Munich Cancer Registry

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ICD-10 C44: Skin other

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	25,994
Diseases	32,377
Creation date	12/21/2021
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/bC44__E-ICD-10-C44-Skin-other-incidence-and-mortality.pdf

Index of figures and tables

Global Statements about the statistics on the Internet −
Baseline Statistics (grey button), **Survival** (red button)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.69 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

Clinics and physicians have access to essentially more detailed data, with which they can check, compare and in the best case optimize their own data and results.

We would be pleased to receive corrections, critique and useful suggestions. Just send an e-mail to tumor@ibe.med.uni-muenchen.de.

Munich Cancer Registry, December 2021

[#] Base data has been collected since 1998. An increase in new diseases is apparent, which is an effect of two extensions in the MCR catchment area (from a base population of 2.65 million to 4.10 in 2002, and to 4.69 million in 2007).

[##] Due to the high frequency and good prognosis of non-malignant skin cancer (C44), no systematic ascertainment is performed for this diagnosis. C44 is not designated as a primary, but rather as a secondary tumor.

[###] DCO (death certificate only) identifies a cancer case that first becomes available to the MCR through the death certificate.

ICD-10 codes (ICD-10 2016) used for specifying cancer site

Code	Description
C44.-	Other malignant neoplasms of skin
C44.0	Skin of lip
C44.1	Skin of eyelid, including canthus
C44.2	Skin of ear and external auricular canal
C44.3	Skin of other and unspecified parts of face
C44.4	Skin of scalp and neck
C44.5	Skin of trunk
C44.6	Skin of upper limb, including shoulder
C44.7	Skin of lower limb, including hip
C44.8	Overlapping lesion of skin
C44.9	Malignant neoplasm of skin, 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	267	8	3.0	23.6	30.8	79.8	96.3
1999	312	4	1.3	27.6	30.7	80.8	96.5
2000	313	9	2.9	27.8	30.7	81.5	98.4
2001	270	7	2.6	29.2	30.6	78.1	97.4
2002	708	17	2.4	29.5	30.5	82.6	97.0 #
2003	719	25	3.5	30.0	30.3	78.0	97.1
2004	860	15	1.7	30.9	30.0	75.9	97.6
2005	879	25	2.8	31.7	29.8	74.6	96.1
2006	906	23	2.5	32.6	29.6	72.7	95.3
2007	1298	27	2.1	33.7	29.3	70.5	92.8 #
2008	1572	16	1.0	35.0	28.9	66.4	97.5
2009	1939	17	0.9	36.3	28.3	62.8	97.8
2010	2023	22	1.1	37.5	27.5	57.3	98.6
2011	2092	21	1.0	38.6	26.5	53.2	98.0
2012	2833	27	1.0	39.5	25.6	48.1	97.3
2013	2743	28	1.0	40.4	25.0	45.6	96.8
2014	2370	17	0.7	41.8	24.2	48.9	95.1
2015	2013	29	1.4	43.3	22.5	49.3	94.5
2016	1848	22	1.2	44.1	20.2	42.2	96.6
2017	1773	20	1.1	44.8	17.7	32.8	97.6
2018	2039	14	0.7	45.7	16.4	24.7	97.1
2019	1514	4	0.3	46.3	13.6	19.0	97.7
2020	1086			47.0	10.2	12.5	97.1 ##
1998-2020	32377	397	1.2	47.0	30.8	51.1	96.8

32,377 cases diagnosed 1998-2020 are related to a total of 25,994 patients. Currently, in 14,751 (56.7 %) of these 25,994 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 8,672 / 3,545 / 2,534 (33.4 % / 13.6 % / 9.7 %) 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 2,039 cases has been diagnosed, of which 45.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 16.4 % 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	170	63.7	3	1.8	25.9	33.7	81.2	94.7
1999	175	56.1	1	0.6	28.1	33.6	85.7	96.6
2000	184	58.8	5	2.7	29.3	33.5	83.7	98.4
2001	171	63.3	6	3.5	31.3	33.4	81.9	97.1
2002	426	60.2	8	1.9	31.6	33.4	84.7	97.9 #
2003	432	60.1	10	2.3	32.8	33.1	82.6	97.5
2004	507	59.0	5	1.0	34.2	32.8	77.3	98.4
2005	518	58.9	9	1.7	35.0	32.5	75.5	96.3
2006	556	61.4	11	2.0	36.1	32.2	75.5	96.0
2007	762	58.7	12	1.6	37.5	31.7	71.8	94.9 #
2008	929	59.1	10	1.1	39.0	31.2	68.4	97.6
2009	1167	60.2	9	0.8	40.4	30.6	64.4	97.7
2010	1236	61.1	12	1.0	41.7	29.5	58.3	99.2
2011	1235	59.0	9	0.7	43.0	28.5	55.5	98.1
2012	1723	60.8	11	0.6	43.8	27.3	50.6	97.9
2013	1597	58.2	20	1.3	44.8	26.4	48.2	96.6
2014	1459	61.6	5	0.3	46.1	25.5	51.8	96.4
2015	1229	61.1	14	1.1	47.5	23.6	52.6	95.5
2016	1100	59.5	7	0.6	48.3	21.4	45.5	97.6
2017	1109	62.5	13	1.2	49.0	18.3	35.3	97.7
2018	1263	61.9	8	0.6	50.0	16.9	27.3	98.0
2019	944	62.4	2	0.2	50.6	13.8	20.0	98.4
2020	652	60.0			51.3	9.7	13.3	97.5 ##
1998-2020	19544	60.4	190	1.0	51.3	33.7	53.2	97.3

19,544 cases diagnosed 1998-2020 are related to a total of 15,063 patients. Currently, in 9,158 (60.8 %) of these 15,063 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 5,170 / 2,220 / 1,768 (34.3 % / 14.7 % / 11.7 %) 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 1,263 cases has been diagnosed, of which 50.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 16.9 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	97	36.3	5	5.2	19.6	26.6	77.3	99.0	
1999	137	43.9	3	2.2	26.9	26.6	74.5	96.4	
2000	129	41.2	4	3.1	25.6	26.5	78.3	98.4	
2001	99	36.7	1	1.0	26.0	26.4	71.7	98.0	
2002	282	39.8	9	3.2	26.3	26.3	79.4	95.7	#
2003	287	39.9	15	5.2	25.8	26.2	71.1	96.5	
2004	353	41.0	10	2.8	25.9	26.0	73.9	96.3	
2005	361	41.1	16	4.4	26.8	25.8	73.4	95.8	
2006	350	38.6	12	3.4	27.4	25.8	68.3	94.0	
2007	536	41.3	15	2.8	28.0	25.7	68.7	89.9	#
2008	643	40.9	6	0.9	29.1	25.4	63.6	97.4	
2009	772	39.8	8	1.0	30.4	25.0	60.4	98.1	
2010	787	38.9	10	1.3	31.2	24.4	55.8	97.7	
2011	857	41.0	12	1.4	32.1	23.5	49.8	98.0	
2012	1110	39.2	16	1.4	33.0	23.0	44.3	96.3	
2013	1146	41.8	8	0.7	33.9	22.8	42.1	97.0	
2014	911	38.4	12	1.3	35.2	22.3	44.3	93.1	
2015	784	38.9	15	1.9	36.9	20.7	44.1	93.0	
2016	748	40.5	15	2.0	37.9	18.4	37.4	95.1	
2017	664	37.5	7	1.1	38.4	16.7	28.6	97.6	
2018	776	38.1	6	0.8	39.2	15.6	20.4	95.6	
2019	570	37.6	2	0.4	39.8	13.4	17.2	96.5	
2020	434	40.0			40.5	10.8	11.3	96.5	##
1998-2020	12833	39.6	207	1.6	40.5	26.6	47.9	96.0	

