03–C06	Oral cavity	28	3.6	24	85.7	3	10.7	1	3.6
C07–C08	Salivary gland	2	0.3	2	100.0				
C09–C10	Oropharynx	31	4.0	23	74.2	3	9.7	5	16.1
C12–C13	Hypopharynx	10	1.3	6	60.0	2	20.0	2	20.0
C15	Oesophagus	12	1.5	4	33.3	2	16.7	6	50.0
C16	Stomach	16	2.0	11	68.8	2	12.5	3	18.8
C17	Small intestine	3	0.4	2	66.7			1	33.3
C18	Colon	45	5.8	29	64.4	7	15.6	9	20.0
C19–C20	Rectum	32	4.1	21	65.6	8	25.0	3	9.4
C22	Liver	10	1.3	3	30.0	2	20.0	5	50.0
C23–C24	Bile	2	0.3	1	50.0	1	50.0		
C25	Pancreas	15	1.9			2	13.3	13	86.7
C30–C31	Sinuses	4	0.5	3	75.0			1	25.0
C32	Larynx	40	5.1	32	80.0	6	15.0	2	5.0
C33–C34	Lung	83	10.6			27	32.5	56	67.5
C43	Malign. melanoma	16	2.0	14	87.5	1	6.3	1	6.3
C44	Skin others	69	8.8	55	79.7	2	2.9	12	17.4
C46,C49	Soft tissue	2	0.3	2	100.0				
C50	Breast	4	0.5	2	50.0	1	25.0	1	25.0
C61	Prostate	172	22.0	143	83.1	12	7.0	17	9.9
C62	Testis	8	1.0	7	87.5			1	12.5
C64	Kidney	31	4.0	24	77.4	3	9.7	4	12.9
C65	Renal pelvis	5	0.6	4	80.0			1	20.0
C67	Bladder	49	6.3	39	79.6	4	8.2	6	12.2
C69	Eye carcinoma	2	0.3	2	100.0				
C69	Eye melanoma	2	0.3	2	100.0				
C70–C72	CNS cancer	6	0.8	1	16.7	1	16.7	4	66.7
C73	Thyroid	2	0.3	2	100.0				
C76–C79	CUP	9	1.2	7	77.8	1	11.1	1	11.1
C81	Hodgkin lymphoma	10	1.3	8	80.0	2	20.0		
C82–C85	NHL	40	5.1	29	72.5	4	10.0	7	17.5
C90	Mult. myeloma	6	0.8	4	66.7			2	33.3
C91–C96	Leukaemia	6	0.8	2	33.3			4	66.7
Others, specified		7	0.9	4	57.1			3	42.9
All further malignancies		781	100.0	514	65.8	96	12.3	171	21.9

Further malignancies with number of cases 1 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 1998–2019
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	11	2.7	9	81.8	1	9.1	1	9.1
C09–C10	Oropharynx	5	1.2	4	80.0			1	20.0
C15	Oesophagus	5	1.2	2	40.0	1	20.0	2	40.0
C16	Stomach	6	1.5	4	66.7	2	33.3		
C17	Small intestine	2	0.5	1	50.0			1	50.0
C18	Colon	20	4.8	13	65.0	1	5.0	6	30.0
C19–C20	Rectum	7	1.7	6	85.7			1	14.3
C21	Anus/canal	4	1.0	3	75.0	1	25.0		
C22	Liver	1	0.2	1	100.0				
C23–C24	Bile	2	0.5	2	100.0				
C25	Pancreas	6	1.5	1	16.7	2	33.3	3	50.0
C26	GI cancer	1	0.2	1	100.0				
C32	Larynx	4	1.0	4	100.0				
C33–C34	Lung	33	8.0			4	12.1	29	87.9
C43	Malign. melanoma	6	1.5	6	100.0				
C44	Skin others	24	5.8	21	87.5	1	4.2	2	8.3
C46,C49	Soft tissue	1	0.2			1	100.0		
C50	Breast	145	35.1	131	90.3	5	3.4	9	6.2
C51	Vulva	4	1.0	3	75.0			1	25.0
C52	Vagina	1	0.2	1	100.0				
C53	Cervix uteri	26	6.3	24	92.3	1	3.8	1	3.8
C54	Corpus uteri	16	3.9	15	93.8			1	6.3
C55,C57	Fem. genitals un	4	1.0	4	100.0				
C56	Ovary	9	2.2	8	88.9			1	11.1
C64	Kidney	10	2.4	9	90.0	1	10.0		
C65	Renal pelvis	1	0.2	1	100.0				
C66	Ureter	1	0.2	1	100.0				
C67	Bladder	16	3.9	13	81.3	2	12.5	1	6.3
C70–C72	CNS cancer	2	0.5					2	100.0
C73	Thyroid	8	1.9	8	100.0				
C76–C79	CUP	4	1.0	4	100.0				
C81	Hodgkin lymphoma	3	0.7	3	100.0				
C82–C85	NHL	19	4.6	16	84.2	2	10.5	1	5.3
C90	Mult. myeloma	1	0.2	1	100.0				
C91–C96	Leukaemia	5	1.2	2	40.0	1	20.0	2	40.0
All further malignancies		413	100.0	322	78.0	26	6.3	65	15.7

