Munich Cancer Registry

- Survival
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- *Deutsch*

ICD-10 C34: Small cell LC

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	6,356
Diseases	6,360
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
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Marchioninistr. 15
Munich, 81377
Germany

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

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, December 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	2.7	95.8	97.6
1999	166	10.8	2.7	98.2	99.4
2000	152	11.3	2.7	96.7	99.3
2001	175	10.7	2.6	95.4	98.9
2002	273	11.1	2.6	95.2	97.8 #
2003	267	12.1	2.5	97.8	99.6
2004	276	12.3	2.5	98.2	98.9
2005	291	13.1	2.5	97.9	99.3
2006	277	13.3	2.4	94.9	97.5
2007	345	13.2	2.5	95.9	99.1 #
2008	337	13.3	2.5	95.0	99.7
2009	363	13.5	2.4	95.3	98.9
2010	361	13.7	2.4	96.4	99.7
2011	378	14.2	2.3	96.0	99.5
2012	331	14.3	2.2	94.3	99.7
2013	358	14.8	2.1	93.6	99.4
2014	343	15.4	2.0	92.7	98.3
2015	343	15.7	1.7	91.0	99.4
2016	327	15.8	1.4	89.6	100.0
2017	274	16.0	0.9	87.6	99.6
2018	215	16.5	0.7	77.2	100.0
2019	179	16.7	0.0	75.4	100.0
2020	161	16.9	0.0	59.6	100.0 ##
1998-2020	6360	16.9	2.7	92.7	99.2

6,360 cases diagnosed 1998-2020 are related to a total of 6,356 patients. Currently, in 1,272 (20.0 %) of these 6,356 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,029 / 192 / 51 (16.2 % / 3.0 % / 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 2018, a subgroup of 215 cases has been diagnosed, of which 16.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.7 % 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	95.3	97.2
1999	115	69.3	10.8	2.8	97.4	99.1
2000	105	69.1	11.3	2.8	99.0	99.0
2001	119	68.0	11.0	2.8	93.3	98.3
2002	190	69.6	11.6	2.7	94.2	97.4 #
2003	172	64.4	13.0	2.7	97.1	100.0
2004	174	63.0	12.8	2.7	99.4	100.0
2005	199	68.4	13.5	2.8	98.0	99.5
2006	176	63.5	13.6	2.8	94.9	97.2
2007	215	62.3	13.5	2.9	95.8	99.1 #
2008	215	63.8	13.4	2.9	95.3	100.0
2009	231	63.6	13.7	2.7	96.1	98.3
2010	235	65.1	13.8	2.6	97.0	99.6
2011	235	62.2	14.3	2.4	97.4	100.0
2012	193	58.3	14.3	2.2	95.3	100.0
2013	218	60.9	14.9	2.1	95.9	100.0
2014	212	61.8	15.5	2.3	93.9	97.6
2015	197	57.4	15.7	2.0	90.9	99.0
2016	205	62.7	15.7	1.6	90.7	100.0
2017	146	53.3	16.0	0.7	87.7	99.3
2018	127	59.1	16.6	0.7	78.7	100.0
2019	93	52.0	16.8	0.0	81.7	100.0
2020	81	50.3	17.0	0.0	54.3	100.0 ##
1998-2020	3960	62.3	17.0	2.8	93.6	99.2

3,960 cases diagnosed 1998-2020 are related to a total of 3,957 patients. Currently, in 804 (20.3 %) of these 3,957 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 647 / 126 / 31 (16.4 % / 3.2 % / 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 2018, a subgroup of 127 cases has been diagnosed, of which 16.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.7 % 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	2.4	96.7	98.4
1999	51	30.7	10.7	2.4	100.0	100.0
2000	47	30.9	11.3	2.4	91.5	100.0
2001	56	32.0	10.2	2.3	100.0	100.0
2002	83	30.4	10.1	2.3	97.6	98.8 #
2003	95	35.6	10.2	2.3	98.9	98.9
2004	102	37.0	11.1	2.1	96.1	97.1
2005	92	31.6	12.3	2.1	97.8	98.9
2006	101	36.5	12.5	1.9	95.0	98.0
2007	130	37.7	12.7	1.9	96.2	99.2 #
2008	122	36.2	13.1	1.9	94.3	99.2
2009	132	36.4	13.1	2.0	93.9	100.0
2010	126	34.9	13.6	2.1	95.2	100.0
2011	143	37.8	14.0	2.0	93.7	98.6
2012	138	41.7	14.3	2.1	92.8	99.3
2013	140	39.1	14.7	2.1	90.0	98.6
2014	131	38.2	15.1	1.6	90.8	99.2
2015	146	42.6	15.7	1.2	91.1	100.0
2016	122	37.3	15.9	1.2	87.7	100.0
2017	128	46.7	16.0	1.1	87.5	100.0
2018	88	40.9	16.3	0.8	75.0	100.0
2019	86	48.0	16.5	0.0	68.6	100.0
2020	80	49.7	16.8	0.0	65.0	100.0 ##
1998-2020	2400	37.7	16.8	2.4	91.2	99.3

2,400 cases diagnosed 1998-2020 are related to a total of 2,399 patients. Currently, in 468 (19.5 %) of these 2,399 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 382 / 66 / 20 (15.9 % / 2.8 % / 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 2018, a subgroup of 88 cases has been diagnosed, of which 16.3 % 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 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 4.94 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	131	9.1	5.4	4.5	2.9	6.6	4.0	8.2	4.5
2015	197	146	8.3	6.0	4.2	2.9	6.1	4.1	7.5	4.9
2016	205	122	8.5	5.0	4.5	2.4	6.4	3.5	7.8	4.1
2017	146	128	6.1	5.2	3.0	2.5	4.4	3.6	5.4	4.2
2018	127	88	5.2	3.5	2.4	1.7	3.6	2.5	4.6	2.9
2019	93	86	3.8	3.5	1.8	1.6	2.7	2.3	3.4	2.8
2020	81	80	3.3	3.2	1.7	1.6	2.4	2.2	3.0	2.6
1998–2020	3960	2400	8.5	5.0	4.5	2.6	6.5	3.6	8.0	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	343	67.6	10.0	31.2	94.5	54.0	60.9	68.0	74.7	80.7
2015	343	68.1	9.9	36.3	94.5	53.4	61.4	68.5	75.3	80.3
2016	327	67.9	9.6	37.9	95.4	55.3	61.2	68.0	75.0	79.8
2017	274	68.2	9.8	45.6	89.6	55.5	60.3	68.7	76.1	81.1
2018	215	68.6	10.0	41.4	87.2	55.0	61.1	69.1	77.4	80.1
2019	179	68.1	9.3	41.9	85.4	54.9	60.6	69.5	76.2	79.1
2020	161	68.9	8.7	47.1	91.4	57.8	63.4	69.1	75.9	80.3
1998–2020	6360	66.9	9.9	30.9	97.5	53.8	60.2	67.3	74.1	79.5