12,833 cases diagnosed 1998-2020 are related to a total of 10,931 patients. Currently, in 5,593 (51.2 %) of these 10,931 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,502 / 1,325 / 766 (32.0 % / 12.1 % / 7.0 %) 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 776 cases has been diagnosed, of which 39.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 15.6 % 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 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	170	97	15.3	8.2	8.6	3.2	14.1	5.0	20.8	6.7
1999	175	137	15.6	11.5	9.2	4.4	14.5	6.8	20.1	9.4
2000	184	129	16.2	10.7	8.9	4.1	14.5	6.3	20.8	8.2
2001	171	99	14.8	8.1	8.0	3.4	13.3	5.2	19.2	6.7
2002	426	282	22.9	14.4	11.8	5.0	19.5	7.9	27.8	10.8
2003	432	287	23.0	14.6	11.6	5.2	19.3	8.2	27.8	11.1
2004	507	353	26.9	17.9	13.5	5.9	21.9	9.4	30.6	13.0
2005	518	361	27.3	18.1	13.1	6.3	21.7	9.8	30.8	13.0
2006	556	350	29.0	17.4	13.3	5.7	22.1	9.1	31.8	12.5
2007	762	536	34.4	23.2	15.7	7.6	25.7	12.0	36.7	16.5
2008	929	643	41.7	27.7	18.8	9.1	30.3	14.4	42.8	19.7
2009	1167	772	52.3	33.2	22.6	10.9	36.8	17.2	52.8	23.3
2010	1236	787	54.8	33.6	23.8	11.9	38.0	18.2	53.2	23.9
2011	1235	857	55.2	36.7	23.0	13.4	37.3	20.2	53.4	26.2
2012	1723	1110	75.9	47.0	30.5	16.4	50.0	25.1	71.3	33.4
2013	1597	1146	69.4	48.1	27.6	16.8	44.9	25.7	64.4	34.2
2014	1459	911	62.6	37.8	23.6	11.9	39.2	18.8	57.0	25.8
2015	1229	784	51.7	32.2	18.1	9.5	31.2	15.4	46.3	21.4
2016	1100	748	45.8	30.5	15.8	8.7	27.0	14.2	40.3	20.1
2017	1109	664	46.0	26.9	15.8	8.1	26.8	13.0	39.6	18.2
2018	1263	776	51.9	31.3	17.5	9.0	29.7	14.6	43.9	20.7
2019	944	570	38.8	23.0	12.5	6.4	21.4	10.5	32.6	15.0
2020	652	434	26.8	17.5	8.7	5.0	15.1	8.0	22.5	11.2
1998–2020	19544	12833	42.0	26.6	17.4	8.8	28.9	13.9	41.9	18.9

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	267	73.4	12.2	32.5	100	56.6	64.7	75.6	82.7	87.1
1999	312	74.2	13.3	15.3	101	58.5	66.8	75.6	84.4	89.1
2000	313	74.1	12.9	32.8	99.4	56.1	66.1	75.3	84.2	88.5
2001	270	73.7	13.2	34.6	101	55.6	65.9	76.0	82.8	88.8
2002	708	75.7	12.3	25.4	106	59.8	69.3	76.9	84.4	90.0
2003	719	75.6	12.2	13.2	102	59.7	68.5	77.1	83.7	90.0
2004	860	75.4	12.2	31.8	106	60.2	67.8	77.1	84.1	90.0
2005	879	75.7	12.4	21.2	102	60.2	68.0	77.4	85.0	90.5
2006	906	76.4	11.6	27.5	102	62.6	69.2	77.6	84.8	90.7
2007	1298	76.2	11.7	23.8	100	61.4	69.3	77.8	84.8	89.5
2008	1572	75.6	12.0	25.7	103	60.3	68.7	77.1	84.1	89.3
2009	1939	75.7	11.5	20.3	104	60.9	69.4	76.9	84.0	88.9
2010	2023	74.9	11.7	24.1	106	60.3	68.6	75.3	83.4	88.8
2011	2092	74.8	12.2	19.8	107	59.1	68.8	75.8	83.4	88.9
2012	2833	75.5	11.6	0.7	104	60.6	70.2	76.4	83.7	89.0
2013	2743	75.4	11.6	21.6	104	60.1	69.9	76.6	83.7	88.9
2014	2370	77.0	11.2	0.2	103	63.5	71.8	77.9	84.8	89.5
2015	2013	78.5	10.2	5.2	103	66.9	73.5	79.3	85.6	90.2
2016	1848	78.4	10.2	28.7	104	65.7	73.8	79.3	85.3	90.2
2017	1773	77.7	10.7	23.2	104	64.6	73.6	78.9	84.6	89.4
2018	2039	78.0	10.3	23.6	101	63.9	73.8	79.4	84.6	89.3
2019	1514	78.5	10.2	27.9	104	65.6	74.6	79.8	84.6	89.8
2020	1086	79.0	10.4	34.0	100	64.7	74.1	80.6	85.7	90.5
1998–2020	32377	76.4	11.4	0.2	107	61.7	70.6	77.9	84.4	89.5

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	170	72.9	11.4	38.9	95.6	57.1	64.4	75.3	82.4	86.1
1999	175	73.2	13.1	18.1	97.1	59.2	66.3	73.5	84.0	89.1
2000	184	73.5	11.0	38.7	96.1	59.7	65.9	74.6	81.5	87.5
2001	171	74.1	13.2	34.6	99.6	56.9	66.6	76.2	83.2	89.1
2002	426	74.9	11.5	27.3	96.9	59.8	68.7	75.4	82.8	88.8
2003	432	75.1	11.2	13.2	100	61.5	68.5	76.4	83.1	88.6
2004	507	74.0	11.6	34.4	99.3	59.7	66.6	74.7	82.4	88.9
2005	518	74.9	11.4	33.8	98.7	60.3	68.1	76.2	83.5	88.4
2006	556	75.8	10.8	40.8	102	62.3	69.0	76.6	83.7	88.4
2007	762	75.4	10.5	27.8	98.9	62.4	69.1	76.0	83.0	87.5
2008	929	74.5	11.1	30.9	97.2	60.6	68.4	75.0	82.5	87.6
2009	1167	74.8	10.9	20.3	104	60.8	69.4	76.0	82.4	87.6
2010	1236	74.4	10.7	24.1	106	61.8	68.8	74.8	81.9	87.1
2011	1235	75.0	10.5	25.4	98.6	61.8	69.4	75.9	82.3	87.1
2012	1723	75.5	10.5	0.7	101	62.5	70.7	76.3	82.7	87.6
2013	1597	75.6	10.4	28.1	98.4	62.4	70.5	76.4	83.2	88.2
2014	1459	76.9	10.3	21.1	101	64.3	71.8	77.6	84.2	88.6
2015	1229	78.6	9.3	22.3	103	68.3	73.8	79.3	85.1	89.1
2016	1100	78.2	9.3	28.7	104	66.7	74.0	79.0	84.7	88.2
2017	1109	78.0	9.8	26.5	102	66.1	74.1	78.9	84.1	88.8
2018	1263	78.1	9.9	23.6	101	65.5	74.2	79.5	84.3	88.7
2019	944	78.6	9.6	35.0	101	66.7	75.2	80.0	84.4	89.3
2020	652	79.2	9.4	38.3	99.0	67.2	74.7	80.5	85.1	89.9
1998-2020	19544	76.2	10.6	0.7	106	62.9	70.8	77.4	83.6	88.3

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	97	74.2	13.4	32.5	100	56.3	65.7	76.2	83.0	89.5
1999	137	75.4	13.4	15.3	101	58.2	67.6	78.8	85.2	89.2
2000	129	75.1	15.2	32.8	99.4	50.4	67.3	78.7	86.8	90.3
2001	99	73.0	13.1	39.7	101	51.1	65.1	75.2	82.8	87.2
2002	282	77.0	13.3	25.4	106	59.8	70.7	79.2	87.1	91.3
2003	287	76.5	13.5	33.7	102	57.8	69.0	79.3	86.4	92.1
2004	353	77.5	12.7	31.8	106	61.5	69.2	80.2	86.5	91.3
2005	361	76.8	13.6	21.2	102	60.2	67.6	79.3	87.0	91.8
2006	350	77.4	12.7	27.5	102	62.7	69.7	79.4	86.2	92.0
2007	536	77.4	13.2	23.8	100	59.2	69.7	80.6	86.5	92.1
2008	643	77.3	13.0	25.7	103	60.1	69.6	80.3	86.4	92.0
2009	772	77.1	12.2	25.0	102	61.3	69.6	78.6	86.6	90.6
2010	787	75.5	13.0	26.3	103	57.1	68.3	77.0	85.7	90.2
2011	857	74.4	14.3	19.8	107	53.2	67.3	75.8	85.7	90.6
2012	1110	75.4	13.1	23.3	104	58.3	68.7	76.8	85.9	90.6
2013	1146	75.2	13.0	21.6	104	55.2	68.9	76.7	84.9	90.2
2014	911	77.2	12.6	0.2	103	61.3	71.7	78.5	86.2	91.2
2015	784	78.4	11.3	5.2	102	64.6	72.6	79.4	86.4	91.4
2016	748	78.6	11.4	34.1	103	64.3	73.0	79.4	86.9	92.2
2017	664	77.3	12.1	23.2	104	59.7	71.9	78.8	85.2	91.0
2018	776	77.8	10.9	31.8	101	62.2	72.7	79.2	85.3	90.5
2019	570	78.3	11.2	27.9	104	63.0	73.2	79.6	85.7	90.8
2020	434	78.8	11.8	34.0	100	61.3	73.1	80.6	86.7	92.1
1998-2020	12833	76.8	12.7	0.2	107	59.5	70.1	78.6	86.0	91.0

