Munich Cancer Registry

- Survival
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- *Deutsch*

ICD-10 D04: Ca. i.s. skin

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	4,121
Diseases	4,761
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/bD04__E-ICD-10-D04-Ca.-i.s.-skin-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, 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
D04.-	Carcinoma in situ of skin
D04.0	Skin of lip
D04.1	Skin of eyelid, including canthus
D04.2	Skin of ear and external auricular canal
D04.3	Skin of other and unspecified parts of face
D04.4	Skin of scalp and neck
D04.5	Skin of trunk
D04.6	Skin of upper limb, including shoulder
D04.7	Skin of lower limb, including hip
D04.8	Skin of other sites
D04.9	Skin, unspecified

Comment: Carcinomata in situ of skin are not systematically recorded by the Munich Cancer Registry. The statistics regarding this cancer disease are therefore not necessarily population based, but reflect the registry's current data status.

INCIDENCE

Table 1

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (ALL PATIENTS)

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	13	0.0	32.9	61.5	100.0
1999	14	7.4	32.8	78.6	100.0
2000	9	11.1	32.8	100.0	100.0
2001	14	20.0	32.7	85.7	100.0
2002	27	27.3	32.7	81.5	100.0 #
2003	28	29.5	32.6	75.0	92.9
2004	82	32.1	32.5	72.0	98.8
2005	81	34.3	32.4	71.6	91.4
2006	71	34.2	32.2	64.8	91.5
2007	148	37.2	31.9	68.2	93.2 #
2008	194	39.6	31.5	66.0	99.5
2009	280	41.6	31.1	51.1	96.4
2010	394	43.5	30.3	52.0	98.0
2011	241	45.1	28.9	52.7	95.9
2012	354	45.8	28.7	47.2	98.3
2013	518	47.5	27.9	41.7	97.3
2014	470	48.7	26.2	43.6	95.3
2015	313	50.7	24.7	43.1	96.8
2016	317	51.6	22.9	26.2	98.1
2017	282	52.6	20.6	25.2	100.0
2018	365	53.8	16.1	18.1	98.9
2019	390	54.8	13.0	10.3	99.2
2020	156	56.0	12.1	9.6	98.7 ##
1998-2020	4761	56.0	32.9	40.9	97.4

4,761 cases diagnosed 1998-2020 are related to a total of 4,121 patients. Currently, in 2,789 (67.7 %) of these 4,121 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,212 / 723 / 854 (29.4 % / 17.5 % / 20.7 %) 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 365 cases has been diagnosed, of which 53.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 16.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (MALES)

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %	
1998	7	53.8	0.0	35.4	71.4	100.0	
1999	8	57.1	6.7	35.4	100.0	100.0	
2000	3	33.3	5.6	35.4	100.0	100.0	
2001	9	64.3	22.2	35.3	88.9	100.0	
2002	14	51.9	31.7	35.2	78.6	100.0	#
2003	12	42.9	30.2	35.1	83.3	100.0	
2004	45	54.9	38.8	35.0	80.0	100.0	
2005	36	44.4	37.3	34.9	63.9	86.1	
2006	34	47.9	37.5	34.8	61.8	88.2	
2007	79	53.4	41.7	34.5	65.8	97.5	#
2008	90	46.4	44.2	34.1	62.2	100.0	
2009	146	52.1	46.4	33.6	47.9	94.5	
2010	233	59.1	49.0	32.9	50.6	98.3	
2011	145	60.2	50.2	31.7	48.3	95.2	
2012	182	51.4	52.0	31.6	52.7	98.4	
2013	284	54.8	54.0	30.5	43.7	97.9	
2014	241	51.3	54.5	27.7	46.1	96.7	
2015	188	60.1	56.8	26.0	46.8	97.3	
2016	181	57.1	57.6	23.9	29.3	99.4	
2017	152	53.9	58.5	21.4	27.0	100.0	
2018	203	55.6	59.3	16.9	16.3	99.0	
2019	233	59.7	60.6	14.9	9.0	98.7	
2020	86	55.1	61.5	12.5	8.1	98.8	##
1998-2020	2611	54.8	61.5	35.4	40.8	97.7	

2,611 cases diagnosed 1998-2020 are related to a total of 2,246 patients. Currently, in 1,637 (72.9 %) of these 2,246 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 645 / 410 / 582 (28.7 % / 18.3 % / 25.9 %) 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 203 cases has been diagnosed, of which 59.3 % 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 by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	6	46.2	0.0	29.9	50.0	100.0
1999	6	42.9	8.3	29.9	50.0	100.0
2000	6	66.7	16.7	29.7	100.0	100.0
2001	5	35.7	17.4	29.7	80.0	100.0
2002	13	48.1	22.2	29.7	84.6	100.0 #
2003	16	57.1	28.8	29.7	68.8	87.5
2004	37	45.1	24.7	29.6	62.2	97.3
2005	45	55.6	31.3	29.5	77.8	95.6
2006	37	52.1	31.0	29.1	67.6	94.6
2007	69	46.6	32.5	28.9	71.0	88.4 #
2008	104	53.6	35.2	28.4	69.2	99.0
2009	134	47.9	36.8	28.0	54.5	98.5
2010	161	40.9	37.2	27.1	54.0	97.5
2011	96	39.8	39.2	25.7	59.4	96.9
2012	172	48.6	38.8	25.3	41.3	98.3
2013	234	45.2	40.1	24.8	39.3	96.6
2014	229	48.7	42.0	24.5	41.0	93.9
2015	125	39.9	43.5	23.0	37.6	96.0
2016	136	42.9	44.5	21.5	22.1	96.3
2017	130	46.1	45.5	19.5	23.1	100.0
2018	162	44.4	47.2	15.0	20.4	98.8
2019	157	40.3	47.8	10.4	12.1	100.0
2020	70	44.9	49.2	11.7	11.4	98.6 ##
1998-2020	2150	45.2	49.2	29.9	41.1	97.1

2,150 cases diagnosed 1998-2020 are related to a total of 1,875 patients. Currently, in 1,152 (61.4 %) of these 1,875 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 567 / 313 / 272 (30.2 % / 16.7 % / 14.5 %) 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 162 cases has been diagnosed, of which 47.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 15.0 % 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
(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	7	6	0.6	0.5	0.4	0.3	0.6	0.4	0.8	0.5
1999	8	6	0.7	0.5	0.4	0.2	0.7	0.4	1.0	0.4
2000	3	6	0.3	0.5	0.1	0.2	0.2	0.3	0.4	0.4
2001	9	5	0.8	0.4	0.4	0.1	0.7	0.2	1.0	0.3
2002	14	13	0.8	0.7	0.4	0.2	0.6	0.4	0.9	0.5
2003	12	16	0.6	0.8	0.3	0.3	0.5	0.5	0.8	0.6
2004	45	37	2.4	1.9	1.1	0.6	1.9	0.9	2.7	1.4
2005	36	45	1.9	2.3	0.9	0.7	1.5	1.1	2.1	1.7
2006	34	37	1.8	1.8	0.8	0.6	1.3	1.0	1.9	1.4
2007	79	69	3.6	3.0	1.6	1.0	2.6	1.6	3.8	2.1
2008	90	104	4.0	4.5	1.9	1.3	3.0	2.2	4.0	3.0
2009	146	134	6.5	5.8	2.8	2.1	4.5	3.2	6.5	4.2
2010	233	161	10.3	6.9	4.2	2.5	6.9	3.8	10.2	5.0
2011	145	96	6.5	4.1	2.8	1.5	4.4	2.3	6.2	3.2
2012	182	172	8.0	7.3	3.1	2.2	5.2	3.5	7.5	5.1
2013	284	234	12.3	9.8	4.7	3.4	7.8	5.3	11.4	7.1
2014	241	229	10.3	9.5	3.7	2.7	6.3	4.5	9.5	6.4
2015	188	125	7.9	5.1	2.7	1.5	4.7	2.5	7.1	3.5
2016	181	136	7.5	5.5	2.7	1.7	4.5	2.7	6.7	3.8
2017	152	130	6.3	5.3	2.1	1.6	3.6	2.6	5.5	3.7
2018	203	162	8.3	6.5	2.8	1.8	4.7	3.0	7.1	4.4
2019	233	157	9.6	6.3	3.2	2.0	5.4	3.1	8.1	4.4
2020	86	70	3.5	2.8	1.2	0.8	2.0	1.3	3.0	1.8
1998–2020	2611	2150	5.6	4.5	2.3	1.5	3.8	2.3	5.6	3.2

The computation of the incidence measures includes all cancers, irrespective of first or subsequent malignancy.

