

Munich Cancer Registry



- ▶ Survival
- ▶ Selection Matrix
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- ▶ *Deutsch*

ICD-10 C44: Skin other

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	24,295
Diseases	30,075
Creation date	01/25/2021
Database export	01/07/2021
Population	4.92 m



Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninstr. 15
Munich, 81377
Germany

<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

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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, January 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	29.9	78.7	95.9
1999	311	4	1.3	27.5	29.9	78.8	96.5
2000	310	9	2.9	27.7	29.8	80.0	97.7
2001	269	7	2.6	29.1	29.7	75.8	97.0
2002	708	17	2.4	29.4	29.6	80.2	96.6 #
2003	718	25	3.5	30.0	29.4	76.6	96.8
2004	857	15	1.8	30.8	29.1	73.2	97.5
2005	875	25	2.9	31.7	28.8	71.9	95.5
2006	903	23	2.5	32.6	28.6	69.7	94.6
2007	1296	27	2.1	33.7	28.2	67.7	92.1 #
2008	1566	16	1.0	35.0	27.7	62.7	97.4
2009	1930	17	0.9	36.4	27.0	58.8	97.7
2010	2009	22	1.1	37.5	26.1	54.1	98.4
2011	2087	21	1.0	38.7	25.0	48.6	97.7
2012	2826	27	1.0	39.5	23.9	43.9	96.7
2013	2719	28	1.0	40.5	23.1	40.5	96.4
2014	2312	17	0.7	41.8	22.2	44.7	94.4
2015	1927	29	1.5	43.3	20.3	43.6	94.1
2016	1694	22	1.3	44.1	17.7	35.6	96.2
2017	1593	20	1.3	44.7	14.5	23.7	97.3
2018	1729	7	0.4	45.3	12.9	15.3	96.9
2019	1169	4	0.3	45.9	8.3	10.7	65.8 ##
1998-2019	30075	390	1.3	45.9	29.9	48.5	95.2

30,075 cases diagnosed 1998-2019 are related to a total of 24,295 patients. Currently, in 13,495 (55.5 %) of these 24,295 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 8,037 / 3,220 / 2,238 (33.1 % / 13.3 % / 9.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 1,593 cases has been diagnosed, of which 44.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 14.5 % 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	32.7	79.4	94.1
1999	174	55.9	1	0.6	27.9	32.6	83.9	96.6
2000	183	59.0	5	2.7	29.0	32.6	80.9	97.8
2001	171	63.6	6	3.5	31.1	32.5	80.1	97.1
2002	426	60.2	8	1.9	31.4	32.4	82.4	97.7 #
2003	432	60.2	10	2.3	32.6	32.1	81.3	97.0
2004	506	59.0	5	1.0	34.0	31.7	73.9	98.2
2005	514	58.7	9	1.8	34.9	31.4	71.8	95.7
2006	554	61.4	11	2.0	35.9	31.1	72.2	95.1
2007	761	58.7	12	1.6	37.5	30.5	69.1	94.3 #
2008	927	59.2	10	1.1	39.0	29.9	64.5	97.4
2009	1162	60.2	9	0.8	40.4	29.2	59.7	97.5
2010	1230	61.2	12	1.0	41.7	28.0	54.6	98.8
2011	1233	59.1	9	0.7	43.1	26.8	50.6	97.8
2012	1716	60.7	11	0.6	43.8	25.4	46.2	97.6
2013	1584	58.3	20	1.3	44.9	24.3	43.2	96.3
2014	1423	61.5	5	0.4	46.2	23.1	47.4	95.6
2015	1179	61.2	14	1.2	47.6	21.0	45.7	95.3
2016	1006	59.4	7	0.7	48.3	18.4	38.3	97.7
2017	988	62.0	13	1.3	48.9	14.8	25.9	97.5
2018	1075	62.2	3	0.3	49.6	13.0	16.2	97.7
2019	735	62.9	2	0.3	50.2	8.6	12.7	66.9 ##
1998-2019	18149	60.3	185	1.0	50.2	32.7	50.3	95.7

18,149 cases diagnosed 1998-2019 are related to a total of 14,084 patients. Currently, in 8,393 (59.6 %) of these 14,084 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,805 / 2,014 / 1,574 (34.1 % / 14.3 % / 11.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 988 cases has been diagnosed, of which 48.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 14.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	25.8	77.3	99.0
1999	137	44.1	3	2.2	26.9	25.8	72.3	96.4
2000	127	41.0	4	3.1	25.8	25.7	78.7	97.6
2001	98	36.4	1	1.0	26.1	25.6	68.4	96.9
2002	282	39.8	9	3.2	26.5	25.5	77.0	95.0 #
2003	286	39.8	15	5.2	25.9	25.4	69.6	96.5
2004	351	41.0	10	2.8	26.1	25.1	72.1	96.6
2005	361	41.3	16	4.4	26.9	25.0	72.0	95.3
2006	349	38.6	12	3.4	27.5	24.9	65.6	93.7
2007	535	41.3	15	2.8	28.1	24.8	65.6	89.0 #
2008	639	40.8	6	0.9	29.2	24.4	60.1	97.3
2009	768	39.8	8	1.0	30.4	23.9	57.4	98.0
2010	779	38.8	10	1.3	31.2	23.3	53.1	97.8
2011	854	40.9	12	1.4	32.1	22.3	45.7	97.7
2012	1110	39.3	16	1.4	33.0	21.7	40.3	95.3
2013	1135	41.7	8	0.7	33.9	21.4	36.8	96.6
2014	889	38.5	12	1.3	35.3	20.8	40.3	92.4
2015	748	38.8	15	2.0	36.8	19.2	40.4	92.1
2016	688	40.6	15	2.2	37.7	16.8	31.7	94.0
2017	605	38.0	7	1.2	38.3	14.1	20.2	97.0
2018	654	37.8	4	0.6	38.9	12.6	13.8	95.7
2019	434	37.1	2	0.5	39.4	7.8	7.4	63.8 ##
1998-2019	11926	39.7	205	1.7	39.4	25.8	45.8	94.3

11,926 cases diagnosed 1998-2019 are related to a total of 10,211 patients. Currently, in 5,102 (50.0 %) of these 10,211 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,232 / 1,206 / 664 (31.7 % / 11.8 % / 6.5 %) 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 retrieved from the respective headings.

How to interpret:

In 2017, a subgroup of 605 cases has been diagnosed, of which 38.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 14.1 % 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 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 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	170	97	15.3	8.2	8.6	3.2	14.1	5.0	20.8	6.7
1999	174	137	15.5	11.5	9.1	4.4	14.4	6.8	20.0	9.4
2000	183	127	16.1	10.6	8.9	3.9	14.4	6.2	20.7	8.1
2001	171	98	14.8	8.1	8.0	3.3	13.3	5.1	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	286	23.0	14.5	11.6	5.1	19.3	8.1	27.8	11.0
2004	506	351	26.9	17.8	13.4	5.9	21.8	9.4	30.5	12.9
2005	514	361	27.1	18.1	13.0	6.3	21.5	9.8	30.5	13.0
2006	554	349	28.9	17.4	13.2	5.7	22.0	9.0	31.7	12.4
2007	761	535	34.4	23.2	15.7	7.6	25.7	12.0	36.6	16.5
2008	927	639	41.6	27.5	18.8	9.1	30.3	14.3	42.7	19.6
2009	1162	768	52.1	33.0	22.5	10.8	36.7	17.1	52.6	23.1
2010	1230	779	54.6	33.3	23.7	11.7	37.9	18.0	52.9	23.6
2011	1233	854	55.1	36.5	22.9	13.4	37.3	20.1	53.3	26.1
2012	1716	1110	75.6	47.0	30.4	16.4	49.8	25.1	71.0	33.4
2013	1584	1135	68.8	47.6	27.3	16.6	44.5	25.5	63.9	33.9
2014	1423	889	61.0	36.9	23.0	11.6	38.2	18.3	55.6	25.2
2015	1179	748	49.6	30.7	17.3	9.0	29.9	14.6	44.4	20.3
2016	1006	688	41.9	28.0	14.5	7.9	24.7	13.0	36.9	18.6
2017	988	605	40.9	24.5	14.1	7.3	23.9	11.8	35.3	16.6
2018	1075	654	44.2	26.3	15.2	7.7	25.6	12.4	37.4	17.6
2019	735	434	30.2	17.5	9.6	4.8	16.6	7.9	25.4	11.4
1998-2019	18149	11926	41.2	26.0	17.3	8.7	28.6	13.7	41.4	18.6

