Munich Cancer Registry

- Survival
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- *Deutsch*

ICD-10 C00: Lip cancer

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	432
Diseases	435
Creation date	12/20/2021
Database export	12/20/2021
Population	4.95 m

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

https://www.tumorregister-muenchen.de/en/facts/base/bC00__E-ICD-10-C00-Lip-cancer-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.

Some remarks regarding this cancer type

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C00.-	Malignant neoplasm of lip
C00.0	External upper lip
C00.1	External lower lip
C00.2	External lip, unspecified
C00.3	Upper lip, inner aspect
C00.4	Lower lip, inner aspect
C00.5	Lip, unspecified, inner aspect
C00.6	Commissure of lip
C00.8	Overlapping lesion of lip
C00.9	Lip, unspecified

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	17			11.8	26.3	58.8	100.0	
1999	17			14.7	26.3	64.7	100.0	
2000	9			11.6	25.9	77.8	100.0	
2001	9	1	11.1	17.3	25.1	55.6	88.9	
2002	33	4	12.1	16.5	24.9	75.8	100.0	#
2003	24	2	8.3	14.7	24.4	70.8	100.0	
2004	21	1	4.8	16.9	25.0	76.2	100.0	
2005	22			17.8	24.1	63.6	100.0	
2006	12			19.5	23.4	75.0	83.3	
2007	22	2	9.1	19.4	22.5	68.2	90.9	#
2008	29			19.1	21.4	65.5	100.0	
2009	24			20.1	22.3	58.3	95.8	
2010	26			21.5	21.0	46.2	100.0	
2011	36	1	2.8	22.6	19.9	50.0	94.4	
2012	26			23.5	21.0	57.7	100.0	
2013	24	3	12.5	25.1	16.2	66.7	100.0	
2014	19	1	5.3	25.9	18.2	52.6	100.0	
2015	20			26.4	16.9	35.0	90.0	
2016	21			26.3	12.2	28.6	100.0	
2017	12			26.0	5.0	8.3	91.7	
2018	2	2	100.0	25.9	0.0	100.0	100.0	
2019	6			26.2	0.0		100.0	
2020	4			26.2	0.0		100.0	##
1998-2020	435	17	3.9	26.2	26.3	57.2	97.5	

435 cases diagnosed 1998-2020 are related to a total of 432 patients. Currently, in 210 (48.6 %) of these 432 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 130 / 42 / 38 (30.1 % / 9.7 % / 8.8 %) 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 2 cases has been diagnosed, of which 25.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % 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 DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	11	64.7			9.1	31.9	63.6	100.0	
1999	13	76.5			12.5	32.5	69.2	100.0	
2000	7	77.8			9.7	31.7	71.4	100.0	
2001	8	88.9	1	12.5	17.9	30.9	50.0	87.5	
2002	21	63.6	3	14.3	16.7	30.7	71.4	100.0	#
2003	11	45.8	2	18.2	16.9	29.6	72.7	100.0	
2004	14	66.7	1	7.1	21.2	29.2	64.3	100.0	
2005	13	59.1			23.5	28.7	76.9	100.0	
2006	8	66.7			24.5	28.0	62.5	75.0	
2007	13	59.1	2	15.4	23.5	26.8	61.5	84.6	#
2008	22	75.9			23.4	25.4	54.5	100.0	
2009	16	66.7			23.6	26.2	56.3	93.8	
2010	13	50.0			24.7	24.3	53.8	100.0	
2011	27	75.0	1	3.7	25.4	21.1	55.6	92.6	
2012	16	61.5			26.3	23.9	62.5	100.0	
2013	13	54.2	2	15.4	27.9	17.9	84.6	100.0	
2014	12	63.2			28.6	22.2	41.7	100.0	
2015	9	45.0			28.7	18.2	22.2	88.9	
2016	12	57.1			28.2	16.0	25.0	100.0	
2017	8	66.7			28.1	7.7	12.5	87.5	
2018	2	100.0	2	100.0	27.9	0.0	100.0	100.0	
2019	5	83.3			28.5	0.0		100.0	
2020	2	50.0			28.3	0.0		100.0	##
1998-2020	276	63.4	14	5.1	28.3	31.9	56.9	96.4	

276 cases diagnosed 1998-2020 are related to a total of 273 patients. Currently, in 149 (54.6 %) of these 273 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 91 / 29 / 29 (33.3 % / 10.6 % / 10.6 %) 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 2 cases has been diagnosed, of which 27.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % 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 DCO, further malignancies, deaths, and active follow-up (FEMALES)
(incl. DCO)

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	6	35.3			16.7	16.4	50.0	100.0	
1999	4	23.5			20.0	15.6	50.0	100.0	
2000	2	22.2			16.7	16.1	100.0	100.0	
2001	1	11.1			15.4	15.6	100.0	100.0	
2002	12	36.4	1	8.3	16.0	15.7	83.3	100.0	#
2003	13	54.2			10.5	16.1	69.2	100.0	
2004	7	33.3			8.9	18.0	100.0	100.0	
2005	9	40.9			7.4	16.8	44.4	100.0	
2006	4	33.3			10.3	16.0	100.0	100.0	
2007	9	40.9			11.9	15.6	77.8	100.0	#
2008	7	24.1			10.8	14.9	100.0	100.0	
2009	8	33.3			13.4	16.3	62.5	100.0	
2010	13	50.0			15.8	16.2	38.5	100.0	
2011	9	25.0			17.3	18.0	33.3	100.0	
2012	10	38.5			18.4	17.0	50.0	100.0	
2013	11	45.8	1	9.1	20.0	14.0	45.5	100.0	
2014	7	36.8	1	14.3	21.2	12.5	71.4	100.0	
2015	11	55.0			22.4	15.4	45.5	90.9	
2016	9	42.9			23.0	6.3	33.3	100.0	
2017	4	33.3			22.4	0.0		100.0	
2018	0								
2019	1	16.7			22.3	0.0		100.0	
2020	2	50.0			22.6	0.0		100.0	##
1998-2020	159	36.6	3	1.9	22.6	16.4	57.9	99.4	

159 cases diagnosed 1998-2020 are related to a total of 159 patients. Currently, in 61 (38.4 %) of these 159 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 39 / 13 / 9 (24.5 % / 8.2 % / 5.7 %) patients exist having 2 / 3 / 4+ malignancies.

