

# Munich Cancer Registry



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## ICD-10 C34: Non-small cell LC

### Incidence and Mortality

Year of diagnosis	1998-2019
Patients	27,687
Diseases	27,994
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m





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

[https://www.tumorregister-muenchen.de/en/facts/base/bC34N\\_E-ICD-10-C34-Non-small-cell-LC-incidence-and-mortality.pdf](https://www.tumorregister-muenchen.de/en/facts/base/bC34N_E-ICD-10-C34-Non-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<sup>#</sup>, with a total of 4.69 million inhabitants, account for the frequency of cancer diseases<sup>##</sup> 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<sup>###</sup> 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](mailto:tumor@ibe.med.uni-muenchen.de).

Munich Cancer Registry, January 2021

- <sup>#</sup> 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).
- <sup>##</sup> 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.
- <sup>###</sup> 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 morphology recorded and not coexisting any of ...

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

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

## INCIDENCE

Table 1

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	595	9.7	6.0	93.9	99.3
1999	664	11.4	6.0	92.0	98.5
2000	647	12.0	6.0	91.8	98.6
2001	664	12.5	5.9	93.1	98.6
2002	1028	13.4	5.8	93.2	98.7 #
2003	1115	14.0	5.7	91.7	98.8
2004	1101	14.7	5.5	91.5	98.6
2005	1119	15.3	5.5	91.4	98.0
2006	1176	15.9	5.4	89.6	98.1
2007	1444	16.3	5.3	88.2	97.3 #
2008	1549	17.0	5.3	87.3	99.1
2009	1544	17.4	5.1	87.0	98.4
2010	1598	17.8	4.8	87.4	98.7
2011	1634	18.2	4.5	85.7	99.1
2012	1671	18.7	4.3	84.0	99.1
2013	1653	19.0	4.1	82.6	98.7
2014	1676	19.2	3.8	77.4	98.0
2015	1696	19.5	3.3	75.1	97.6
2016	1597	19.8	3.0	69.9	99.9
2017	1481	20.1	2.7	61.7	99.7
2018	1301	20.4	2.2	45.2	99.8
2019	1041	20.6	2.5	32.2	81.6 ##
1998-2019	27994	20.6	6.0	80.4	98.1

27,994 cases diagnosed 1998-2019 are related to a total of 27,687 patients. Currently, in 7,093 (25.6 %) of these 27,687 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 5,471 / 1,236 / 386 (19.8 % / 4.5 % / 1.4 %) 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 1,481 cases has been diagnosed, of which 20.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.7 % 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	411	69.1	9.5	6.3	95.1	99.8
1999	460	69.3	10.3	6.3	92.4	98.5
2000	452	69.9	11.5	6.2	92.5	98.7
2001	470	70.8	12.3	6.1	94.0	98.3
2002	704	68.5	13.3	6.1	95.0	99.1 #
2003	735	65.9	13.9	5.9	92.8	99.0
2004	742	67.4	14.4	5.7	92.7	98.8
2005	751	67.1	15.2	5.7	92.3	98.0
2006	793	67.4	15.7	5.6	90.0	98.1
2007	954	66.1	16.3	5.6	89.5	97.2 #
2008	1012	65.3	17.0	5.5	89.6	99.1
2009	987	63.9	17.3	5.3	88.3	98.7
2010	1012	63.3	17.7	5.1	89.1	98.6
2011	1026	62.8	18.3	4.9	87.9	99.2
2012	1028	61.5	18.9	4.7	86.3	99.3
2013	1026	62.1	19.3	4.4	84.2	98.9
2014	984	58.7	19.6	4.0	79.4	98.6
2015	1040	61.3	19.8	3.5	77.3	98.1
2016	913	57.2	20.1	3.2	73.5	99.9
2017	869	58.7	20.3	2.6	66.5	99.8
2018	746	57.3	20.7	2.1	48.1	99.7
2019	573	55.0	21.0	2.0	34.9	82.7 ##
1998-2019	17688	63.2	21.0	6.3	83.1	98.3

17,688 cases diagnosed 1998-2019 are related to a total of 17,487 patients. Currently, in 4,578 (26.2 %) of these 17,487 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,530 / 795 / 253 (20.2 % / 4.5 % / 1.4 %) 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 869 cases has been diagnosed, of which 20.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.6 % 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	184	30.9	10.3	5.6	91.3	98.4
1999	204	30.7	13.9	5.6	91.2	98.5
2000	195	30.1	13.0	5.5	90.3	98.5
2001	194	29.2	13.1	5.5	90.7	99.5
2002	324	31.5	13.4	5.4	89.2	97.8 #
2003	380	34.1	14.4	5.3	89.7	98.4
2004	359	32.6	15.3	5.2	88.9	98.3
2005	368	32.9	15.5	5.2	89.7	98.1
2006	383	32.6	16.3	5.1	88.8	98.2
2007	490	33.9	16.3	5.0	85.7	97.6 #
2008	537	34.7	16.9	4.9	83.1	99.1
2009	557	36.1	17.5	4.7	84.6	98.0
2010	586	36.7	17.9	4.4	84.5	98.8
2011	608	37.2	18.0	4.0	82.1	99.0
2012	643	38.5	18.3	3.7	80.2	98.8
2013	627	37.9	18.3	3.6	80.1	98.2
2014	692	41.3	18.4	3.5	74.7	97.3
2015	656	38.7	19.0	3.1	71.5	97.0
2016	684	42.8	19.2	2.9	65.2	99.9
2017	612	41.3	19.6	2.8	54.9	99.7
2018	555	42.7	20.0	2.4	41.3	100.0
2019	468	45.0	20.1	3.1	28.8	80.1 ##
1998-2019	10306	36.8	20.1	5.6	75.7	97.7

10,306 cases diagnosed 1998-2019 are related to a total of 10,200 patients. Currently, in 2,515 (24.7 %) of these 10,200 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,941 / 441 / 133 (19.0 % / 4.3 % / 1.3 %) 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 612 cases has been diagnosed, of which 19.6 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 2.8 % 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 4.92 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	411	184	37.1	15.6	22.8	8.3	33.1	11.7	40.6	14.1
1999	460	204	41.1	17.2	25.4	9.0	36.5	12.9	44.6	15.8
2000	452	195	39.7	16.2	24.2	9.0	34.8	12.6	42.1	14.9
2001	470	194	40.6	15.9	24.9	8.8	35.6	12.3	43.0	14.7
2002	704	324	37.8	16.5	21.8	8.9	31.9	12.6	40.2	15.0
2003	735	380	39.2	19.3	22.5	10.4	32.9	14.6	40.3	17.3
2004	742	359	39.4	18.2	21.9	9.5	32.2	13.4	40.4	16.0
2005	751	368	39.6	18.5	21.9	10.0	31.7	14.1	39.5	16.3
2006	793	383	41.4	19.1	22.5	9.8	32.8	13.9	40.9	16.5
2007	954	490	43.1	21.2	22.7	11.1	33.4	15.7	43.2	18.7
2008	1012	537	45.5	23.1	23.8	12.1	34.9	17.1	44.2	20.1
2009	987	557	44.2	24.0	23.4	12.0	34.0	17.0	42.0	20.4
2010	1012	586	44.9	25.0	23.1	12.6	33.6	17.9	42.1	21.3
2011	1026	608	45.9	26.0	23.3	12.5	33.9	17.9	42.4	21.5
2012	1028	643	45.3	27.2	22.6	13.1	33.1	18.7	42.1	22.5
2013	1026	627	44.6	26.3	22.2	13.0	32.3	18.3	40.6	21.7
2014	984	692	42.2	28.7	20.2	13.8	29.8	19.6	38.0	23.6
2015	1040	656	43.7	27.0	21.5	12.8	31.5	18.2	39.7	22.0
2016	913	684	38.0	27.9	18.8	13.2	27.5	18.7	34.3	22.6
2017	869	612	36.0	24.8	17.6	11.6	25.7	16.5	32.3	20.1
2018	746	555	30.6	22.4	15.2	10.8	22.1	15.2	27.5	18.3
2019	573	468	23.5	18.9	10.9	8.8	16.3	12.5	20.9	15.1
1998-2019	17688	10306	40.1	22.5	21.0	11.2	30.6	15.8	38.2	19.0