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	205	68.3	9.7	41.3	95.4	55.3	61.3	68.1	75.0	80.4
2017	146	68.3	10.3	45.6	89.6	54.2	60.0	68.8	76.5	82.3
2018	127	70.0	9.8	41.4	87.2	57.4	62.2	70.8	77.7	81.8
2019	93	68.2	9.9	41.9	85.4	54.1	61.2	69.5	76.4	79.1
2020	81	69.6	8.1	47.1	82.8	58.2	64.9	70.7	74.1	80.3
1998-2020	3960	67.2	9.9	30.9	95.4	53.8	60.5	67.7	74.5	79.6

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	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	131	65.4	10.7	31.2	88.5	51.4	56.5	65.8	73.0	79.4
2015	146	68.2	9.3	45.3	94.5	54.9	63.1	68.5	74.1	79.9
2016	122	67.4	9.5	37.9	89.2	55.3	60.9	67.5	75.9	79.2
2017	128	68.1	9.2	45.7	89.3	56.3	61.2	68.6	75.5	80.1
2018	88	66.6	9.9	43.9	85.6	53.0	58.9	67.1	75.3	78.6
2019	86	68.1	8.7	47.2	82.1	55.8	60.6	69.5	75.7	78.8
2020	80	68.2	9.2	48.7	91.4	57.0	62.7	67.1	75.9	79.8
1998–2020	2400	66.5	9.8	31.2	97.5	53.7	59.7	66.4	73.6	79.2

Table 4

Age distribution by 5-year age group and sex for period 2007-2020

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	0.2
40-44	32	0.7	0.9	23	0.9	1.0	9	0.5	0.8
45-49	132	3.1	4.0	79	3.0	4.1	53	3.1	3.9
50-54	324	7.5	11.5	186	7.1	11.2	138	8.1	11.9
55-59	469	10.9	22.4	274	10.5	21.7	195	11.4	23.3
60-64	677	15.7	38.1	388	14.9	36.7	289	16.9	40.2
65-69	859	19.9	58.0	499	19.2	55.8	360	21.0	61.2
70-74	776	18.0	75.9	483	18.6	74.4	293	17.1	78.3
75-79	622	14.4	90.4	385	14.8	89.2	237	13.8	92.2
80-84	308	7.1	97.5	213	8.2	97.3	95	5.5	97.7
85+	108	2.5	100.0	69	2.7	100.0	39	2.3	100.0
All ages	4315	100.0		2603	100.0		1712	100.0	

Table 5

Age-specific incidence and proportion of all cancers
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34	1	1	0.0	0.0	0.1	0.0
35-39	3	3	0.1	0.1	0.2	0.1
40-44	23	9	0.9	0.4	0.8	0.1
45-49	79	53	2.9	2.0	1.6	0.6
50-54	186	138	7.3	5.5	2.2	1.1
55-59	274	195	12.9	9.0	2.2	1.5
60-64	387	288	21.9	15.2	2.2	1.8
65-69	499	360	30.6	19.9	2.1	1.9
70-74	482	293	32.1	17.0	1.8	1.5
75-79	385	237	31.8	15.8	1.6	1.2
80-84	213	95	29.4	8.9	1.4	0.6
85+	69	39	14.8	3.7	0.7	0.2
All ages	2601	1711			1.7	1.1
Incidence						
Raw			8.0	5.1		
WS			4.1	2.6		
ES			5.9	3.6		
BRD-S			7.3	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).

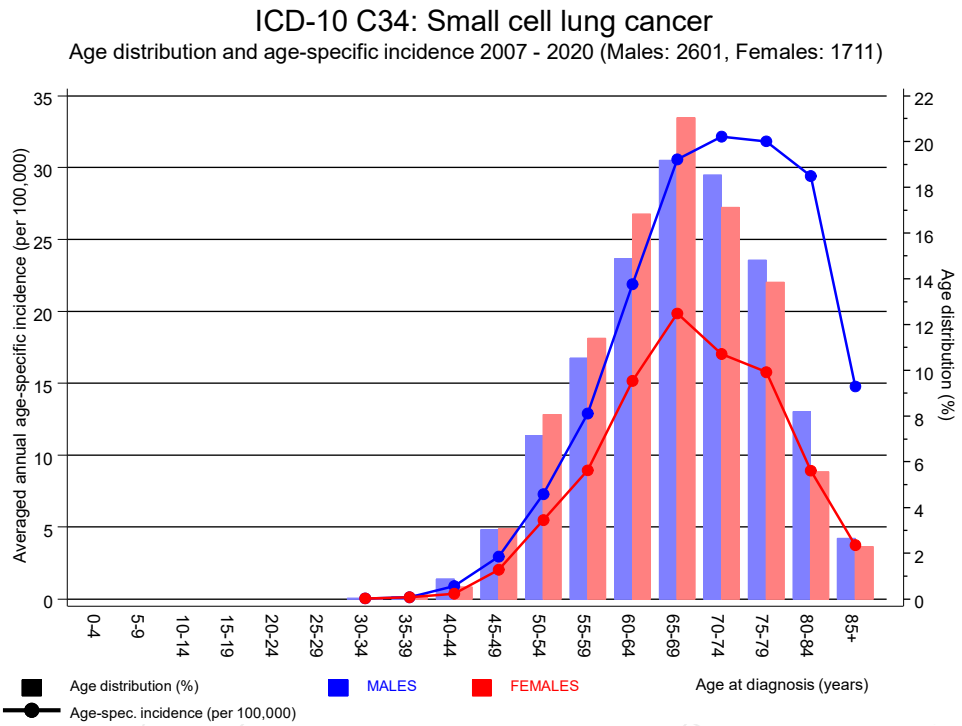

Figure 6. Age distribution (males: mean=67.9 yrs, median=68.5 yrs; females: mean=67.0 yrs, median=67.4 yrs) and age-specific incidence.