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	2	0.0	0.0	1	0.0	0.0	1	0.0	0.0
5-9	1	0.0	0.0			0.0	1	0.0	0.0
10-14	0	0.0	0.0			0.0			0.0
15-19	1	0.0	0.0			0.0	1	0.0	0.0
20-24	17	0.1	0.1	7	0.0	0.0	10	0.1	0.1
25-29	28	0.1	0.2	14	0.1	0.1	14	0.1	0.3
30-34	46	0.2	0.3	15	0.1	0.2	31	0.3	0.5
35-39	97	0.4	0.7	49	0.3	0.5	48	0.4	1.0
40-44	180	0.7	1.4	83	0.5	1.0	97	0.9	1.9
45-49	419	1.5	2.9	197	1.2	2.2	222	2.1	4.0
50-54	661	2.4	5.3	334	2.0	4.3	327	3.0	7.0
55-59	765	2.8	8.2	419	2.6	6.8	346	3.2	10.2
60-64	1327	4.9	13.1	793	4.8	11.7	534	5.0	15.2
65-69	2554	9.4	22.5	1585	9.7	21.3	969	9.0	24.2
70-74	4345	16.0	38.5	2846	17.3	38.7	1499	14.0	38.2
75-79	5348	19.7	58.2	3536	21.6	60.2	1812	16.9	55.1
80-84	5085	18.7	76.9	3287	20.0	80.3	1798	16.7	71.8
85+	6267	23.1	100.0	3239	19.7	100.0	3028	28.2	100.0
All ages	27143	100.0		16405	100.0		10738	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=131 %	Females DCO rate n=131 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	1	1	0.1	0.1			0.5	0.6
5- 9		1		0.1				1.0
10-14								
15-19		1		0.1				0.4
20-24	7	10	0.3	0.5			1.1	1.9
25-29	14	14	0.6	0.6			1.5	1.2
30-34	15	31	0.6	1.4			1.2	1.4
35-39	47	46	2.0	2.0			2.6	1.3
40-44	80	94	3.2	3.9	1.3		2.9	1.5
45-49	195	216	7.3	8.3		0.5	3.9	2.3
50-54	317	315	12.4	12.5	0.3		3.8	2.5
55-59	394	334	18.6	15.3	0.5		3.1	2.5
60-64	753	519	42.6	27.3	0.5	0.4	4.3	3.3
65-69	1454	925	89.1	51.0	0.2	0.1	6.0	4.9
70-74	2582	1413	172.2	82.2	0.6	0.1	9.4	7.1
75-79	3155	1680	260.7	111.9	0.4	0.7	13.1	8.6
80-84	2877	1658	397.3	155.8	0.9	0.9	18.7	10.8
85+	2785	2770	596.4	265.7	2.4	3.6	26.5	16.9
All ages	14676	10028			0.9	1.3	9.5	6.5
Incidence								
Raw			45.1	29.9				
WS			17.6	9.8				
ES			29.0	15.3				
BRD-S			41.7	20.8				

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).

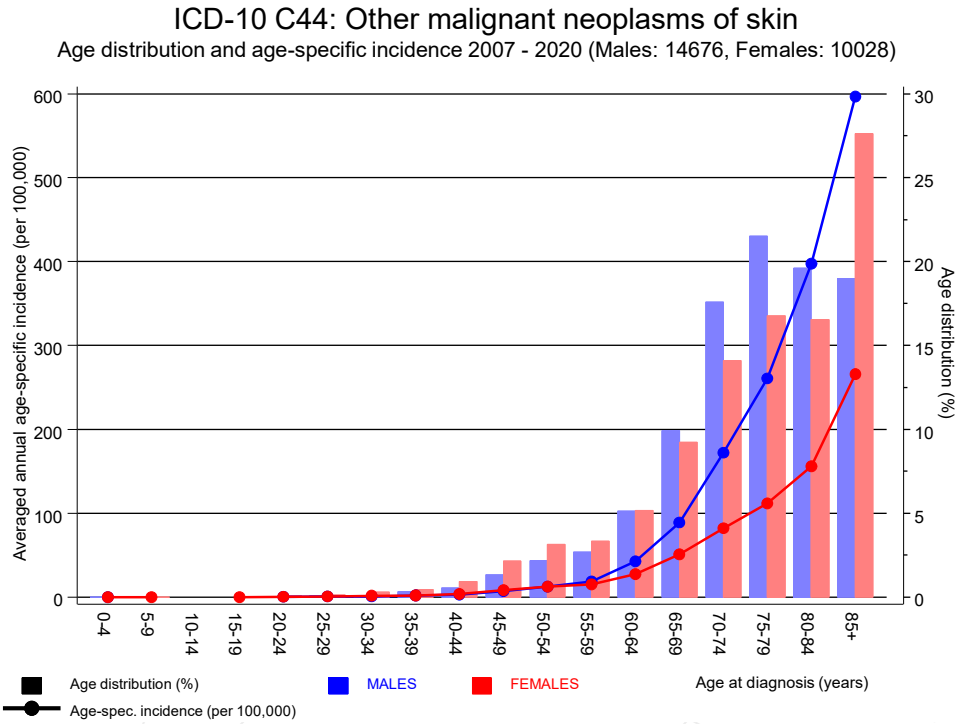


Figure 6. Age distribution (males: mean=76.2 yrs, median=77.4 yrs; females: mean=76.6 yrs, median=78.4 yrs) and age-specific incidence.

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	22	1.3	17.2	10.8	26.0	#	4.1	4.5
C03–C06	Oral cavity	36	6.2	5.8	4.1	8.1	#	5.8	5.6
C07–C08	Salivary gland	60	3.1	19.1	14.6	24.6	#	11.1	6.7
C09–C10	Oropharynx	38	6.8	5.6	3.9	7.6	#	6.1	2.6
C12–C13	Hypopharynx	19	3.7	5.2	3.1	8.1	#	3.0	26.3
C15	Oesophagus	57	18.4	3.1	2.4	4.0	#	7.6	5.3
C16	Stomach	101	48.0	2.1	1.7	2.6	#	10.4	6.9
C17	Small intestine	22	6.6	3.3	2.1	5.0	#	3.0	4.5
C18	Colon	289	116.1	2.5	2.2	2.8	#	33.9	7.3
C19–C20	Rectum	132	52.3	2.5	2.1	3.0	#	15.6	1.5
C21	Anus/canal	9	2.5	3.7	1.7	6.9	#	1.3	11.1
C22	Liver	90	29.8	3.0	2.4	3.7	#	11.8	14.4
C23–C24	Bile	23	12.8	1.8	1.1	2.7	#	2.0	17.4
C25	Pancreas	112	47.3	2.4	2.0	2.9	#	12.7	19.6
C30–C31	Sinuses	10	1.8	5.5	2.6	10.1	#	1.6	
C32	Larynx	34	8.4	4.1	2.8	5.7	#	5.0	11.8
C33–C34	Lung	376	119.0	3.2	2.8	3.5	#	50.4	16.2
C38,C45	Mesothelioma	21	8.1	2.6	1.6	4.0	#	2.5	4.8
C43	Malign. melanoma	779	48.2	16.2	15.1	17.3	#	143.2	1.4
C46,C49	Soft tissue	34	6.9	4.9	3.4	6.9	#	5.3	
C50	Breast	8	3.1	2.6	1.1	5.1	#	1.0	
C60	Penis	12	3.0	4.0	2.1	7.0	#	1.8	
C61	Prostate	577	283.5	2.0	1.9	2.2	#	57.5	11.8
C64	Kidney	84	33.3	2.5	2.0	3.1	#	9.9	2.4
C65	Renal pelvis	9	5.3	1.7	0.8	3.2		0.7	11.1
C66	Ureter	10	3.3	3.0	1.4	5.6	#	1.3	
C67	Bladder	127	63.3	2.0	1.7	2.4	#	12.5	11.0
C68	Urethra	7	1.2	5.7	2.3	11.8	#	1.1	
C69	Eye carcinoma	11	0.5	22.4	11.2	40.1	#	2.1	
C70–C72	CNS cancer	20	12.0	1.7	1.0	2.6	#	1.6	20.0
C73	Thyroid	14	4.7	3.0	1.6	5.0	#	1.8	7.1
C76–C79	CUP	73	20.3	3.6	2.8	4.5	#	10.3	5.5
C81	Hodgkin lymphoma	14	2.1	6.6	3.6	11.0	#	2.3	7.1
C82–C85	NHL	220	49.5	4.4	3.9	5.1	#	33.4	11.4
C90	Mult. myeloma	35	15.2	2.3	1.6	3.2	#	3.9	20.0
C91–C96	Leukaemia	51	19.5	2.6	1.9	3.4	#	6.2	35.3
	Others, specified	40	13.2	3.0	2.2	4.1	#	5.3	32.5
	Not observed	0	0.1	0.0	0.0	71.8		-0.0	
	All further malignancies	3576	1080.5	3.3	3.2	3.4	#	489.1	9.0

Patients	14553
Median age at next malignancy (years)	77.6
Person-years	51023
Mean observation time (years)	3.5
Median observation time (years)	2.2

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 4 are pooled in category “Others, specified”.