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	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	595	65.2	10.4	28.1	91.7	51.7	57.6	65.5	73.3	78.0
1999	664	65.6	10.3	32.0	93.0	51.8	58.4	66.7	73.0	78.5
2000	647	64.9	10.7	15.8	88.6	51.1	57.9	65.3	72.7	78.4
2001	664	65.0	10.7	17.0	93.6	50.4	58.4	65.6	72.4	77.9
2002	1028	66.2	10.6	27.5	91.7	52.2	59.3	66.5	74.3	79.3
2003	1115	66.2	10.5	17.5	95.0	52.6	59.2	66.7	73.6	79.5
2004	1101	66.7	10.5	24.4	92.2	53.6	59.9	66.6	74.6	80.2
2005	1119	66.2	10.8	18.1	92.7	52.5	59.4	66.6	74.2	79.4
2006	1176	66.9	10.5	27.5	92.7	53.4	60.2	67.0	74.7	80.3
2007	1444	67.2	10.9	7.5	97.2	53.2	60.6	67.8	75.4	80.6
2008	1549	67.4	10.6	22.3	95.7	53.8	60.9	68.2	75.0	80.3
2009	1544	67.5	10.6	20.3	95.2	53.7	60.6	68.2	74.7	81.0
2010	1598	67.6	10.3	15.6	97.8	53.9	61.4	68.5	75.0	80.4
2011	1634	67.9	10.8	28.9	94.7	53.2	60.8	68.8	75.5	81.7
2012	1671	68.4	10.7	22.9	96.6	54.1	61.8	69.2	76.1	82.1
2013	1653	68.2	10.4	27.9	97.7	53.7	61.6	69.1	75.6	81.0
2014	1676	68.6	10.9	15.9	96.0	53.3	62.0	70.3	76.0	81.5
2015	1696	68.8	10.3	23.7	95.2	54.9	62.0	70.1	76.0	81.2
2016	1597	68.7	10.5	20.9	96.2	54.7	61.5	69.5	76.0	81.4
2017	1481	68.7	10.3	24.2	95.2	54.5	61.3	69.6	76.7	80.5
2018	1301	68.5	10.6	18.5	92.6	54.7	62.0	69.7	76.2	80.6
2019	1041	69.5	10.6	19.7	98.8	56.1	62.5	70.3	77.5	81.4
1998-2019	27994	67.6	10.6	7.5	98.8	53.5	60.7	68.4	75.4	80.6

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	411	64.9	9.8	28.1	91.7	52.5	57.8	64.8	72.2	77.1
1999	460	65.2	9.8	32.0	90.6	52.1	58.4	65.8	72.3	77.6
2000	452	64.9	9.9	28.1	88.6	52.2	58.5	64.9	71.9	78.0
2001	470	64.9	10.2	17.0	93.6	51.8	58.9	65.4	71.7	77.3
2002	704	66.5	10.0	34.2	91.7	52.7	60.3	66.5	74.0	79.3
2003	735	66.5	9.7	36.8	93.5	53.6	59.9	66.7	73.5	78.9
2004	742	67.1	10.0	37.2	92.2	54.4	60.6	67.0	74.5	80.0
2005	751	67.0	10.3	18.1	92.7	54.9	61.1	67.3	74.4	79.3
2006	793	67.2	9.9	28.7	92.1	54.0	61.1	67.2	74.5	79.5
2007	954	68.0	10.3	7.5	94.1	54.7	61.9	68.4	75.7	80.6
2008	1012	68.2	10.0	22.3	90.2	55.0	61.8	68.9	75.2	80.2
2009	987	67.8	10.0	30.8	93.1	55.2	61.0	68.2	74.6	80.5
2010	1012	68.1	10.0	15.6	93.2	54.6	61.8	69.2	75.0	80.2
2011	1026	67.9	10.4	28.9	94.3	53.4	61.4	69.2	75.3	81.3
2012	1028	68.9	10.6	22.9	96.6	55.1	62.9	69.7	76.3	82.2
2013	1026	68.8	9.8	27.9	92.5	55.4	62.1	69.9	75.9	80.7
2014	984	69.6	10.4	30.3	96.0	54.8	63.0	71.1	76.8	82.4
2015	1040	69.1	10.1	29.2	91.5	55.2	62.3	70.6	76.2	81.2
2016	913	69.1	10.0	25.5	94.6	55.4	61.9	70.2	75.8	81.3
2017	869	68.9	10.0	28.7	91.9	55.0	61.7	70.0	76.6	80.7
2018	746	69.3	10.0	24.7	92.6	56.3	62.9	70.0	76.4	81.0
2019	573	70.5	10.1	22.3	94.5	56.9	63.7	71.7	78.7	81.9
1998-2019	17688	68.0	10.2	7.5	96.6	54.5	61.3	68.7	75.3	80.4

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	184	66.0	11.5	35.8	89.6	50.3	57.1	66.8	75.3	79.9
1999	204	66.7	11.2	32.9	93.0	50.9	58.5	68.1	75.7	79.2
2000	195	64.8	12.3	15.8	87.6	49.2	56.0	66.7	74.2	78.7
2001	194	65.2	11.7	31.5	92.6	48.2	56.8	66.8	74.4	80.1
2002	324	65.4	11.7	27.5	89.7	50.7	57.5	66.9	75.1	79.2
2003	380	65.6	11.8	17.5	95.0	50.6	57.2	66.8	74.1	79.8
2004	359	65.8	11.4	24.4	92.1	50.8	58.0	65.5	75.3	80.6
2005	368	64.4	11.6	21.6	89.3	49.6	56.4	65.0	73.3	79.5
2006	383	66.3	11.7	27.5	92.7	51.6	59.0	66.0	75.3	81.9
2007	490	65.6	11.7	22.3	97.2	50.2	57.3	66.0	74.8	80.4
2008	537	66.0	11.4	29.4	95.7	51.7	58.6	66.2	74.3	80.5
2009	557	66.8	11.6	20.3	95.2	51.7	59.8	68.2	75.2	81.6
2010	586	66.9	10.8	33.2	97.8	52.7	60.2	67.3	75.0	80.8
2011	608	67.9	11.3	33.0	94.7	51.9	59.7	68.0	76.3	83.1
2012	643	67.8	10.8	33.3	91.8	53.0	60.0	68.5	75.8	81.6
2013	627	67.2	11.3	30.6	97.7	52.1	59.7	67.3	75.1	81.6
2014	692	67.3	11.5	15.9	95.0	51.0	60.3	69.2	75.5	80.7
2015	656	68.3	10.5	23.7	95.2	54.4	61.6	69.2	75.7	81.2
2016	684	68.3	11.1	20.9	96.2	53.3	60.9	69.1	76.4	81.7
2017	612	68.3	10.7	24.2	95.2	53.5	60.8	69.2	76.8	80.4
2018	555	67.5	11.3	18.5	90.3	52.7	60.7	69.0	75.5	80.2
2019	468	68.2	11.1	19.7	98.8	54.4	61.2	69.0	76.2	81.0
1998-2019	10306	67.0	11.3	15.8	98.8	51.9	59.5	67.8	75.4	80.9