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	13	67.9	13.0	33.9	82.6	52.2	66.1	69.8	76.0	82.4
1999	14	73.5	11.4	51.7	94.7	58.0	65.7	73.4	82.4	85.5
2000	9	77.3	10.2	57.0	88.9	57.0	72.0	76.5	86.3	88.9
2001	14	74.2	15.7	36.7	92.9	52.1	64.7	79.1	83.9	91.2
2002	27	76.3	10.1	54.0	94.5	64.9	68.0	77.1	84.3	88.0
2003	28	71.0	13.4	37.8	86.7	44.2	64.8	76.4	80.3	83.3
2004	82	76.3	8.7	42.5	92.7	65.7	70.5	76.6	81.6	87.5
2005	81	77.4	10.8	35.2	96.8	65.0	71.2	79.7	84.2	89.5
2006	71	74.7	10.8	32.8	93.1	63.7	70.4	75.3	82.8	86.2
2007	148	76.0	12.0	22.0	96.4	64.2	70.1	77.5	85.2	88.0
2008	194	76.4	11.3	43.0	100	63.8	69.2	76.9	85.8	89.2
2009	280	74.3	10.5	25.4	93.7	61.5	68.5	74.4	81.9	86.7
2010	394	74.6	10.4	34.4	96.7	61.6	69.2	75.1	82.3	86.8
2011	241	74.1	11.6	32.1	98.6	58.5	68.2	76.5	82.2	87.1
2012	354	77.0	9.9	39.3	102	65.4	71.5	77.2	83.7	88.8
2013	518	75.8	10.4	41.1	101	61.4	70.9	76.3	83.8	88.0
2014	470	78.0	9.3	44.7	98.8	66.7	73.6	78.2	84.7	89.1
2015	313	78.5	9.6	47.3	102	67.8	73.9	78.9	84.5	89.9
2016	317	77.1	9.5	42.8	95.9	65.0	72.7	78.6	83.0	87.9
2017	282	77.2	9.2	44.2	97.4	65.0	73.5	78.1	83.3	87.1
2018	365	77.6	8.7	44.7	97.1	66.0	73.8	78.6	83.6	88.0
2019	390	77.1	9.3	39.8	96.4	63.3	72.3	78.5	83.1	87.6
2020	156	77.9	10.1	33.9	95.9	64.5	72.0	80.0	84.6	89.4
1998–2020	4761	76.5	10.1	22.0	102	63.7	71.2	77.6	83.6	88.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	7	67.7	16.1	33.9	82.6	33.9	64.5	73.0	77.2	82.6
1999	8	75.9	10.5	58.0	94.7	58.0	71.8	74.6	81.1	94.7
2000	3	78.6	7.9	72.0	87.5	72.0	72.0	76.5	87.5	87.5
2001	9	72.3	16.3	36.7	92.9	36.7	64.7	79.0	79.8	92.9
2002	14	74.0	10.2	54.0	92.0	64.9	66.9	74.0	81.6	85.1
2003	12	73.4	8.0	55.7	83.3	64.7	67.3	76.0	78.5	81.5
2004	45	74.6	8.6	42.5	92.7	65.7	69.3	73.3	80.7	86.8
2005	36	77.6	10.7	44.1	96.8	65.0	70.9	78.4	84.9	90.2
2006	34	72.8	11.5	32.8	91.2	60.9	69.9	73.0	81.1	84.3
2007	79	74.8	10.8	39.6	91.5	64.4	69.2	75.4	83.4	86.8
2008	90	73.2	11.8	43.0	97.8	55.6	67.5	72.6	81.8	87.3
2009	146	74.1	9.4	30.5	92.3	62.2	69.2	74.5	81.0	85.4
2010	233	74.6	9.4	34.4	96.6	62.4	70.5	75.4	81.0	85.0
2011	145	74.1	10.0	45.6	98.6	59.9	68.4	75.1	80.9	85.6
2012	182	76.4	8.7	41.6	98.4	66.4	71.1	76.5	82.8	86.8
2013	284	76.4	9.4	44.1	101	65.6	71.8	77.2	84.0	87.2
2014	241	77.7	9.0	51.6	96.0	65.6	74.1	78.3	83.4	88.0
2015	188	78.5	9.0	47.3	102	68.7	74.3	78.8	84.0	89.5
2016	181	77.1	9.2	46.3	95.1	65.4	73.0	78.6	82.9	87.8
2017	152	78.0	7.8	51.4	97.4	68.1	74.5	78.5	83.2	86.2
2018	203	77.7	7.9	55.8	97.1	66.9	73.8	78.4	82.4	87.7
2019	233	77.5	8.8	50.8	96.4	64.9	73.4	78.9	83.2	87.0
2020	86	77.5	9.1	41.2	94.5	68.3	72.0	79.8	82.9	87.8
1998–2020	2611	76.4	9.4	30.5	102	64.8	71.4	77.5	82.8	87.1

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	6	68.2	9.7	52.2	82.4	52.2	66.1	68.8	70.8	82.4
1999	6	70.2	12.6	51.7	85.5	51.7	63.5	69.1	82.4	85.5
2000	6	76.7	11.9	57.0	88.9	57.0	71.4	78.2	86.3	88.9
2001	5	77.7	15.7	52.1	91.2	52.1	74.8	81.1	89.1	91.2
2002	13	78.7	9.8	56.0	94.5	68.0	73.7	78.1	84.8	88.0
2003	16	69.1	16.3	37.8	86.7	38.9	61.5	76.7	82.2	84.8
2004	37	78.4	8.4	57.4	90.5	64.8	74.7	79.6	84.3	90.4
2005	45	77.1	11.0	35.2	92.9	64.1	71.4	80.2	83.4	89.5
2006	37	76.4	9.9	48.5	93.1	63.7	70.7	76.7	84.4	86.9
2007	69	77.4	13.1	22.0	96.4	64.2	71.1	81.5	86.3	88.1
2008	104	79.2	10.1	50.3	100	67.4	71.2	81.1	87.0	90.7
2009	134	74.4	11.6	25.4	93.7	61.1	67.8	74.2	84.0	88.5
2010	161	74.6	11.8	42.8	96.7	57.7	67.8	74.6	84.0	88.8
2011	96	74.0	13.7	32.1	97.6	52.1	66.5	77.3	83.5	87.5
2012	172	77.6	11.1	39.3	102	64.7	71.9	78.0	86.0	90.9
2013	234	75.1	11.4	41.1	98.3	58.2	68.5	75.1	83.6	89.4
2014	229	78.3	9.6	44.7	98.8	67.3	73.2	78.1	85.5	90.7
2015	125	78.5	10.3	47.5	98.1	65.4	73.8	79.1	85.8	92.4
2016	136	77.2	10.0	42.8	95.9	65.0	72.5	78.6	83.5	88.4
2017	130	76.2	10.6	44.2	94.0	57.5	72.8	78.1	83.3	87.9
2018	162	77.6	9.6	44.7	96.2	64.2	73.2	79.3	84.5	88.0
2019	157	76.4	9.9	39.8	96.0	61.6	71.0	78.1	82.5	88.6
2020	70	78.4	11.2	33.9	95.9	63.6	71.9	80.5	85.7	91.0
1998-2020	2150	76.6	11.0	22.0	102	62.3	71.0	78.0	84.5	89.2