Table 7b

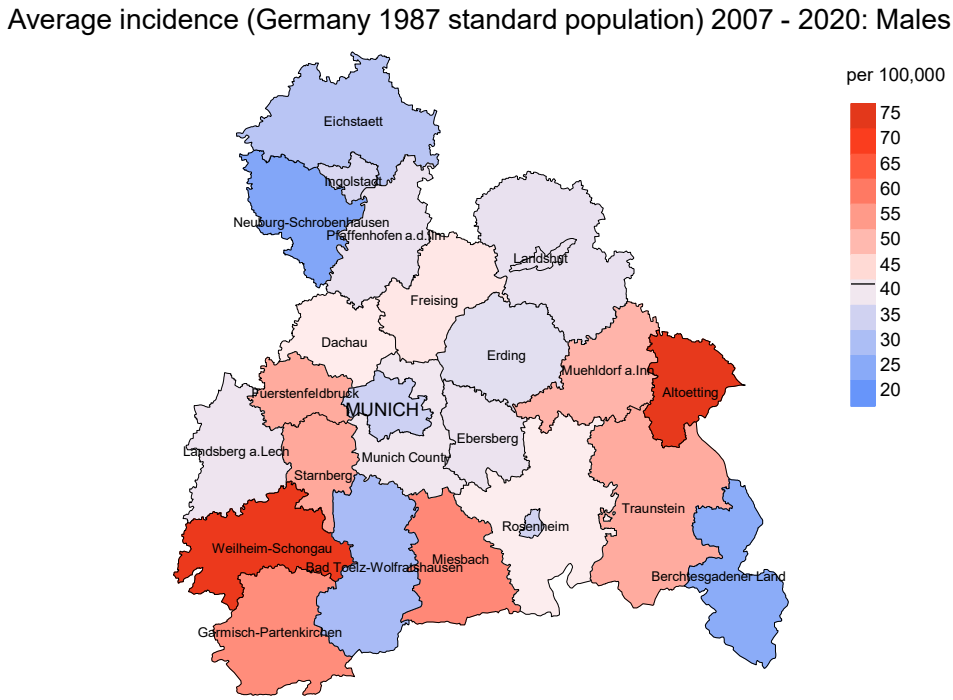
Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2020
FEMALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C00	Lip	7	0.5	15.1	6.1	31.2	#	1.9	
C03–C06	Oral cavity	16	2.5	6.5	3.7	10.6	#	3.9	6.3
C07–C08	Salivary gland	15	0.9	16.9	9.4	27.8	#	4.0	6.7
C09–C10	Oropharynx	10	1.4	7.4	3.5	13.6	#	2.5	10.0
C15	Oesophagus	13	3.2	4.1	2.2	7.0	#	2.8	
C16	Stomach	54	20.2	2.7	2.0	3.5	#	9.7	5.6
C17	Small intestine	13	2.4	5.3	2.8	9.1	#	3.0	7.7
C18	Colon	147	57.0	2.6	2.2	3.0	#	25.7	7.5
C19–C20	Rectum	46	20.3	2.3	1.7	3.0	#	7.4	6.5
C21	Anus/canal	17	2.6	6.6	3.9	10.6	#	4.1	17.6
C22	Liver	24	6.9	3.5	2.2	5.2	#	4.9	8.3
C23–C24	Bile	21	8.4	2.5	1.6	3.8	#	3.6	9.5
C25	Pancreas	73	28.1	2.6	2.0	3.3	#	12.8	26.0
C33–C34	Lung	109	33.3	3.3	2.7	3.9	#	21.6	16.5
C38,C45	Mesothelioma	4	1.0	4.1	1.1	10.5	#	0.9	
C43	Malign. melanoma	313	17.2	18.2	16.2	20.3	#	84.5	1.9
C44	Skin others	6	0.1	75.9	27.9	165.2	#	1.7	
C46,C49	Soft tissue	12	2.9	4.1	2.1	7.2	#	2.6	
C48	Peritoneal	13	1.8	7.4	3.9	12.6	#	3.2	15.4
C50	Breast	567	130.1	4.4	4.0	4.7	#	124.9	5.3
C51	Vulva	24	6.4	3.8	2.4	5.6	#	5.0	4.2
C52	Vagina	4	1.1	3.7	1.0	9.6	#	0.8	
C53	Cervix uteri	14	4.9	2.8	1.6	4.8	#	2.6	28.6
C54	Corpus uteri	69	23.7	2.9	2.3	3.7	#	12.9	1.4
C55,C57	Fem. genitals un	6	1.7	3.6	1.3	7.9	#	1.2	66.7
C56	Ovary	46	18.2	2.5	1.8	3.4	#	7.9	6.5
C64	Kidney	47	11.1	4.2	3.1	5.6	#	10.2	19.1
C65	Renal pelvis	6	1.7	3.5	1.3	7.6	#	1.2	
C67	Bladder	27	12.7	2.1	1.4	3.1	#	4.1	18.5
C70–C72	CNS cancer	13	5.6	2.3	1.2	3.9	#	2.1	38.5
C73	Thyroid	22	4.7	4.7	2.9	7.0	#	4.9	
C76–C79	CUP	29	11.8	2.5	1.7	3.5	#	4.9	6.9
C81	Hodgkin lymphoma	5	0.8	6.6	2.1	15.4	#	1.2	20.0
C82–C85	NHL	101	20.4	5.0	4.0	6.0	#	23.0	12.9
C90	Mult. myeloma	17	6.3	2.7	1.6	4.3	#	3.1	23.5
C91–C96	Leukaemia	24	8.3	2.9	1.9	4.3	#	4.5	50.0
Others, specified		32	8.5	3.8	2.6	5.3	#	6.7	21.9
Not observed		0	0.5	0.0	0.0	7.2		−0.1	
All further malignancies		1966	488.9	4.0	3.8	4.2	#	422.1	8.9

Patients	10409
Median age at next malignancy (years)	78.2
Person-years	34992
Mean observation time (years)	3.4
Median observation time (years)	2.0

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 3 are pooled in category “Others, specified”.



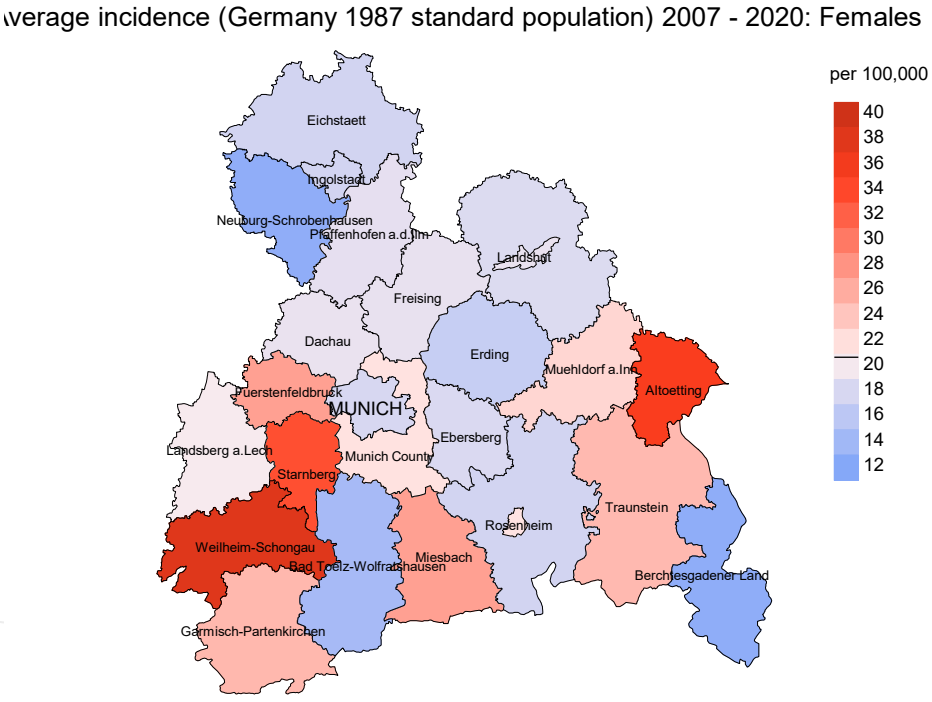
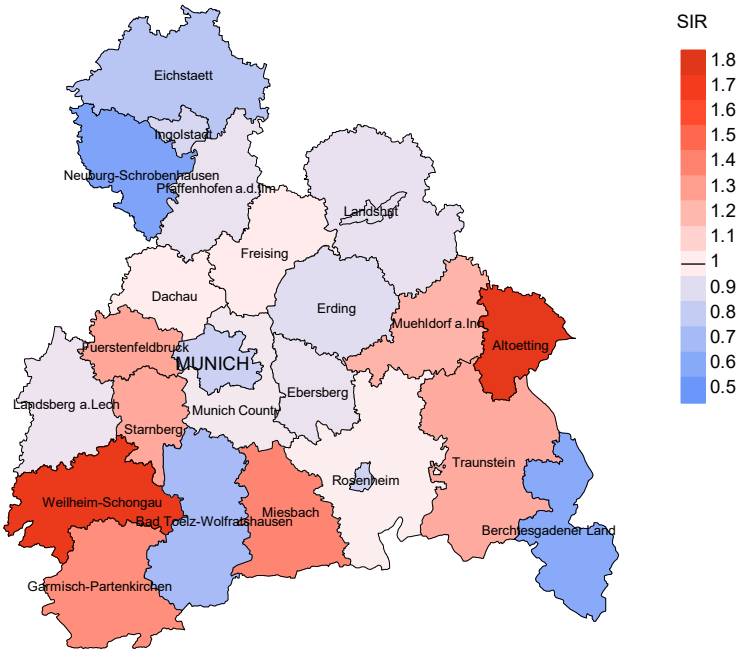


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 41.7/100,000 WS N=14,676, females 20.8/100,000 WS N=10,028).