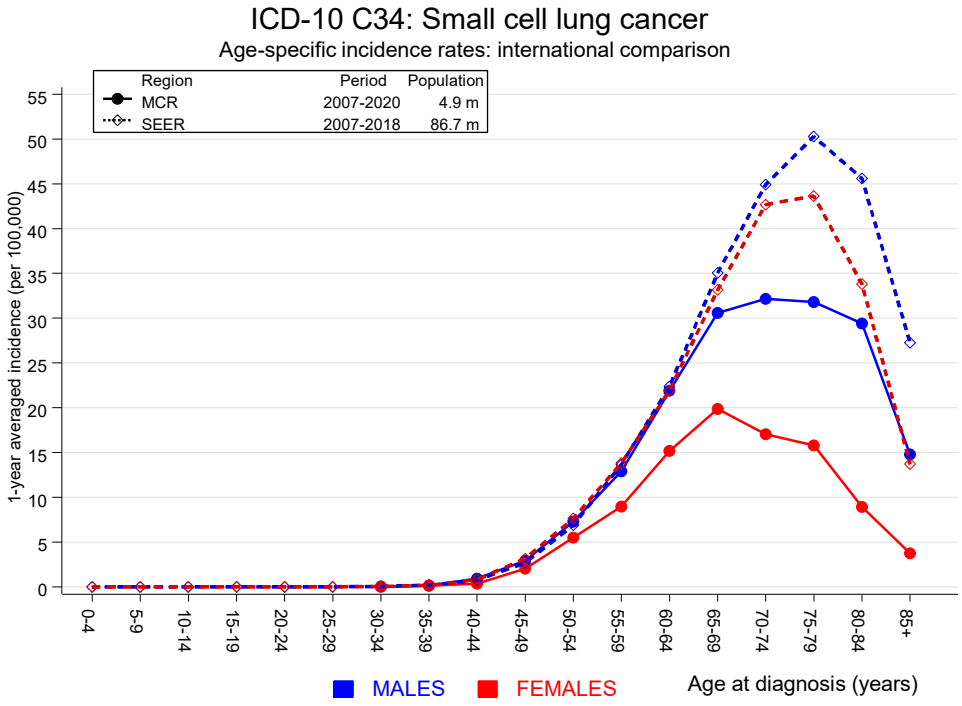

Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 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 1998–2020

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	3	0.6	5.2	1.1	15.3	#	6.0	33.3
C09–C10	Oropharynx	8	0.7	11.0	4.7	21.6	#	18.1	
C12–C13	Hypopharynx	1	0.4	2.5	0.1	14.2		1.5	
C15	Oesophagus	7	1.3	5.6	2.2	11.5	#	14.3	57.1
C16	Stomach	3	2.2	1.4	0.3	4.0		2.0	
C17	Small intestine	1	0.3	2.9	0.1	16.1		1.6	
C18	Colon	14	5.5	2.6	1.4	4.3	#	21.2	28.6
C19–C20	Rectum	8	3.3	2.4	1.1	4.8	#	11.7	12.5
C22	Liver	6	1.7	3.4	1.3	7.5	#	10.6	50.0
C25	Pancreas	15	2.2	6.9	3.9	11.4	#	31.9	53.3
C26	GI cancer	1	0.0	20.4	0.5	113.5		2.4	
C32	Larynx	5	0.7	7.5	2.4	17.5	#	10.8	20.0
C33–C34	Lung	38	7.3	5.2	3.7	7.2	#	76.5	7.9
C37	Thymus	1	0.0	28.0	0.7	156.1		2.4	
C38,C45	Mesothelioma	1	0.4	2.6	0.1	14.5		1.5	
C43	Malign. melanoma	2	2.7	0.8	0.1	2.7		−1.6	50.0
C48	Peritoneal	1	0.0	20.2	0.5	112.3		2.4	
C50	Breast	1	0.2	6.2	0.2	34.6		2.1	100.0
C61	Prostate	23	17.6	1.3	0.8	2.0		13.3	13.0
C64	Kidney	7	2.2	3.3	1.3	6.7	#	12.1	28.6
C65	Renal pelvis	1	0.2	4.0	0.1	22.5		1.9	
C67	Bladder	5	2.5	2.0	0.7	4.7		6.3	40.0
C70–C72	CNS cancer	4	0.8	5.1	1.4	13.0	#	8.0	100.0
C76–C79	CUP	1	0.9	1.1	0.0	5.9		0.1	
C82–C85	NHL	7	2.4	2.9	1.2	6.0	#	11.5	14.3
C90	Mult. myeloma	1	0.7	1.3	0.0	7.5		0.6	100.0
C91–C96	Leukaemia	3	0.8	3.7	0.8	10.8		5.4	66.7
Not observed		0	2.8	0.0	0.0	1.3		−7.1	
All further malignancies		168	60.5	2.8	2.4	3.2	#	267.5	25.0

Patients	3921
Median age at next malignancy (years)	70.6
Person-years	4019
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 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	1	0.2	5.2	0.1	29.2		2.7	
C07–C08	Salivary gland	1	0.0	24.3	0.6	135.4		3.2	
C09–C10	Oropharynx	1	0.2	6.0	0.2	33.7		2.8	100.0
C15	Oesophagus	2	0.2	9.2	1.1	33.2	#	6.0	
C16	Stomach	1	0.8	1.3	0.0	7.1		0.7	100.0
C17	Small intestine	2	0.2	11.3	1.4	41.0	#	6.1	50.0
C18	Colon	6	2.3	2.6	0.9	5.6		12.4	33.3
C19–C20	Rectum	2	1.1	1.9	0.2	6.8		3.2	50.0
C25	Pancreas	4	1.1	3.5	1.0	9.0		9.6	75.0
C33–C34	Lung	18	2.5	7.1	4.2	11.3	#	52.2	5.6
C46,C49	Soft tissue	1	0.2	6.3	0.2	34.9		2.8	
C50	Breast	15	10.1	1.5	0.8	2.4		16.5	40.0
C51	Vulva	1	0.3	3.8	0.1	21.4		2.5	100.0
C53	Cervix uteri	2	0.4	4.8	0.6	17.5		5.3	50.0
C54	Corpus uteri	1	1.8	0.6	0.0	3.1		−2.7	100.0
C56	Ovary	2	1.2	1.7	0.2	6.0		2.7	
C64	Kidney	1	0.7	1.5	0.0	8.5		1.2	
C67	Bladder	4	0.4	9.0	2.5	23.1	#	12.0	25.0
C70–C72	CNS cancer	2	0.4	5.3	0.6	19.0		5.5	
C73	Thyroid	1	0.6	1.7	0.0	9.6		1.4	
C76–C79	CUP	1	0.4	2.5	0.1	13.7		2.0	
C82–C85	NHL	3	1.1	2.8	0.6	8.3		6.6	33.3
C91–C96	Leukaemia	2	0.4	5.5	0.7	19.9		5.5	
Not observed		0	3.2	0.0	0.0	1.2		−10.7	
All further malignancies		74	29.6	2.5	2.0	3.1	#	149.6	28.4

Patients	2374
Median age at next malignancy (years)	66.5
Person-years	2967
Mean observation time (years)	1.2
Median observation time (years)	0.8

The occurrence of further specified malignancy is statistically significant.