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24	1	0.0	0.0			0.0	1	0.1	0.1
25-29	1	0.0	0.0			0.0	1	0.1	0.1
30-34	4	0.1	0.1	2	0.1	0.1	2	0.1	0.2
35-39	7	0.2	0.3	1	0.0	0.1	6	0.3	0.5
40-44	16	0.4	0.7	7	0.3	0.4	9	0.5	1.0
45-49	50	1.1	1.8	23	0.9	1.4	27	1.4	2.3
50-54	88	2.0	3.8	38	1.6	2.9	50	2.5	4.9
55-59	131	3.0	6.7	73	3.0	5.9	58	2.9	7.8
60-64	204	4.6	11.4	102	4.2	10.1	102	5.2	12.9
65-69	440	10.0	21.3	248	10.2	20.2	192	9.7	22.6
70-74	764	17.3	38.6	431	17.6	37.9	333	16.8	39.5
75-79	966	21.8	60.4	605	24.8	62.6	361	18.2	57.7
80-84	887	20.1	80.5	516	21.1	83.7	371	18.7	76.5
85+	863	19.5	100.0	397	16.3	100.0	466	23.5	100.0
All ages	4422	100.0		2443	100.0		1979	100.0	

Table 5

Age-specific incidence
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.
0- 4				
5- 9				
10-14				
15-19				
20-24		1		0.1
25-29		1		0.0
30-34	2	2	0.1	0.1
35-39	1	6	0.0	0.3
40-44	6	9	0.2	0.4
45-49	22	26	0.8	1.0
50-54	37	49	1.5	2.0
55-59	71	56	3.3	2.6
60-64	99	98	5.6	5.2
65-69	233	183	14.3	10.1
70-74	402	315	26.8	18.3
75-79	555	338	45.9	22.5
80-84	477	343	65.9	32.2
85+	364	426	77.9	40.9
All ages	2269	1853		
Incidence				
Raw			7.0	5.5
WS			2.6	1.8
ES			4.4	2.8
BRD-S			6.5	3.9

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).

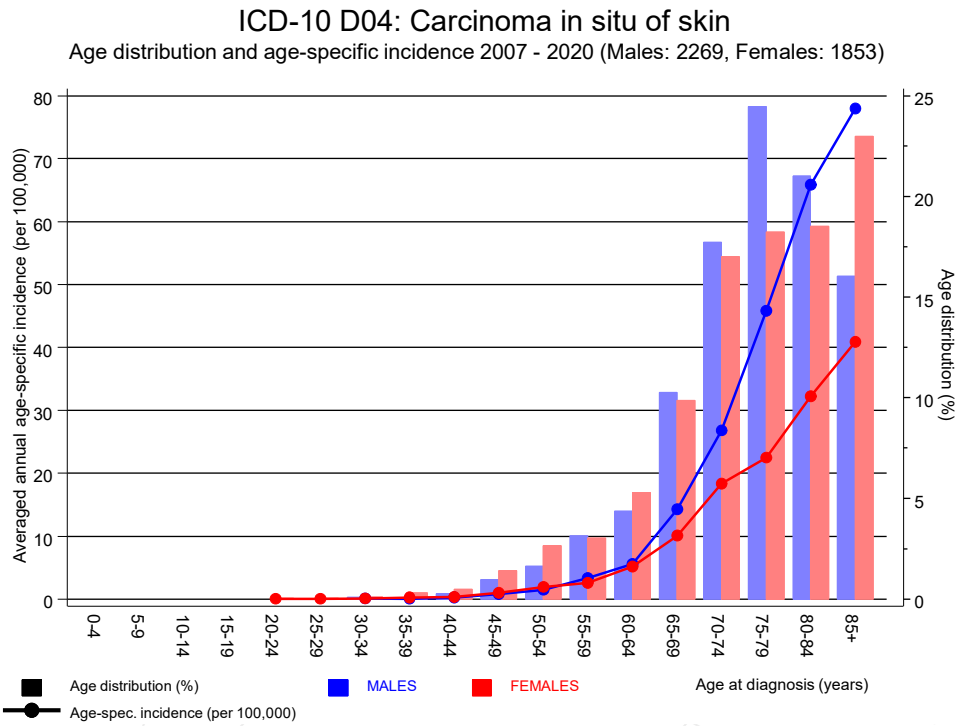


Figure 6. Age distribution (males: mean=76.4 yrs, median=77.5 yrs; females: mean=76.5 yrs, median=77.7 yrs) and age-specific incidence.

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	3	0.2	20.0	4.1	58.4	#	4.3	
C03–C06	Oral cavity	9	0.7	12.0	5.5	22.8	#	12.5	11.1
C07–C08	Salivary gland	4	0.4	9.7	2.6	24.8	#	5.4	
C09–C10	Oropharynx	3	0.8	3.6	0.7	10.6		3.3	
C12–C13	Hypopharynx	2	0.5	4.4	0.5	16.0		2.3	50.0
C15	Oesophagus	8	2.4	3.3	1.4	6.6	#	8.5	25.0
C16	Stomach	18	5.8	3.1	1.8	4.9	#	18.4	5.6
C17	Small intestine	2	0.9	2.2	0.3	7.9		1.6	
C18	Colon	36	14.5	2.5	1.7	3.4	#	32.6	5.6
C19–C20	Rectum	10	6.5	1.5	0.7	2.8		5.4	
C21	Anus/canal	4	0.3	12.2	3.3	31.3	#	5.6	
C22	Liver	4	3.9	1.0	0.3	2.7		0.2	25.0
C23–C24	Bile	2	1.7	1.2	0.1	4.3		0.5	50.0
C25	Pancreas	10	6.2	1.6	0.8	3.0		5.7	40.0
C32	Larynx	3	1.0	2.9	0.6	8.5		3.0	66.7
C33–C34	Lung	38	15.0	2.5	1.8	3.5	#	34.9	13.2
C37	Thymus	1	0.1	13.8	0.4	77.1		1.4	
C43	Malign. melanoma	157	6.5	24.3	20.7	28.4	#	227.8	0.6
C46,C49	Soft tissue	8	0.9	8.9	3.9	17.6	#	10.7	
C48	Peritoneal	1	0.1	9.2	0.2	51.0		1.3	
C50	Breast	1	0.4	2.5	0.1	13.9		0.9	
C60	Penis	1	0.4	2.6	0.1	14.2		0.9	
C61	Prostate	60	34.1	1.8	1.3	2.3	#	39.1	5.0
C64	Kidney	12	4.2	2.9	1.5	5.0	#	11.8	8.3
C65	Renal pelvis	1	0.7	1.4	0.0	8.0		0.5	
C67	Bladder	13	8.1	1.6	0.9	2.7		7.4	
C69	Eye melanoma	1	0.1	7.3	0.2	40.6		1.3	
C70–C72	CNS cancer	3	1.5	2.0	0.4	5.9		2.3	
C73	Thyroid	2	0.6	3.4	0.4	12.4		2.1	
C76–C79	CUP	7	2.5	2.8	1.1	5.7	#	6.8	
C81	Hodgkin lymphoma	3	0.3	10.6	2.2	31.1	#	4.1	
C82–C85	NHL	30	6.3	4.7	3.2	6.8	#	35.8	10.0
C90	Mult. myeloma	3	1.9	1.6	0.3	4.6		1.6	
C91–C96	Leukaemia	7	2.5	2.8	1.1	5.7	#	6.8	42.9
Not observed		0	3.3	0.0	0.0	1.1		-5.0	
All further malignancies		467	135.3	3.5	3.1	3.8	#	502.0	6.6