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	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	267	73.4	12.2	32.5	100	56.6	64.7	75.6	82.7	87.1
1999	311	74.2	13.3	15.3	101	58.5	66.8	75.7	84.5	89.1
2000	310	74.3	12.7	32.8	99.4	56.6	66.4	75.4	84.2	88.6
2001	269	73.7	13.2	34.6	101	55.2	66.0	76.1	82.8	89.0
2002	708	75.7	12.3	25.4	106	59.8	69.3	76.9	84.4	90.0
2003	718	75.7	12.1	13.2	102	60.0	68.6	77.1	83.7	90.0
2004	857	75.4	12.2	31.8	106	60.2	67.8	77.1	84.1	90.1
2005	875	75.7	12.4	21.2	102	60.2	68.0	77.4	85.0	90.5
2006	903	76.4	11.6	27.5	102	62.6	69.2	77.6	84.8	90.7
2007	1296	76.2	11.8	23.8	100	61.3	69.2	77.7	84.8	89.5
2008	1566	75.6	12.0	25.7	103	60.2	68.6	77.0	84.1	89.3
2009	1930	75.7	11.5	20.3	104	60.9	69.4	76.9	84.0	88.9
2010	2009	74.9	11.6	24.1	106	60.3	68.6	75.2	83.4	88.8
2011	2087	74.8	12.1	19.8	107	59.0	68.8	75.8	83.4	88.9
2012	2826	75.4	11.6	0.7	104	60.4	70.2	76.4	83.7	89.0
2013	2719	75.5	11.6	21.6	104	60.1	69.9	76.6	83.8	88.9
2014	2312	77.1	11.2	0.2	103	63.5	71.8	78.0	84.8	89.5
2015	1927	78.7	10.0	22.3	103	67.1	73.6	79.4	85.7	90.3
2016	1694	78.4	10.2	28.7	104	65.6	74.1	79.4	85.3	90.2
2017	1593	77.6	10.7	23.2	104	64.6	73.4	78.8	84.4	89.4
2018	1729	77.7	10.5	23.6	101	62.4	73.4	79.2	84.5	89.2
2019	1169	78.8	10.1	27.9	104	66.1	75.2	79.9	84.7	89.9
1998-2019	30075	76.3	11.5	0.2	107	61.5	70.4	77.7	84.4	89.4

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.		Max.		Median		
		Mean	dev.			10%	25%	50%	75%	90%
1998	170	72.9	11.4	38.9	95.6	57.1	64.4	75.3	82.4	86.1
1999	174	73.3	13.2	18.1	97.1	59.2	66.8	73.6	84.0	89.1
2000	183	73.5	11.0	38.7	96.1	59.7	65.8	74.7	81.7	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	506	74.0	11.6	34.4	99.3	59.8	66.7	74.7	82.4	88.9
2005	514	74.9	11.4	33.8	98.7	60.3	68.1	76.2	83.5	88.4
2006	554	75.8	10.9	40.8	102	62.3	69.0	76.6	83.7	88.4
2007	761	75.3	10.6	27.8	98.9	62.1	69.0	75.9	82.9	87.5
2008	927	74.5	11.1	30.9	97.2	60.4	68.2	74.9	82.5	87.6
2009	1162	74.8	10.9	20.3	104	60.8	69.3	75.9	82.4	87.6
2010	1230	74.4	10.7	24.1	106	61.8	68.8	74.8	81.8	87.2
2011	1233	75.0	10.5	25.4	98.6	61.8	69.4	75.9	82.3	87.1
2012	1716	75.5	10.5	0.7	101	62.5	70.7	76.3	82.7	87.6
2013	1584	75.7	10.4	28.1	98.4	62.3	70.6	76.6	83.3	88.2
2014	1423	77.0	10.3	21.1	101	64.3	71.8	77.7	84.2	88.6
2015	1179	78.7	9.4	22.3	103	68.4	73.8	79.3	85.1	89.1
2016	1006	78.3	9.4	28.7	104	66.2	74.4	79.3	84.8	88.3
2017	988	77.9	9.9	26.5	102	66.6	74.0	78.8	84.0	88.8
2018	1075	77.7	10.2	23.6	101	63.8	73.7	79.4	84.3	88.6
2019	735	79.0	9.5	35.0	101	67.2	75.6	80.1	84.6	89.6
1998-2019	18149	76.0	10.6	0.7	106	62.6	70.5	77.2	83.5	88.2

Table 3b

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	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	127	75.6	14.8	32.8	99.4	52.0	68.3	78.9	86.8	90.3
2001	98	73.1	13.1	39.7	101	51.1	65.2	75.4	82.8	87.2
2002	282	77.0	13.3	25.4	106	59.8	70.7	79.2	87.1	91.3
2003	286	76.5	13.5	33.7	102	57.8	69.0	79.4	86.4	92.1
2004	351	77.4	12.7	31.8	106	61.5	69.1	80.1	86.5	91.3
2005	361	76.8	13.6	21.2	102	60.2	67.6	79.3	87.0	91.8
2006	349	77.4	12.7	27.5	102	62.6	69.7	79.4	86.2	92.2
2007	535	77.4	13.2	23.8	100	59.2	69.7	80.6	86.5	92.1
2008	639	77.2	13.0	25.7	103	59.6	69.6	80.2	86.3	92.0
2009	768	77.1	12.2	25.0	102	61.3	69.6	78.6	86.6	90.8
2010	779	75.5	12.9	26.3	103	57.4	68.3	77.0	86.0	90.2
2011	854	74.4	14.2	19.8	107	53.3	67.2	75.7	85.7	90.5
2012	1110	75.4	13.2	23.3	104	58.3	68.6	76.7	85.9	90.6
2013	1135	75.2	13.0	21.6	104	55.7	68.9	76.7	84.9	90.2
2014	889	77.2	12.5	0.2	103	61.3	71.7	78.6	86.3	91.3
2015	748	78.6	11.0	23.7	102	65.2	72.7	79.5	86.5	91.5
2016	688	78.6	11.4	34.1	103	64.3	73.4	79.4	86.5	92.2
2017	605	77.3	11.9	23.2	104	59.7	71.9	78.8	85.1	90.7
2018	654	77.6	11.1	36.6	101	61.4	72.3	79.0	85.1	90.3
2019	434	78.5	11.1	27.9	104	64.4	74.4	79.6	85.6	90.5
1998-2019	11926	76.7	12.7	0.2	107	59.4	69.9	78.4	86.0	91.0