Table 4

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

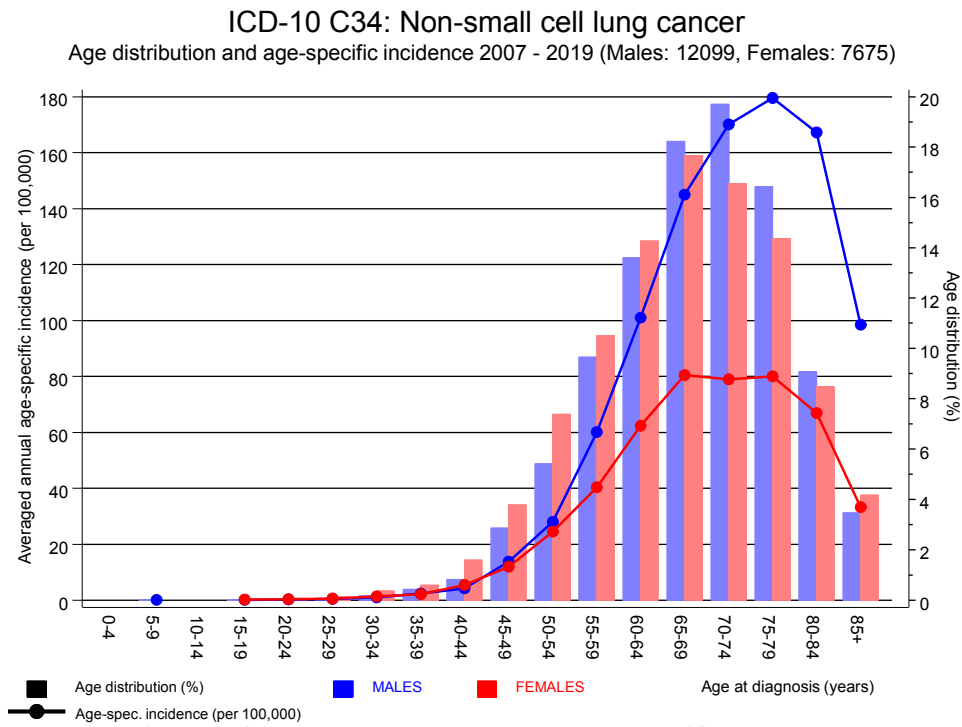
Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9	1	0.0	0.0	1	0.0	0.0			0.0
10-14	0	0.0	0.0			0.0			0.0
15-19	5	0.0	0.0	2	0.0	0.0	3	0.0	0.0
20-24	10	0.1	0.1	4	0.0	0.1	6	0.1	0.1
25-29	21	0.1	0.2	10	0.1	0.1	11	0.1	0.3
30-34	49	0.2	0.4	21	0.2	0.3	28	0.4	0.6
35-39	98	0.5	0.9	52	0.4	0.7	46	0.6	1.2
40-44	223	1.1	2.0	100	0.8	1.6	123	1.6	2.8
45-49	641	3.2	5.3	349	2.9	4.4	292	3.8	6.6
50-54	1226	6.2	11.4	658	5.4	9.8	568	7.4	14.0
55-59	1987	10.0	21.4	1173	9.6	19.5	814	10.6	24.5
60-64	2760	13.9	35.3	1656	13.6	33.1	1104	14.3	38.8
65-69	3589	18.0	53.4	2226	18.3	51.4	1363	17.7	56.5
70-74	3673	18.5	71.8	2396	19.7	71.1	1277	16.6	73.0
75-79	3108	15.6	87.5	2000	16.4	87.5	1108	14.4	87.4
80-84	1753	8.8	96.3	1102	9.1	96.5	651	8.4	95.8
85+	741	3.7	100.0	420	3.5	100.0	321	4.2	100.0
All ages	19885	100.0		12170	100.0		7715	100.0	

Table 5

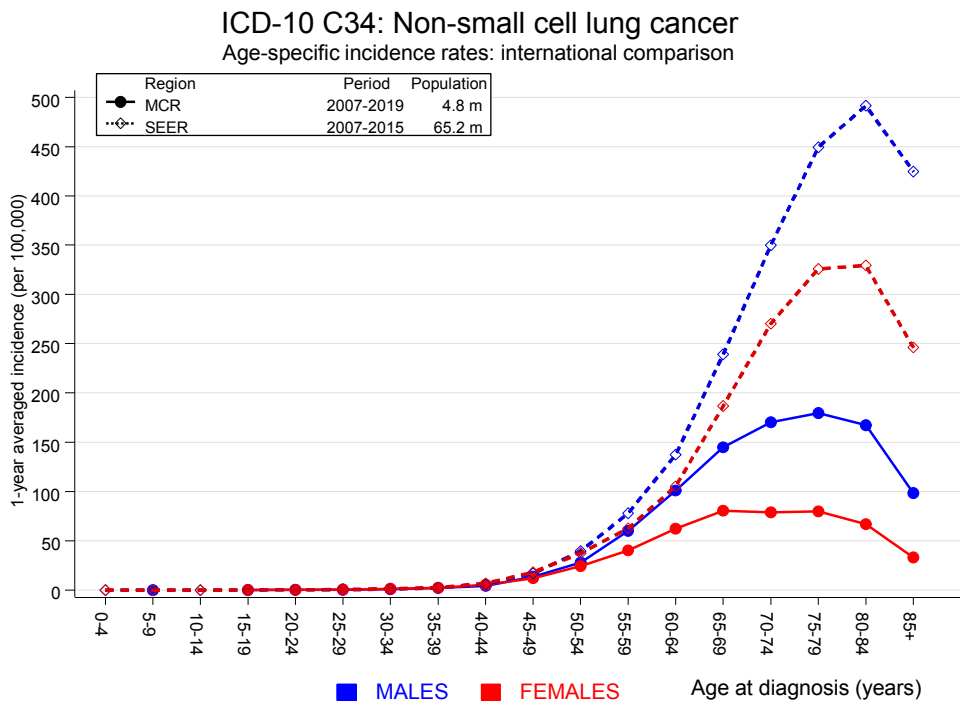
Age-specific incidence and proportion of all cancers for period 2007-2019

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	1		0.1		0.9	
10-14						
15-19	2	3	0.1	0.2	0.7	1.2
20-24	4	6	0.2	0.3	0.7	1.3
25-29	10	11	0.5	0.5	1.1	1.0
30-34	21	28	1.0	1.3	1.8	1.4
35-39	52	46	2.4	2.2	3.0	1.4
40-44	100	123	4.3	5.4	3.8	2.1
45-49	346	291	13.8	12.0	7.2	3.3
50-54	656	567	28.0	24.5	8.4	4.9
55-59	1168	807	60.1	40.4	9.9	6.5
60-64	1646	1095	100.9	62.4	10.1	7.5
65-69	2205	1355	145.0	80.4	9.7	7.6
70-74	2383	1269	170.0	79.0	9.2	6.8
75-79	1987	1102	179.5	80.0	9.0	6.1
80-84	1098	651	167.2	66.9	7.8	4.6
85+	420	321	98.5	33.3	4.3	2.1
All ages	12099	7675			8.5	5.3
Incidence						
Raw			40.2	24.7		
WS			20.1	12.0		
ES			29.3	17.0		
BRD-S			36.9	20.4		

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=68.7 yrs, median=69.6 yrs; females: mean=67.4 yrs, median=68.3 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 %
C00 Lip	3	0.5	5.9	1.2	17.2 #	0.9	33.3
C03–C06 Oral cavity	34	4.0	8.6	5.9	12.0 #	10.4	17.6
C09–C10 Oropharynx	45	5.0	9.0	6.6	12.1 #	13.9	4.4
C12–C13 Hypopharynx	17	2.7	6.2	3.6	10.0 #	5.0	5.9
C15 Oesophagus	46	9.5	4.9	3.6	6.5 #	12.7	4.3
C16 Stomach	70	18.0	3.9	3.0	4.9 #	18.1	12.9
C17 Small intestine	12	2.8	4.3	2.2	7.5 #	3.2	8.3
C18 Colon	91	44.5	2.0	1.6	2.5 #	16.2	15.4
C19–C20 Rectum	47	25.2	1.9	1.4	2.5 #	7.6	6.4
C21 Anus/canal	2	1.1	1.8	0.2	6.6	0.3	
C22 Liver	45	13.9	3.2	2.4	4.3 #	10.8	13.3
C23–C24 Bile	12	4.9	2.5	1.3	4.3 #	2.5	16.7
C25 Pancreas	44	18.0	2.4	1.8	3.3 #	9.0	38.6
C26 GI cancer	3	0.5	6.6	1.4	19.4 #	0.9	33.3
C32 Larynx	55	4.8	11.4	8.6	14.8 #	17.5	7.3
C33–C34 Lung	268	56.7	4.7	4.2	5.3 #	73.5	1.1
C38,C45 Mesothelioma	2	3.3	0.6	0.1	2.2	-0.4	
C40–C41 Bone	3	0.4	8.5	1.7	24.7 #	0.9	33.3
C43 Malign. melanoma	33	20.6	1.6	1.1	2.2 #	4.3	9.1
C46,C49 Soft tissue	8	2.5	3.2	1.4	6.3 #	1.9	
C48 Peritoneal	2	0.4	5.4	0.7	19.4	0.6	
C50 Breast	3	1.3	2.4	0.5	6.9	0.6	33.3
C61 Prostate	166	135.4	1.2	1.0	1.4 #	10.7	15.1
C62 Testis	2	1.0	1.9	0.2	7.0	0.3	50.0
C64 Kidney	61	16.5	3.7	2.8	4.8 #	15.5	16.4
C65 Renal pelvis	10	2.1	4.8	2.3	8.9 #	2.8	
C67 Bladder	68	20.9	3.3	2.5	4.1 #	16.4	11.8
C68 Urinary org.	4	0.3	14.7	4.0	37.5 #	1.3	50.0
C70–C72 CNS cancer	9	5.9	1.5	0.7	2.9	1.1	33.3
C73 Thyroid	10	3.1	3.3	1.6	6.0 #	2.4	
C74–C80 Cancer others	2	1.0	2.1	0.2	7.5	0.4	50.0
C76–C79 CUP	14	7.7	1.8	1.0	3.1	2.2	7.1
C82–C85 NHL	50	19.4	2.6	1.9	3.4 #	10.6	8.0
C90 Mult. myeloma	10	6.1	1.6	0.8	3.0	1.4	10.0
C91–C96 Leukaemia	20	6.8	2.9	1.8	4.5 #	4.6	30.0
Others, specified	8	6.1	1.3	0.6	2.6	0.6	25.0
Not observed	0	1.5	0.0	0.0	2.5	-0.5	
All further malignancies	1279	474.0	2.7	2.6	2.9 #	280.1	11.0