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 255 women were identified with newly diagnosed skin other. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 18.1/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 15.2 and 21.4/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

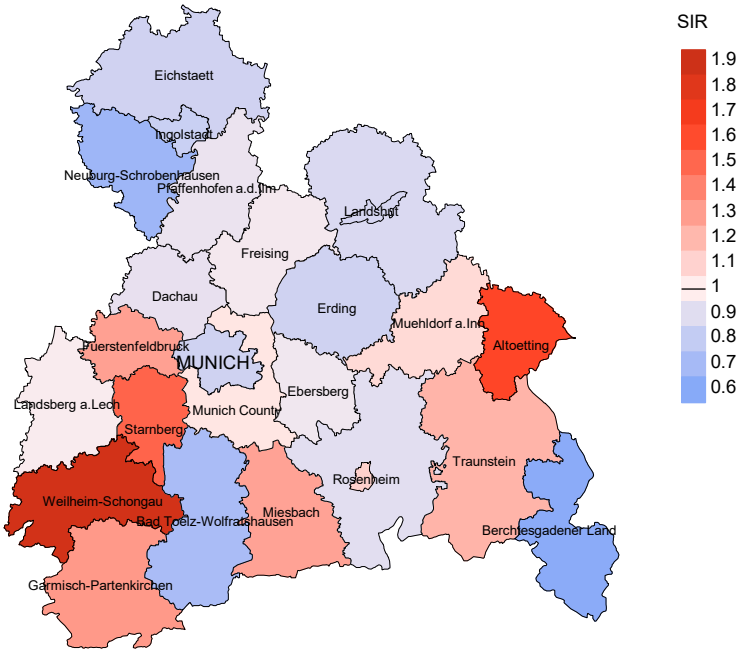


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=14,676, females N=10,028).

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 255 women were identified with newly diagnosed skin other. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.95. Though, the value of this parameter may vary with an underlying probability of 99% between 0.81 and 1.12, 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	267	96.3	3.0	213	79.8	93.0
1999	312	96.5	1.3	252	80.8	91.7
2000	313	98.4	2.9	255	81.5	92.5
2001	270	97.4	2.6	211	78.1	90.5
2002	708	97.0	2.4	585	82.6	94.5
2003	719	97.1	3.5	561	78.0	93.9
2004	860	97.6	1.7	653	75.9	96.0
2005	879	96.1	2.8	656	74.6	96.0
2006	906	95.3	2.5	659	72.7	94.5
2007	1298	92.8	2.1	915	70.5	95.7
2008	1572	97.5	1.0	1044	66.4	95.3
2009	1939	97.8	0.9	1218	62.8	94.1
2010	2023	98.6	1.1	1160	57.3	94.9
2011	2092	98.0	1.0	1112	53.2	92.4
2012	2833	97.3	1.0	1363	48.1	92.4
2013	2743	96.8	1.0	1252	45.6	90.7
2014	2370	95.1	0.7	1160	48.9	89.1
2015	2013	94.5	1.4	993	49.3	86.4
2016	1848	96.6	1.2	780	42.2	82.6
2017	1773	97.6	1.1	581	32.8	78.3
2018	2039	97.1	0.7	503	24.7	71.2
2019	1514	97.7	0.3	287	19.0	82.6
2020	1086	97.1		136	12.5	86.0
1998-2020	32377	96.8	1.2	16549	51.1	91.0

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	267	89	94.4	16	6.0
1999	312	99	93.9	19	6.1
2000	313	98	95.9	15	4.8
2001	270	140	92.9	25	9.3
2002	708	185	96.2	52	7.3
2003	719	253	96.0	56	7.8
2004	860	278	94.2	48	5.6
2005	879	296	97.3	63	7.2
2006	906	345	96.2	57	6.3
2007	1298	415	97.3	93	7.2
2008	1572	482	97.9	80	5.1
2009	1939	485	98.4	77	4.0
2010	2023	582	99.3	89	4.4
2011	2092	672	98.4	86	4.1
2012	2833	756	98.1	121	4.3
2013	2743	856	98.2	147	5.4
2014	2370	906	98.9	120	5.1
2015	2013	1052	99.0	140	7.0
2016	1848	1068	98.8	104	5.6
2017	1773	1162	96.4	118	6.7
2018	2039	962	69.1	92	4.5
2019	1514	918	45.5	69	4.6
2020	1086	1035	89.7	59	5.4
1998–2020	32377	13134	91.4	1746	5.4

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	89	47.2	52.8	65.5
1999	99	30.3	69.7	53.8
2000	98	41.8	58.2	58.5
2001	140	41.4	58.6	61.5
2002	185	45.9	54.1	58.4
2003	253	43.5	56.5	53.5
2004	278	43.5	56.5	55.3
2005	296	42.9	57.1	53.1
2006	345	44.1	55.9	54.2
2007	415	44.6	55.4	56.2
2008	482	36.5	63.5	47.0
2009	485	37.1	62.9	48.4
2010	582	39.9	60.1	47.6
2011	672	37.4	62.6	45.2
2012	756	40.5	59.5	48.8
2013	856	38.0	62.0	47.2
2014	906	38.4	61.6	45.9
2015	1052	33.1	66.9	43.0
2016	1068	36.1	63.9	44.6
2017	1162	33.2	66.8	43.6
2018	962	24.4	75.6	38.9
2019	918	16.6	83.4	44.0
2020	1035	22.8	77.2	46.6
1998-2020	13134	34.4	65.6	47.1

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	59	81.7	77.1	86.2	78.9
1999	56	81.5	73.5	84.4	75.3
2000	58	84.5	77.7	86.8	80.5
2001	83	80.1	79.0	81.8	77.5
2002	109	81.4	79.6	86.0	81.4
2003	156	82.6	78.0	85.0	78.4
2004	173	83.8	78.3	85.9	81.2
2005	168	83.0	79.1	84.2	79.2
2006	206	80.6	77.7	85.6	78.1
2007	243	83.0	79.4	85.3	79.7
2008	294	83.4	79.5	86.5	80.3
2009	263	83.3	77.5	85.1	80.4
2010	330	84.3	80.1	86.2	80.6
2011	372	83.5	79.9	86.0	80.5
2012	434	83.8	79.9	86.1	80.7
2013	502	84.3	81.0	86.4	81.6
2014	573	84.7	81.5	86.2	82.9
2015	620	84.5	82.2	86.0	82.9
2016	678	83.8	81.5	85.7	81.8
2017	691	85.4	82.2	86.7	82.9
2018	578	85.4	82.0	86.9	82.7
2019	578	85.6	83.3	86.0	84.4
2020	647	85.4	84.0	85.7	84.1
1998–2020	7871	84.2	80.8	86.0	81.7

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	30	87.4	81.8	90.3	86.0
1999	43	85.1	82.0	86.5	83.8
2000	40	87.5	80.3	90.4	81.0
2001	57	87.0	83.1	87.1	85.1
2002	76	87.3	82.2	89.2	86.1
2003	97	88.4	84.7	90.5	88.3
2004	105	85.4	79.0	90.2	81.0
2005	128	87.2	83.1	90.1	84.5
2006	139	88.3	86.9	89.4	86.8
2007	172	88.1	85.9	89.7	87.1
2008	188	88.7	82.0	91.3	85.0
2009	222	87.7	84.2	88.7	85.7
2010	252	88.7	83.9	90.0	84.4
2011	300	88.4	84.8	89.9	85.4
2012	322	87.5	81.8	89.6	83.0
2013	354	88.6	84.0	90.1	85.4
2014	333	88.7	82.2	89.9	84.3
2015	432	88.7	84.3	89.9	85.4
2016	390	88.7	83.2	89.9	84.5
2017	471	88.3	83.7	89.7	84.6
2018	384	87.9	81.4	89.4	82.5
2019	340	88.1	81.7	89.0	83.0
2020	388	88.0	83.7	88.6	85.0
1998–2020	5263	88.2	83.2	89.7	84.8