Table 4

Age distribution by 5-year age group and sex for period 2007–2019
(incl. DCO)

Age at diagnosis Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0–4	2	0.0	0.0	1	0.0	0.0	1	0.0	0.0
5–9	0	0.0	0.0			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	0.1	10	0.1	0.1
25–29	26	0.1	0.2	14	0.1	0.1	12	0.1	0.2
30–34	41	0.2	0.4	15	0.1	0.2	26	0.3	0.5
35–39	94	0.4	0.7	47	0.3	0.6	47	0.5	1.0
40–44	172	0.7	1.4	78	0.5	1.1	94	1.0	1.9
45–49	409	1.6	3.1	195	1.3	2.4	214	2.2	4.1
50–54	619	2.5	5.6	318	2.1	4.5	301	3.1	7.2
55–59	701	2.8	8.4	387	2.6	7.1	314	3.2	10.4
60–64	1239	5.0	13.4	749	5.0	12.1	490	5.0	15.3
65–69	2394	9.6	23.0	1483	9.9	21.9	911	9.3	24.6
70–74	4080	16.4	39.4	2673	17.8	39.7	1407	14.3	38.9
75–79	4840	19.5	58.9	3200	21.3	61.0	1640	16.7	55.6
80–84	4549	18.3	77.2	2933	19.5	80.6	1616	16.4	72.0
85+	5673	22.8	100.0	2919	19.4	100.0	2754	28.0	100.0
All ages	24857	100.0		15019	100.0		9838	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007–2019

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=126 %	Females DCO rate n=129 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4	1	1	0.1	0.1			0.5	0.6
5- 9								
10-14								
15-19		1		0.1				0.4
20-24	7	10	0.4	0.6			1.2	2.1
25-29	14	12	0.7	0.6			1.6	1.1
30-34	15	26	0.7	1.2			1.3	1.3
35-39	45	45	2.1	2.1			2.6	1.4
40-44	76	91	3.2	4.0	1.3		2.9	1.6
45-49	193	209	7.7	8.6		0.5	4.0	2.4
50-54	301	291	12.8	12.6	0.3		3.8	2.5
55-59	364	303	18.7	15.2	0.5		3.1	2.5
60-64	712	475	43.7	27.1	0.6	0.4	4.4	3.3
65-69	1359	870	89.4	51.6	0.2	0.1	6.0	4.9
70-74	2424	1327	173.0	82.6	0.6	0.2	9.4	7.1
75-79	2858	1518	258.1	110.2	0.4	0.7	12.9	8.4
80-84	2566	1492	390.8	153.3	0.9	0.9	18.1	10.5
85+	2514	2518	589.6	260.8	2.6	3.9	25.6	16.3
All ages	13449	9189			0.9	1.4	9.4	6.3
Incidence								
Raw			44.6	29.5				
WS			17.7	9.8				
ES			29.0	15.2				
BRD-S			41.6	20.6				

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).

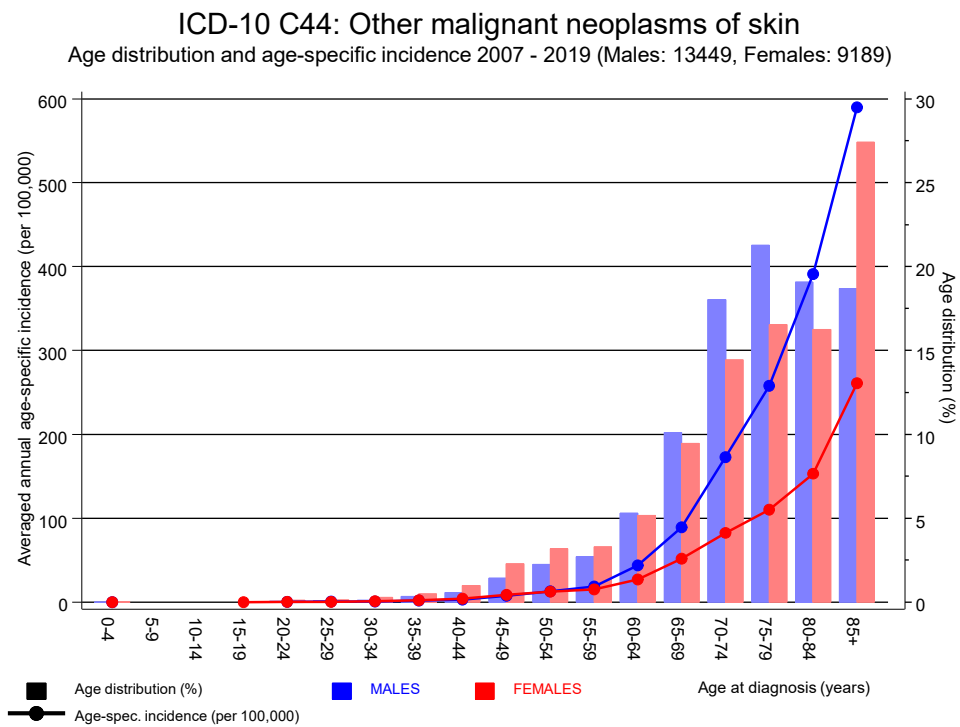


Figure 6. Age distribution (males: mean=76.0 yrs, median=77.2 yrs; females: mean=76.4 yrs, median=78.2 yrs) and age-specific incidence.

Table 7a

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

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	22	1.2	19.0	11.9	28.8 #	4.7	4.5
C03-C06 Oral cavity	31	5.4	5.7	3.9	8.1 #	5.8	6.5
C07-C08 Salivary gland	50	2.6	19.4	14.4	25.6 #	10.8	8.0
C09-C10 Oropharynx	35	6.0	5.8	4.0	8.1 #	6.6	2.9
C12-C13 Hypopharynx	19	3.3	5.8	3.5	9.1 #	3.6	26.3
C15 Oesophagus	49	15.7	3.1	2.3	4.1 #	7.6	6.1
C16 Stomach	94	42.7	2.2	1.8	2.7 #	11.7	7.4
C17 Small intestine	20	5.6	3.6	2.2	5.5 #	3.3	5.0
C18 Colon	262	101.7	2.6	2.3	2.9 #	36.5	8.0
C19-C20 Rectum	110	46.1	2.4	2.0	2.9 #	14.6	1.8
C21 Anus/canal	9	2.1	4.3	2.0	8.1 #	1.6	11.1
C22 Liver	76	26.0	2.9	2.3	3.7 #	11.4	15.8
C23-C24 Bile	23	10.9	2.1	1.3	3.2 #	2.7	17.4
C25 Pancreas	103	40.9	2.5	2.1	3.1 #	14.1	21.4
C30-C31 Sinuses	9	1.6	5.7	2.6	10.9 #	1.7	
C32 Larynx	31	7.5	4.2	2.8	5.9 #	5.4	12.9
C33-C34 Lung	348	105.6	3.3	3.0	3.7 #	55.2	16.7
C38,C45 Mesothelioma	20	6.9	2.9	1.8	4.5 #	3.0	5.0
C43 Malign. melanoma	692	40.4	17.1	15.9	18.5 #	148.5	1.4
C46,C49 Soft tissue	28	5.9	4.8	3.2	6.9 #	5.0	
C50 Breast	7	2.6	2.6	1.1	5.5 #	1.0	
C60 Penis	11	2.6	4.2	2.1	7.5 #	1.9	
C61 Prostate	535	251.5	2.1	2.0	2.3 #	64.6	12.5
C64 Kidney	76	29.4	2.6	2.0	3.2 #	10.6	2.6
C65 Renal pelvis	8	4.6	1.7	0.7	3.4	0.8	12.5
C66 Ureter	8	2.8	2.8	1.2	5.6 #	1.2	
C67 Bladder	111	54.7	2.0	1.7	2.4 #	12.8	12.6
C68 Urethra	7	1.0	7.0	2.8	14.5 #	1.4	
C69 Eye carcinoma	11	0.4	25.4	12.7	45.5 #	2.4	
C70-C72 CNS cancer	18	10.7	1.7	1.0	2.7 #	1.7	22.2
C73 Thyroid	14	4.2	3.3	1.8	5.6 #	2.2	7.1
C76-C79 CUP	68	18.0	3.8	2.9	4.8 #	11.4	5.9
C81 Hodgkin lymphoma	12	1.9	6.4	3.3	11.2 #	2.3	8.3
C82-C85 NHL	195	43.4	4.5	3.9	5.2 #	34.5	12.8
C90 Mult. myeloma	30	13.5	2.2	1.5	3.2 #	3.8	23.3
C91-C96 Leukaemia	51	17.3	3.0	2.2	3.9 #	7.7	37.3
Others, specified	35	11.7	3.0	2.1	4.2 #	5.3	37.1
Not observed	0	0.0	0.0	0.0	79.5	-0.0	
All further malignancies	3228	948.4	3.4	3.3	3.5 #	519.4	9.8