Patients	17121
Median age at next malignancy (years)	71.3
Person-years	28737
Mean observation time (years)	1.7
Median observation time (years)	0.7

# The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".



Table 7b

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

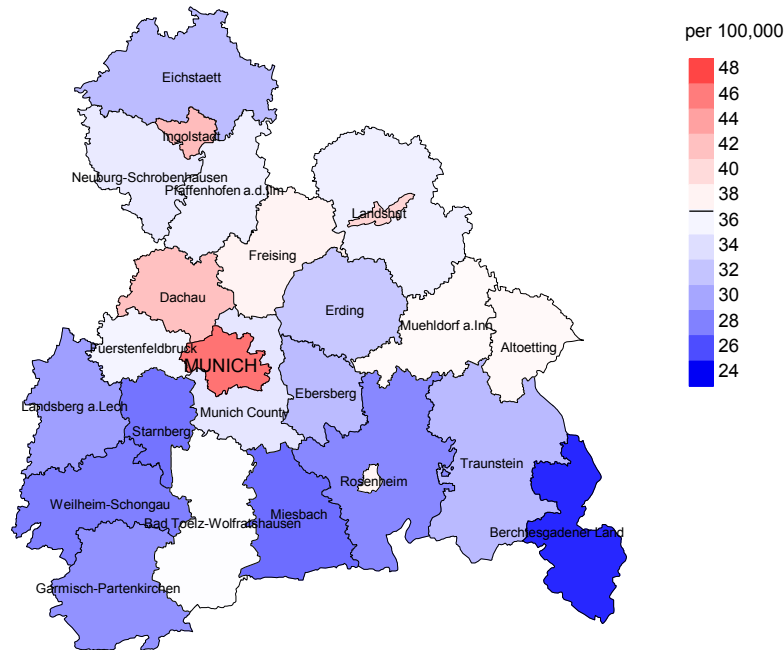
## FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	5	1.1	4.4	1.4	10.2 #	2.1	
C09–C10 Oropharynx	7	0.9	7.8	3.1	16.0 #	3.3	
C15 Oesophagus	10	1.3	7.5	3.6	13.7 #	4.7	10.0
C16 Stomach	20	5.9	3.4	2.1	5.3 #	7.7	30.0
C17 Small intestine	6	1.1	5.4	2.0	11.7 #	2.7	
C18 Colon	39	17.0	2.3	1.6	3.1 #	12.0	12.8
C19–C20 Rectum	13	7.3	1.8	1.0	3.1	3.1	7.7
C21 Anus/canal	4	1.1	3.7	1.0	9.5 #	1.6	
C22 Liver	10	2.4	4.2	2.0	7.8 #	4.2	20.0
C23–C24 Bile	4	2.5	1.6	0.4	4.1	0.8	50.0
C25 Pancreas	35	8.5	4.1	2.9	5.7 #	14.5	34.3
C32 Larynx	4	0.4	10.6	2.9	27.2 #	2.0	
C33–C34 Lung	125	15.9	7.9	6.6	9.4 #	59.8	0.8
C43 Malign. melanoma	16	7.4	2.2	1.2	3.5 #	4.7	6.3
C46,C49 Soft tissue	3	1.1	2.9	0.6	8.3	1.1	33.3
C50 Breast	137	62.1	2.2	1.9	2.6 #	41.0	13.9
C51 Vulva	11	1.9	5.7	2.8	10.2 #	5.0	
C53 Cervix uteri	14	2.5	5.5	3.0	9.3 #	6.3	14.3
C54 Corpus uteri	17	11.4	1.5	0.9	2.4	3.1	5.9
C56 Ovary	14	7.9	1.8	1.0	3.0	3.4	21.4
C57.9 Fem. urogen.	2	0.0	180.6	21.9	652.4 #	1.1	
C64 Kidney	13	4.5	2.9	1.6	5.0 #	4.7	38.5
C65 Renal pelvis	8	0.6	13.7	5.9	27.0 #	4.1	
C66 Ureter	3	0.3	9.6	2.0	28.0 #	1.5	
C67 Bladder	15	3.4	4.4	2.5	7.3 #	6.4	20.0
C68 Urinary org.	2	0.1	38.1	4.6	137.8 #	1.1	100.0
C70–C72 CNS cancer	4	2.5	1.6	0.4	4.1	0.8	50.0
C73 Thyroid	14	3.3	4.2	2.3	7.0 #	5.8	14.3
C76–C79 CUP	13	3.1	4.1	2.2	7.1 #	5.4	
C82–C85 NHL	12	7.2	1.7	0.9	2.9	2.6	8.3
C90 Mult. myeloma	7	2.3	3.1	1.2	6.3 #	2.6	42.9
C91–C96 Leukaemia	8	2.6	3.0	1.3	6.0 #	2.9	12.5
Others, specified	10	2.6	3.8	1.8	7.0 #	4.0	40.0
Not observed	0	2.1	0.0	0.0	1.8	-1.1	
All further malignancies	605	194.2	3.1	2.9	3.4 #	225.0	13.2
Patients		9896					
Median age at next malignancy (years)		70.1					
Person-years		18257					
Mean observation time (years)		1.8					
Median observation time (years)		0.8					

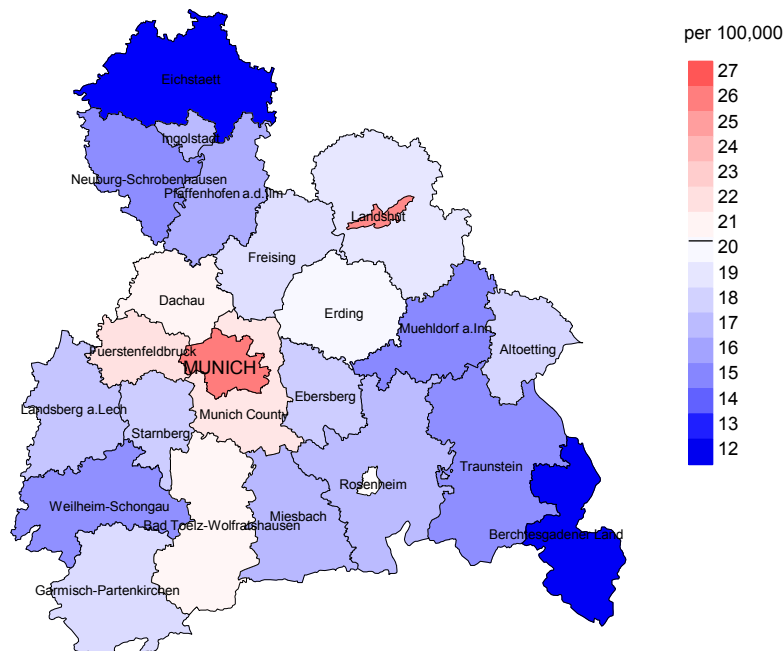
# The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 are pooled in category "Others, specified".