Patients	2201
Median age at next malignancy (years)	78.5
Person-years	6609
Mean observation time (years)	3.0
Median observation time (years)	1.8

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 %
C00	Lip	1	0.1	13.7	0.3	76.1		1.6	
C03-C06	Oral cavity	2	0.4	5.2	0.6	18.6		2.9	
C07-C08	Salivary gland	4	0.1	28.6	7.8	73.3	#	6.9	
C15	Oesophagus	5	0.5	9.3	3.0	21.8	#	7.9	
C16	Stomach	6	3.1	1.9	0.7	4.2		5.2	16.7
C17	Small intestine	2	0.4	4.9	0.6	17.5		2.8	
C18	Colon	24	8.9	2.7	1.7	4.0	#	26.8	12.5
C19-C20	Rectum	8	3.1	2.6	1.1	5.1	#	8.7	12.5
C21	Anus/canal	5	0.4	12.2	3.9	28.4	#	8.2	
C22	Liver	4	1.1	3.5	1.0	9.1		5.1	50.0
C23-C24	Bile	1	1.3	0.8	0.0	4.2		-0.6	100.0
C25	Pancreas	17	4.6	3.7	2.1	5.9	#	22.0	29.4
C26	GI cancer	1	0.2	5.0	0.1	27.7		1.4	100.0
C30-C31	Sinuses	1	0.1	8.7	0.2	48.6		1.6	
C33-C34	Lung	19	5.5	3.4	2.1	5.4	#	24.0	10.5
C43	Malign. melanoma	68	2.8	24.2	18.8	30.6	#	115.9	
C46,C49	Soft tissue	2	0.5	4.3	0.5	15.4		2.7	
C48	Peritoneal	2	0.3	6.6	0.8	23.9		3.0	
C50	Breast	73	21.0	3.5	2.7	4.4	#	92.5	6.8
C51	Vulva	3	1.0	2.9	0.6	8.4		3.5	
C52	Vagina	1	0.2	5.8	0.1	32.1		1.5	
C53	Cervix uteri	2	0.7	2.7	0.3	9.7		2.2	
C54	Corpus uteri	9	3.9	2.3	1.1	4.4	#	9.2	
C55,C57	Fem. genitals un	1	0.2	4.3	0.1	23.9		1.4	100.0
C56	Ovary	16	2.9	5.5	3.2	9.0	#	23.3	12.5
C64	Kidney	4	1.8	2.3	0.6	5.8		4.0	25.0
C66	Ureter	1	0.2	6.1	0.2	33.9		1.5	
C67	Bladder	6	2.0	3.0	1.1	6.4	#	7.1	33.3
C70-C72	CNS cancer	3	0.9	3.4	0.7	9.9		3.8	
C73	Thyroid	4	0.7	5.6	1.5	14.4	#	5.8	
C76-C79	CUP	4	1.9	2.1	0.6	5.5		3.8	25.0
C81	Hodgkin lymphoma	1	0.1	8.2	0.2	45.5		1.6	
C82-C85	NHL	17	3.3	5.2	3.0	8.3	#	24.4	5.9
C90	Mult. myeloma	2	1.0	2.0	0.2	7.2		1.8	
C91-C96	Leukaemia	6	1.4	4.4	1.6	9.7	#	8.3	50.0
C96	Systemic	1	0.0	25.2	0.6	140.5		1.7	
Not observed		0	1.6	0.0	0.0	2.4		-2.8	
All further malignancies		326	78.3	4.2	3.7	4.6	#	440.6	9.8

Patients	1842
Median age at next malignancy (years)	79.2
Person-years	5622
Mean observation time (years)	3.1
Median observation time (years)	1.9

The occurrence of further specified malignancy is statistically significant.

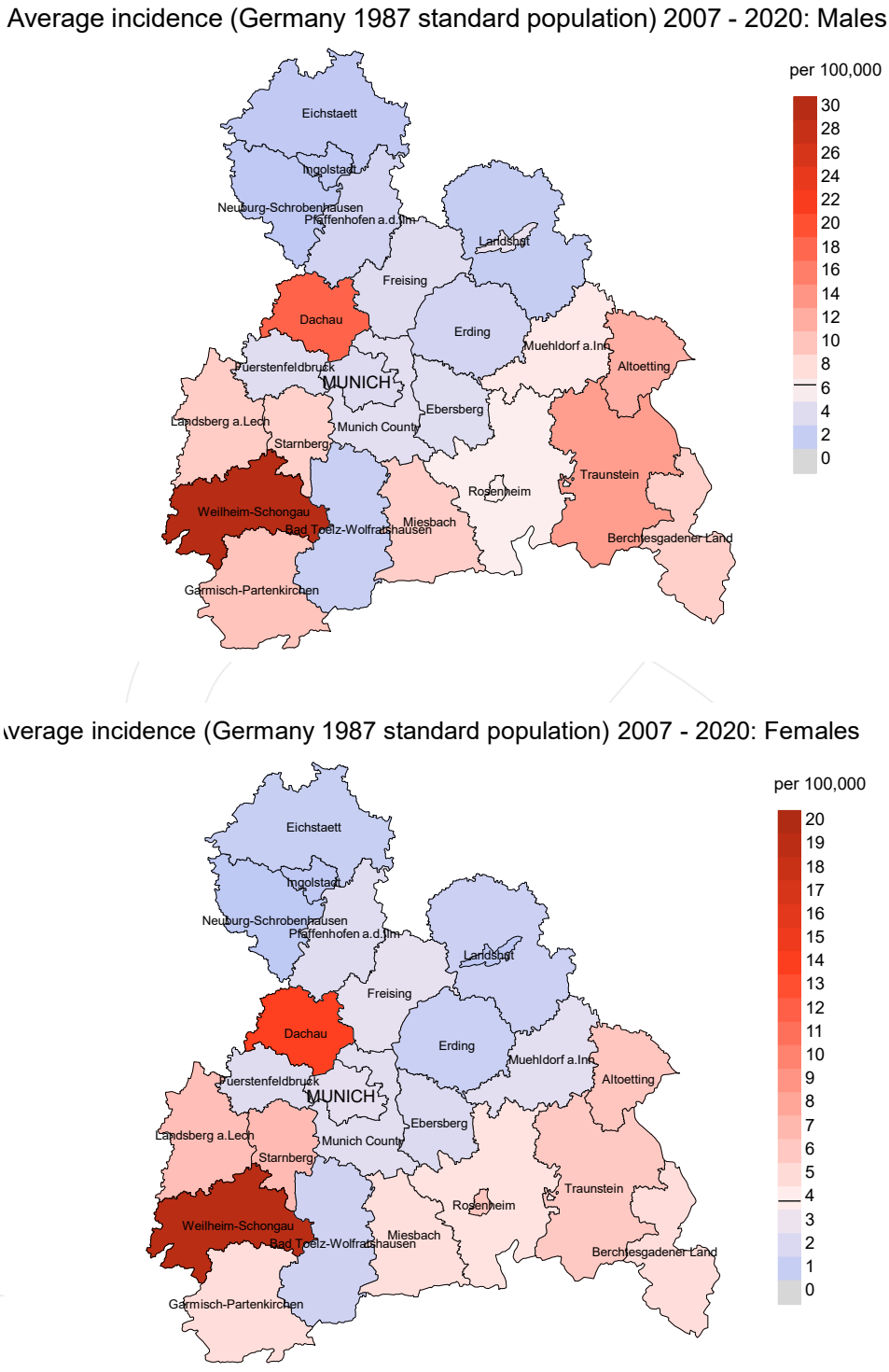
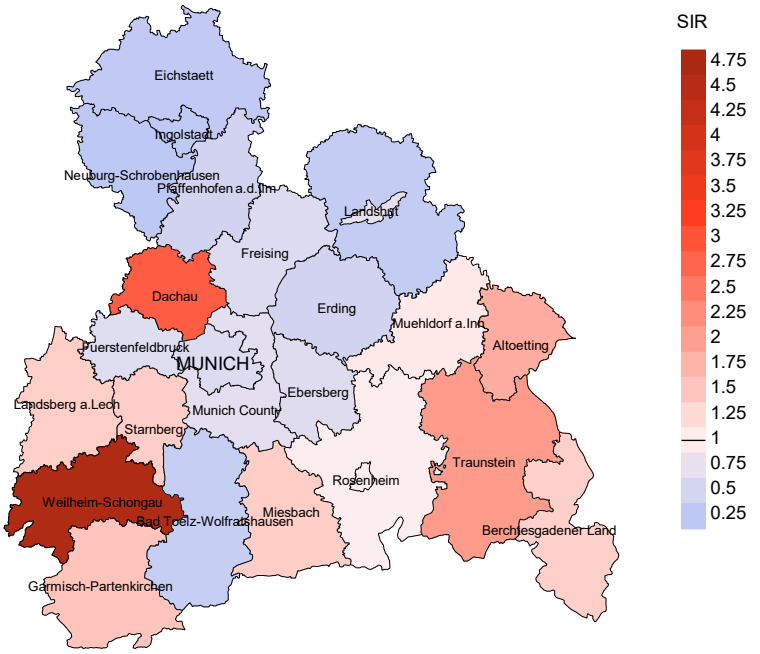