Patients 13437
Median age at next malignancy (years) 77.3
Person-years 43886
Mean observation time (years) 3.3
Median observation time (years) 2.0

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 1998-2019

FEMALES

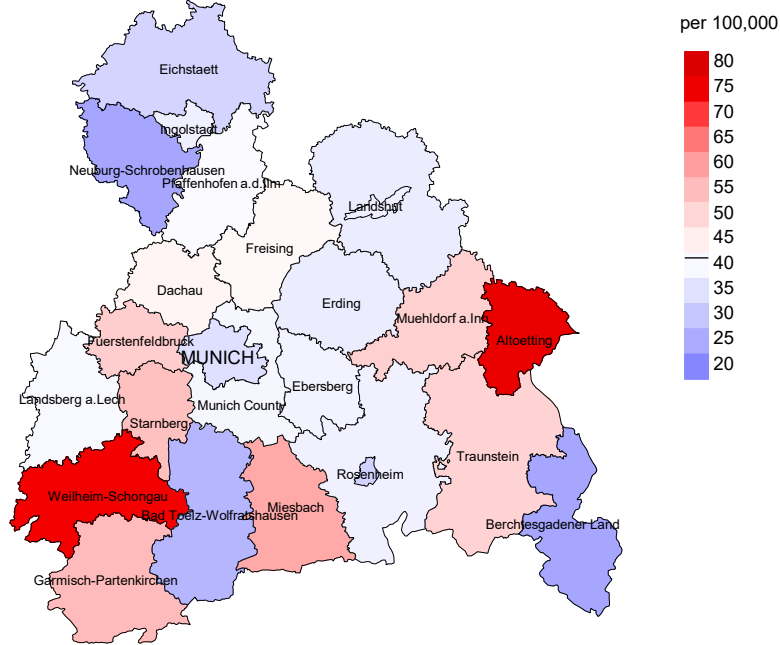
Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	7	0.4	16.7	6.7	34.4 #	2.2	
C03-C06 Oral cavity	11	2.2	5.1	2.5	9.1 #	3.0	9.1
C07-C08 Salivary gland	15	0.8	19.4	10.8	32.0 #	4.8	6.7
C09-C10 Oropharynx	6	1.2	5.2	1.9	11.3 #	1.6	16.7
C15 Oesophagus	9	2.7	3.4	1.5	6.4 #	2.1	
C16 Stomach	50	18.0	2.8	2.1	3.7 #	10.7	6.0
C17 Small intestine	11	2.1	5.3	2.6	9.5 #	3.0	9.1
C18 Colon	135	50.1	2.7	2.3	3.2 #	28.4	8.1
C19-C20 Rectum	42	18.1	2.3	1.7	3.1 #	8.0	7.1
C21 Anus/canal	16	2.2	7.2	4.1	11.7 #	4.6	18.8
C22 Liver	22	6.0	3.7	2.3	5.6 #	5.4	9.1
C23-C24 Bile	21	7.4	2.8	1.7	4.3 #	4.5	9.5
C25 Pancreas	66	24.6	2.7	2.1	3.4 #	13.8	28.8
C33-C34 Lung	98	28.8	3.4	2.8	4.1 #	23.2	19.4
C38,C45 Mesothelioma	4	0.9	4.7	1.3	12.0 #	1.1	
C43 Malign. melanoma	271	14.4	18.8	16.6	21.2 #	85.9	2.2
C44 Skin others	6	0.1	93.9	34.4	204.3 #	2.0	
C46,C49 Soft tissue	10	2.5	4.0	1.9	7.4 #	2.5	
C48 Peritoneal	10	1.5	6.9	3.3	12.7 #	2.9	10.0
C50 Breast	515	112.2	4.6	4.2	5.0 #	134.8	5.8
C51 Vulva	21	5.5	3.8	2.4	5.8 #	5.2	4.8
C52 Vagina	4	0.9	4.3	1.2	11.0 #	1.0	
C53 Cervix uteri	13	4.3	3.0	1.6	5.1 #	2.9	30.8
C54 Corpus uteri	65	20.6	3.1	2.4	4.0 #	14.8	1.5
C55,C57 Fem. genitals un	6	1.5	4.0	1.5	8.7 #	1.5	66.7
C56 Ovary	39	16.1	2.4	1.7	3.3 #	7.7	7.7
C64 Kidney	43	9.9	4.4	3.1	5.9 #	11.1	20.9
C65 Renal pelvis	6	1.5	4.0	1.5	8.7 #	1.5	
C67 Bladder	25	11.1	2.3	1.5	3.3 #	4.7	20.0
C70-C72 CNS cancer	13	5.0	2.6	1.4	4.5 #	2.7	38.5
C73 Thyroid	21	4.2	5.0	3.1	7.7 #	5.6	
C76-C79 CUP	29	10.5	2.8	1.8	4.0 #	6.2	6.9
C81 Hodgkin lymphoma	4	0.7	6.0	1.6	15.2 #	1.1	25.0
C82-C85 NHL	92	17.9	5.1	4.1	6.3 #	24.8	13.0
C90 Mult. myeloma	16	5.6	2.8	1.6	4.6 #	3.5	25.0
C91-C96 Leukaemia	23	7.3	3.1	2.0	4.7 #	5.2	52.2
Others, specified	30	7.6	3.9	2.7	5.6 #	7.5	23.3
Not observed	0	0.4	0.0	0.0	8.5	-0.1	
All further malignancies	1775	426.7	4.2	4.0	4.4 #	451.2	9.7

Patients	9585
Median age at next malignancy (years)	78.0
Person-years	29884
Mean observation time (years)	3.1
Median observation time (years)	1.8

The occurrence of further specified malignancy is statistically significant.