Average incidence (Germany 1987 standard population) 2007 - 2019: Males



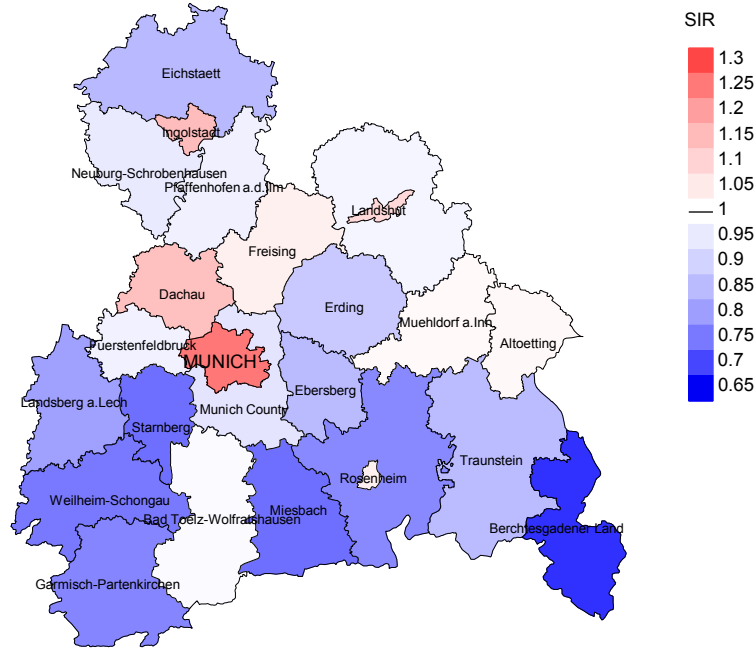
Average incidence (Germany 1987 standard population) 2007 - 2019: Females



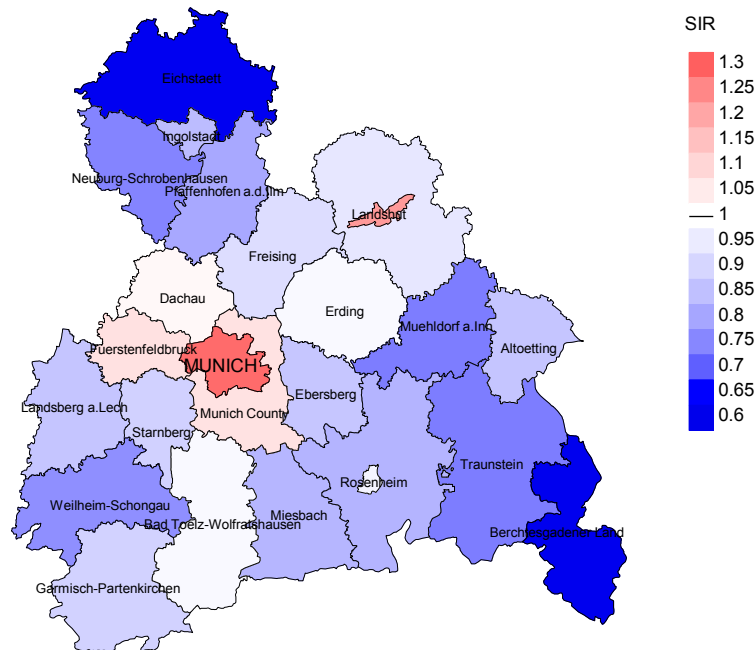
**Figure 8a.** Map of cancer incidence (german standard population) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 36.9/100,000 WS N=12,099, females 20.4/100,000 WS N=7,675).

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 183 women were identified with newly diagnosed non-small cell LC. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 17.7/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 14.5 and 21.5/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females



**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=12,099, females N=7,675).

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 183 women were identified with newly diagnosed non-small cell LC. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.87. Though, the value of this parameter may vary with an underlying probability of 99% between 0.71 and 1.04, 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	595	99.3	559	93.9	91.2
1999	664	98.5	611	92.0	93.5
2000	647	98.6	594	91.8	94.1
2001	664	98.6	618	93.1	93.4
2002	1028	98.7	958	93.2	96.8
2003	1115	98.8	1023	91.7	96.3
2004	1101	98.6	1007	91.5	97.1
2005	1119	98.0	1023	91.4	97.7
2006	1176	98.1	1054	89.6	97.5
2007	1444	97.3	1274	88.2	97.3
2008	1549	99.1	1353	87.3	98.2
2009	1544	98.4	1343	87.0	98.1
2010	1598	98.7	1397	87.4	97.4
2011	1634	99.1	1401	85.7	97.3
2012	1671	99.1	1403	84.0	95.9
2013	1653	98.7	1366	82.6	95.4
2014	1676	98.0	1298	77.4	94.9
2015	1696	97.6	1273	75.1	93.3
2016	1597	99.9	1117	69.9	87.3
2017	1481	99.7	914	61.7	71.4
2018	1301	99.8	588	45.2	33.5
2019	1041	81.6	335	32.2	82.7
1998-2019	27994	98.1	22509	80.4	92.9

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	595	473	191	32.1
1999	664	507	202	30.4
2000	647	538	205	31.7
2001	664	542	203	30.6
2002	1028	809	326	31.7
2003	1115	925	384	34.4
2004	1101	964	356	32.3
2005	1119	961	385	34.4
2006	1176	1023	372	31.6
2007	1444	1154	444	30.7
2008	1549	1201	469	30.3
2009	1544	1276	464	30.1
2010	1598	1363	502	31.4
2011	1634	1403	541	33.1
2012	1671	1404	514	30.8
2013	1653	1437	519	31.4
2014	1676	1426	508	30.3
2015	1696	1456	483	28.5
2016	1597	1403	460	28.8
2017	1481	1359	419	28.3
2018	1301	1035	289	22.2
2019	1041	750	184	17.7
1998-2019	27994	23409	8420	30.1

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	473	84.1	15.9	95.7
1999	507	88.2	11.8	96.2
2000	538	90.1	9.9	97.6
2001	542	88.2	11.8	95.8
2002	809	91.3	8.7	95.4
2003	925	92.5	7.5	96.5
2004	964	94.0	6.0	97.1
2005	961	92.1	7.9	95.7
2006	1023	92.0	8.0	96.5
2007	1154	92.9	7.1	96.6
2008	1201	93.3	6.7	96.4
2009	1276	92.9	7.1	96.6
2010	1363	92.6	7.4	96.5
2011	1403	93.2	6.8	95.7
2012	1404	92.3	7.7	96.0
2013	1437	93.2	6.8	96.0
2014	1426	92.7	7.3	95.4
2015	1456	91.9	8.1	94.6
2016	1403	91.3	8.7	94.6
2017	1359	88.0	12.0	93.9
2018	1035	71.1	28.9	90.6
2019	750	74.0	26.0	89.8
1998–2019	23409	90.3	9.7	95.7

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	329	67.9	67.8	69.4	68.1
1999	357	68.4	68.3	68.6	68.7
2000	373	67.0	66.5	71.2	67.1
2001	386	67.4	67.0	71.3	67.8
2002	578	67.2	66.6	74.8	66.8
2003	662	68.0	67.9	71.0	68.0
2004	675	68.8	68.6	72.6	68.8
2005	659	69.2	69.0	75.2	69.2
2006	716	69.8	69.7	71.9	69.7
2007	790	69.4	68.8	74.5	69.3
2008	817	69.7	69.2	76.2	69.5
2009	877	70.5	70.2	74.3	70.2
2010	885	70.9	70.5	75.6	70.6
2011	920	71.1	70.7	75.0	70.8
2012	883	71.4	70.5	80.1	71.1
2013	921	72.2	72.1	76.5	72.1
2014	889	72.7	72.4	75.0	72.6
2015	904	72.6	72.0	77.3	72.2
2016	832	73.3	73.0	76.9	73.2
2017	848	73.7	73.0	77.3	73.1
2018	658	73.1	71.0	76.0	72.6
2019	450	74.7	72.5	76.4	74.7
1998-2019	15409	70.8	70.3	75.1	70.6

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

Table 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	144	67.0	67.4	63.4	68.3
1999	150	70.8	70.6	72.7	70.9
2000	165	68.4	68.0	74.0	68.4
2001	156	70.6	69.5	73.1	70.4
2002	231	69.2	69.1	72.8	69.2
2003	263	68.9	68.8	72.2	68.8
2004	289	69.8	68.7	77.9	69.1
2005	302	66.8	66.6	77.5	66.8
2006	307	70.2	69.7	77.5	69.7
2007	364	69.1	68.3	77.4	68.4
2008	384	69.2	68.2	78.6	68.3
2009	399	68.7	68.3	79.3	68.6
2010	478	69.9	69.6	76.0	69.8
2011	483	69.6	69.3	76.7	69.5
2012	521	71.1	70.7	79.0	71.0
2013	516	71.3	70.5	80.4	70.8
2014	537	71.4	70.7	81.8	70.9
2015	552	71.8	71.3	78.8	71.5
2016	571	71.7	71.1	76.2	71.1
2017	511	71.4	70.5	77.3	70.8
2018	377	72.7	71.2	76.5	73.2
2019	300	71.2	70.3	74.1	69.9
1998-2019	8000	70.4	69.8	76.5	70.0