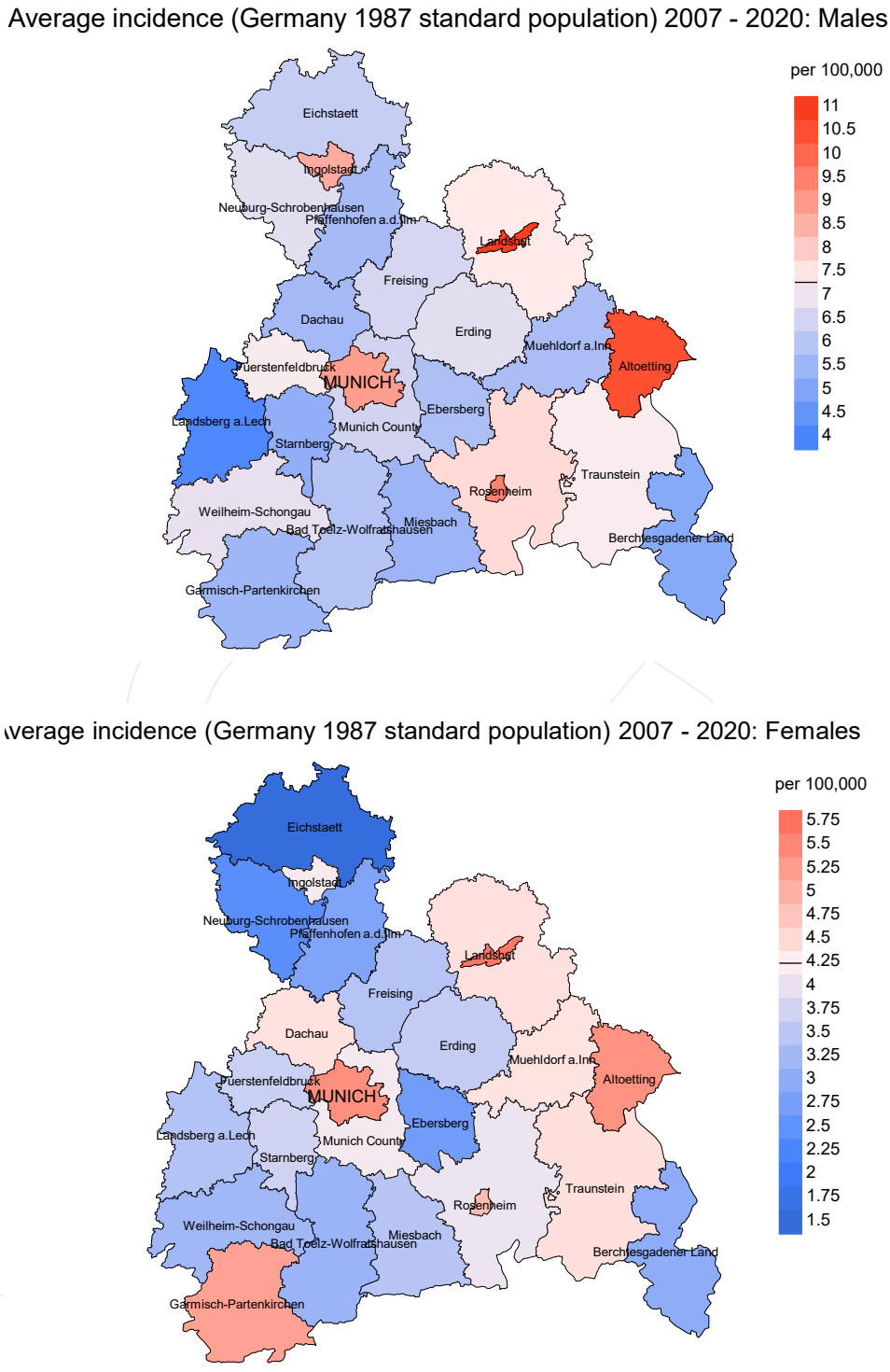

Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.3/100,000 WS N=2,601, females 4.3/100,000 WS N=1,711).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 30 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 4.3/100,000.