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

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



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

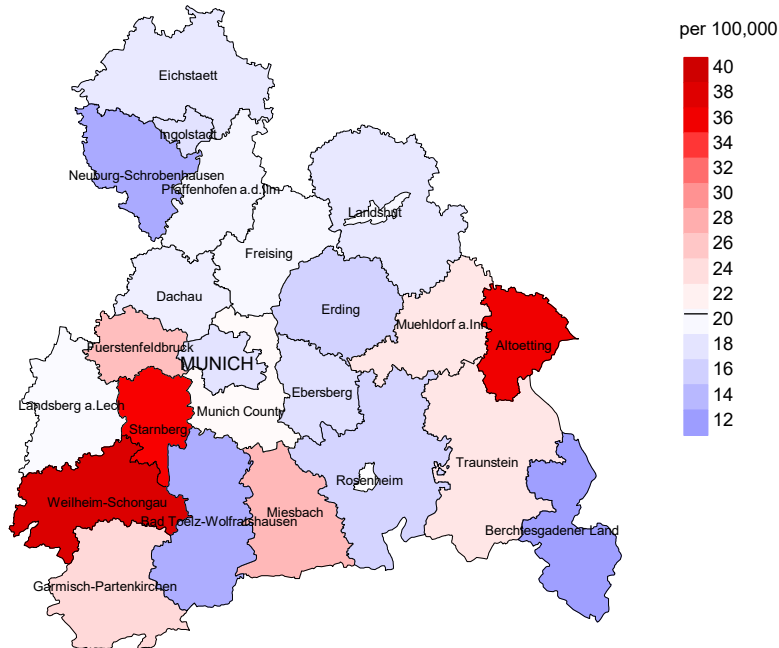
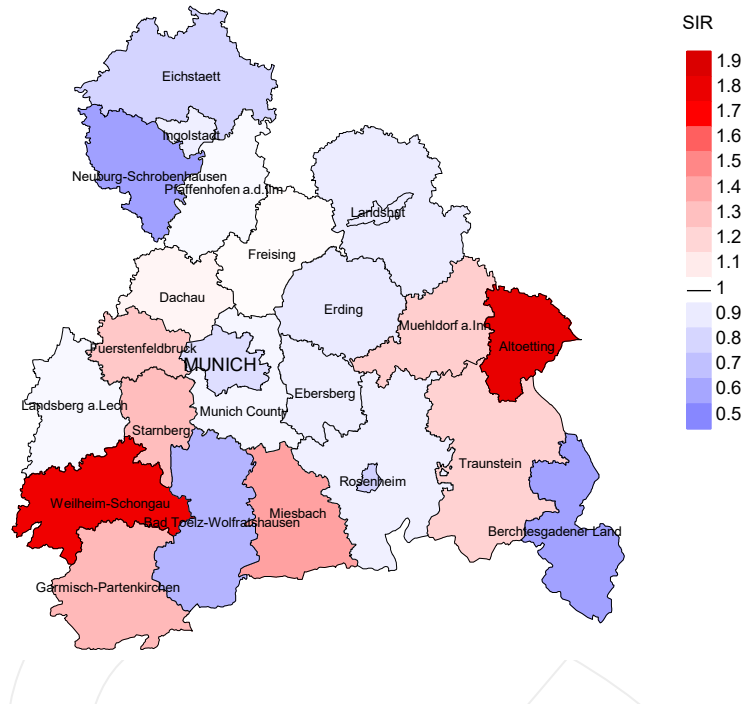


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 41.6/100,000 WS N=13,449, females 20.6/100,000 WS N=9,189).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 229 women were identified with newly diagnosed skin other. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 17.6/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 14.7 and 21.0/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

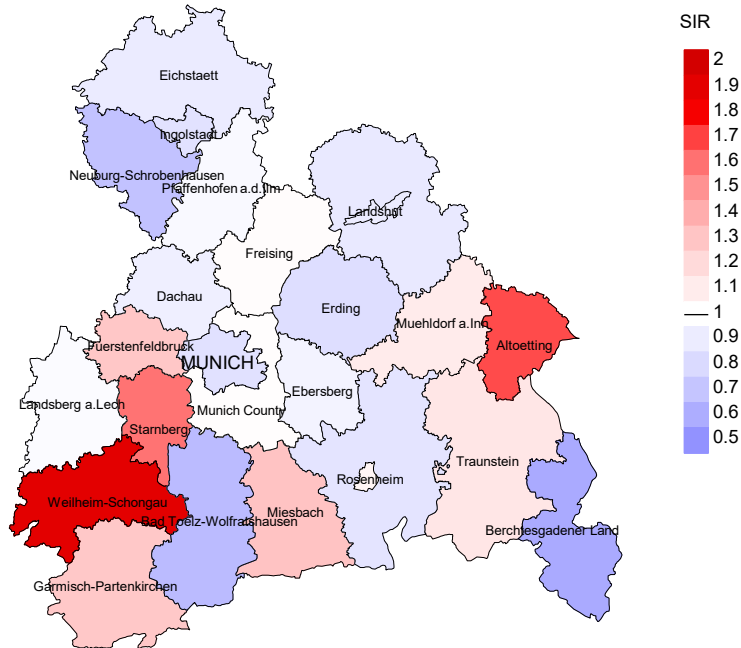


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=13,449, females N=9,189).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 229 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 0.93. Though, the value of this parameter may vary with an underlying probability of 99% between 0.78 and 1.11, 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 4.92 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	95.9	3.0	210	78.7	93.3
1999	311	96.5	1.3	245	78.8	93.1
2000	310	97.7	2.9	248	80.0	93.5
2001	269	97.0	2.6	204	75.8	91.7
2002	708	96.6	2.4	568	80.2	94.4
2003	718	96.8	3.5	550	76.6	94.2
2004	857	97.5	1.8	627	73.2	95.7
2005	875	95.5	2.9	629	71.9	96.0
2006	903	94.6	2.5	629	69.7	94.8
2007	1296	92.1	2.1	877	67.7	94.9
2008	1566	97.4	1.0	982	62.7	94.5
2009	1930	97.7	0.9	1135	58.8	92.8
2010	2009	98.4	1.1	1086	54.1	92.7
2011	2087	97.7	1.0	1014	48.6	91.8
2012	2826	96.7	1.0	1240	43.9	90.8
2013	2719	96.4	1.0	1102	40.5	88.8
2014	2312	94.4	0.7	1033	44.7	85.9
2015	1927	94.1	1.5	841	43.6	83.0
2016	1694	96.2	1.3	603	35.6	77.4
2017	1593	97.3	1.3	378	23.7	65.6
2018	1729	96.9	0.4	264	15.3	59.1
2019	1169	65.8	0.3	125	10.7	84.8
1998-2019	30075	95.2	1.3	14590	48.5	89.9

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 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Prop. deaths in same year	
				n	%
1998	267	89	94.4	16	6.0
1999	311	99	93.9	19	6.1
2000	310	98	95.9	15	4.8
2001	269	140	92.9	25	9.3
2002	708	185	96.2	52	7.3
2003	718	253	96.0	56	7.8
2004	857	278	94.2	48	5.6
2005	875	296	97.3	63	7.2
2006	903	345	96.2	57	6.3
2007	1296	415	97.3	93	7.2
2008	1566	482	97.9	80	5.1
2009	1930	485	98.4	77	4.0
2010	2009	582	99.3	89	4.4
2011	2087	672	98.4	86	4.1
2012	2826	756	98.1	121	4.3
2013	2719	857	98.2	147	5.4
2014	2312	903	98.9	119	5.1
2015	1927	1050	99.0	139	7.2
2016	1694	1061	98.8	102	6.0
2017	1593	1146	96.2	112	7.0
2018	1729	828	35.1	69	4.0
2019	1169	753	52.7	54	4.6
1998–2019	30075	11773	90.5	1639	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 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	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	857	38.0	62.0	47.3
2014	903	38.4	61.6	45.9
2015	1050	33.1	66.9	43.1
2016	1061	35.8	64.2	44.5
2017	1146	32.5	67.5	43.2
2018	828	14.0	86.0	38.5
2019	753	16.7	83.3	44.1
1998-2019	11773	34.9	65.1	47.4