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 2007-2019
(**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	3	0.0	0.33	0.1	1.00	0.4	0.9
40-44	15	4	0.6	0.71	0.2	0.50	2.8	0.6
45-49	64	25	2.5	0.89	1.0	0.57	5.2	1.9
50-54	136	86	5.8	0.80	3.7	0.78	6.1	4.1
55-59	198	130	10.2	0.85	6.5	0.85	5.5	4.4
60-64	283	186	17.4	0.89	10.6	0.82	5.7	4.9
65-69	377	258	24.8	0.95	15.3	0.95	5.5	5.0
70-74	366	227	26.1	1.08	14.1	1.01	4.3	3.6
75-79	268	157	24.2	1.06	11.4	1.01	3.2	2.3
80-84	163	82	24.8	1.14	8.4	1.21	2.4	1.2
85+	51	32	12.0	1.24	3.3	1.14	0.9	0.4
All ages	1922	1190					3.9	2.6
Mortality								
Raw			6.4	0.97	3.8	0.92		
WS			3.3	0.93	1.9	0.88		
ES			4.7	0.94	2.7	0.89		
BRD-S			5.8	0.97	3.2	0.91		
PYLL-70								
per 100,000			36.9		22.7			
ES			31.3		18.5			
AYLL-70			9.1		8.6			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**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	3	0.0	0.33	0.1	1.00	0.4	0.9
40-44	15	4	0.6	0.71	0.2	0.57	2.9	0.6
45-49	62	24	2.5	0.89	1.0	0.55	5.1	1.8
50-54	132	85	5.6	0.80	3.7	0.78	6.0	4.2
55-59	195	126	10.0	0.85	6.3	0.85	5.5	4.3
60-64	272	183	16.7	0.89	10.4	0.82	5.5	4.9
65-69	360	254	23.7	0.95	15.1	0.96	5.4	5.1
70-74	353	219	25.2	1.07	13.6	1.00	4.3	3.6
75-79	252	153	22.8	1.02	11.1	0.99	3.2	2.3
80-84	157	80	23.9	1.11	8.2	1.19	2.5	1.3
85+	47	32	11.0	1.15	3.3	1.14	0.9	0.4
All ages	1846	1163					3.9	2.7
Mortality								
Raw			6.1	0.96	3.7	0.92		
WS			3.2	0.93	1.8	0.87		
ES			4.6	0.94	2.6	0.88		
BRD-S			5.6	0.96	3.1	0.90		
PYLL-70								
per 100,000			35.9		22.2			
ES			30.4		18.1			
AYLL-70			9.2		8.6			

* See corresponding tables with multiple malignancies.