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	274	24.7	0.67	15.1	0.66	22.3	0.67	28.4	0.70
1999	315	28.1	0.69	16.8	0.66	25.1	0.69	32.7	0.74
2000	333	29.2	0.74	17.5	0.73	25.7	0.74	32.3	0.77
2001	339	29.3	0.73	17.3	0.70	25.5	0.72	32.2	0.76
2002	522	28.0	0.74	16.0	0.73	23.4	0.74	29.9	0.75
2003	611	32.6	0.83	18.4	0.82	26.9	0.82	34.0	0.85
2004	638	33.9	0.86	18.5	0.85	27.6	0.86	35.3	0.88
2005	596	31.5	0.80	16.6	0.76	24.6	0.78	31.9	0.81
2006	655	34.2	0.83	17.6	0.79	26.5	0.81	34.6	0.85
2007	728	32.9	0.77	16.9	0.75	25.2	0.76	33.1	0.77
2008	758	34.1	0.75	17.5	0.74	26.0	0.75	33.8	0.77
2009	806	36.1	0.82	17.9	0.77	26.9	0.79	35.0	0.83
2010	807	35.8	0.80	17.7	0.77	26.3	0.79	34.0	0.81
2011	850	38.0	0.83	18.4	0.80	27.5	0.82	35.8	0.85
2012	804	35.4	0.79	17.2	0.76	25.4	0.77	32.9	0.79
2013	855	37.1	0.84	17.4	0.79	26.0	0.81	34.2	0.84
2014	815	35.0	0.83	16.1	0.80	24.2	0.82	31.5	0.83
2015	815	34.3	0.79	16.0	0.75	23.9	0.77	31.2	0.79
2016	744	31.0	0.82	14.1	0.75	21.3	0.78	27.9	0.81
2017	741	30.7	0.86	13.7	0.78	20.7	0.81	27.3	0.85
2018	447	18.4	0.60	8.5	0.56	12.7	0.58	16.2	0.59
2019	319	13.1	0.56	5.8	0.53	8.7	0.54	11.6	0.55
1998-2019	13772	31.2	0.78	15.6	0.75	23.3	0.77	30.1	0.79

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	124	10.5	0.67	5.4	0.66	7.8	0.66	9.3	0.65
1999	132	11.1	0.65	5.5	0.61	8.0	0.63	10.1	0.64
2000	152	12.7	0.78	6.6	0.73	9.4	0.74	11.4	0.77
2001	140	11.5	0.72	5.9	0.67	8.5	0.69	10.4	0.71
2002	217	11.1	0.67	5.6	0.63	8.1	0.64	9.8	0.66
2003	245	12.4	0.64	6.3	0.61	9.2	0.63	11.1	0.64
2004	268	13.6	0.75	6.6	0.69	9.6	0.72	12.0	0.75
2005	289	14.5	0.79	7.4	0.73	10.6	0.75	12.6	0.77
2006	286	14.2	0.75	6.8	0.69	9.8	0.71	12.1	0.73
2007	344	14.9	0.71	7.3	0.67	10.5	0.68	12.8	0.69
2008	362	15.6	0.68	7.4	0.61	10.7	0.63	13.2	0.66
2009	379	16.3	0.68	8.1	0.67	11.5	0.68	13.7	0.67
2010	455	19.4	0.78	9.0	0.72	13.0	0.73	16.0	0.76
2011	457	19.5	0.75	9.0	0.72	12.9	0.72	15.9	0.74
2012	492	20.8	0.77	9.2	0.71	13.4	0.72	16.6	0.75
2013	485	20.3	0.77	9.0	0.69	13.0	0.71	16.0	0.74
2014	507	21.1	0.74	9.2	0.67	13.4	0.69	16.7	0.71
2015	523	21.5	0.80	9.3	0.73	13.6	0.75	17.0	0.78
2016	539	22.0	0.79	9.3	0.71	13.6	0.73	17.1	0.76
2017	457	18.5	0.75	8.2	0.71	11.8	0.72	14.8	0.74
2018	290	11.7	0.53	5.2	0.48	7.5	0.50	9.3	0.51
2019	238	9.6	0.51	4.3	0.49	6.1	0.49	7.7	0.51
1998-2019	7381	16.1	0.72	7.4	0.67	10.8	0.68	13.3	0.70

Table 12

Age distribution of age at death (cancer-related) for period 2007-2019  
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19	1	0.0	0.0	1	0.0	0.0			0.0
20-24	2	0.0	0.0	2	0.0	0.0			0.0
25-29	3	0.0	0.0	3	0.0	0.1			0.0
30-34	11	0.1	0.1	5	0.1	0.1	6	0.1	0.1
35-39	52	0.3	0.5	27	0.3	0.4	25	0.5	0.6
40-44	133	0.9	1.3	71	0.7	1.1	62	1.1	1.7
45-49	383	2.6	3.9	213	2.2	3.4	170	3.1	4.8
50-54	758	5.0	8.9	435	4.6	8.0	323	5.8	10.6
55-59	1262	8.4	17.3	769	8.1	16.1	493	8.9	19.5
60-64	1891	12.6	29.9	1173	12.4	28.4	718	13.0	32.5
65-69	2542	16.9	46.9	1597	16.8	45.3	945	17.1	49.6
70-74	2807	18.7	65.6	1868	19.7	65.0	939	17.0	66.6
75-79	2543	16.9	82.5	1685	17.8	82.7	858	15.5	82.1
80-84	1732	11.5	94.0	1126	11.9	94.6	606	11.0	93.1
85+	897	6.0	100.0	514	5.4	100.0	383	6.9	100.0
All ages	15017	100.0		9489	100.0		5528	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.	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	1		0.1	0.50			2.1	
20-24	2		0.1	0.50			3.0	
25-29	3		0.1	0.30			3.5	
30-34	5	6	0.2	0.24	0.3	0.21	3.9	3.8
35-39	27	25	1.3	0.52	1.2	0.54	11.1	6.8
40-44	71	62	3.0	0.71	2.7	0.50	12.4	7.7
45-49	213	170	8.5	0.62	7.0	0.58	15.9	10.8
50-54	435	323	18.6	0.66	14.0	0.57	17.3	13.2
55-59	769	493	39.6	0.66	24.7	0.61	18.7	14.0
60-64	1173	718	71.9	0.71	40.9	0.66	19.7	15.6
65-69	1597	945	105.0	0.72	56.1	0.70	18.6	14.6
70-74	1868	939	133.3	0.78	58.5	0.74	16.9	11.5
75-79	1685	858	152.2	0.85	62.3	0.78	14.7	9.5
80-84	1126	606	171.5	1.03	62.3	0.93	11.9	7.1
85+	514	383	120.5	1.22	39.7	1.19	6.3	3.5
All ages	9489	5528					14.8	9.7
Mortality								
Raw			31.5	0.78	17.8	0.72		
WS			15.0	0.75	8.0	0.67		
ES			22.4	0.76	11.6	0.68		
BRD-S			29.0	0.79	14.3	0.70		
PYLL-70								
per 100,000			143.6		99.8			
ES			122.1		82.0			
AYLL-70			8.9		9.5			

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	19	0.5	14	73.7	1	5.3	4	21.1
C03–C06 Oral cavity	151	3.8	116	76.8	17	11.3	18	11.9
C07–C08 Salivary gland	11	0.3	10	90.9	1	9.1		
C09–C10 Oropharynx	132	3.3	89	67.4	15	11.4	28	21.2
C12–C13 Hypopharynx	76	1.9	51	67.1	11	14.5	14	18.4
C15 Oesophagus	79	2.0	30	38.0	22	27.8	27	34.2
C16 Stomach	144	3.6	68	47.2	29	20.1	47	32.6
C17 Small intestine	20	0.5	7	35.0	6	30.0	7	35.0
C18 Colon	306	7.6	206	67.3	41	13.4	59	19.3
C19–C20 Rectum	166	4.1	118	71.1	24	14.5	24	14.5
C21 Anus/canal	17	0.4	13	76.5	3	17.6	1	5.9
C22 Liver	64	1.6	20	31.3	16	25.0	28	43.8
C23–C24 Bile	17	0.4	7	41.2	2	11.8	8	47.1
C25 Pancreas	60	1.5	14	23.3	10	16.7	36	60.0
C30–C31 Sinuses	14	0.3	13	92.9			1	7.1
C32 Larynx	184	4.6	130	70.7	22	12.0	32	17.4
C33–C34 Lung	287	7.2			80	27.9	207	72.1
C43 Malign. melanoma	131	3.3	107	81.7	9	6.9	15	11.5
C44 Skin others	354	8.8	232	65.5	41	11.6	81	22.9
C46,C49 Soft tissue	19	0.5	12	63.2	2	10.5	5	26.3
C50 Breast	10	0.2	7	70.0	1	10.0	2	20.0
C61 Prostate	820	20.4	668	81.5	47	5.7	105	12.8
C62 Testis	50	1.2	46	92.0	1	2.0	3	6.0
C64 Kidney	166	4.1	115	69.3	21	12.7	30	18.1
C65 Renal pelvis	18	0.4	8	44.4			10	55.6
C67 Bladder	266	6.6	194	72.9	19	7.1	53	19.9
C69 Eye melanoma	10	0.2	9	90.0			1	10.0
C70–C72 CNS cancer	15	0.4	7	46.7	1	6.7	7	46.7
C73 Thyroid	30	0.7	24	80.0	2	6.7	4	13.3
C76–C79 CUP	48	1.2	28	58.3	10	20.8	10	20.8
C81 Hodgkin lymphoma	47	1.2	47	100.0				
C82–C85 NHL	172	4.3	123	71.5	22	12.8	27	15.7
C90 Mult. myeloma	21	0.5	13	61.9	3	14.3	5	23.8
C91–C96 Leukaemia	30	0.7	11	36.7	2	6.7	17	56.7
Others, specified	59	1.5	32	54.2	8	13.6	19	32.2
All further malignancies	4013	100.0	2589	64.5	489	12.2	935	23.3