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	572	84.7	81.5	86.2	82.9
2015	619	84.6	82.2	86.0	82.9
2016	673	83.8	81.5	85.7	81.8
2017	683	85.4	82.2	86.7	83.1
2018	501	85.1	81.8	86.3	81.9
2019	476	85.9	84.4	86.0	84.2
1998-2019	7030	84.0	80.6	86.0	81.4

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	355	88.6	84.3	90.1	85.4
2014	331	88.7	82.3	89.9	84.4
2015	431	88.7	84.3	89.9	85.4
2016	388	88.7	83.0	89.9	85.0
2017	463	88.3	83.4	89.7	84.2
2018	327	87.3	81.6	88.2	83.0
2019	277	87.4	81.8	88.8	83.2
1998-2019	4743	88.1	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	0.18	5.1	0.18
2005	79	4.2	0.17	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	0.17	6.3	0.18	9.4	0.19
2015	218	9.2	0.21	3.1	0.20	5.5	0.21	8.2	0.21
2016	282	11.7	0.31	3.9	0.29	6.9	0.31	10.3	0.31
2017	236	9.8	0.26	3.0	0.23	5.5	0.25	8.2	0.26
2018	79	3.2	0.08	0.9	0.06	1.6	0.07	2.7	0.08
2019	83	3.4	0.12	1.0	0.12	1.9	0.13	2.8	0.12
1998-2019	2712	6.2	0.17	2.4	0.15	4.2	0.16	6.3	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	0.13	1.1	0.15
2001	19	1.6	0.20	0.5	0.15	0.8	0.16	1.1	0.17
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	0.09	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	113	4.7	0.11	1.1	0.07	2.0	0.08	2.9	0.09
2014	112	4.7	0.14	1.2	0.11	2.0	0.12	2.9	0.12
2015	134	5.5	0.20	1.3	0.15	2.2	0.17	3.3	0.18
2016	107	4.4	0.17	1.1	0.15	1.9	0.16	2.6	0.15
2017	144	5.8	0.25	1.5	0.21	2.5	0.22	3.5	0.22
2018	45	1.8	0.07	0.5	0.06	0.8	0.07	1.2	0.07
2019	52	2.1	0.12	0.6	0.12	0.9	0.12	1.3	0.12
1998-2019	1479	3.2	0.13	0.9	0.10	1.5	0.11	2.1	0.12

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19	1	0.0	0.0	1	0.0	0.0			0.0
20-24	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	15	0.4	0.7	6	0.3	0.5	9	0.7	1.0
50-54	46	1.3	2.0	26	1.2	1.7	20	1.6	2.6
55-59	61	1.8	3.8	40	1.8	3.5	21	1.7	4.4
60-64	107	3.1	6.9	60	2.7	6.2	47	3.9	8.2
65-69	192	5.6	12.6	132	6.0	12.2	60	4.9	13.2
70-74	385	11.3	23.8	275	12.5	24.7	110	9.1	22.3
75-79	641	18.8	42.6	449	20.4	45.1	192	15.8	38.1
80-84	696	20.4	63.0	477	21.7	66.8	219	18.1	56.1
85+	1263	37.0	100.0	731	33.2	100.0	532	43.9	100.0
All ages	3414	100.0		2201	100.0		1213	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(incl. multiple malignancies)

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	1.00			2.1	
20-24	1		0.1	0.14			1.5	
25-29								
30-34								
35-39	2		0.1	0.04			0.8	
40-44	1	3	0.0	0.01	0.1	0.03	0.2	0.4
45-49	6	9	0.2	0.03	0.4	0.04	0.4	0.6
50-54	26	20	1.1	0.09	0.9	0.07	1.0	0.8
55-59	40	21	2.1	0.11	1.1	0.07	1.0	0.6
60-64	60	47	3.7	0.08	2.7	0.10	1.0	1.0
65-69	132	60	8.7	0.10	3.6	0.07	1.5	0.9
70-74	275	110	19.6	0.11	6.8	0.08	2.5	1.3
75-79	449	192	40.6	0.16	13.9	0.13	3.9	2.1
80-84	477	219	72.7	0.19	22.5	0.15	5.1	2.6
85+	731	532	171.4	0.29	55.1	0.21	8.9	4.8
All ages	2201	1213					3.4	2.1
Mortality								
Raw			7.3	0.16	3.9	0.13		
WS			2.6	0.15	1.0	0.10		
ES			4.6	0.16	1.7	0.11		
BRD-S			6.8	0.16	2.4	0.12		
PYLL-70								
per 100,000			7.8		5.3			
ES			6.7		4.4			
AYLL-70			7.7		8.8			

Table 14a

Further malignancies in deaths in period 1998–2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C00 Lip	17	0.4	6	35.3	2	11.8	9	52.9
C03-C06 Oral cavity	54	1.3	26	48.1	4	7.4	24	44.4
C07-C08 Salivary gland	51	1.2	13	25.5	5	9.8	33	64.7
C09-C10 Oropharynx	57	1.4	25	43.9	14	24.6	18	31.6
C12-C13 Hypopharynx	26	0.6	14	53.8	3	11.5	9	34.6
C15 Oesophagus	45	1.1	10	22.2	4	8.9	31	68.9
C16 Stomach	86	2.1	18	20.9	6	7.0	62	72.1
C17 Small intestine	14	0.3	7	50.0			7	50.0
C18 Colon	200	4.8	79	39.5	15	7.5	106	53.0
C19-C20 Rectum	111	2.7	54	48.6	7	6.3	50	45.0
C22 Liver	79	1.9	19	24.1	2	2.5	58	73.4
C23-C24 Bile	19	0.5	4	21.1	1	5.3	14	73.7
C25 Pancreas	93	2.2	9	9.7	6	6.5	78	83.9
C30-C31 Sinuses	10	0.2	1	10.0	4	40.0	5	50.0
C32 Larynx	49	1.2	23	46.9	7	14.3	19	38.8
C33-C34 Lung	388	9.4	67	17.3	34	8.8	287	74.0
C38,C45 Mesothelioma	23	0.6	6	26.1	1	4.3	16	69.6
C43 Malign. melanoma	308	7.4	120	39.0	85	27.6	103	33.4
C44 Skin others	1159	28.0	1	0.1	226	19.5	932	80.4
C46,C49 Soft tissue	27	0.7	14	51.9	1	3.7	12	44.4
C50 Breast	8	0.2	3	37.5	1	12.5	4	50.0
C60 Penis	9	0.2	4	44.4			5	55.6
C61 Prostate	524	12.6	342	65.3	13	2.5	169	32.3
C64 Kidney	72	1.7	44	61.1	5	6.9	23	31.9
C65 Renal pelvis	8	0.2	5	62.5			3	37.5
C67 Bladder	117	2.8	48	41.0	4	3.4	65	55.6
C69 Eye carcinoma	9	0.2	2	22.2	1	11.1	6	66.7
C70-C72 CNS cancer	25	0.6	5	20.0	4	16.0	16	64.0
C73 Thyroid	9	0.2	5	55.6	1	11.1	3	33.3
C76-C79 CUP	68	1.6	13	19.1	7	10.3	48	70.6
C81 Hodgkin lymphoma	19	0.5	10	52.6	1	5.3	8	42.1
C82-C85 NHL	319	7.7	196	61.4	25	7.8	98	30.7
C90 Mult. myeloma	36	0.9	19	52.8			17	47.2
C91-C96 Leukaemia	49	1.2	12	24.5	5	10.2	32	65.3
Others, specified	58	1.4	19	32.8	4	6.9	35	60.3
All further malignancies	4146	100.0	1243	30.0	498	12.0	2405	58.0