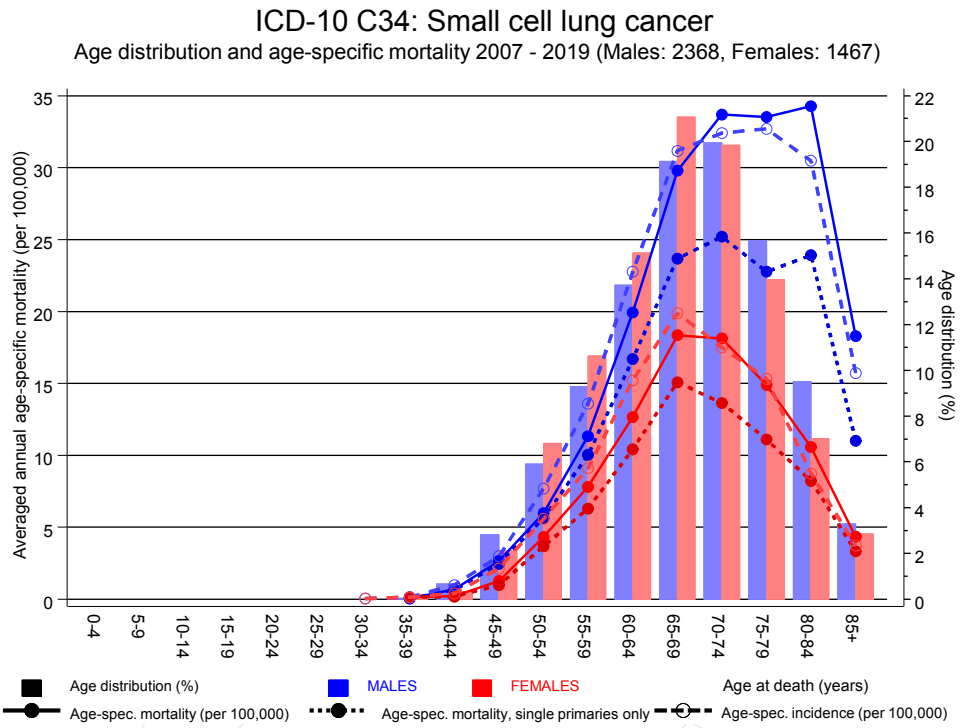


Figure 17. Distribution of age at death (bars; males: mean=67.9 yrs, median=68.4 yrs; females: mean=66.9 yrs, median=67.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

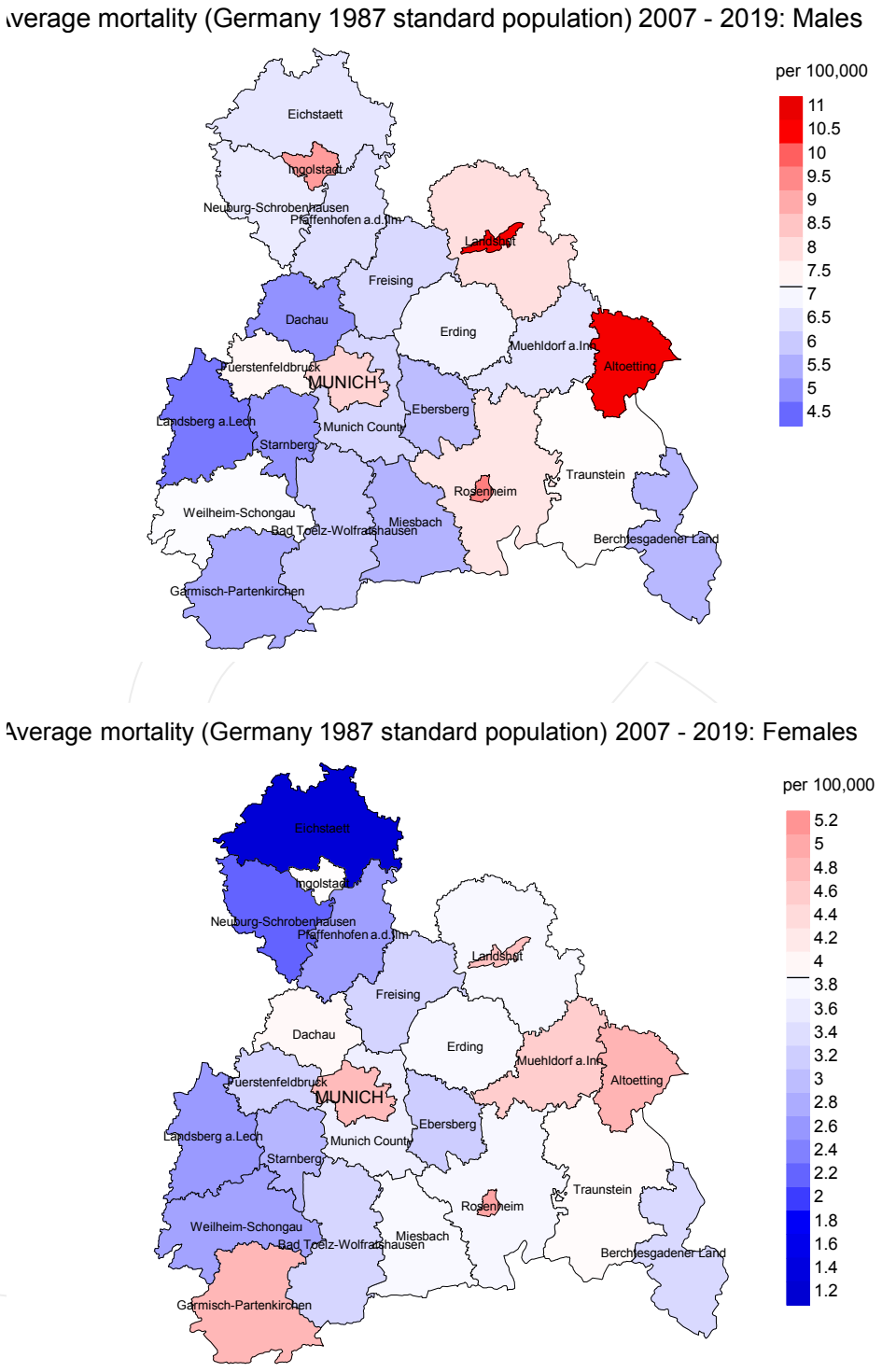
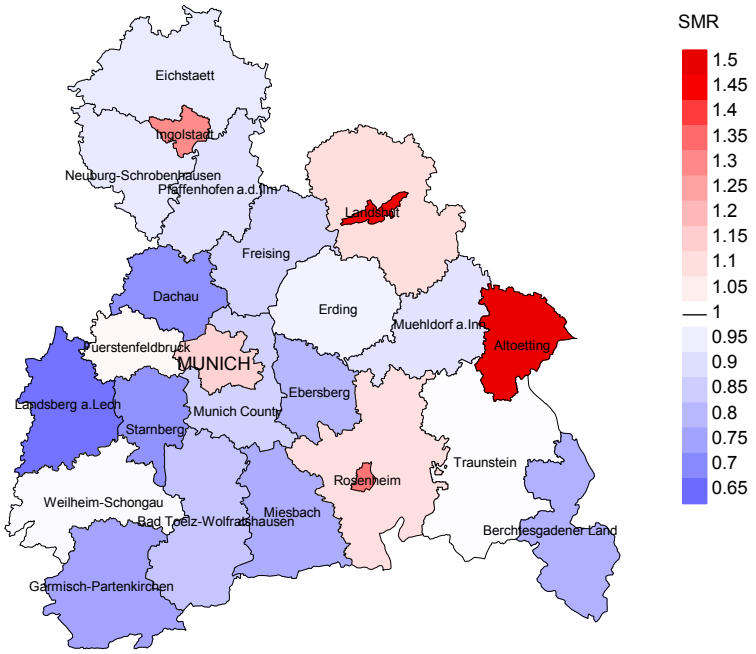