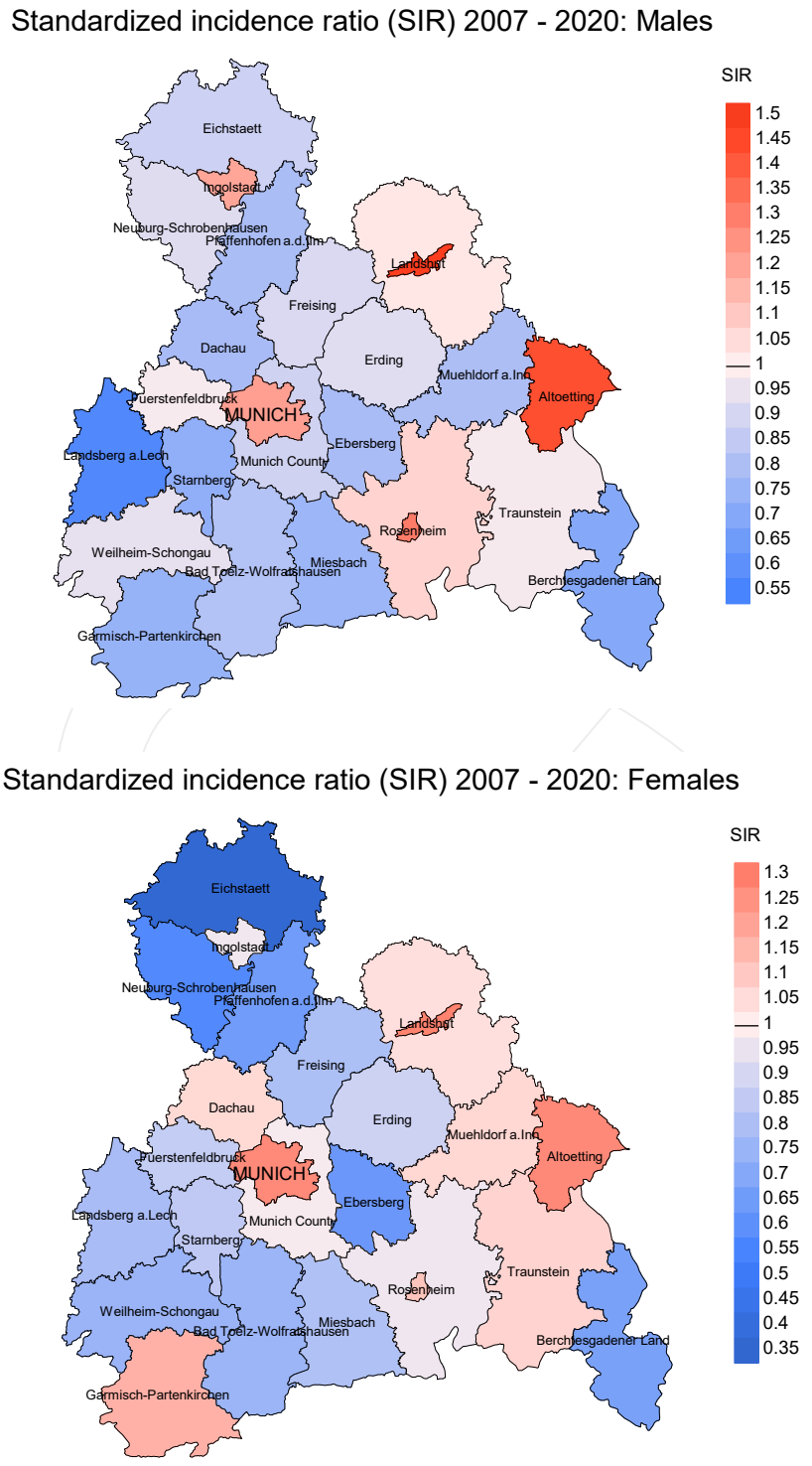

Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,601, females N=1,711).

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 2020 a total of 30 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 0.38 and 1.00, 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 4.94 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	161	95.8	91.9
1999	166	99.4	163	98.2	95.1
2000	152	99.3	147	96.7	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	97.7
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	99.1	331	95.9	98.5
2008	337	99.7	320	95.0	97.5
2009	363	98.9	346	95.3	97.7
2010	361	99.7	348	96.4	99.4
2011	378	99.5	363	96.0	99.4
2012	331	99.7	312	94.3	98.7
2013	358	99.4	335	93.6	97.6
2014	343	98.3	318	92.7	96.9
2015	343	99.4	312	91.0	97.8
2016	327	100.0	293	89.6	90.8
2017	274	99.6	240	87.6	81.3
2018	215	100.0	166	77.2	48.8
2019	179	100.0	135	75.4	81.5
2020	161	100.0	96	59.6	95.8
1998–2020	6360	99.2	5893	92.7	94.6

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 4.94 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	343	325	116	33.8
2015	343	348	135	39.4
2016	327	328	116	35.5
2017	274	279	103	37.6
2018	215	233	71	33.0
2019	179	186	53	29.6
2020	161	154	55	34.2
1998–2020	6360	6059	2392	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 4.94 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	98.5	1.5	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	325	96.6	3.4	98.1
2015	348	98.6	1.4	98.6
2016	328	96.0	4.0	97.2
2017	279	98.2	1.8	99.3
2018	233	91.4	8.6	94.8
2019	186	84.4	15.6	100.0
2020	154	94.2	5.8	96.0
1998-2020	6059	96.8	3.2	98.7

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	68.5	69.1	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	200	70.4	70.3	77.0	70.4
2015	221	70.8	70.8	67.8	70.8
2016	184	70.3	70.2	75.7	70.3
2017	169	70.4	70.2	74.3	70.3
2018	132	71.8	71.8	70.5	71.9
2019	101	71.6	71.5	75.5	71.9
2020	77	72.6	72.7	71.1	72.6
1998–2020	3830	69.0	68.9	71.7	69.0

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	125	70.1	70.2	66.3	69.7
2015	127	70.3	70.3	72.2	70.3
2016	144	69.0	68.9	72.0	68.8
2017	110	69.7	69.7	66.9	70.1
2018	101	69.7	69.4	74.2	69.4
2019	85	70.0	69.7	72.8	69.7
2020	77	69.1	68.9	84.0	69.1
1998–2020	2229	68.0	67.8	73.3	67.8

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	177	9.3	0.89	5.0	0.86	7.4	0.87	9.4	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	176	7.3	0.86	3.6	0.81	5.3	0.83	6.7	0.86
2017	166	6.9	1.14	3.3	1.12	4.9	1.12	6.2	1.15
2018	120	4.9	0.94	2.3	0.94	3.4	0.95	4.4	0.94
2019	85	3.5	0.91	1.7	0.91	2.5	0.90	3.2	0.93
2020	70	2.9	0.86	1.3	0.80	2.0	0.82	2.6	0.86
1998-2020	3709	8.0	0.94	4.1	0.91	6.0	0.92	7.6	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	120	5.0	0.92	2.3	0.79	3.3	0.82	4.0	0.88
2015	123	5.1	0.85	2.3	0.82	3.3	0.82	4.1	0.84
2016	139	5.7	1.14	2.6	1.08	3.8	1.10	4.6	1.12
2017	108	4.4	0.84	2.0	0.80	2.9	0.81	3.5	0.82
2018	93	3.7	1.06	1.7	0.98	2.4	0.99	3.0	1.03
2019	72	2.9	0.84	1.3	0.82	1.9	0.82	2.3	0.83
2020	75	3.0	0.94	1.4	0.90	2.0	0.91	2.4	0.93
1998-2020	2157	4.5	0.90	2.2	0.86	3.1	0.87	3.7	0.89