The increases of incident cases in 2002 and 2007 reflect the expansion to additional registry areas.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 0 cases has been diagnosed, of which 22.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % 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 including DCO cases
(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	11	6	1.0	0.5	0.7	0.2	0.9	0.3	1.0	0.4
1999	13	4	1.2	0.3	0.6	0.1	1.1	0.2	1.6	0.2
2000	7	2	0.6	0.2	0.4	0.1	0.6	0.1	0.8	0.2
2001	8	1	0.7	0.1	0.4	0.0	0.6	0.0	0.7	0.0
2002	21	12	1.1	0.6	0.6	0.3	1.0	0.4	1.3	0.5
2003	11	13	0.6	0.7	0.3	0.2	0.5	0.4	0.6	0.5
2004	14	7	0.7	0.4	0.4	0.1	0.6	0.2	0.8	0.3
2005	13	9	0.7	0.5	0.3	0.2	0.5	0.3	0.8	0.4
2006	8	4	0.4	0.2	0.2	0.0	0.3	0.1	0.5	0.1
2007	13	9	0.6	0.4	0.3	0.1	0.4	0.2	0.6	0.3
2008	22	7	1.0	0.3	0.5	0.1	0.8	0.1	1.0	0.2
2009	16	8	0.7	0.3	0.3	0.1	0.5	0.2	0.7	0.3
2010	13	13	0.6	0.6	0.3	0.2	0.4	0.3	0.6	0.4
2011	27	9	1.2	0.4	0.6	0.2	0.9	0.3	1.2	0.4
2012	16	10	0.7	0.4	0.3	0.2	0.5	0.3	0.6	0.3
2013	13	11	0.6	0.5	0.2	0.1	0.4	0.2	0.5	0.3
2014	12	7	0.5	0.3	0.2	0.1	0.3	0.1	0.5	0.2
2015	9	11	0.4	0.5	0.1	0.2	0.2	0.3	0.3	0.3
2016	12	9	0.5	0.4	0.2	0.1	0.3	0.2	0.4	0.2
2017	8	4	0.3	0.2	0.1	0.0	0.2	0.1	0.3	0.1
2018	2		0.1		0.0		0.1		0.1	
2019	5	1	0.2	0.0	0.1	0.0	0.1	0.0	0.2	0.0
2020	2	2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0
1998-2020	276	159	0.6	0.3	0.3	0.1	0.4	0.2	0.6	0.2

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)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	17	66.4	13.8	26.4	85.0	53.8	61.9	66.3	74.1	84.7
1999	17	71.9	11.4	55.0	86.8	55.6	60.6	75.2	80.8	85.8
2000	9	65.4	12.3	47.9	82.7	47.9	54.7	66.5	73.3	82.7
2001	9	69.2	15.3	54.4	94.9	54.4	62.4	64.9	67.5	94.9
2002	33	72.7	11.1	53.9	94.4	58.7	65.2	71.3	81.1	86.0
2003	24	72.9	13.9	41.7	94.5	51.3	63.0	74.8	84.3	90.0
2004	21	73.2	8.0	60.7	87.9	63.8	66.6	75.2	76.3	84.1
2005	22	71.6	12.3	36.9	99.0	58.9	67.0	72.0	78.5	82.5
2006	12	77.4	10.5	59.3	93.2	63.6	67.7	81.1	84.5	87.9
2007	22	73.3	9.9	43.7	84.3	62.5	67.6	76.0	80.4	81.8
2008	29	71.7	12.0	46.2	90.8	52.1	64.3	70.8	81.8	87.4
2009	24	73.5	10.4	45.8	88.3	63.0	67.7	74.3	80.6	86.6
2010	26	72.6	11.1	47.1	85.9	56.2	67.4	73.6	81.1	85.3
2011	36	69.3	16.0	29.3	90.5	49.4	62.5	74.6	81.0	84.1
2012	26	72.2	10.3	38.6	85.2	60.3	67.0	73.4	79.3	83.8
2013	24	78.6	10.8	53.5	94.6	64.1	72.9	78.7	88.3	92.2
2014	19	79.0	9.0	62.6	93.7	64.3	71.4	81.2	84.1	93.2
2015	20	74.1	11.5	43.5	96.0	60.8	68.5	75.8	80.8	87.0
2016	21	75.8	12.2	42.6	91.2	62.1	73.5	77.6	84.4	89.7
2017	12	77.7	10.5	52.6	88.8	62.1	76.0	80.9	84.3	85.5
2018	2	76.0	12.1	67.4	84.6	67.4	67.4	76.0	84.6	84.6
2019	6	79.7	9.6	60.6	86.2	60.6	81.2	82.3	85.7	86.2
2020	4	75.9	12.9	58.0	88.8	58.0	67.7	78.3	84.0	88.8
1998–2020	435	73.1	11.9	26.4	99.0	57.7	65.2	75.1	81.9	86.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	11	61.5	12.7	26.4	74.1	54.4	61.8	63.9	69.4	69.8
1999	13	72.3	11.2	55.0	86.8	55.6	60.6	75.2	80.8	85.4
2000	7	65.8	13.1	47.9	82.7	47.9	54.4	66.5	78.6	82.7
2001	8	66.0	12.7	54.4	94.9	54.4	58.4	64.6	66.4	94.9
2002	21	72.2	9.4	53.9	86.0	62.2	65.8	72.6	79.4	85.7
2003	11	67.9	14.8	41.7	94.5	51.3	60.2	69.8	75.8	84.4
2004	14	72.5	8.1	60.7	87.9	62.1	66.6	72.4	75.8	84.1
2005	13	70.8	8.9	53.7	82.5	58.9	67.0	71.1	75.6	81.9
2006	8	73.7	10.2	59.3	85.1	59.3	65.3	74.5	82.6	85.1
2007	13	70.6	10.5	43.7	81.1	57.7	67.6	73.6	78.0	79.7
2008	22	68.2	11.2	46.2	86.2	52.1	63.6	68.3	78.0	83.3
2009	16	72.2	11.3	45.8	87.7	53.1	66.7	73.7	80.6	84.5
2010	13	69.8	12.2	47.1	85.9	56.2	57.7	71.6	78.9	85.8
2011	27	71.7	15.1	29.3	90.5	50.6	63.1	77.4	81.8	86.1
2012	16	73.5	8.1	59.5	85.1	60.8	68.7	73.6	79.3	83.8
2013	13	76.5	9.3	59.4	92.2	64.1	70.5	76.5	82.6	88.0
2014	12	76.1	9.2	62.6	93.2	64.3	67.7	79.1	81.6	84.1
2015	9	75.5	4.6	69.3	83.7	69.3	72.3	75.7	76.1	83.7
2016	12	72.9	9.5	56.9	91.2	62.1	64.1	75.8	77.9	78.8
2017	8	78.7	7.8	62.1	85.5	62.1	76.0	80.6	84.3	85.5
2018	2	76.0	12.1	67.4	84.6	67.4	67.4	76.0	84.6	84.6
2019	5	79.2	10.6	60.6	86.2	60.6	81.2	82.2	85.7	86.2
2020	2	67.7	13.7	58.0	77.4	58.0	58.0	67.7	77.4	77.4
1998-2020	276	71.6	11.2	26.4	94.9	57.7	64.3	73.2	79.6	84.4

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)
(incl. DCO)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6	75.4	11.7	53.8	85.0	53.8	72.9	78.1	84.7	85.0
1999	4	70.9	14.1	55.9	85.8	55.9	59.1	71.0	82.7	85.8
2000	2	63.9	13.1	54.7	73.2	54.7	54.7	63.9	73.2	73.2
2001	1	94.8		94.8	94.8	94.8	94.8	94.8	94.8	94.8
2002	12	73.6	14.1	58.4	94.4	58.7	59.9	69.4	87.6	92.8
2003	13	77.1	12.1	48.5	90.0	63.8	69.6	79.7	86.6	90.0
2004	7	74.6	8.1	63.8	84.4	63.8	64.2	75.3	82.8	84.4
2005	9	72.9	16.6	36.9	99.0	36.9	68.8	72.3	78.5	99.0
2006	4	84.8	7.4	76.1	93.2	76.1	79.1	84.9	90.5	93.2
2007	9	77.2	7.8	62.5	84.3	62.5	76.9	80.4	81.8	84.3
2008	7	82.8	6.9	72.1	90.8	72.1	77.6	82.9	89.5	90.8
2009	8	76.1	8.5	63.0	88.3	63.0	70.5	75.6	82.5	88.3
2010	13	75.4	9.4	53.7	85.3	63.8	70.8	76.7	84.2	85.0
2011	9	61.9	17.2	29.4	83.5	29.4	51.0	64.2	76.3	83.5
2012	10	70.1	13.3	38.6	85.2	49.4	67.0	71.9	78.0	84.3
2013	11	81.1	12.3	53.5	94.6	69.7	75.9	80.2	91.8	92.6
2014	7	84.1	6.6	71.4	93.7	71.4	83.0	84.1	87.0	93.7
2015	11	73.0	15.2	43.5	96.0	60.3	61.4	76.4	83.1	90.3
2016	9	79.5	14.7	42.6	90.9	42.6	77.6	84.4	87.2	90.9
2017	4	75.8	16.0	52.6	88.8	52.6	66.2	81.0	85.4	88.8
2019	1	82.3		82.3	82.3	82.3	82.3	82.3	82.3	82.3
2020	2	84.0	6.8	79.2	88.8	79.2	79.2	84.0	88.8	88.8
1998–2020	159	75.7	12.8	29.4	99.0	58.4	68.8	78.3	84.4	90.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2020 (incl. DCO)