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.5/100,000 WS N=2,269, females 3.9/100,000 WS N=1,853).

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 28 women were identified with newly diagnosed ca. i.s. skin. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 2.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.2 and 3.3/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

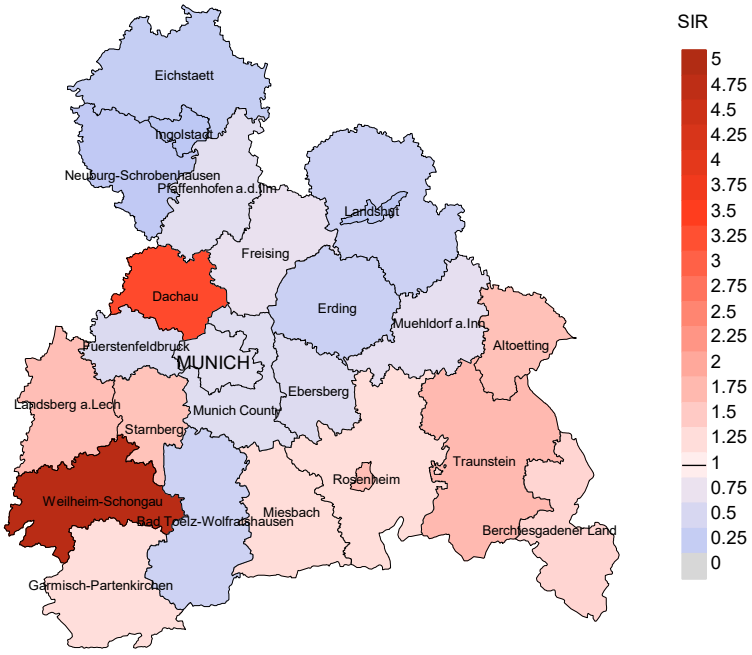


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,269, females N=1,853).

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 28 women were identified with newly diagnosed ca. i.s. skin. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.57. Though, the value of this parameter may vary with an underlying probability of 99% between 0.33 and 0.90.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status,
and deaths among the annual cohorts

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	13	100.0	8	61.5	75.0
1999	14	100.0	11	78.6	90.9
2000	9	100.0	9	100.0	100.0
2001	14	100.0	12	85.7	91.7
2002	27	100.0	22	81.5	95.5
2003	28	92.9	21	75.0	90.5
2004	82	98.8	59	72.0	89.8
2005	81	91.4	58	71.6	96.6
2006	71	91.5	46	64.8	95.7
2007	148	93.2	101	68.2	97.0
2008	194	99.5	128	66.0	96.1
2009	280	96.4	143	51.1	95.1
2010	394	98.0	205	52.0	92.2
2011	241	95.9	127	52.7	95.3
2012	354	98.3	167	47.2	88.6
2013	518	97.3	216	41.7	89.4
2014	470	95.3	205	43.6	89.3
2015	313	96.8	135	43.1	87.4
2016	317	98.1	83	26.2	81.9
2017	282	100.0	71	25.2	73.2
2018	365	98.9	66	18.1	80.3
2019	390	99.2	40	10.3	80.0
2020	156	98.7	15	9.6	86.7
1998–2020	4761	97.4	1948	40.9	90.1

Table 9b

Annual cohorts of incident cancers and deaths,
and cases deceased within the same year of being diagnosed with cancer

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	13	4		
1999	14	3	1	7.1
2000	9	2		
2001	14	4	1	7.1
2002	27	10		
2003	28	8		
2004	82	14	4	4.9
2005	81	13	2	2.5
2006	71	18		
2007	148	20	3	2.0
2008	194	35	7	3.6
2009	280	50	3	1.1
2010	394	61	7	1.8
2011	241	78	8	3.3
2012	354	85	6	1.7
2013	518	126	9	1.7
2014	470	118	14	3.0
2015	313	167	15	4.8
2016	317	186	10	3.2
2017	282	139	8	2.8
2018	365	162	6	1.6
2019	390	147	11	2.8
2020	156	197	8	5.1
1998–2020	4761	1647	123	2.6

Table 9c

Annual cohorts of deaths, and proportion of cancer-related and non-cancer-related deaths

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	4	50.0	50.0	75.0
1999	3		100.0	66.7
2000	2		100.0	50.0
2001	4		100.0	
2002	10	20.0	80.0	44.4
2003	8	25.0	75.0	25.0
2004	14	35.7	64.3	50.0
2005	13	46.2	53.8	58.3
2006	18	16.7	83.3	52.9
2007	20	55.0	45.0	70.0
2008	35	37.1	62.9	37.1
2009	50	40.0	60.0	44.0
2010	61	42.6	57.4	50.8
2011	78	34.6	65.4	39.7
2012	85	32.9	67.1	42.9
2013	126	32.5	67.5	45.5
2014	118	41.5	58.5	50.8
2015	167	31.1	68.9	40.1
2016	186	34.9	65.1	41.6
2017	139	32.4	67.6	40.8
2018	162	18.5	81.5	33.3
2019	147	17.7	82.3	55.6
2020	197	17.3	82.7	46.8
1998-2020	1647	29.6	70.4	44.2

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	1	70.6		70.6	
1999	1	83.9		83.9	
2000					
2001	2	80.3		80.3	
2002	4	77.7		77.7	73.6
2003	4	85.1	79.4	91.1	79.4
2004	8	86.7	82.0	89.0	82.0
2005	9	83.8	76.1	83.8	83.8
2006	9	80.0	80.0	83.6	79.5
2007	11	82.1	80.4	83.7	82.1
2008	19	85.0	83.7	86.6	82.9
2009	25	84.9	75.9	85.9	76.3
2010	30	80.2	78.5	81.3	78.5
2011	43	84.4	80.3	87.4	76.8
2012	36	84.8	82.3	87.0	82.3
2013	65	82.7	79.5	84.9	81.2
2014	74	84.8	78.4	85.9	81.9
2015	81	85.9	82.6	86.8	82.5
2016	105	83.3	82.1	84.4	81.8
2017	79	85.5	81.0	87.0	82.0
2018	100	87.0	81.4	88.1	81.4
2019	80	86.7	80.6	87.7	81.6
2020	110	86.6	84.5	86.6	85.1
1998-2020	896	84.8	81.0	86.6	81.9