Table 12

Age distribution of age at death (cancer-related) for period 2007-2020
(**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	0.6	16	0.6	0.7	5	0.3	0.5
45-49	104	2.6	3.2	71	2.9	3.5	33	2.1	2.6
50-54	252	6.2	9.4	146	5.9	9.4	106	6.7	9.3
55-59	392	9.6	19.0	226	9.1	18.5	166	10.5	19.7
60-64	577	14.2	33.2	338	13.6	32.1	239	15.1	34.8
65-69	805	19.8	52.9	473	19.0	51.1	332	20.9	55.8
70-74	800	19.6	72.6	495	19.9	71.0	305	19.2	75.0
75-79	632	15.5	88.1	400	16.1	87.1	232	14.6	89.7
80-84	356	8.7	96.8	239	9.6	96.7	117	7.4	97.0
85+	129	3.2	100.0	82	3.3	100.0	47	3.0	100.0
All ages	4072	100.0		2487	100.0		1585	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**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	0.7
40-44	16	5	0.6	0.70	0.2	0.56	2.6	0.6
45-49	71	33	2.6	0.90	1.3	0.62	5.0	2.0
50-54	146	106	5.7	0.78	4.2	0.77	5.5	4.0
55-59	226	166	10.6	0.82	7.6	0.85	5.1	4.3
60-64	338	239	19.1	0.87	12.6	0.83	5.3	4.8
65-69	473	332	29.0	0.95	18.3	0.92	5.1	4.8
70-74	495	305	33.0	1.03	17.7	1.04	4.2	3.5
75-79	400	232	33.1	1.04	15.5	0.98	3.2	2.4
80-84	239	117	33.0	1.12	11.0	1.23	2.3	1.2
85+	82	47	17.6	1.19	4.5	1.21	0.9	0.4
All ages	2487	1585					3.6	2.6
Mortality								
Raw			7.6	0.96	4.7	0.93		
WS			3.8	0.92	2.3	0.88		
ES			5.5	0.94	3.2	0.89		
BRD-S			7.0	0.96	3.9	0.91		
PYLL-70								
per 100,000			39.0		26.6			
ES			32.9		21.6			
AYLL-70			8.8		8.5			

Table 14a

Further malignancies in deaths in period 1998-2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	2	0.2	2	100.0				
C03-C06	Oral cavity	29	3.5	25	86.2	3	10.3	1	3.4
C07-C08	Salivary gland	2	0.2	2	100.0				
C09-C10	Oropharynx	34	4.1	26	76.5	3	8.8	5	14.7
C12-C13	Hypopharynx	11	1.3	7	63.6	2	18.2	2	18.2
C15	Oesophagus	12	1.5	4	33.3	2	16.7	6	50.0
C16	Stomach	17	2.1	12	70.6	2	11.8	3	17.6
C17	Small intestine	4	0.5	3	75.0			1	25.0
C18	Colon	50	6.1	33	66.0	7	14.0	10	20.0
C19-C20	Rectum	34	4.1	22	64.7	9	26.5	3	8.8
C22	Liver	10	1.2	3	30.0	2	20.0	5	50.0
C23-C24	Bile	2	0.2	1	50.0	1	50.0		
C25	Pancreas	15	1.8			2	13.3	13	86.7
C30-C31	Sinuses	4	0.5	3	75.0			1	25.0
C32	Larynx	43	5.2	35	81.4	6	14.0	2	4.7
C33-C34	Lung	86	10.4			28	32.6	58	67.4
C43	Malign. melanoma	18	2.2	16	88.9	1	5.6	1	5.6
C44	Skin others	73	8.8	58	79.5	3	4.1	12	16.4
C46,C49	Soft tissue	2	0.2	2	100.0				
C50	Breast	4	0.5	2	50.0	1	25.0	1	25.0
C61	Prostate	182	22.0	152	83.5	12	6.6	18	9.9
C62	Testis	8	1.0	7	87.5			1	12.5
C64	Kidney	32	3.9	25	78.1	3	9.4	4	12.5
C65	Renal pelvis	5	0.6	4	80.0			1	20.0
C67	Bladder	50	6.1	40	80.0	4	8.0	6	12.0
C69	Eye carcinoma	2	0.2	2	100.0				
C69	Eye melanoma	2	0.2	2	100.0				
C70-C72	CNS cancer	7	0.8	2	28.6	1	14.3	4	57.1
C73	Thyroid	2	0.2	2	100.0				
C76-C79	CUP	9	1.1	7	77.8	1	11.1	1	11.1
C81	Hodgkin lymphoma	10	1.2	8	80.0	2	20.0		
C82-C85	NHL	45	5.4	33	73.3	5	11.1	7	15.6
C90	Mult. myeloma	6	0.7	4	66.7			2	33.3
C91-C96	Leukaemia	6	0.7	2	33.3			4	66.7
Others, specified		8	1.0	5	62.5			3	37.5
All further malignancies		826	100.0	551	66.7	100	12.1	175	21.2

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 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	11	2.4	9	81.8	1	9.1	1	9.1
C07–C08	Salivary gland	1	0.2					1	100.0
C09–C10	Oropharynx	5	1.1	4	80.0			1	20.0
C15	Oesophagus	6	1.3	2	33.3	1	16.7	3	50.0
C16	Stomach	6	1.3	4	66.7	2	33.3		
C17	Small intestine	2	0.4	1	50.0			1	50.0
C18	Colon	23	5.1	16	69.6	1	4.3	6	26.1
C19–C20	Rectum	10	2.2	9	90.0			1	10.0
C21	Anus/canal	4	0.9	3	75.0	1	25.0		
C22	Liver	2	0.4	2	100.0				
C23–C24	Bile	2	0.4	2	100.0				
C25	Pancreas	7	1.5	2	28.6	2	28.6	3	42.9
C26	GI cancer	1	0.2	1	100.0				
C32	Larynx	5	1.1	5	100.0				
C33–C34	Lung	33	7.3			4	12.1	29	87.9
C43	Malign. melanoma	6	1.3	6	100.0				
C44	Skin others	25	5.5	22	88.0	1	4.0	2	8.0
C46,C49	Soft tissue	2	0.4	1	50.0	1	50.0		
C50	Breast	156	34.5	141	90.4	6	3.8	9	5.8
C51	Vulva	5	1.1	4	80.0			1	20.0
C52	Vagina	1	0.2	1	100.0				
C53	Cervix uteri	31	6.9	28	90.3	1	3.2	2	6.5
C54	Corpus uteri	19	4.2	18	94.7			1	5.3
C55,C57	Fem. genitals un	4	0.9	4	100.0				
C56	Ovary	9	2.0	8	88.9			1	11.1
C64	Kidney	10	2.2	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	17	3.8	14	82.4	2	11.8	1	5.9
C70–C72	CNS cancer	2	0.4					2	100.0
C73	Thyroid	10	2.2	10	100.0				
C76–C79	CUP	5	1.1	4	80.0			1	20.0
C81	Hodgkin lymphoma	3	0.7	3	100.0				
C82–C85	NHL	20	4.4	16	80.0	2	10.0	2	10.0
C90	Mult. myeloma	1	0.2	1	100.0				
C91–C96	Leukaemia	6	1.3	3	50.0	1	16.7	2	33.3
All further malignancies		452	100.0	355	78.5	27	6.0	70	15.5