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	2	0.7	0.7	1	0.6	0.6	1	1.0	1.0
30-34	1	0.4	1.1	1	0.6	1.2			1.0
35-39	1	0.4	1.5			1.2	1	1.0	2.0
40-44	3	1.1	2.6	1	0.6	1.8	2	2.0	4.0
45-49	4	1.5	4.1	3	1.8	3.5	1	1.0	5.0
50-54	8	3.0	7.0	4	2.4	5.9	4	4.0	8.9
55-59	11	4.1	11.1	10	5.9	11.8	1	1.0	9.9
60-64	26	9.6	20.7	18	10.6	22.4	8	7.9	17.8
65-69	28	10.3	31.0	22	12.9	35.3	6	5.9	23.8
70-74	37	13.7	44.6	25	14.7	50.0	12	11.9	35.6
75-79	60	22.1	66.8	40	23.5	73.5	20	19.8	55.4
80-84	52	19.2	86.0	30	17.6	91.2	22	21.8	77.2
85+	38	14.0	100.0	15	8.8	100.0	23	22.8	100.0
All ages	271	100.0		170	100.0		101	100.0	

Table 5

Age-specific incidence, DCO rate 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 DCO rate n=7 %	Females DCO rate n=2 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0– 4								
5– 9								
10–14								
15–19								
20–24								
25–29	1	1	0.0	0.0			0.1	0.1
30–34	1		0.0				0.1	
35–39		1		0.0				0.0
40–44	1	2	0.0	0.1			0.0	0.0
45–49	3	1	0.1	0.0			0.1	0.0
50–54	4	4	0.2	0.2			0.0	0.0
55–59	9	1	0.4	0.0			0.1	0.0
60–64	18	8	1.0	0.4	5.6		0.1	0.1
65–69	22	6	1.3	0.3	4.5		0.1	0.0
70–74	25	12	1.7	0.7	4.0		0.1	0.1
75–79	40	20	3.3	1.3			0.2	0.1
80–84	30	22	4.1	2.1	6.7		0.2	0.1
85+	15	23	3.2	2.2	13.3	8.7	0.1	0.1
All ages	169	101			4.1	2.0	0.1	0.1
Incidence								
Raw			0.5	0.3				
WS			0.2	0.1				
ES			0.3	0.2				
BRD-S			0.5	0.2				

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).

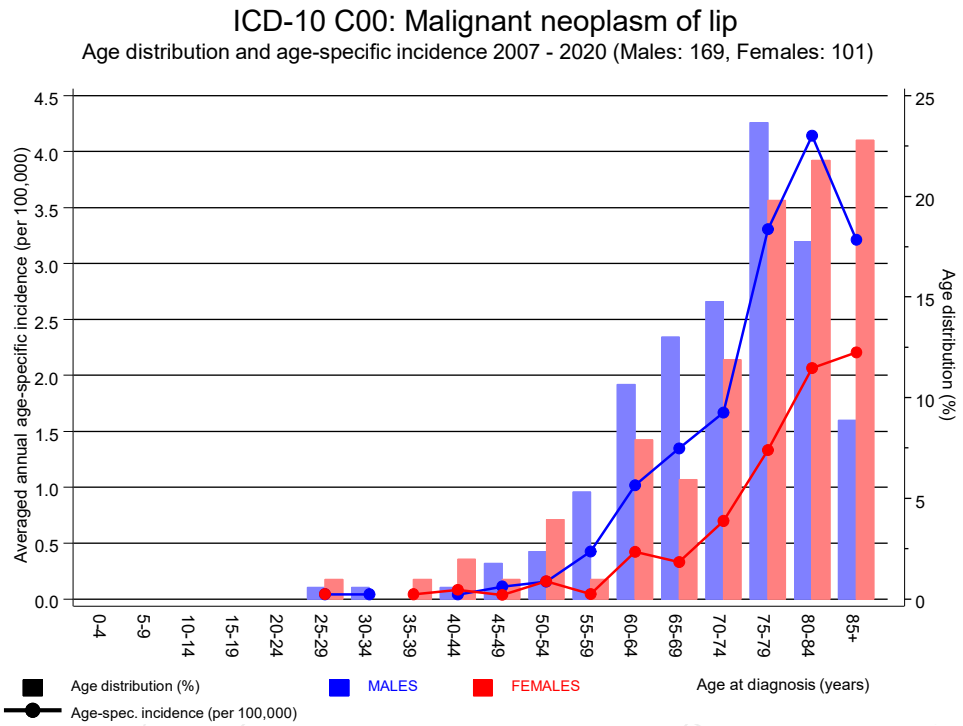


Figure 6. Age distribution (males: mean=72.8 yrs, median=75.0 yrs; females: mean=76.0 yrs, median=78.9 yrs) and age-specific incidence.