Further malignancies with number of cases 1 to 9 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	36	1.9	31	86.1	3	8.3	2	5.6
C07-C08 Salivary gland	8	0.4	7	87.5	1	12.5		
C09-C10 Oropharynx	31	1.6	25	80.6	2	6.5	4	12.9
C12-C13 Hypopharynx	9	0.5	8	88.9	1	11.1		
C15 Oesophagus	14	0.7	7	50.0	1	7.1	6	42.9
C16 Stomach	38	2.0	17	44.7	8	21.1	13	34.2
C17 Small intestine	10	0.5	5	50.0	3	30.0	2	20.0
C18 Colon	142	7.4	98	69.0	14	9.9	30	21.1
C19-C20 Rectum	47	2.4	35	74.5	4	8.5	8	17.0
C21 Anus/canal	22	1.1	18	81.8	1	4.5	3	13.6
C22 Liver	15	0.8	5	33.3	2	13.3	8	53.3
C23-C24 Bile	12	0.6	6	50.0	2	16.7	4	33.3
C25 Pancreas	47	2.4	8	17.0	13	27.7	26	55.3
C32 Larynx	14	0.7	9	64.3	2	14.3	3	21.4
C33-C34 Lung	128	6.7			27	21.1	101	78.9
C43 Malign. melanoma	57	3.0	52	91.2	1	1.8	4	7.0
C44 Skin others	91	4.7	52	57.1	6	6.6	33	36.3
C50 Breast	574	29.9	470	81.9	40	7.0	64	11.1
C51 Vulva	22	1.1	16	72.7	2	9.1	4	18.2
C53 Cervix uteri	95	4.9	83	87.4	5	5.3	7	7.4
C54 Corpus uteri	111	5.8	101	91.0	2	1.8	8	7.2
C55,C57 Fem. genitals un	11	0.6	10	90.9	1	9.1		
C56 Ovary	49	2.6	33	67.3	4	8.2	12	24.5
C64 Kidney	47	2.4	31	66.0	7	14.9	9	19.1
C65 Renal pelvis	13	0.7	6	46.2	1	7.7	6	46.2
C67 Bladder	42	2.2	30	71.4	3	7.1	9	21.4
C69 Eye melanoma	7	0.4	4	57.1	1	14.3	2	28.6
C70-C72 CNS cancer	8	0.4	3	37.5			5	62.5
C73 Thyroid	39	2.0	28	71.8	5	12.8	6	15.4
C76-C79 CUP	33	1.7	14	42.4	7	21.2	12	36.4
C81 Hodgkin lymphoma	18	0.9	18	100.0				
C82-C85 NHL	70	3.6	59	84.3	3	4.3	8	11.4
C90 Mult. myeloma	11	0.6	3	27.3	3	27.3	5	45.5
C91-C96 Leukaemia	12	0.6	5	41.7	2	16.7	5	41.7
Others, specified	37	1.9	16	43.2	8	21.6	13	35.1
All further malignancies	1920	100.0	1313	68.4	185	9.6	422	22.0

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

ICD-10 C44 (Other malignant neoplasms of skin) is not systematically recorded by MCR and therefore not considered for evaluation as a particular primary but at least as a further malignancy.

Table 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.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	1.00			2.2	
20-24	1		0.1	0.33			1.7	
25-29	3		0.1	0.30			3.9	
30-34	5	6	0.2	0.28	0.3	0.22	4.0	4.3
35-39	24	19	1.1	0.50	0.9	0.46	10.6	5.8
40-44	65	57	2.8	0.69	2.5	0.52	12.3	8.1
45-49	196	142	7.8	0.64	5.8	0.58	16.0	10.5
50-54	376	273	16.0	0.66	11.8	0.56	17.0	13.1
55-59	661	432	34.0	0.66	21.6	0.64	18.4	14.6
60-64	967	598	59.3	0.72	34.1	0.67	19.4	15.8
65-69	1272	730	83.6	0.75	43.3	0.72	18.5	14.2
70-74	1394	695	99.5	0.80	43.3	0.75	16.4	11.0
75-79	1203	649	108.7	0.88	47.1	0.80	14.4	9.4
80-84	746	435	113.6	1.08	44.7	0.95	11.0	6.6
85+	327	289	76.7	1.23	29.9	1.19	5.5	3.3
All ages	7241	4325					14.6	9.6
Mortality								
Raw			24.0	0.79	13.9	0.73		
WS			11.8	0.75	6.4	0.67		
ES			17.4	0.77	9.2	0.69		
BRD-S			22.1	0.80	11.3	0.71		
PYLL-70								
per 100,000			123.1		84.4			
ES			104.7		69.5			
AYLL-70			9.1		9.8			

\* See corresponding tables with multiple malignancies.

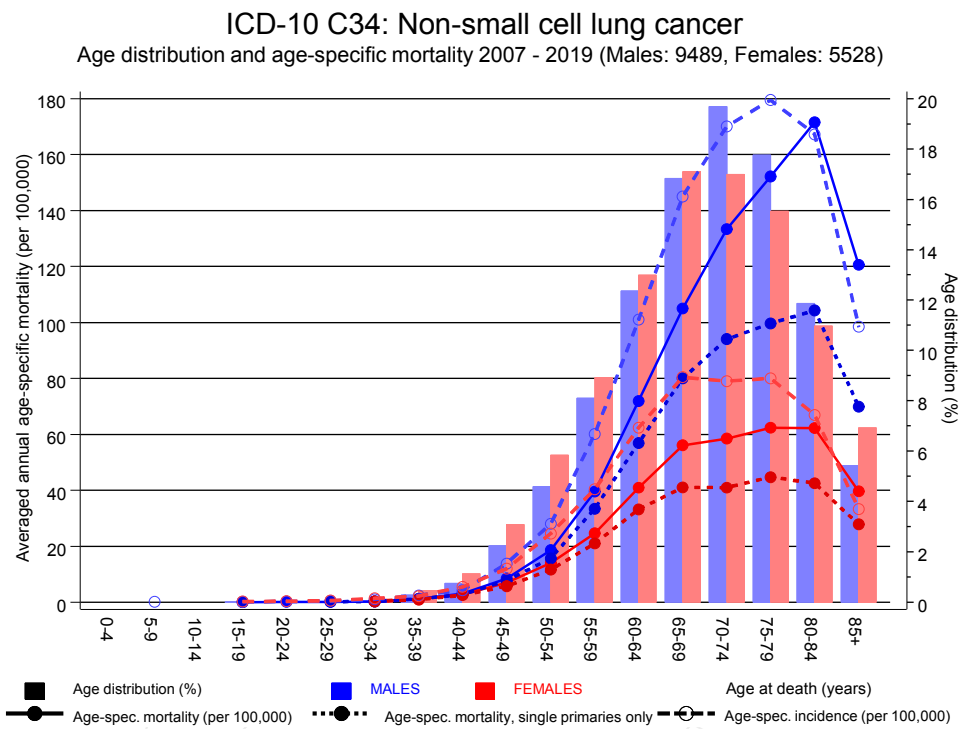
Table 16

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	1		0.1	1.00			2.2	
20-24								
25-29	3		0.1	0.30			3.9	
30-34	5	6	0.2	0.28	0.3	0.22	4.1	4.4
35-39	24	19	1.1	0.51	0.9	0.48	10.7	5.8
40-44	65	56	2.8	0.70	2.5	0.53	12.4	8.0
45-49	193	139	7.7	0.65	5.7	0.58	15.9	10.4
50-54	367	268	15.7	0.67	11.6	0.56	16.8	13.1
55-59	650	419	33.4	0.67	21.0	0.66	18.4	14.4
60-64	928	582	56.9	0.73	33.2	0.69	18.9	15.7
65-69	1216	691	80.0	0.77	41.0	0.72	18.2	13.8
70-74	1317	658	94.0	0.80	41.0	0.75	16.1	10.7
75-79	1103	616	99.6	0.86	44.7	0.79	13.8	9.2
80-84	685	414	104.3	1.04	42.5	0.94	10.8	6.6
85+	298	268	69.9	1.15	27.8	1.12	5.5	3.2
All ages	6855	4136					14.4	9.4
Mortality								
Raw			22.7	0.79	13.3	0.73		
WS			11.3	0.76	6.2	0.68		
ES			16.5	0.77	8.9	0.69		
BRD-S			20.9	0.79	10.8	0.71		
PYLL-70								
per 100,000			119.9		82.2			
ES			102.0		67.8			
AYLL-70			9.2		9.9			

\* See corresponding tables with multiple malignancies.