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 2007-2020
(**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	0.8
40-44	15	4	0.6	0.71	0.2	0.50	2.7	0.5
45-49	67	27	2.5	0.89	1.0	0.60	5.2	1.9
50-54	141	91	5.5	0.81	3.6	0.78	6.0	4.1
55-59	202	137	9.5	0.84	6.3	0.84	5.2	4.3
60-64	296	197	16.7	0.89	10.4	0.82	5.5	4.8
65-69	389	275	23.8	0.94	15.2	0.95	5.3	5.0
70-74	382	237	25.5	1.06	13.8	1.02	4.2	3.5
75-79	284	180	23.5	1.07	12.0	1.02	3.1	2.4
80-84	173	89	23.9	1.14	8.4	1.20	2.3	1.2
85+	53	34	11.3	1.26	3.3	1.17	0.8	0.4
All ages	2003	1274					3.7	2.6
Mortality								
Raw			6.2	0.96	3.8	0.92		
WS			3.2	0.93	1.8	0.88		
ES			4.6	0.94	2.6	0.89		
BRD-S			5.6	0.96	3.1	0.91		
PYLL-70								
per 100,000			35.4		22.2			
ES			29.8		18.1			
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 2007-2020
(**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	0.8
40-44	15	4	0.6	0.71	0.2	0.57	2.7	0.5
45-49	65	26	2.4	0.89	1.0	0.58	5.1	1.8
50-54	137	90	5.4	0.81	3.6	0.78	5.9	4.1
55-59	199	133	9.4	0.84	6.1	0.84	5.2	4.2
60-64	285	193	16.1	0.89	10.2	0.82	5.4	4.8
65-69	372	271	22.8	0.94	14.9	0.96	5.2	5.0
70-74	369	229	24.6	1.06	13.3	1.01	4.2	3.5
75-79	268	176	22.1	1.03	11.7	1.01	3.1	2.4
80-84	166	87	22.9	1.10	8.2	1.19	2.4	1.3
85+	49	34	10.5	1.17	3.3	1.17	0.8	0.4
All ages	1926	1246					3.7	2.6
Mortality								
Raw			5.9	0.95	3.7	0.92		
WS			3.0	0.93	1.8	0.88		
ES			4.4	0.94	2.6	0.89		
BRD-S			5.4	0.96	3.1	0.91		
PYLL-70								
per 100,000			34.4		21.8			
ES			29.0		17.7			
AYLL-70			9.2		8.5			

* See corresponding tables with multiple malignancies.

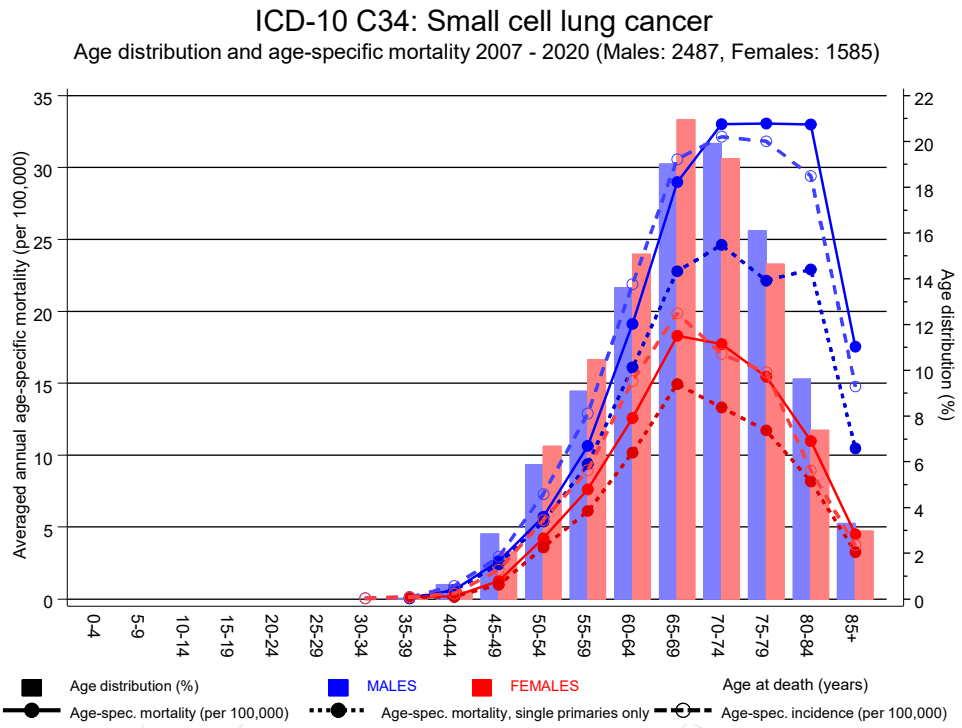

Figure 17. Distribution of age at death (bars; males: mean=67.9 yrs, median=68.6 yrs; females: mean=67.0 yrs, median=67.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