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 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	17	0.9	10	58.8	2	11.8	5	29.4
C07-C08 Salivary gland	11	0.6	3	27.3			8	72.7
C09-C10 Oropharynx	10	0.6	6	60.0			4	40.0
C16 Stomach	46	2.6	12	26.1	2	4.3	32	69.6
C17 Small intestine	8	0.4	4	50.0			4	50.0
C18 Colon	89	4.9	29	32.6	7	7.9	53	59.6
C19-C20 Rectum	38	2.1	16	42.1	2	5.3	20	52.6
C21 Anus/canal	11	0.6	6	54.5			5	45.5
C22 Liver	27	1.5	6	22.2	1	3.7	20	74.1
C23-C24 Bile	20	1.1	1	5.0	3	15.0	16	80.0
C25 Pancreas	59	3.3	4	6.8	3	5.1	52	88.1
C30-C31 Sinuses	6	0.3	3	50.0	2	33.3	1	16.7
C33-C34 Lung	112	6.2	27	24.1	6	5.4	79	70.5
C43 Malign. melanoma	106	5.9	47	44.3	30	28.3	29	27.4
C44 Skin others	359	20.0	1	0.3	62	17.3	296	82.5
C46,C49 Soft tissue	8	0.4	5	62.5	1	12.5	2	25.0
C48 Peritoneal	10	0.6	1	10.0	2	20.0	7	70.0
C50 Breast	379	21.1	223	58.8	34	9.0	122	32.2
C51 Vulva	16	0.9	6	37.5	5	31.3	5	31.3
C53 Cervix uteri	20	1.1	11	55.0			9	45.0
C54 Corpus uteri	66	3.7	31	47.0	5	7.6	30	45.5
C55,C57 Fem. genitals un	6	0.3	3	50.0			3	50.0
C56 Ovary	59	3.3	19	32.2	9	15.3	31	52.5
C64 Kidney	23	1.3	6	26.1	1	4.3	16	69.6
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	24	1.3	14	58.3	1	4.2	9	37.5
C70-C72 CNS cancer	17	0.9	3	17.6	2	11.8	12	70.6
C73 Thyroid	11	0.6	5	45.5	1	9.1	5	45.5
C76-C79 CUP	27	1.5	1	3.7	3	11.1	23	85.2
C81 Hodgkin lymphoma	9	0.5	7	77.8	1	11.1	1	11.1
C82-C85 NHL	124	6.9	64	51.6	7	5.6	53	42.7
C90 Mult. myeloma	17	0.9	5	29.4			12	70.6
C91-C96 Leukaemia	24	1.3	7	29.2			17	70.8
Others, specified	29	1.6	10	34.5	2	6.9	17	58.6
All further malignancies	1798	100.0	598	33.3	196	10.9	1004	55.8

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 2007-2019
(First primaries only *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	1.00			2.2	
20-24	1		0.1	0.14			1.7	
25-29								
30-34								
35-39	2		0.1	0.06			0.9	
40-44	1	2	0.0	0.02	0.1	0.03	0.2	0.3
45-49		2			0.1	0.01		0.1
50-54	14	10	0.6	0.06	0.4	0.05	0.6	0.5
55-59	20	10	1.0	0.08	0.5	0.05	0.6	0.3
60-64	23	20	1.4	0.05	1.1	0.06	0.5	0.5
65-69	44	26	2.9	0.06	1.5	0.05	0.6	0.5
70-74	101	39	7.2	0.09	2.4	0.05	1.2	0.6
75-79	149	86	13.5	0.12	6.2	0.11	1.8	1.2
80-84	190	98	28.9	0.18	10.1	0.12	2.8	1.5
85+	294	277	68.9	0.28	28.7	0.18	5.0	3.2
All ages	840	570					1.7	1.3
Mortality								
Raw			2.8	0.13	1.8	0.11		
WS			1.0	0.11	0.4	0.08		
ES			1.8	0.12	0.8	0.08		
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			9.2		8.8			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2019
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	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		0.1	0.14			1.7	
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	6	3	0.3	0.03	0.1	0.02	0.3	0.1
55-59	11	1	0.6	0.06	0.1	0.01	0.3	0.0
60-64	6	5	0.4	0.02	0.3	0.02	0.1	0.1
65-69	8	8	0.5	0.02	0.5	0.02	0.1	0.2
70-74	27	12	1.9	0.03	0.7	0.02	0.3	0.2
75-79	37	27	3.3	0.04	2.0	0.05	0.5	0.4
80-84	55	33	8.4	0.07	3.4	0.05	0.9	0.5
85+	111	138	26.0	0.14	14.3	0.11	2.0	1.7
All ages	264	228					0.6	0.5
Mortality								
Raw			0.9	0.06	0.7	0.06		
WS			0.3	0.05	0.2	0.04		
ES			0.6	0.05	0.3	0.04		
BRD-S			0.8	0.06	0.4	0.04		
PYLL-70								
per 100,000			1.6		0.6			
ES			1.4		0.5			
AYLL-70			12.2		8.3			

* See corresponding tables with multiple malignancies.

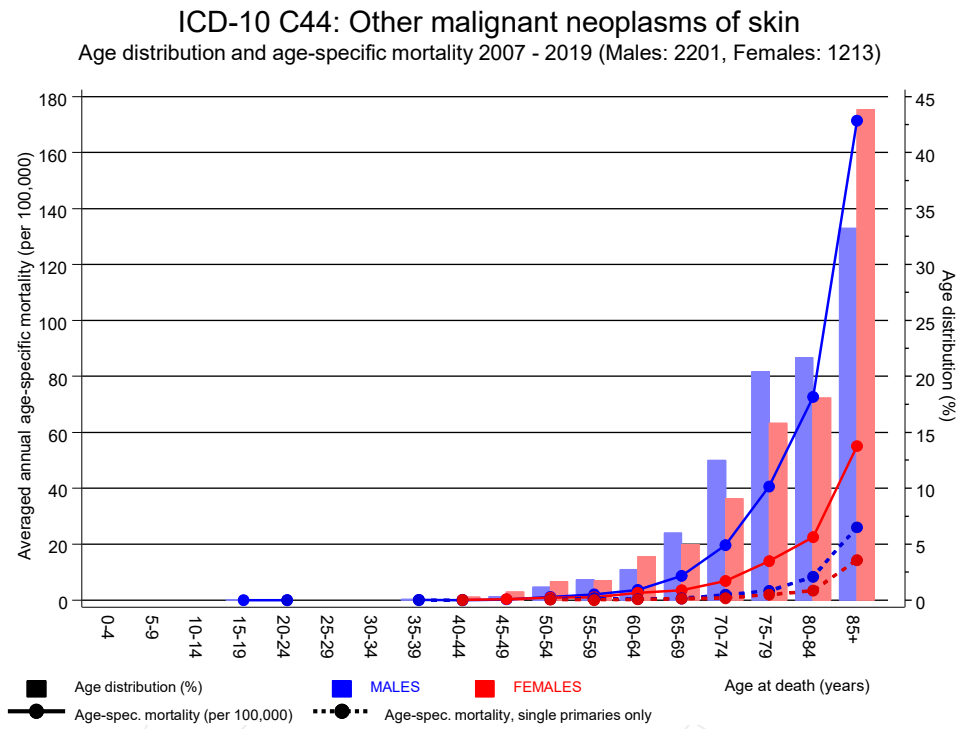
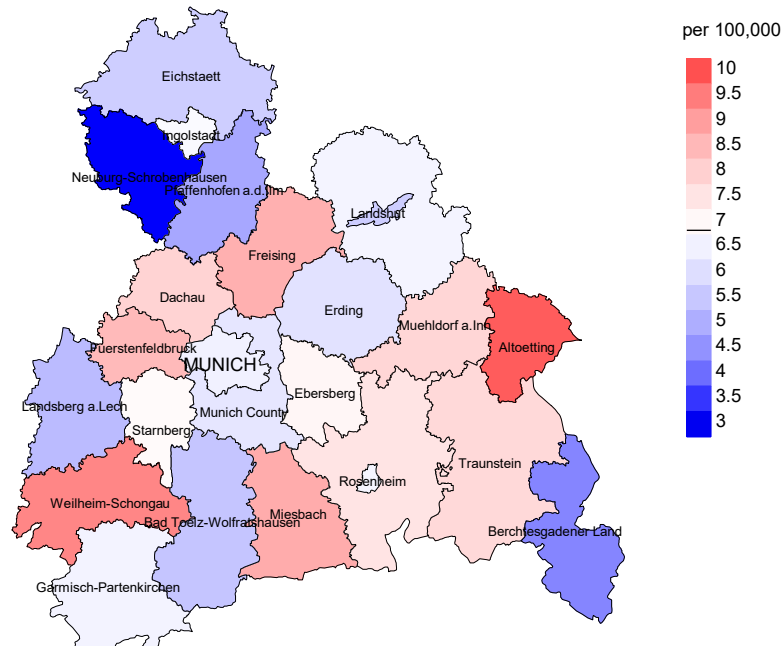