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

Table 10b

Medians of age at death according to the grouping in Table 9
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	3	79.2	70.5	79.2	79.2
1999	2	83.9		83.9	83.9
2000	2	76.9		76.9	75.9
2001	2	90.0		90.0	
2002	6	86.9	82.1	86.9	82.8
2003	4	80.0		80.0	
2004	6	83.1	92.1	82.9	86.4
2005	4	89.8	90.0	86.3	90.0
2006	9	85.9	87.4	85.2	87.4
2007	9	84.9	84.2	86.2	84.2
2008	16	87.9	86.5	88.3	88.0
2009	25	88.1	70.9	88.9	72.1
2010	31	87.7	85.4	88.4	87.6
2011	35	86.7	75.6	88.7	81.9
2012	49	86.7	80.0	88.0	82.3
2013	61	87.0	81.2	89.8	82.7
2014	44	86.3	76.7	89.8	76.8
2015	86	88.8	83.3	91.4	82.7
2016	81	89.4	85.2	90.8	85.2
2017	60	90.8	89.8	90.9	90.4
2018	62	89.6	83.7	90.0	83.0
2019	67	86.8	80.5	87.5	81.7
2020	87	87.3	86.3	87.4	86.1
1998-2020	751	87.9	83.7	89.2	84.1

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									
1999									
2000									
2001									
2002									
2003	2	0.1	0.17	0.0	0.13	0.1	0.16	0.2	0.19
2004	4	0.2	0.09	0.1	0.09	0.2	0.11	0.3	0.10
2005	4	0.2	0.11	0.1	0.10	0.1	0.10	0.2	0.11
2006	2	0.1	0.06	0.0	0.04	0.1	0.06	0.1	0.07
2007	6	0.3	0.08	0.1	0.07	0.2	0.08	0.3	0.09
2008	6	0.3	0.07	0.1	0.06	0.2	0.07	0.3	0.08
2009	11	0.5	0.08	0.2	0.08	0.4	0.09	0.5	0.08
2010	15	0.7	0.07	0.3	0.06	0.4	0.07	0.6	0.07
2011	17	0.8	0.12	0.3	0.11	0.5	0.11	0.7	0.12
2012	16	0.7	0.09	0.3	0.08	0.5	0.09	0.7	0.10
2013	24	1.0	0.09	0.4	0.09	0.6	0.09	1.0	0.09
2014	30	1.3	0.13	0.5	0.14	0.8	0.14	1.2	0.13
2015	19	0.8	0.11	0.3	0.11	0.5	0.12	0.7	0.11
2016	47	2.0	0.29	0.7	0.26	1.2	0.29	1.7	0.28
2017	27	1.1	0.19	0.4	0.19	0.6	0.19	1.0	0.19
2018	19	0.8	0.10	0.2	0.08	0.4	0.09	0.6	0.10
2019	16	0.7	0.08	0.2	0.06	0.3	0.07	0.5	0.07
2020	23	0.9	0.28	0.3	0.24	0.5	0.27	0.8	0.27
1998-2020	288	0.6	0.12	0.2	0.11	0.4	0.12	0.6	0.12

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	2	0.2	0.33	0.1	0.21	0.1	0.25	0.1	0.30
1999									
2000									
2001									
2002	2	0.1	0.15	0.0	0.17	0.1	0.16	0.1	0.14
2003									
2004	1	0.1	0.03	0.0	0.02	0.0	0.02	0.0	0.02
2005	2	0.1	0.05	0.0	0.03	0.0	0.03	0.0	0.03
2006	1	0.0	0.03	0.0	0.01	0.0	0.02	0.0	0.02
2007	5	0.2	0.08	0.0	0.05	0.1	0.06	0.1	0.07
2008	7	0.3	0.07	0.1	0.04	0.1	0.05	0.2	0.06
2009	9	0.4	0.07	0.2	0.08	0.2	0.08	0.3	0.07
2010	11	0.5	0.07	0.1	0.03	0.2	0.04	0.2	0.05
2011	10	0.4	0.11	0.2	0.11	0.2	0.11	0.3	0.10
2012	12	0.5	0.08	0.2	0.08	0.3	0.08	0.4	0.09
2013	17	0.7	0.08	0.2	0.05	0.3	0.06	0.5	0.07
2014	19	0.8	0.09	0.2	0.09	0.4	0.09	0.5	0.09
2015	35	1.4	0.30	0.4	0.25	0.6	0.26	0.9	0.26
2016	20	0.8	0.16	0.2	0.12	0.3	0.13	0.5	0.13
2017	18	0.7	0.14	0.1	0.08	0.3	0.10	0.4	0.10
2018	11	0.4	0.07	0.1	0.04	0.1	0.05	0.3	0.06
2019	10	0.4	0.07	0.1	0.06	0.2	0.07	0.2	0.06
2020	13	0.5	0.20	0.1	0.11	0.2	0.13	0.3	0.15
1998-2020	205	0.4	0.10	0.1	0.08	0.2	0.09	0.3	0.09

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	1	0.2	0.2			0.0	1	0.5	0.5
30-34	0	0.0	0.2			0.0			0.5
35-39	0	0.0	0.2			0.0			0.5
40-44	1	0.2	0.4			0.0	1	0.5	1.0
45-49	2	0.4	0.8	2	0.7	0.7			1.0
50-54	4	0.8	1.7			0.7	4	2.0	3.0
55-59	5	1.1	2.7	2	0.7	1.4	3	1.5	4.6
60-64	11	2.3	5.1	6	2.2	3.6	5	2.5	7.1
65-69	24	5.1	10.1	18	6.5	10.1	6	3.0	10.2
70-74	61	12.9	23.0	40	14.5	24.6	21	10.7	20.8
75-79	82	17.3	40.4	50	18.1	42.8	32	16.2	37.1
80-84	103	21.8	62.2	64	23.2	65.9	39	19.8	56.9
85+	179	37.8	100.0	94	34.1	100.0	85	43.1	100.0
All ages	473	100.0		276	100.0		197	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
0– 4						
5– 9						
10–14						
15–19						
20–24						
25–29		1			0.0	1.00
30–34						
35–39						
40–44		1			0.0	0.11
45–49	2		0.1	0.09		
50–54		4			0.2	0.08
55–59	2	3	0.1	0.03	0.1	0.05
60–64	6	5	0.3	0.06	0.3	0.05
65–69	18	6	1.1	0.08	0.3	0.03
70–74	40	21	2.7	0.10	1.2	0.07
75–79	50	32	4.1	0.09	2.1	0.09
80–84	64	39	8.8	0.13	3.7	0.11
85+	94	85	20.1	0.26	8.2	0.20
All ages	276	197				
Mortality						
Raw			0.8	0.12	0.6	0.11
WS			0.3	0.11	0.1	0.08
ES			0.5	0.12	0.2	0.09
BRD-S			0.8	0.12	0.4	0.09
PYLL-70						
per 100,000			0.6		0.8	
ES			0.5		0.7	
AYLL-70			5.7		11.5	