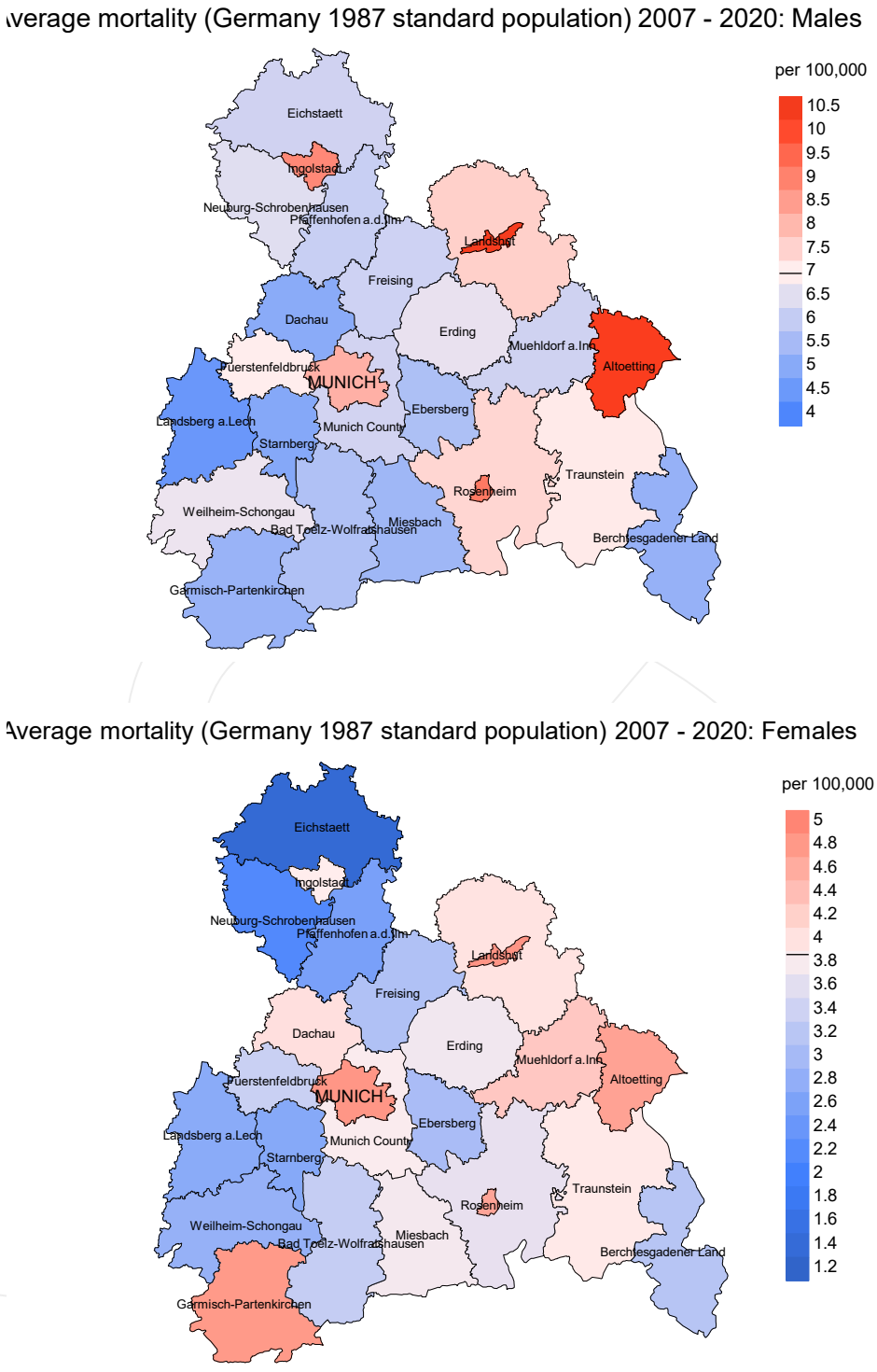

Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.0/100,000 WS N=2,487, females 3.9/100,000 WS N=1,585).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 34 women died from small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.9 and 4.7/100,000.

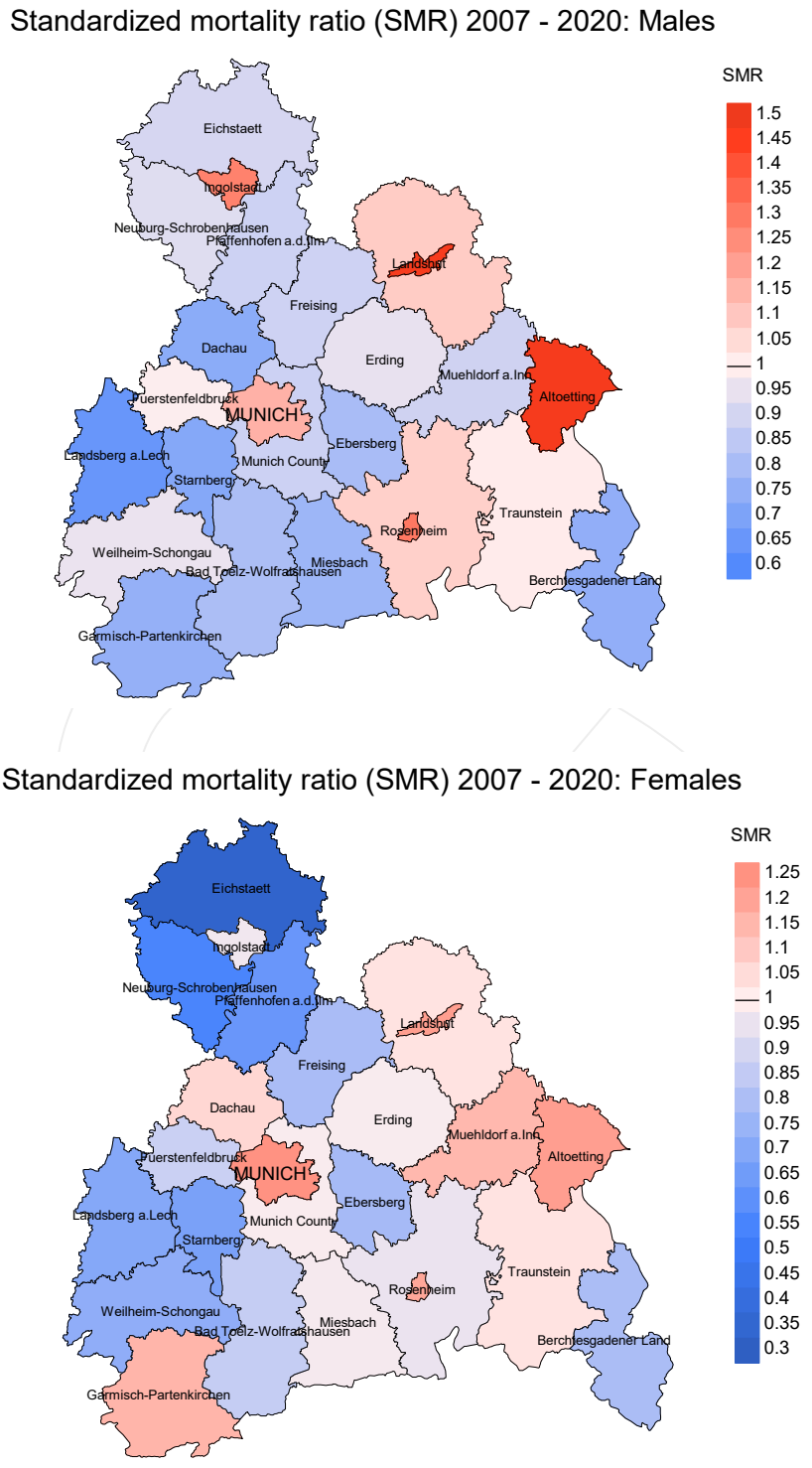

Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,487, females N=1,585).

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 2020 a total of 34 women died from small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.78. Though, the value of this parameter may vary with an underlying probability of 99% between 0.48 and 1.20, 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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