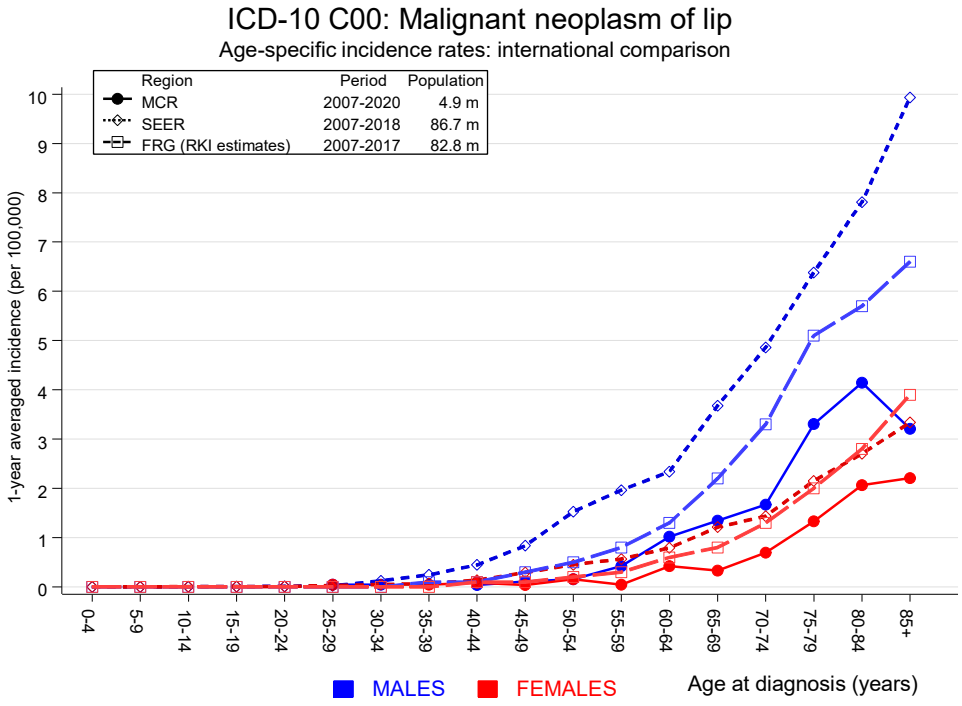


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. http://www.krebsdaten.de. Last access: 08/17/2021
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 %
C00	Lip	3	0.0	89.4	18.4	261.4	#	22.2	
C03-C06	Oral cavity	5	0.2	27.6	9.0	64.4	#	36.0	
C07-C08	Salivary gland	1	0.1	14.2	0.4	79.2		6.9	
C09-C10	Oropharynx	1	0.2	4.7	0.1	26.4		5.9	
C11	Nasopharynx	1	0.0	68.1	1.7	379.3	#	7.4	
C15	Oesophagus	1	0.5	2.1	0.1	11.7		3.9	
C16	Stomach	4	1.2	3.4	0.9	8.6		21.0	
C18	Colon	7	2.9	2.4	1.0	5.0		30.9	
C19-C20	Rectum	4	1.4	2.9	0.8	7.3		19.4	
C22	Liver	3	0.8	3.9	0.8	11.5		16.7	33.3
C25	Pancreas	1	1.1	0.9	0.0	5.1		-0.7	
C32	Larynx	1	0.2	4.1	0.1	22.8		5.6	
C33-C34	Lung	17	3.1	5.4	3.2	8.7	#	103.6	11.8
C43	Malign. melanoma	5	1.2	4.3	1.4	10.0	#	28.6	20.0
C61	Prostate	9	7.7	1.2	0.5	2.2		9.3	33.3
C67	Bladder	2	1.4	1.4	0.2	5.0		4.1	
C76-C79	CUP	2	0.5	4.1	0.5	14.6		11.3	
C81	Hodgkin lymphoma	1	0.1	18.2	0.5	101.1		7.1	100.0
C82-C85	NHL	4	1.2	3.3	0.9	8.5		20.9	
C90	Mult. myeloma	1	0.4	2.6	0.1	14.7		4.6	
C91-C96	Leukaemia	1	0.5	2.2	0.1	12.3		4.1	100.0
Not observed		0	3.1	0.0	0.0	1.2		-23.0	
All further malignancies		74	27.7	2.7	2.1	3.4	#	345.8	12.2

Patients	258
Median age at next malignancy (years)	77.8
Person-years	1339
Mean observation time (years)	5.2
Median observation time (years)	4.5

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 %
C07–C08	Salivary gland	1	0.0	62.0	1.6	345.4	#	15.3	
C21	Anus/canal	1	0.0	21.0	0.5	117.3		14.8	
C25	Pancreas	1	0.5	2.0	0.1	11.2		7.8	
C30–C31	Sinuses	1	0.0	80.6	2.0	449.1	#	15.3	
C43	Malign. melanoma	4	0.3	12.9	3.5	33.1	#	57.2	
C50	Breast	5	2.4	2.1	0.7	4.8		39.9	
C51	Vulva	2	0.1	18.0	2.2	65.2	#	29.3	
C54	Corpus uteri	1	0.4	2.2	0.1	12.4		8.6	
C56	Ovary	2	0.3	5.7	0.7	20.7		25.6	
C69	Eye lymphoma	1	0.0	376.6	9.5	2098	#	15.5	
C82–C85	NHL	1	0.4	2.6	0.1	14.6		9.6	
Not observed		0	4.5	0.0	0.0	0.8	#	-69.9	
All further malignancies		20	9.1	2.2	1.3	3.4	#	168.9	

Patients	151
Median age at next malignancy (years)	74.9
Person-years	645
Mean observation time (years)	4.3
Median observation time (years)	3.0

The occurrence of further specified malignancy is statistically significant.

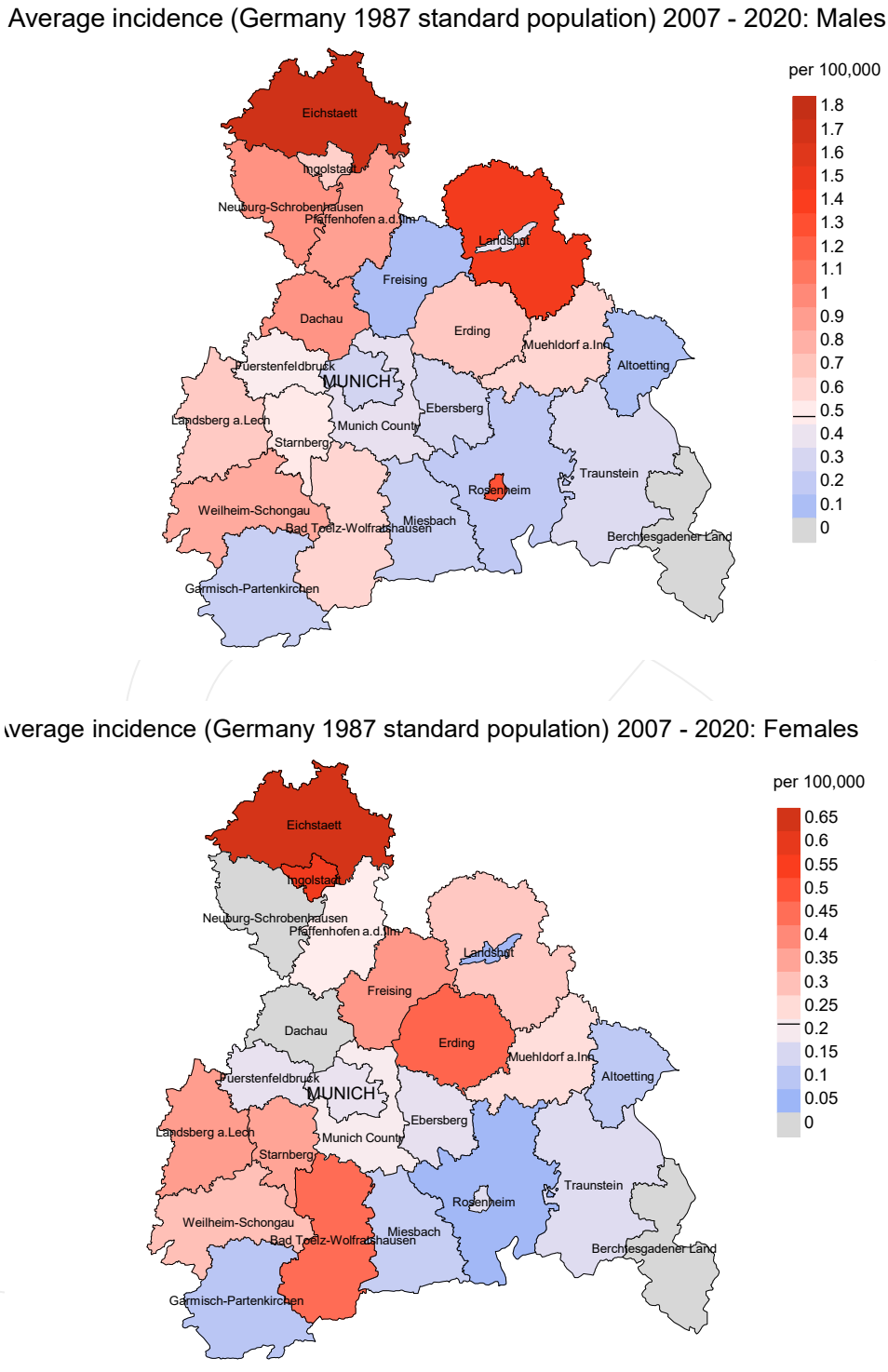
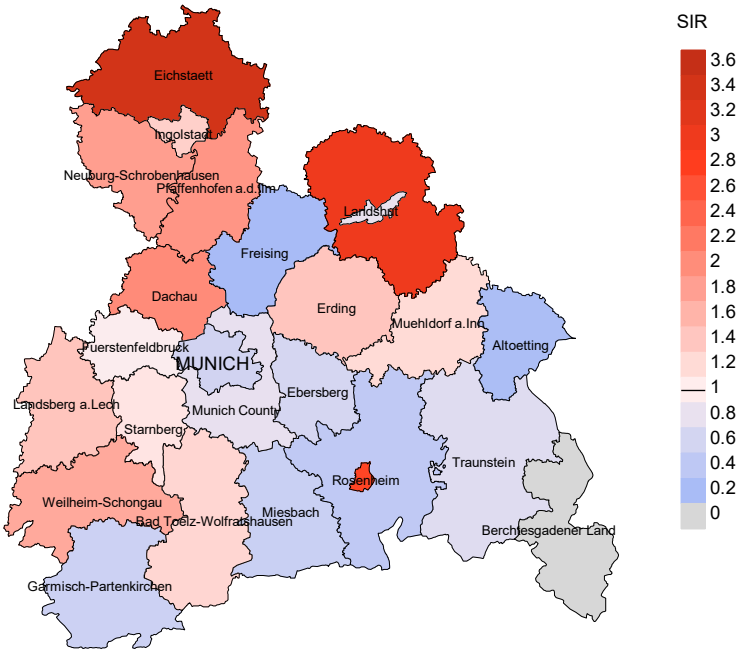