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.2/100,000 WS N=2,368, females 3.9/100,000 WS N=1,467).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 33 women died from small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.9 and 4.9/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

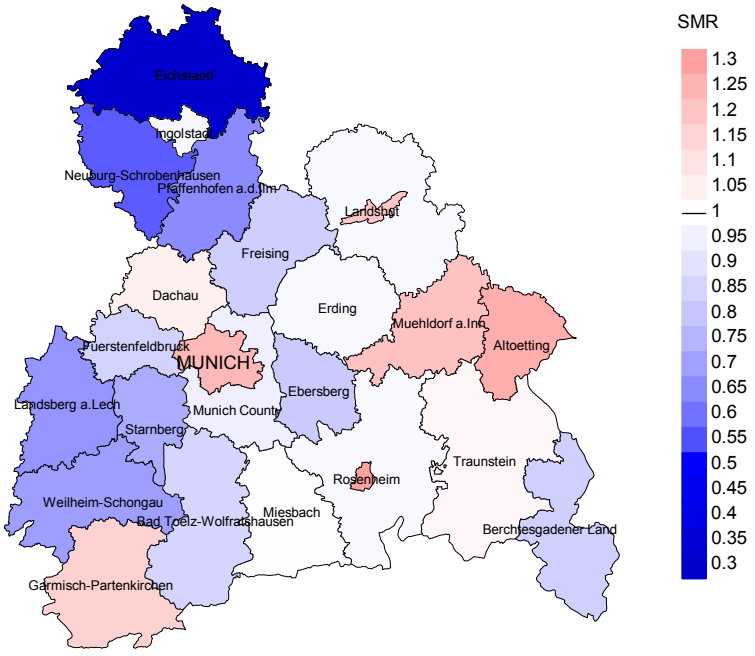


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,368, females N=1,467).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 33 women died from small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.50 and 1.26, 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 ratio of mortality and incidence (mortality-to-incidence ratio, **MIR**, **MI-Index**) is a statistical index 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 MIR. 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 (FRG) 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 of mortality to incidence, MIR
FRG	Federal Republic of Germany

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