Figure 17. Distribution of age at death (bars; males: mean=76.4 yrs, median=77.3 yrs; females: mean=77.6 yrs, median=79.2 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line).

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

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



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

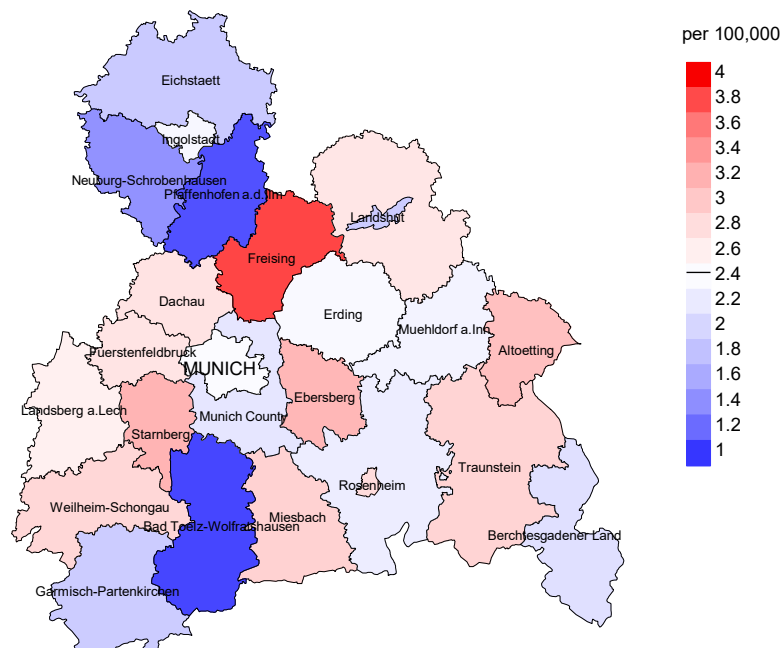
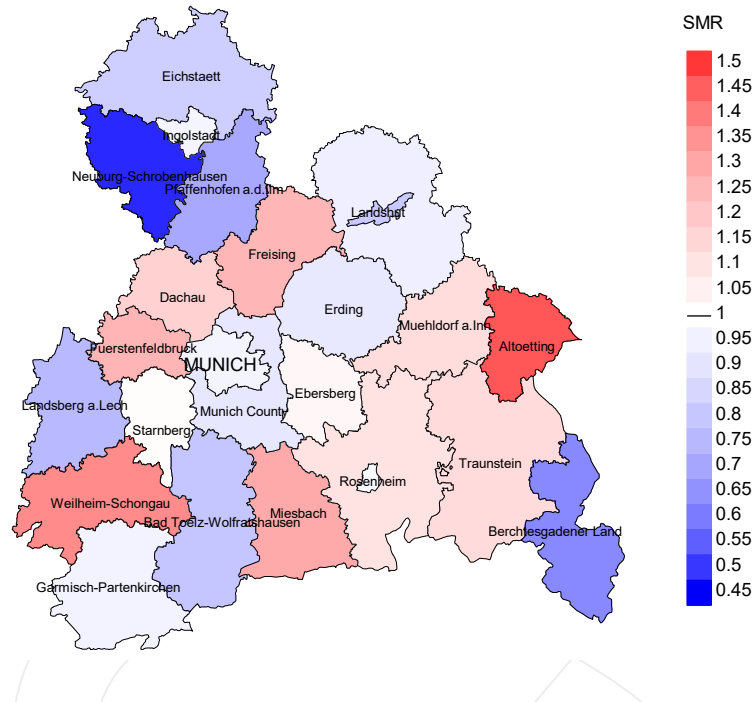


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.8/100,000 WS N=2,201, females 2.4/100,000 WS N=1,213).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 39 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 4.8/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

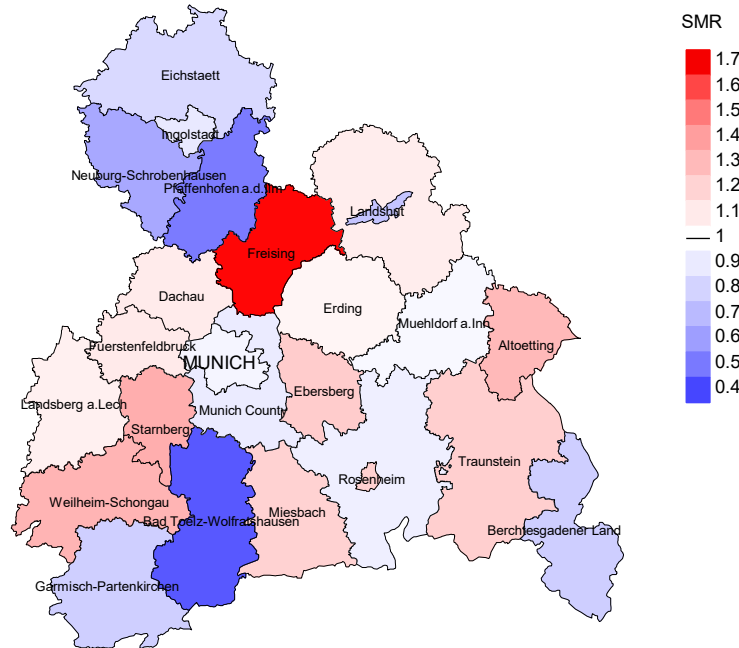


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,201, females N=1,213).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 39 women died from skin other. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.23. Though, the value of this parameter may vary with an underlying probability of 99% between 0.78 and 1.84, 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

Recommended Citation

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