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.5/100,000 WS N=169, females 0.2/100,000 WS N=101).

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 2 women were identified with newly diagnosed lip cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.9/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

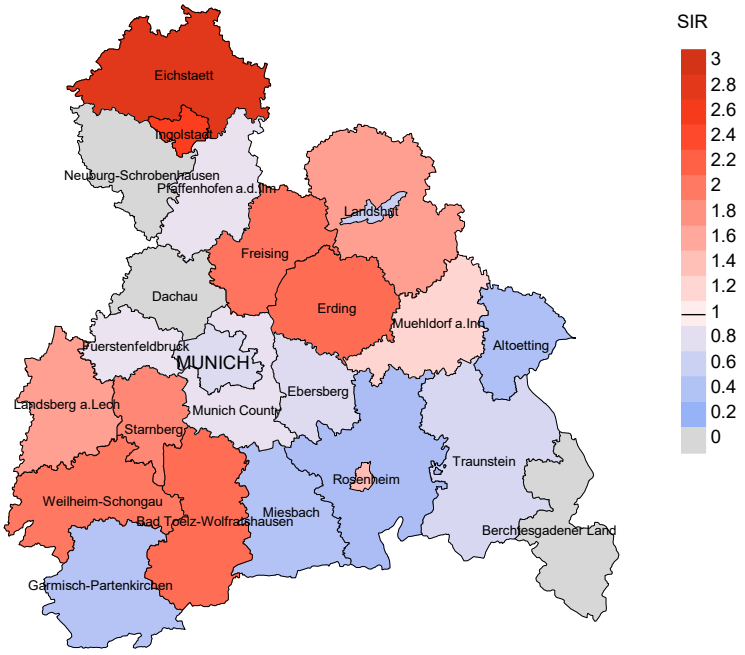


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=169, females N=101).

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 2 women were identified with newly diagnosed lip cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.74. Though, the value of this parameter may vary with an underlying probability of 99% between 0.04 and 3.44, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 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 %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	17	100.0		10	58.8	100.0
1999	17	100.0		11	64.7	90.9
2000	9	100.0		7	77.8	100.0
2001	9	88.9	11.1	5	55.6	100.0
2002	33	100.0	12.1	25	75.8	84.0
2003	24	100.0	8.3	17	70.8	100.0
2004	21	100.0	4.8	16	76.2	87.5
2005	22	100.0		14	63.6	100.0
2006	12	83.3		9	75.0	100.0
2007	22	90.9	9.1	15	68.2	93.3
2008	29	100.0		19	65.5	100.0
2009	24	95.8		14	58.3	100.0
2010	26	100.0		12	46.2	91.7
2011	36	94.4	2.8	18	50.0	83.3
2012	26	100.0		15	57.7	86.7
2013	24	100.0	12.5	16	66.7	93.8
2014	19	100.0	5.3	10	52.6	90.0
2015	20	90.0		7	35.0	85.7
2016	21	100.0		6	28.6	83.3
2017	12	91.7		1	8.3	100.0
2018	2	100.0	100.0	2	100.0	100.0
2019	6	100.0				
2020	4	100.0				
1998-2020	435	97.5	3.9	249	57.2	92.8

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(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	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	17	9	100.0	1	5.9
1999	17	11	90.9		
2000	9	5	100.0		
2001	9	8	75.0		
2002	33	10	100.0	3	9.1
2003	24	17	88.2	1	4.2
2004	21	12	100.0	3	14.3
2005	22	17	100.0	1	4.5
2006	12	18	100.0	1	8.3
2007	22	15	100.0	1	4.5
2008	29	21	95.2	2	6.9
2009	24	20	100.0	1	4.2
2010	26	22	95.5	2	7.7
2011	36	15	100.0	2	5.6
2012	26	24	91.7		
2013	24	15	93.3	5	20.8
2014	19	17	94.1	2	10.5
2015	20	24	100.0	2	10.0
2016	21	24	100.0		
2017	12	21	100.0		
2018	2	16	75.0	2	100.0
2019	6	15	46.7		
2020	4	11	90.9		
1998-2020	435	367	93.5	29	6.7

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(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	9	44.4	55.6	66.7
1999	11	54.5	45.5	60.0
2000	5	80.0	20.0	80.0
2001	8	12.5	87.5	33.3
2002	10	70.0	30.0	80.0
2003	17	35.3	64.7	33.3
2004	12	66.7	33.3	83.3
2005	17	23.5	76.5	47.1
2006	18	38.9	61.1	44.4
2007	15	46.7	53.3	60.0
2008	21	28.6	71.4	40.0
2009	20	35.0	65.0	40.0
2010	22	31.8	68.2	38.1
2011	15	46.7	53.3	66.7
2012	24	50.0	50.0	59.1
2013	15	26.7	73.3	42.9
2014	17	35.3	64.7	62.5
2015	24	33.3	66.7	50.0
2016	24	29.2	70.8	37.5
2017	21	23.8	76.2	38.1
2018	16	25.0	75.0	33.3
2019	15	13.3	86.7	71.4
2020	11	27.3	72.7	70.0
1998-2020	367	36.0	64.0	50.7