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

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

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death
MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	27	2.4	0.17	1.3	0.16	2.3	0.17	3.5	0.18
1999	18	1.6	0.11	0.9	0.11	1.5	0.11	2.0	0.11
2000	24	2.1	0.14	1.1	0.13	1.9	0.14	2.8	0.14
2001	41	3.5	0.26	1.8	0.24	3.1	0.25	5.0	0.28
2002	60	3.2	0.15	1.6	0.15	2.8	0.16	4.1	0.16
2003	78	4.2	0.19	2.1	0.19	3.5	0.20	5.1	0.20
2004	80	4.3	0.17	2.1	0.16	3.6	0.17	5.1	0.18
2005	79	4.2	0.16	1.8	0.15	3.2	0.16	4.9	0.17
2006	104	5.4	0.20	2.4	0.19	4.1	0.20	6.1	0.20
2007	122	5.5	0.18	2.5	0.17	4.2	0.18	6.0	0.18
2008	117	5.3	0.14	2.2	0.13	3.8	0.14	5.6	0.15
2009	110	4.9	0.10	2.1	0.10	3.6	0.11	5.0	0.10
2010	148	6.6	0.13	2.6	0.12	4.5	0.13	6.6	0.14
2011	152	6.8	0.14	2.5	0.12	4.5	0.13	6.9	0.14
2012	194	8.5	0.13	3.2	0.11	5.6	0.12	8.3	0.13
2013	218	9.5	0.15	3.3	0.13	5.9	0.15	9.0	0.16
2014	242	10.4	0.19	3.5	0.16	6.3	0.18	9.4	0.18
2015	218	9.2	0.20	3.1	0.19	5.5	0.20	8.2	0.20
2016	285	11.9	0.29	3.9	0.27	6.9	0.29	10.4	0.29
2017	244	10.1	0.24	3.2	0.22	5.7	0.24	8.5	0.24
2018	161	6.6	0.14	1.9	0.12	3.5	0.13	5.5	0.14
2019	97	4.0	0.11	1.2	0.10	2.2	0.11	3.3	0.11
2020	166	6.8	0.28	2.0	0.25	3.7	0.27	5.5	0.27
1998-2020	2985	6.4	0.17	2.5	0.15	4.4	0.17	6.5	0.17

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	15	1.3	0.16	0.4	0.11	0.6	0.13	0.9	0.14
1999	13	1.1	0.10	0.3	0.08	0.6	0.09	0.9	0.10
2000	17	1.4	0.14	0.4	0.12	0.7	0.12	1.1	0.14
2001	19	1.6	0.20	0.5	0.15	0.8	0.16	1.1	0.16
2002	27	1.4	0.10	0.4	0.08	0.6	0.09	1.0	0.10
2003	33	1.7	0.12	0.6	0.12	0.9	0.12	1.2	0.11
2004	42	2.1	0.12	0.6	0.11	1.1	0.12	1.6	0.13
2005	51	2.6	0.15	0.7	0.12	1.2	0.13	1.8	0.14
2006	49	2.4	0.14	0.6	0.11	1.1	0.12	1.5	0.12
2007	64	2.8	0.13	0.7	0.09	1.2	0.10	1.7	0.11
2008	63	2.7	0.11	0.7	0.09	1.3	0.09	1.8	0.10
2009	71	3.1	0.10	0.8	0.08	1.4	0.08	1.9	0.09
2010	89	3.8	0.12	1.0	0.09	1.7	0.10	2.4	0.11
2011	103	4.4	0.13	1.1	0.09	1.9	0.10	2.7	0.11
2012	116	4.9	0.11	1.4	0.09	2.3	0.10	3.3	0.10
2013	112	4.7	0.11	1.1	0.07	1.9	0.08	2.9	0.09
2014	113	4.7	0.13	1.2	0.10	2.0	0.11	2.9	0.12
2015	134	5.5	0.19	1.3	0.15	2.2	0.16	3.3	0.17
2016	110	4.5	0.16	1.1	0.14	1.9	0.15	2.7	0.15
2017	150	6.1	0.24	1.5	0.19	2.5	0.21	3.6	0.21
2018	80	3.2	0.11	0.8	0.10	1.4	0.10	2.1	0.11
2019	64	2.6	0.12	0.7	0.12	1.2	0.12	1.6	0.11
2020	84	3.4	0.21	0.7	0.16	1.3	0.17	1.9	0.18
1998-2020	1619	3.4	0.13	0.9	0.11	1.5	0.11	2.2	0.12

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	1	0.0	0.0	1	0.0	0.0			0.0
20-24	1	0.0	0.1	1	0.0	0.1			0.0
25-29	0	0.0	0.1			0.1			0.0
30-34	0	0.0	0.1			0.1			0.0
35-39	2	0.1	0.1	2	0.1	0.2			0.0
40-44	4	0.1	0.2	1	0.0	0.2	3	0.2	0.2
45-49	16	0.4	0.6	6	0.2	0.4	10	0.7	1.0
50-54	48	1.3	1.9	27	1.1	1.5	21	1.6	2.5
55-59	66	1.7	3.6	43	1.7	3.3	23	1.7	4.2
60-64	117	3.1	6.7	67	2.7	6.0	50	3.7	7.9
65-69	203	5.3	12.0	136	5.5	11.5	67	5.0	12.9
70-74	424	11.1	23.0	301	12.2	23.6	123	9.1	22.0
75-79	715	18.7	41.7	501	20.3	43.9	214	15.8	37.8
80-84	798	20.9	62.6	549	22.2	66.1	249	18.4	56.2
85+	1432	37.4	100.0	839	33.9	100.0	593	43.8	100.0
All ages	3827	100.0		2474	100.0		1353	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**incl. multiple malignancies**)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	1.00			2.1	
20-24	1		0.0	0.14			1.4	
25-29								
30-34								
35-39	2		0.1	0.04			0.7	
40-44	1	3	0.0	0.01	0.1	0.03	0.2	0.4
45-49	6	10	0.2	0.03	0.4	0.05	0.4	0.6
50-54	27	21	1.1	0.09	0.8	0.07	1.0	0.8
55-59	43	23	2.0	0.11	1.1	0.07	1.0	0.6
60-64	67	50	3.8	0.09	2.6	0.10	1.0	1.0
65-69	136	67	8.3	0.09	3.7	0.07	1.5	1.0
70-74	301	123	20.1	0.12	7.2	0.09	2.5	1.4
75-79	501	214	41.4	0.16	14.3	0.13	4.0	2.2
80-84	549	249	75.8	0.19	23.4	0.15	5.2	2.7
85+	839	593	179.7	0.30	56.9	0.21	9.2	5.0
All ages	2474	1353					3.6	2.2
Mortality								
Raw			7.6	0.17	4.0	0.13		
WS			2.7	0.15	1.0	0.10		
ES			4.7	0.16	1.7	0.11		
BRD-S			7.1	0.17	2.5	0.12		
PYLL-70								
per 100,000			7.6		5.3			
ES			6.5		4.3			
AYLL-70			7.7		8.6			