Table 14a

Further malignancies in deaths in period 1998-2020
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	1	0.2					1	100.0
C03-C06	Oral cavity	7	1.1	1	14.3			6	85.7
C07-C08	Salivary gland	3	0.5			1	33.3	2	66.7
C09-C10	Oropharynx	4	0.6	2	50.0			2	50.0
C12-C13	Hypopharynx	2	0.3	1	50.0			1	50.0
C15	Oesophagus	11	1.7	2	18.2			9	81.8
C16	Stomach	14	2.2	4	28.6			10	71.4
C17	Small intestine	3	0.5	2	66.7			1	33.3
C18	Colon	21	3.3	7	33.3	1	4.8	13	61.9
C19-C20	Rectum	7	1.1	2	28.6			5	71.4
C21	Anus/canal	3	0.5	1	33.3			2	66.7
C22	Liver	6	1.0	1	16.7			5	83.3
C23-C24	Bile	2	0.3					2	100.0
C25	Pancreas	7	1.1	1	14.3			6	85.7
C32	Larynx	6	1.0	3	50.0	1	16.7	2	33.3
C33-C34	Lung	31	4.9	3	9.7	1	3.2	27	87.1
C38,C45	Mesothelioma	2	0.3	1	50.0			1	50.0
C43	Malign. melanoma	52	8.3	12	23.1	24	46.2	16	30.8
C44	Skin others	277	44.0			54	19.5	223	80.5
C46,C49	Soft tissue	3	0.5	1	33.3			2	66.7
C48	Peritoneal	1	0.2					1	100.0
C50	Breast	1	0.2					1	100.0
C61	Prostate	52	8.3	37	71.2	1	1.9	14	26.9
C64	Kidney	4	0.6	3	75.0			1	25.0
C65	Renal pelvis	1	0.2					1	100.0
C67	Bladder	8	1.3	3	37.5			5	62.5
C68	Urethra	1	0.2					1	100.0
C69	Eye carcinoma	1	0.2					1	100.0
C69	Eye melanoma	1	0.2					1	100.0
C70-C72	CNS cancer	4	0.6	1	25.0			3	75.0
C73	Thyroid	1	0.2					1	100.0
C76-C79	CUP	9	1.4			2	22.2	7	77.8
C81	Hodgkin lymphoma	5	0.8	3	60.0			2	40.0
C82-C85	NHL	62	9.9	35	56.5	3	4.8	24	38.7
C90	Mult. myeloma	7	1.1	5	71.4			2	28.6
C91-C96	Leukaemia	9	1.4	2	22.2	1	11.1	6	66.7
All further malignancies		629	100.0	133	21.1	89	14.1	407	64.7

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

Table 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	1	0.3					1	100.0
C07-C08	Salivary gland	2	0.6			1	50.0	1	50.0
C12-C13	Hypopharynx	1	0.3	1	100.0				
C15	Oesophagus	1	0.3					1	100.0
C16	Stomach	7	2.1	3	42.9			4	57.1
C17	Small intestine	1	0.3					1	100.0
C18	Colon	20	6.1	4	20.0			16	80.0
C19-C20	Rectum	5	1.5	3	60.0			2	40.0
C21	Anus/canal	3	0.9	3	100.0				
C22	Liver	4	1.2	2	50.0			2	50.0
C23-C24	Bile	3	0.9	2	66.7			1	33.3
C25	Pancreas	13	4.0					13	100.0
C26	GI cancer	1	0.3					1	100.0
C30-C31	Sinuses	1	0.3					1	100.0
C33-C34	Lung	20	6.1	4	20.0	2	10.0	14	70.0
C43	Malign. melanoma	27	8.2	8	29.6	7	25.9	12	44.4
C44	Skin others	92	28.0			16	17.4	76	82.6
C46,C49	Soft tissue	4	1.2	2	50.0			2	50.0
C50	Breast	39	11.9	26	66.7			13	33.3
C51	Vulva	2	0.6	2	100.0				
C52	Vagina	1	0.3					1	100.0
C53	Cervix uteri	2	0.6	1	50.0			1	50.0
C54	Corpus uteri	10	3.0	6	60.0			4	40.0
C56	Ovary	8	2.4	5	62.5			3	37.5
C64	Kidney	5	1.5	3	60.0			2	40.0
C66	Ureter	1	0.3					1	100.0
C67	Bladder	7	2.1	3	42.9			4	57.1
C70-C72	CNS cancer	3	0.9					3	100.0
C73	Thyroid	1	0.3					1	100.0
C76-C79	CUP	3	0.9	1	33.3			2	66.7
C81	Hodgkin lymphoma	2	0.6	1	50.0			1	50.0
C82-C85	NHL	29	8.8	20	69.0	1	3.4	8	27.6
C90	Mult. myeloma	1	0.3	1	100.0				
C91-C96	Leukaemia	7	2.1	2	28.6			5	71.4
C96	Systemic	1	0.3					1	100.0
All further malignancies		328	100.0	103	31.4	27	8.2	198	60.4

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 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.	MI-index	Females Age-spec. mortal.	MI-index
0- 4						
5- 9						
10-14						
15-19						
20-24						
25-29						
30-34						
35-39						
40-44						
45-49	1		0.0	0.07		
50-54						
55-59	1	1	0.0	0.02	0.0	0.03
60-64	1	2	0.1	0.02	0.1	0.03
65-69	5	3	0.3	0.05	0.2	0.03
70-74	10	6	0.7	0.06	0.3	0.04
75-79	11	8	0.9	0.06	0.5	0.05
80-84	12	11	1.7	0.09	1.0	0.08
85+	21	34	4.5	0.24	3.3	0.17
All ages	62	65				
Mortality						
Raw			0.2	0.08	0.2	0.07
WS			0.1	0.07	0.0	0.05
ES			0.1	0.07	0.1	0.06
BRD-S			0.2	0.08	0.1	0.06
PYLL-70						
per 100,000			0.2		0.1	
ES			0.2		0.1	
AYLL-70			6.9		5.8	

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2009-2020
(**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
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	0.02		
70-74						
75-79		1			0.1	0.01
80-84	2	2	0.3	0.02	0.2	0.02
85+	4	7	1.0	0.07	0.8	0.05
All ages	7	10				
Mortality						
Raw			0.0	0.01	0.0	0.02
WS			0.0	0.01	0.0	0.01
ES			0.0	0.01	0.0	0.01
BRD-S			0.0	0.01	0.0	0.01
PYLL-70						
per 100,000			0.0			
ES			0.0			
AYLL-70			2.5			

* See corresponding tables with multiple malignancies.

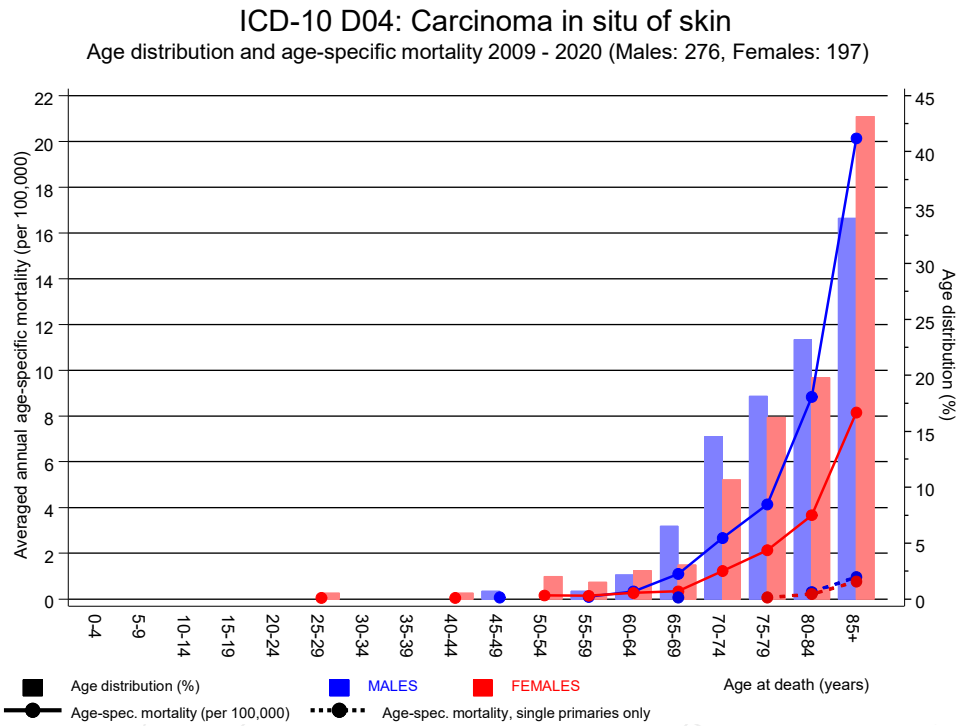
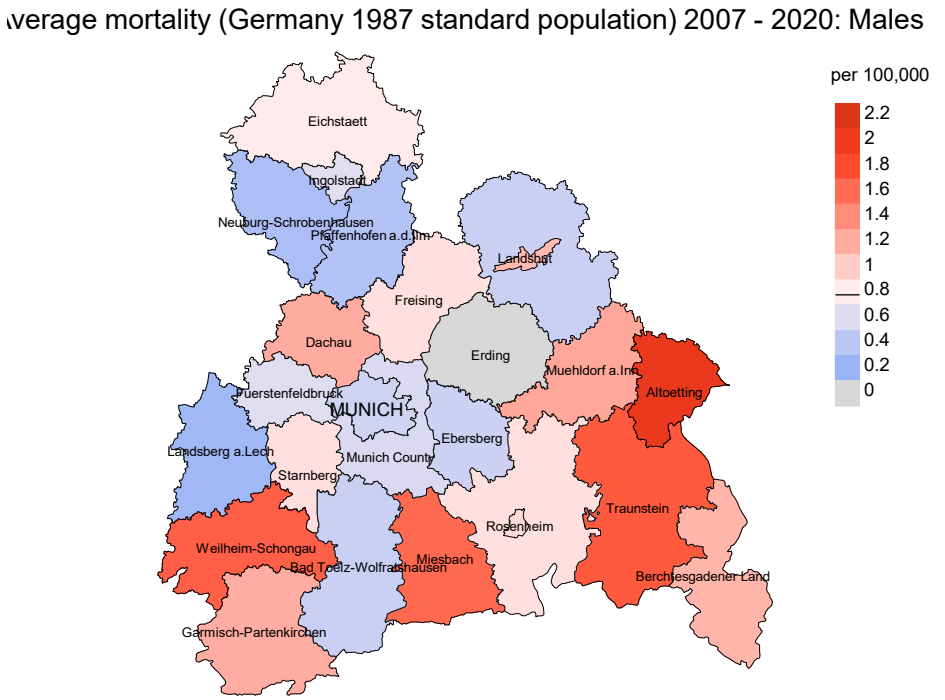