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	7	68.9	70.0	65.4	68.9
1999	6	78.6	74.8	78.6	66.4
2000	5	79.4	76.5	82.8	76.5
2001	6	78.9	71.6	83.7	77.7
2002	9	81.4	81.4	76.5	81.4
2003	16	75.7	72.2	79.3	69.6
2004	9	78.4	78.4	84.7	78.1
2005	9	83.9	78.3	85.3	82.5
2006	9	82.1	76.8	83.7	76.8
2007	11	80.3	79.0	86.5	79.0
2008	14	85.6	85.8	82.1	85.7
2009	10	81.6	81.1	83.3	81.1
2010	16	79.4	75.4	81.7	76.4
2011	10	82.7	82.7	81.3	77.9
2012	16	80.2	80.2	76.6	78.9
2013	10	83.2	74.4	83.6	82.6
2014	14	79.1	79.4	78.8	77.7
2015	19	82.2	73.1	86.2	75.7
2016	14	82.8	82.3	82.9	85.0
2017	15	86.5	83.9	87.7	83.9
2018	12	79.5	78.0	80.7	76.1
2019	12	84.8	67.2	86.1	79.4
2020	7	84.4	85.6	84.4	86.9
1998–2020	256	82.1	79.1	83.7	79.2

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	2	85.3	83.5	87.1	83.5
1999	5	79.2	81.0	79.2	85.5
2000					
2001	2	84.5		84.5	
2002	1	91.0		91.0	91.0
2003	1	95.3		95.3	
2004	3	85.5	85.5	81.1	78.3
2005	8	87.8	77.1	88.8	77.4
2006	9	82.7	79.4	83.0	77.9
2007	4	83.8	67.4	87.8	67.4
2008	7	89.6	77.9	89.9	83.7
2009	10	82.3	73.8	83.2	83.7
2010	6	85.9	64.8	87.7	64.8
2011	5	86.2	88.4	86.1	87.3
2012	8	84.3	78.8	86.3	78.8
2013	5	84.2	76.0	84.6	76.0
2014	3	84.3	84.3	78.7	77.7
2015	5	82.1	83.0	75.4	82.1
2016	10	90.2	95.2	89.3	95.2
2017	6	89.1	65.9	90.2	76.8
2018	4	93.1		93.1	
2019	3	71.9		71.9	71.9
2020	4	89.7	98.5	87.6	89.0
1998-2020	111	85.9	80.0	87.2	80.5

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	3	0.3	0.27	0.2	0.25	0.3	0.29	0.3	0.31
1999	4	0.4	0.31	0.2	0.33	0.3	0.31	0.5	0.30
2000	4	0.4	0.57	0.2	0.47	0.3	0.52	0.5	0.63
2001	1	0.1	0.13	0.1	0.12	0.1	0.13	0.1	0.15
2002	7	0.4	0.33	0.2	0.28	0.3	0.33	0.5	0.40
2003	6	0.3	0.55	0.2	0.53	0.3	0.57	0.3	0.57
2004	7	0.4	0.50	0.2	0.45	0.3	0.55	0.5	0.61
2005	2	0.1	0.15	0.0	0.13	0.1	0.14	0.1	0.17
2006	4	0.2	0.50	0.1	0.52	0.2	0.50	0.2	0.54
2007	6	0.3	0.46	0.1	0.39	0.2	0.43	0.3	0.48
2008	5	0.2	0.23	0.1	0.17	0.2	0.24	0.3	0.25
2009	5	0.2	0.31	0.1	0.26	0.1	0.28	0.3	0.37
2010	6	0.3	0.50	0.1	0.50	0.2	0.50	0.3	0.49
2011	6	0.3	0.22	0.1	0.17	0.2	0.22	0.3	0.22
2012	10	0.4	0.63	0.1	0.48	0.2	0.53	0.4	0.66
2013	3	0.1	0.23	0.0	0.23	0.1	0.22	0.1	0.19
2014	5	0.2	0.42	0.1	0.31	0.1	0.34	0.2	0.39
2015	6	0.3	0.67	0.1	0.82	0.2	0.75	0.2	0.67
2016	6	0.2	0.50	0.1	0.39	0.1	0.44	0.2	0.52
2017	4	0.2	0.50	0.0	0.36	0.1	0.43	0.1	0.48
2018	4	0.2	2.00	0.1	1.74	0.1	1.86	0.1	1.91
2019	2	0.1	0.40	0.1	0.78	0.1	0.62	0.1	0.46
2020	2	0.1	1.00	0.0	0.61	0.0	0.74	0.1	0.94
1998-2020	108	0.2	0.39	0.1	0.33	0.2	0.37	0.2	0.40

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	1	0.1	0.17	0.0	0.11	0.0	0.13	0.1	0.19
1999	2	0.2	0.50	0.0	0.27	0.1	0.35	0.1	0.45
2000									
2001									
2002									
2003									
2004	1	0.1	0.14	0.0	0.09	0.0	0.11	0.0	0.09
2005	2	0.1	0.22	0.0	0.15	0.1	0.20	0.1	0.28
2006	3	0.1	0.75	0.0	1.14	0.1	1.00	0.1	0.88
2007	1	0.0	0.11	0.0	0.19	0.0	0.15	0.0	0.09
2008	1	0.0	0.14	0.0	0.17	0.0	0.18	0.0	0.21
2009	2	0.1	0.25	0.0	0.31	0.1	0.28	0.1	0.29
2010	1	0.0	0.08	0.0	0.17	0.0	0.13	0.0	0.10
2011	1	0.0	0.11	0.0	0.03	0.0	0.05	0.0	0.05
2012	2	0.1	0.20	0.0	0.10	0.0	0.14	0.1	0.22
2013	1	0.0	0.09	0.0	0.08	0.0	0.09	0.0	0.12
2014	1	0.0	0.14	0.0	0.13	0.0	0.14	0.0	0.18
2015	2	0.1	0.18	0.0	0.07	0.0	0.10	0.1	0.18
2016	1	0.0	0.11	0.0	0.07	0.0	0.08	0.0	0.07
2017	1	0.0	0.25	0.0	0.51	0.0	0.41	0.0	0.32
2018									
2019									
2020	1	0.0	0.50	0.0	0.45	0.0	0.45	0.0	0.36
1998-2020	24	0.0	0.15	0.0	0.12	0.0	0.13	0.0	0.15

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									
40-44									
45-49	1	1.2	1.2	1	1.4	1.4			0.0
50-54	2	2.4	3.5	2	2.9	4.3			0.0
55-59	0	0.0	3.5			4.3			0.0
60-64	4	4.7	8.2	2	2.9	7.1	2	13.3	13.3
65-69	9	10.6	18.8	7	10.0	17.1	2	13.3	26.7
70-74	11	12.9	31.8	11	15.7	32.9			26.7
75-79	13	15.3	47.1	10	14.3	47.1	3	20.0	46.7
80-84	27	31.8	78.8	22	31.4	78.6	5	33.3	80.0
85+	18	21.2	100.0	15	21.4	100.0	3	20.0	100.0
All ages	85	100.0		70	100.0		15	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.	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								
40-44								
45-49	1		0.0	0.33			0.1	
50-54	2		0.1	0.50			0.1	
55-59								
60-64	2	2	0.1	0.11	0.1	0.25	0.0	0.0
65-69	7	2	0.4	0.32	0.1	0.33	0.1	0.0
70-74	11		0.7	0.44			0.1	
75-79	10	3	0.8	0.25	0.2	0.15	0.1	0.0
80-84	22	5	3.0	0.73	0.5	0.23	0.2	0.1
85+	15	3	3.2	1.00	0.3	0.13	0.2	0.0
All ages	70	15					0.1	0.0
Mortality								
Raw			0.2	0.41	0.0	0.15		
WS			0.1	0.35	0.0	0.13		
ES			0.1	0.38	0.0	0.14		
BRD-S			0.2	0.41	0.0	0.15		
PYLL-70								
per 100,000			0.3		0.1			
ES			0.3		0.1			
AYLL-70			7.5		5.0			