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	18	0.4	6	33.3	2	11.1	10	55.6
C03–C06	Oral cavity	58	1.3	29	50.0	4	6.9	25	43.1
C07–C08	Salivary gland	54	1.2	14	25.9	6	11.1	34	63.0
C09–C10	Oropharynx	62	1.4	28	45.2	14	22.6	20	32.3
C12–C13	Hypopharynx	28	0.6	16	57.1	3	10.7	9	32.1
C15	Oesophagus	52	1.1	11	21.2	4	7.7	37	71.2
C16	Stomach	95	2.1	23	24.2	6	6.3	66	69.5
C17	Small intestine	15	0.3	8	53.3			7	46.7
C18	Colon	216	4.7	91	42.1	15	6.9	110	50.9
C19–C20	Rectum	124	2.7	63	50.8	7	5.6	54	43.5
C22	Liver	86	1.9	22	25.6	2	2.3	62	72.1
C23–C24	Bile	23	0.5	7	30.4	1	4.3	15	65.2
C25	Pancreas	103	2.2	12	11.7	7	6.8	84	81.6
C30–C31	Sinuses	11	0.2	1	9.1	4	36.4	6	54.5
C32	Larynx	54	1.2	28	51.9	7	13.0	19	35.2
C33–C34	Lung	409	8.9	76	18.6	33	8.1	300	73.3
C38,C45	Mesothelioma	23	0.5	6	26.1	1	4.3	16	69.6
C43	Malign. melanoma	346	7.6	136	39.3	93	26.9	117	33.8
C44	Skin others	1320	28.8	1	0.1	258	19.5	1061	80.4
C46,C49	Soft tissue	31	0.7	16	51.6	1	3.2	14	45.2
C50	Breast	9	0.2	3	33.3	2	22.2	4	44.4
C60	Penis	9	0.2	4	44.4			5	55.6
C61	Prostate	583	12.7	393	67.4	14	2.4	176	30.2
C62	Testis	10	0.2	9	90.0			1	10.0
C64	Kidney	83	1.8	51	61.4	5	6.0	27	32.5
C65	Renal pelvis	9	0.2	5	55.6			4	44.4
C67	Bladder	124	2.7	52	41.9	4	3.2	68	54.8
C69	Eye carcinoma	9	0.2	2	22.2	1	11.1	6	66.7
C70–C72	CNS cancer	26	0.6	5	19.2	4	15.4	17	65.4
C73	Thyroid	11	0.2	7	63.6	1	9.1	3	27.3
C76–C79	CUP	70	1.5	14	20.0	7	10.0	49	70.0
C81	Hodgkin lymphoma	20	0.4	11	55.0	1	5.0	8	40.0
C82–C85	NHL	345	7.5	213	61.7	24	7.0	108	31.3
C90	Mult. myeloma	41	0.9	21	51.2			20	48.8
C91–C96	Leukaemia	50	1.1	14	28.0	6	12.0	30	60.0
Others, specified		54	1.2	14	25.9	5	9.3	35	64.8
All further malignancies		4581	100.0	1412	30.8	542	11.8	2627	57.3

Further malignancies with number of cases 1 to 7 are pooled in category “Others, specified”.

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

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03–C06	Oral cavity	20	1.0	13	65.0	2	10.0	5	25.0
C07–C08	Salivary gland	12	0.6	3	25.0			9	75.0
C09–C10	Oropharynx	10	0.5	6	60.0			4	40.0
C15	Oesophagus	7	0.4					7	100.0
C16	Stomach	49	2.5	14	28.6	2	4.1	33	67.3
C17	Small intestine	8	0.4	4	50.0			4	50.0
C18	Colon	95	4.8	35	36.8	7	7.4	53	55.8
C19–C20	Rectum	43	2.2	19	44.2	2	4.7	22	51.2
C21	Anus/canal	12	0.6	6	50.0			6	50.0
C22	Liver	27	1.4	6	22.2	1	3.7	20	74.1
C23–C24	Bile	21	1.1	2	9.5	3	14.3	16	76.2
C25	Pancreas	64	3.2	4	6.3	3	4.7	57	89.1
C30–C31	Sinuses	6	0.3	3	50.0	2	33.3	1	16.7
C33–C34	Lung	122	6.2	28	23.0	7	5.7	87	71.3
C43	Malign. melanoma	125	6.3	55	44.0	30	24.0	40	32.0
C44	Skin others	401	20.2	1	0.2	70	17.5	330	82.3
C46,C49	Soft tissue	9	0.5	5	55.6	1	11.1	3	33.3
C48	Peritoneal	12	0.6	1	8.3	2	16.7	9	75.0
C50	Breast	421	21.2	253	60.1	37	8.8	131	31.1
C51	Vulva	20	1.0	8	40.0	5	25.0	7	35.0
C53	Cervix uteri	21	1.1	12	57.1			9	42.9
C54	Corpus uteri	73	3.7	35	47.9	5	6.8	33	45.2
C55,C57	Fem. genitals un	6	0.3	3	50.0			3	50.0
C56	Ovary	63	3.2	20	31.7	9	14.3	34	54.0
C64	Kidney	26	1.3	8	30.8	2	7.7	16	61.5
C65	Renal pelvis	5	0.3			2	40.0	3	60.0
C66	Ureter	5	0.3	2	40.0			3	60.0
C67	Bladder	26	1.3	16	61.5	1	3.8	9	34.6
C70–C72	CNS cancer	17	0.9	3	17.6	2	11.8	12	70.6
C73	Thyroid	12	0.6	5	41.7	1	8.3	6	50.0
C76–C79	CUP	28	1.4	2	7.1	3	10.7	23	82.1
C81	Hodgkin lymphoma	9	0.5	7	77.8	1	11.1	1	11.1
C82–C85	NHL	134	6.8	70	52.2	8	6.0	56	41.8
C90	Mult. myeloma	19	1.0	7	36.8			12	63.2
C91–C96	Leukaemia	26	1.3	9	34.6			17	65.4
Others, specified		29	1.5	11	37.9	3	10.3	15	51.7
All further malignancies		1983	100.0	676	34.1	211	10.6	1096	55.3

Further malignancies with number of cases 1 to 4 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 2007-2020
(**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	1		0.1	1.00			2.2	
20-24	1		0.0	0.14			1.5	
25-29								
30-34								
35-39	2		0.1	0.05			0.8	
40-44	1	2	0.0	0.01	0.1	0.03	0.2	0.3
45-49		3			0.1	0.02		0.2
50-54	15	10	0.6	0.06	0.4	0.04	0.6	0.4
55-59	22	11	1.0	0.08	0.5	0.05	0.6	0.3
60-64	28	20	1.6	0.06	1.1	0.06	0.5	0.5
65-69	46	30	2.8	0.06	1.7	0.06	0.6	0.5
70-74	108	43	7.2	0.09	2.5	0.06	1.2	0.6
75-79	164	95	13.6	0.12	6.3	0.11	1.8	1.3
80-84	214	107	29.6	0.19	10.1	0.12	2.9	1.5
85+	324	306	69.4	0.28	29.4	0.19	5.0	3.3
All ages	926	627					1.7	1.3
Mortality								
Raw			2.8	0.13	1.9	0.11		
WS			1.0	0.11	0.5	0.08		
ES			1.8	0.13	0.8	0.09		
BRD-S			2.6	0.13	1.1	0.09		
PYLL-70								
per 100,000			3.7		2.3			
ES			3.3		1.9			
AYLL-70			9.1		8.7			

* 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	1		0.0	0.14			1.5	
25-29								
30-34								
35-39	1		0.0	0.03			0.4	
40-44	1	1	0.0	0.02	0.0	0.02	0.2	0.1
45-49								
50-54	7	3	0.3	0.04	0.1	0.02	0.3	0.1
55-59	12	1	0.6	0.06	0.0	0.01	0.3	0.0
60-64	9	5	0.5	0.03	0.3	0.02	0.2	0.1
65-69	9	8	0.6	0.02	0.4	0.02	0.1	0.1
70-74	28	13	1.9	0.03	0.8	0.03	0.3	0.2
75-79	45	29	3.7	0.05	1.9	0.05	0.5	0.4
80-84	70	38	9.7	0.08	3.6	0.06	1.0	0.5
85+	130	163	27.8	0.15	15.6	0.12	2.2	1.8
All ages	313	261					0.6	0.6
Mortality								
Raw			1.0	0.06	0.8	0.06		
WS			0.3	0.05	0.2	0.04		
ES			0.6	0.06	0.3	0.04		
BRD-S			0.9	0.06	0.4	0.05		
PYLL-70								
per 100,000			1.6		0.5			
ES			1.4		0.4			
AYLL-70			11.8		8.3			

* See corresponding tables with multiple malignancies.

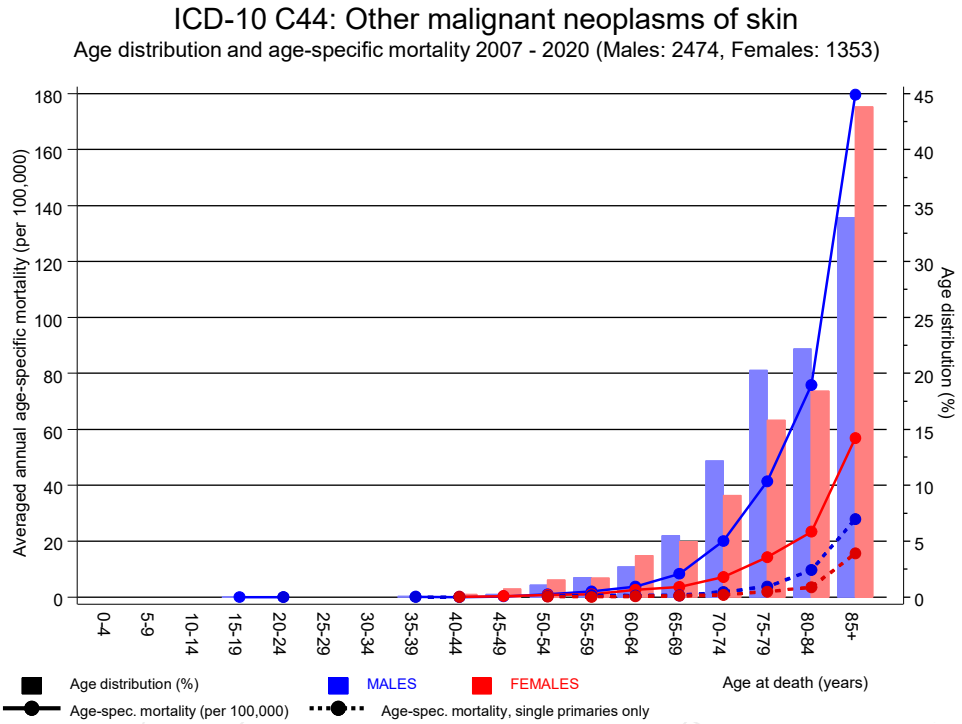


Figure 17. Distribution of age at death (bars; males: mean=76.6 yrs, median=77.6 yrs; females: mean=77.6 yrs, median=79.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line).