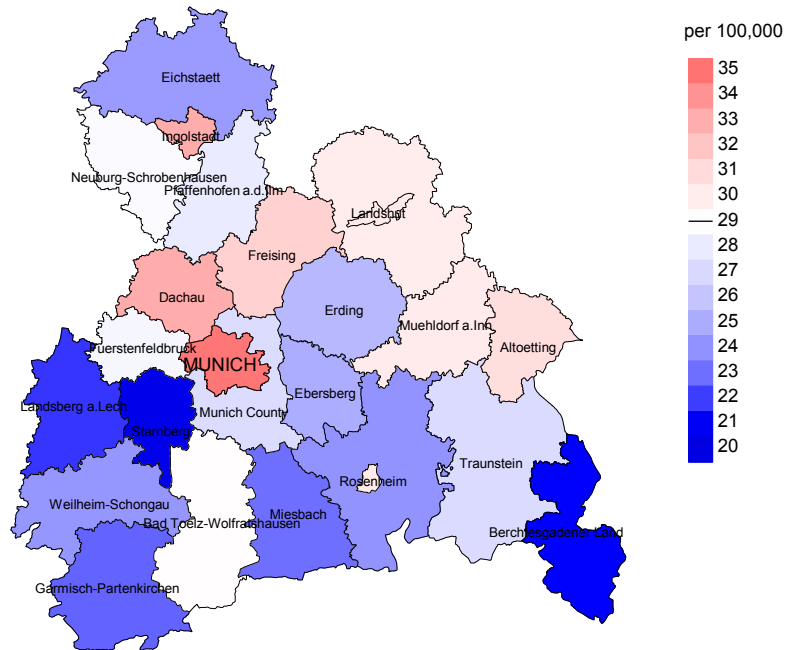




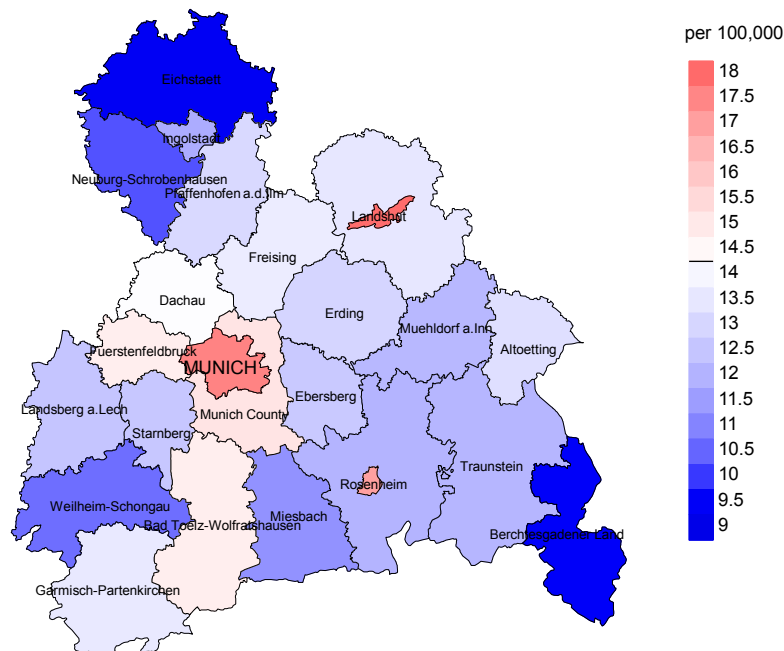
**Figure 17.** Distribution of age at death (bars; males: mean=68.7 yrs, median=69.5 yrs; females: mean=67.8 yrs, median=68.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (Germany 1987 standard population) 2007 - 2019: Males



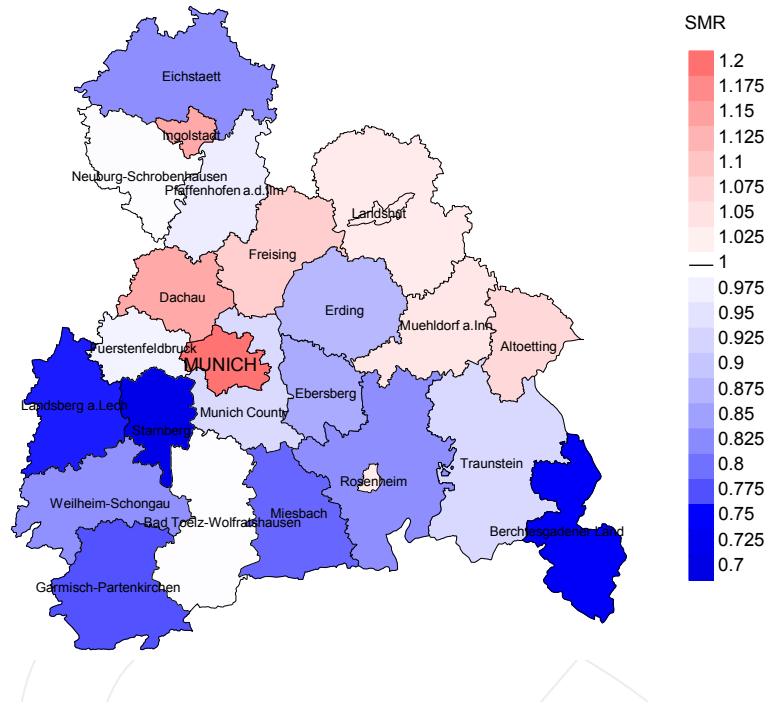
Average mortality (Germany 1987 standard population) 2007 - 2019: Females



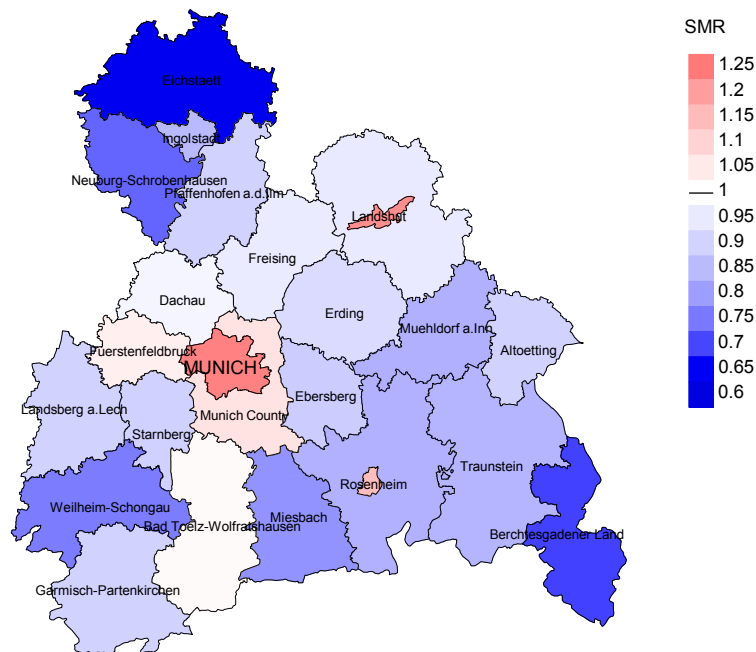
**Figure 18a.** Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 29.0/100,000 WS N=9,489, females 14.3/100,000 WS N=5,528).

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 134 women died from non-small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 12.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 10.0 and 15.8/100,000.

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=9,489, females N=5,528).

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 134 women died from non-small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.88. Though, the value of this parameter may vary with an underlying probability of 99% between 0.70 and 1.10, 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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