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	1	0.6					1	100.0
C03–C06	Oral cavity	7	4.2	1	14.3	1	14.3	5	71.4
C07–C08	Salivary gland	2	1.2					2	100.0
C09–C10	Oropharynx	1	0.6	1	100.0				
C11	Nasopharynx	1	0.6			1	100.0		
C12–C13	Hypopharynx	1	0.6	1	100.0				
C15	Oesophagus	2	1.2	1	50.0			1	50.0
C16	Stomach	7	4.2	2	28.6			5	71.4
C18	Colon	4	2.4	2	50.0			2	50.0
C19–C20	Rectum	5	3.0	1	20.0			4	80.0
C22	Liver	3	1.8	1	33.3			2	66.7
C23–C24	Bile	1	0.6					1	100.0
C25	Pancreas	1	0.6					1	100.0
C30–C31	Sinuses	1	0.6	1	100.0				
C32	Larynx	3	1.8	2	66.7			1	33.3
C33–C34	Lung	34	20.6	3	8.8	1	2.9	30	88.2
C43	Malign. melanoma	7	4.2	2	28.6			5	71.4
C44	Skin others	41	24.8	13	31.7	7	17.1	21	51.2
C46,C49	Soft tissue	2	1.2	2	100.0				
C61	Prostate	19	11.5	9	47.4			10	52.6
C67	Bladder	4	2.4	1	25.0			3	75.0
C76–C79	CUP	2	1.2					2	100.0
C81	Hodgkin lymphoma	1	0.6					1	100.0
C82–C85	NHL	12	7.3	8	66.7			4	33.3
C90	Mult. myeloma	1	0.6	1	100.0				
C91–C96	Leukaemia	2	1.2					2	100.0
All further malignancies		165	100.0	52	31.5	10	6.1	103	62.4

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	2	9.1	2	100.0				
C16 Stomach	2	9.1	2	100.0				
C18 Colon	2	9.1					2	100.0
C19–C20 Rectum	2	9.1	1	50.0			1	50.0
C25 Pancreas	1	4.5			1	100.0		
C30–C31 Sinuses	1	4.5					1	100.0
C43 Malign. melanoma	2	9.1					2	100.0
C44 Skin others	2	9.1			2	100.0		
C50 Breast	2	9.1			2	100.0		
C51 Vulva	2	9.1					2	100.0
C54 Corpus uteri	1	4.5	1	100.0				
C56 Ovary	1	4.5					1	100.0
C82–C85 NHL	2	9.1	2	100.0				
All further malignancies	22	100.0	8	36.4	5	22.7	9	40.9

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								
40-44								
45-49								
50-54	2		0.1	0.67			0.1	
55-59								
60-64	2	1	0.1	0.14	0.1	0.20	0.0	0.0
65-69	5	2	0.3	0.29	0.1	0.50	0.1	0.0
70-74	4		0.3	0.29			0.0	
75-79	9	2	0.7	0.39	0.1	0.17	0.1	0.0
80-84	11	1	1.5	0.69	0.1	0.07	0.1	0.0
85+	8	1	1.7	1.33	0.1	0.06	0.1	0.0
All ages	41	7					0.1	0.0
Mortality								
Raw			0.1	0.39	0.0	0.10		
WS			0.0	0.31	0.0	0.11		
ES			0.1	0.35	0.0	0.11		
BRD-S			0.1	0.39	0.0	0.11		
PYLL-70								
per 100,000			0.2		0.0			
ES			0.2		0.0			
AYLL-70			6.9		4.2			

* 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.	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								
40-44								
45-49								
50-54								
55-59								
60-64								
65-69	1		0.1	0.08			0.0	
70-74	1		0.1	0.11			0.0	
75-79	2	2	0.2	0.11	0.1	0.20	0.0	0.0
80-84	2		0.3	0.20			0.0	
85+	1	1	0.2	0.20	0.1	0.06	0.0	0.0
All ages	7	3					0.0	0.0
Mortality								
Raw			0.0	0.09	0.0	0.05		
WS			0.0	0.06	0.0	0.03		
ES			0.0	0.07	0.0	0.04		
BRD-S			0.0	0.09	0.0	0.05		
PYLL-70								
per 100,000			0.0					
ES			0.0					
AYLL-70			2.5					

* See corresponding tables with multiple malignancies.

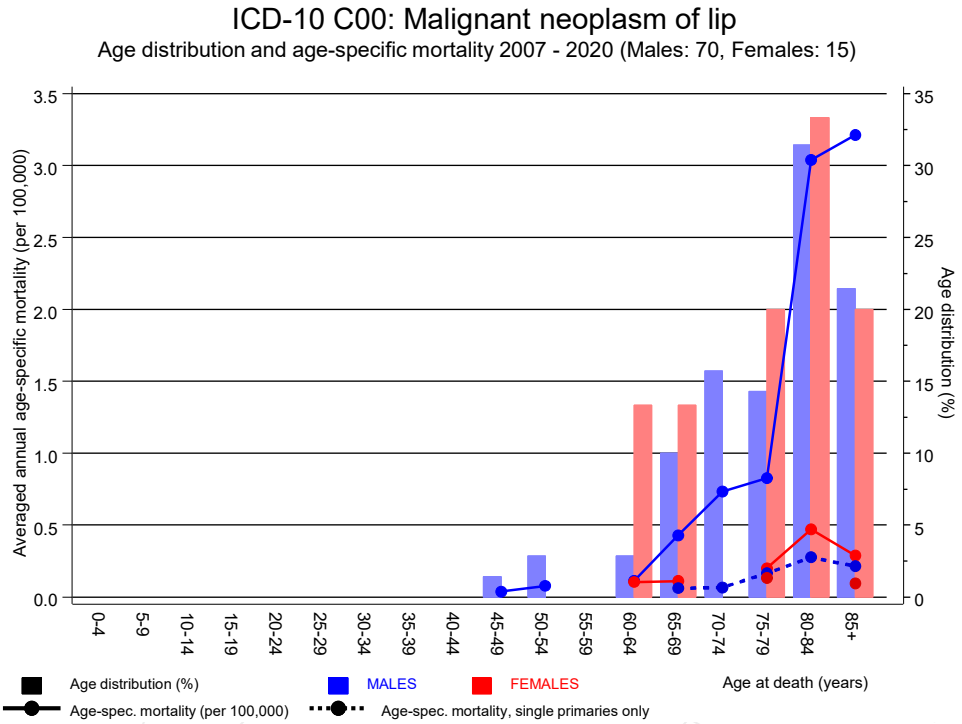
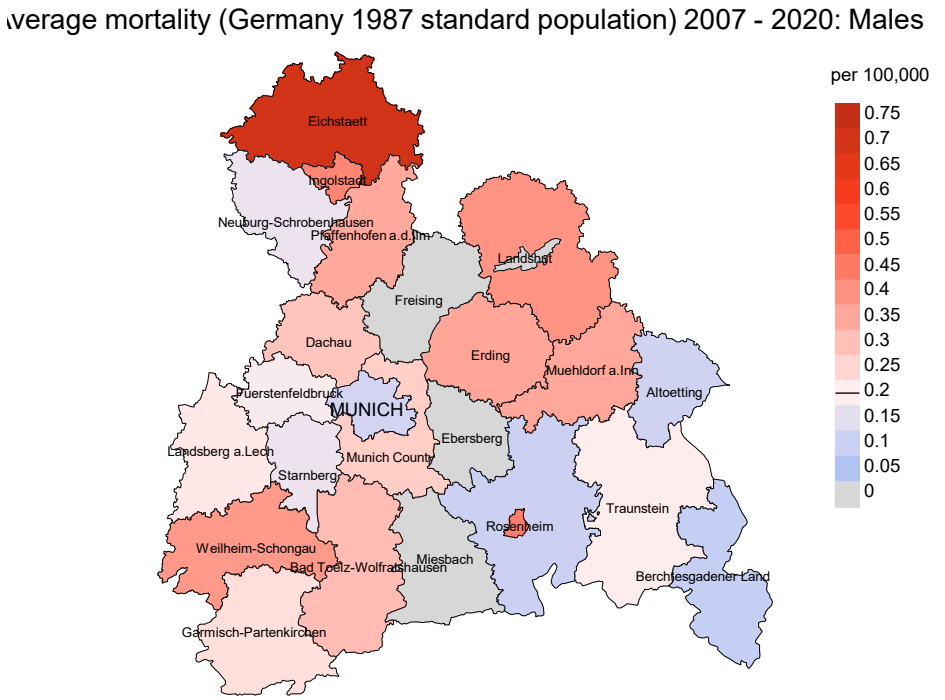