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

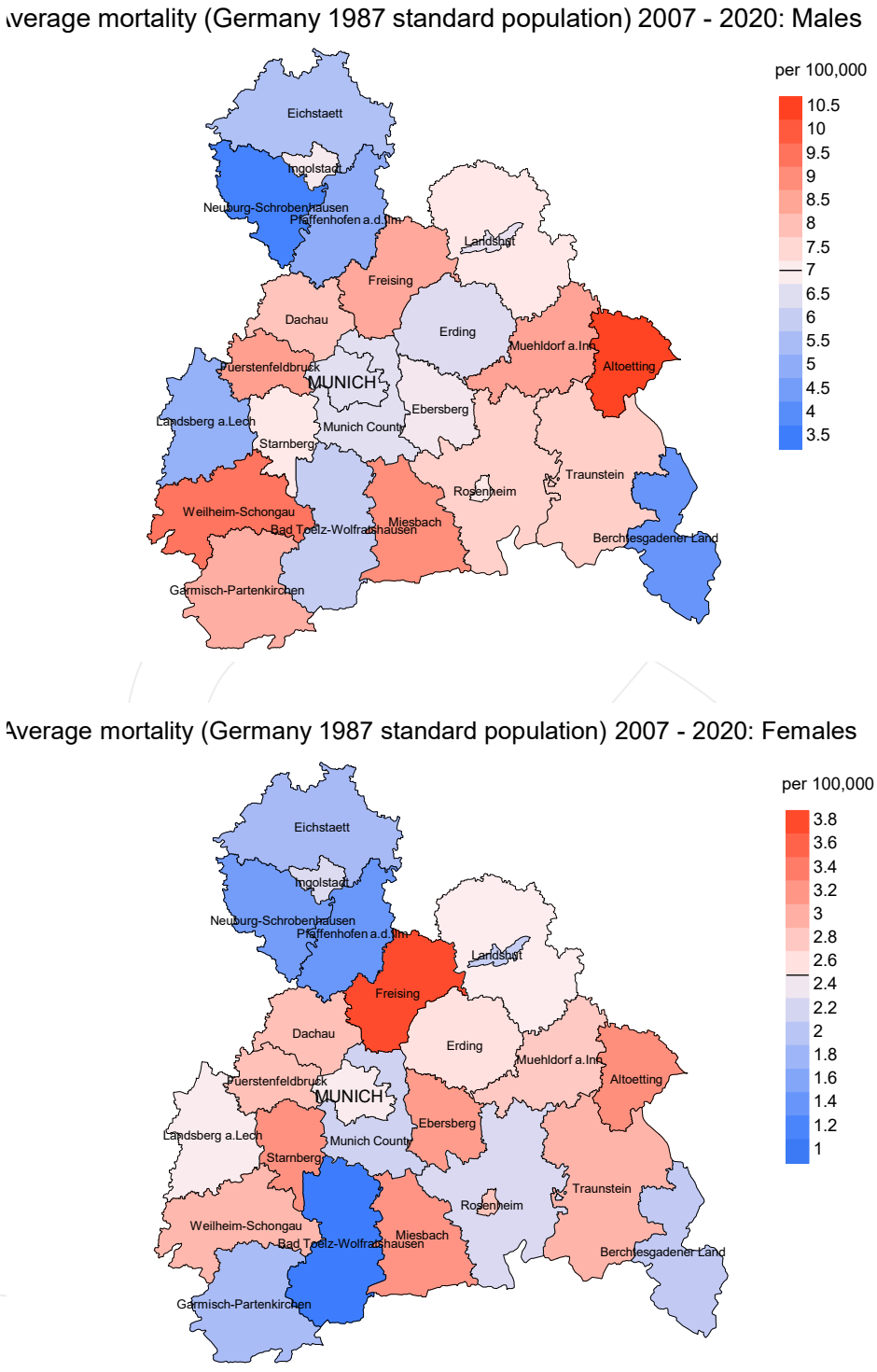


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 7.1/100,000 WS N=2,474, females 2.5/100,000 WS N=1,353).

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 43 women died from skin other. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.0 and 4.7/100,000.

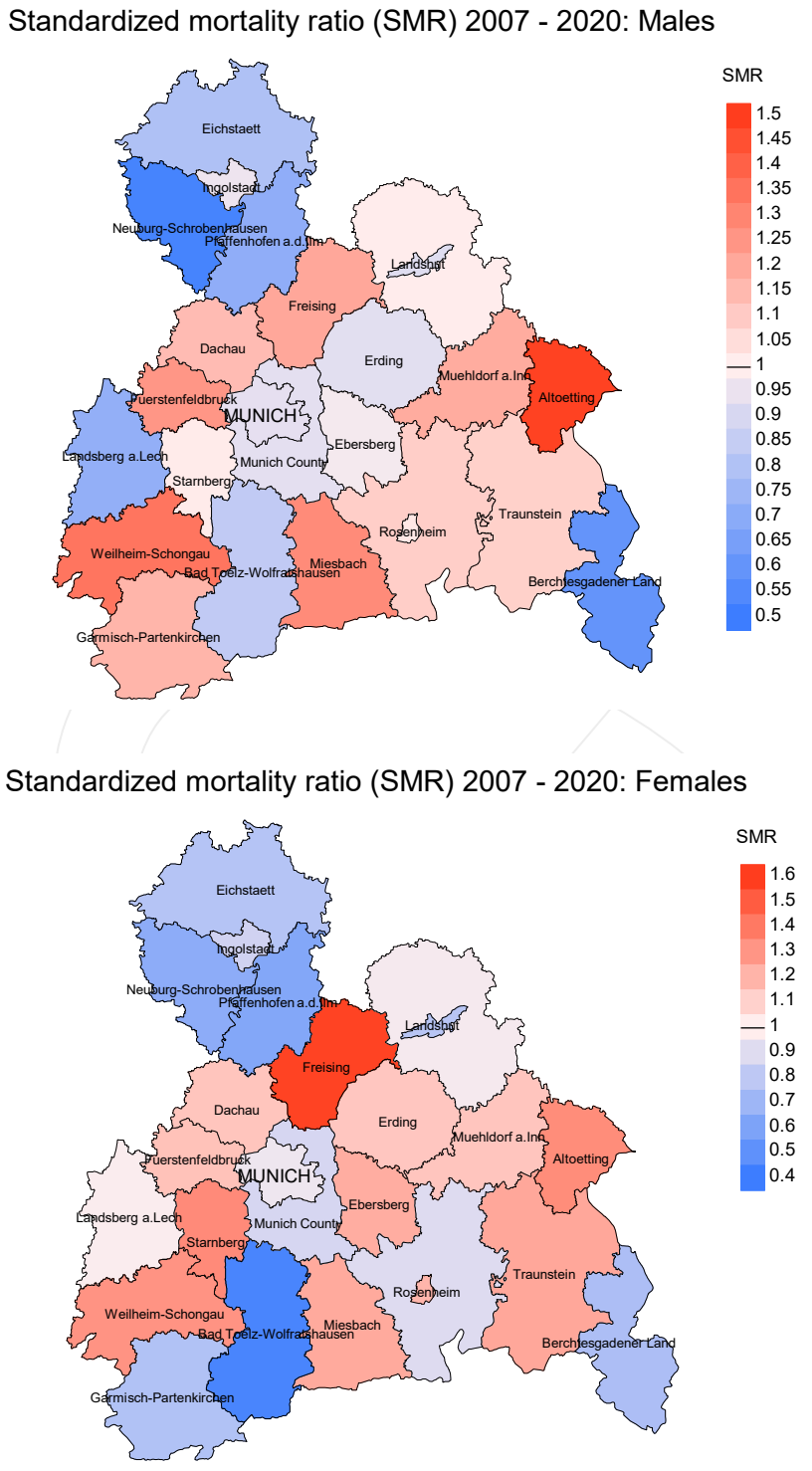


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,474, females N=1,353).

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 43 women died from skin other. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.22. Though, the value of this parameter may vary with an underlying probability of 99% between 0.79 and 1.79, 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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