Figure 17. Distribution of age at death (bars; males: mean=77.1 yrs, median=77.8 yrs; females: mean=77.3 yrs, median=79.3 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line).

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



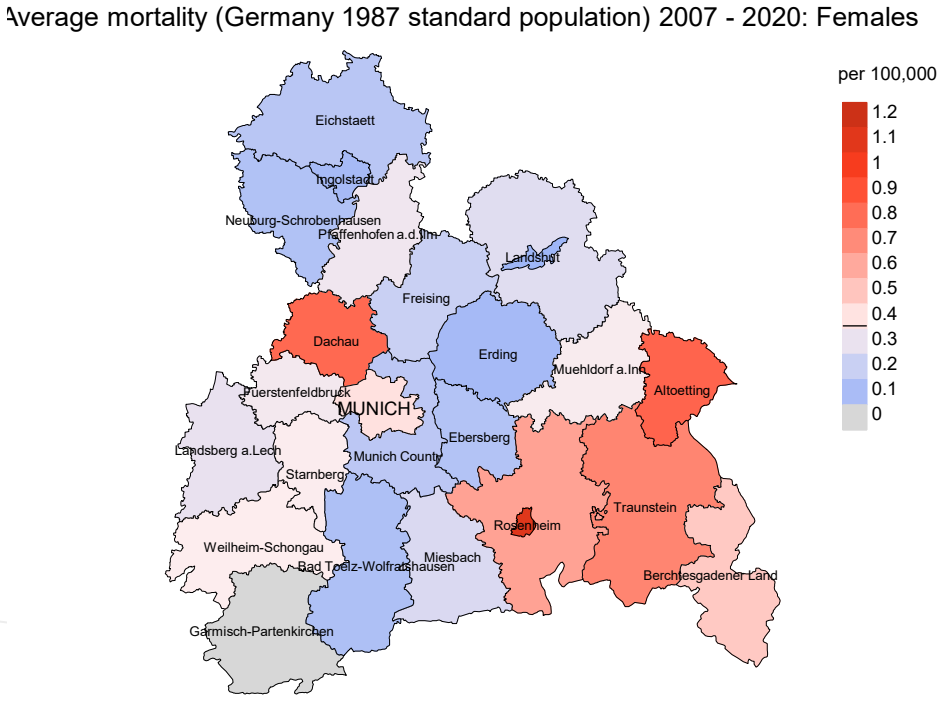
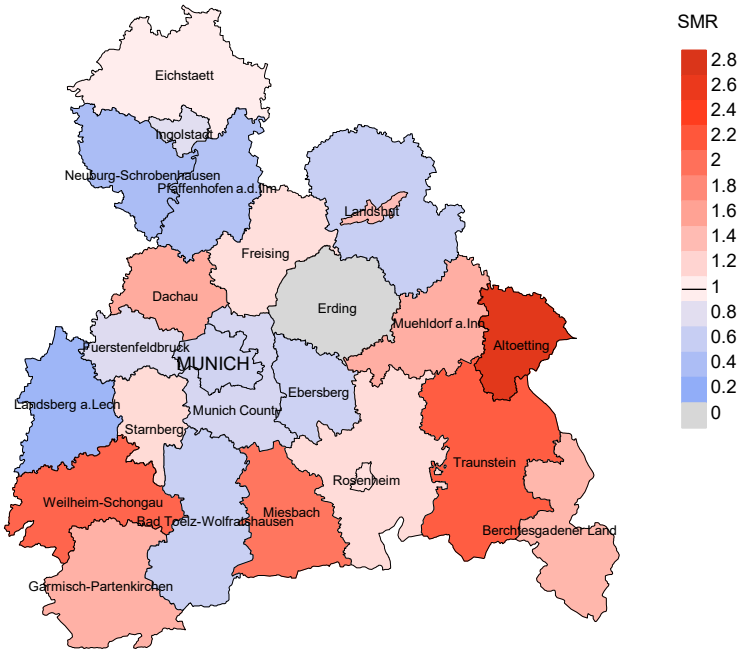


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.8/100,000 WS N=276, females 0.4/100,000 WS N=197).

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 died from ca. i.s. skin. 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 0.8/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

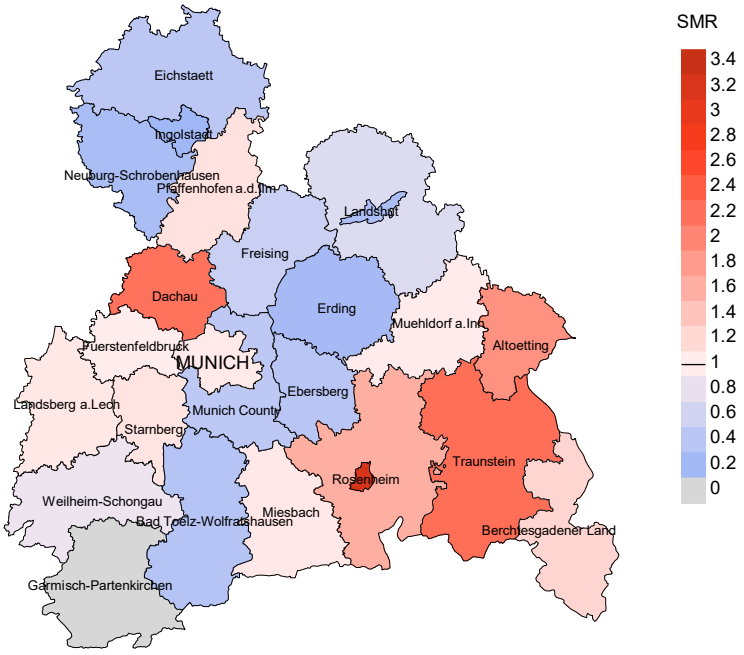


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=276, females N=197).

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 died from ca. i.s. skin. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.39. Though, the value of this parameter may vary with an underlying probability of 99% between 0.02 and 1.81, 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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