Figure 17. Distribution of age at death (bars; males: mean=69.2 yrs, median=72.3 yrs; females: mean=75.0 yrs, median=78.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line).

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



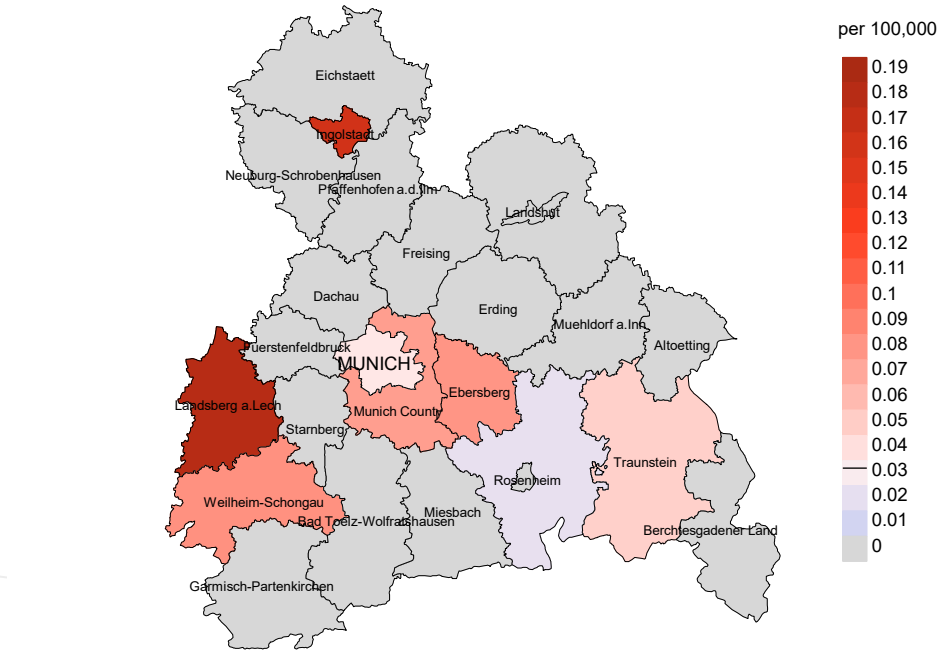
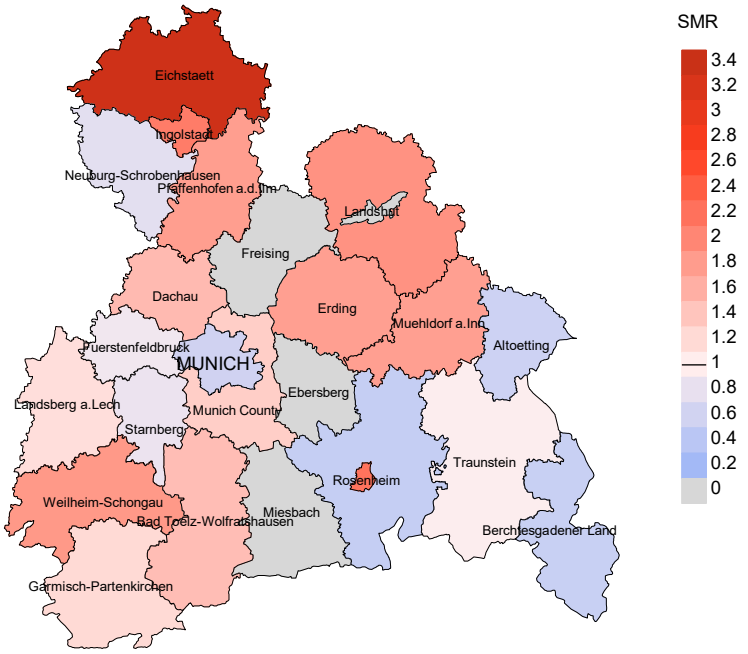


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.2/100,000 WS N=70, females 0.0/100,000 WS N=15).

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 1 women died from lip cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.1/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 0.7/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

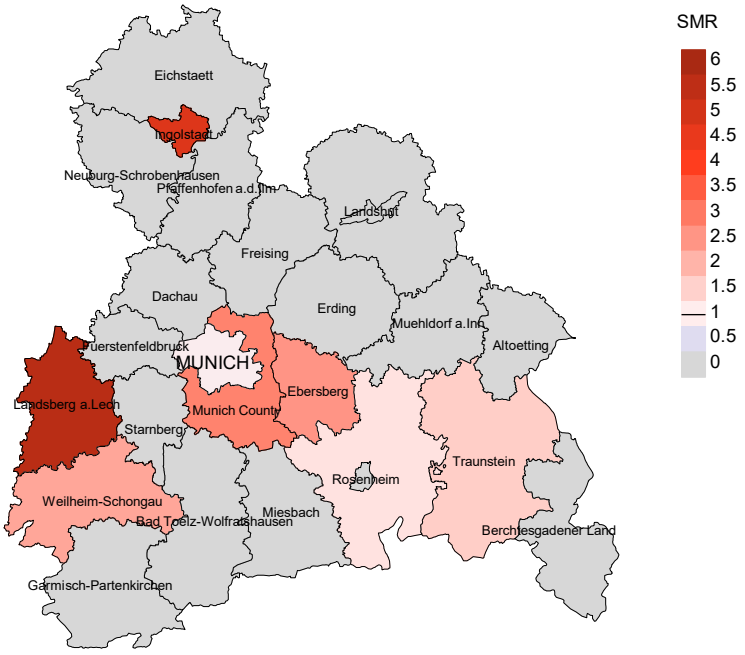


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=70, females N=15).

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 1 women died from lip cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 2.53. Though, the value of this parameter may vary with an underlying probability of 99% between 0.01 and 18.76, 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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