Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C43: Malignant melanoma

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	21,723
Diseases	22,851
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

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

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

https://www.tumorregister-muenchen.de/en/facts/base/bC43__E-ICD-10-C43-Malignant-melanoma-incidence-and-mortality.pdf

Index of figures and tables

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

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

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

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

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

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

Munich Cancer Registry, December 2021

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

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

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

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

Code	Description
C43.-	Malignant melanoma of skin
C43.0	Malignant melanoma of lip
C43.1	Malignant melanoma of eyelid, including canthus
C43.2	Malignant melanoma of ear and external auricular canal
C43.3	Malignant melanoma of other and unspecified parts of face
C43.4	Malignant melanoma of scalp and neck
C43.5	Malignant melanoma of trunk
C43.6	Malignant melanoma of upper limb, including shoulder
C43.7	Malignant melanoma of lower limb, including hip
C43.8	Overlapping malignant melanoma of skin
C43.9	Malignant melanoma 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	487	13	2.7	12.1	18.0	46.8	95.3
1999	467	10	2.1	13.2	17.8	43.7	95.5
2000	522	13	2.5	12.9	17.6	44.6	95.8
2001	522	10	1.9	13.4	17.4	45.2	96.6
2002	888	16	1.8	13.4	17.1	43.9	95.9 #
2003	817	18	2.2	13.4	16.7	42.5	95.0
2004	909	27	3.0	13.4	16.5	43.7	96.1
2005	912	12	1.3	14.0	16.1	41.4	93.4
2006	937	16	1.7	14.4	15.8	40.6	90.2
2007	1077	21	1.9	14.8	15.4	35.5	83.7 #
2008	1228	25	2.0	15.4	15.0	35.6	97.2
2009	1205	23	1.9	16.1	14.2	35.1	97.0
2010	1414	21	1.5	16.8	13.7	32.3	97.8
2011	1577	20	1.3	17.4	13.0	29.7	97.0
2012	1453	26	1.8	17.8	12.1	27.5	96.9
2013	1499	19	1.3	18.4	11.1	23.8	97.0
2014	1254	20	1.6	18.6	10.4	27.2	96.8
2015	1312	24	1.8	18.9	9.4	23.2	91.8
2016	1212	22	1.8	19.3	8.6	20.9	98.3
2017	1001	16	1.6	19.4	7.6	16.7	98.3
2018	799	19	2.4	19.8	7.3	16.9	98.6
2019	788	2	0.3	20.0	5.3	11.7	98.4
2020	571			20.2	3.0	5.1	99.1 ##
1998-2020	22851	393	1.7	20.2	18.0	30.8	95.7

22,851 cases diagnosed 1998-2020 are related to a total of 21,723 patients. Currently, in 7,287 (33.5 %) of these 21,723 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 4,914 / 1,462 / 911 (22.6 % / 6.7 % / 4.2 %) 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 retreived from the respective headings.

How to interpret:
In 2018, a subgroup of 799 cases has been diagnosed, of which 19.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.3 % 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	247	50.7	7	2.8	11.3	19.9	50.2	94.7
1999	217	46.5	2	0.9	13.4	19.7	45.6	95.4
2000	281	53.8	4	1.4	13.3	19.4	51.6	97.2
2001	267	51.1	6	2.2	14.7	19.1	51.3	97.8
2002	470	52.9	4	0.9	14.6	18.8	52.6	97.7 #
2003	402	49.2	8	2.0	14.6	18.3	49.3	97.0
2004	455	50.1	17	3.7	14.9	18.1	51.6	96.9
2005	476	52.2	6	1.3	16.0	17.7	47.3	95.6
2006	478	51.0	5	1.0	16.3	17.4	45.2	92.1
2007	545	50.6	12	2.2	17.1	16.7	42.8	86.6 #
2008	656	53.4	12	1.8	17.7	16.3	38.6	98.0
2009	656	54.4	8	1.2	18.6	15.3	37.7	96.8
2010	736	52.1	8	1.1	19.4	14.6	36.7	97.7
2011	809	51.3	8	1.0	20.1	13.8	34.4	97.5
2012	761	52.4	15	2.0	20.8	12.8	32.3	97.2
2013	845	56.4	13	1.5	21.5	11.9	27.0	96.8
2014	691	55.1	10	1.4	21.7	10.9	30.1	97.3
2015	719	54.8	13	1.8	21.9	9.8	27.5	92.5
2016	643	53.1	10	1.6	22.3	9.2	24.1	99.1
2017	551	55.0	6	1.1	22.5	7.6	19.6	98.9
2018	419	52.4	12	2.9	22.9	7.3	19.3	98.8
2019	444	56.3	1	0.2	23.0	5.0	13.1	98.6
2020	312	54.6			23.1	2.1	5.4	99.4 ##
1998-2020	12080	52.9	187	1.5	23.1	19.9	34.8	96.5

12,080 cases diagnosed 1998-2020 are related to a total of 11,329 patients. Currently, in 4,194 (37.0 %) of these 11,329 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,688 / 879 / 627 (23.7 % / 7.8 % / 5.5 %) 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 419 cases has been diagnosed, of which 22.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.3 % 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	240	49.3	6	2.5	12.9	16.1	43.3	95.8	
1999	250	53.5	8	3.2	13.1	15.8	42.0	95.6	
2000	241	46.2	9	3.7	12.6	15.7	36.5	94.2	
2001	255	48.9	4	1.6	12.1	15.5	38.8	95.3	
2002	418	47.1	12	2.9	12.3	15.2	34.2	94.0	#
2003	415	50.8	10	2.4	12.0	15.0	35.9	93.0	
2004	454	49.9	10	2.2	11.8	14.8	35.7	95.4	
2005	436	47.8	6	1.4	11.8	14.4	35.1	91.1	
2006	459	49.0	11	2.4	12.4	14.1	35.7	88.2	
2007	532	49.4	9	1.7	12.5	13.9	28.0	80.6	#
2008	572	46.6	13	2.3	13.0	13.5	32.2	96.3	
2009	549	45.6	15	2.7	13.4	13.1	32.1	97.3	
2010	678	47.9	13	1.9	14.0	12.6	27.6	97.9	
2011	768	48.7	12	1.6	14.4	12.0	24.7	96.4	
2012	692	47.6	11	1.6	14.6	11.3	22.3	96.5	
2013	654	43.6	6	0.9	15.0	10.2	19.7	97.2	
2014	563	44.9	10	1.8	15.2	9.8	23.6	96.3	
2015	593	45.2	11	1.9	15.6	9.0	17.9	90.9	
2016	569	46.9	12	2.1	15.9	7.9	17.2	97.5	
2017	450	45.0	10	2.2	16.0	7.6	13.1	97.6	
2018	380	47.6	7	1.8	16.5	7.3	14.2	98.4	
2019	344	43.7	1	0.3	16.8	5.6	9.9	98.0	
2020	259	45.4			16.9	4.1	4.6	98.8	##
1998-2020	10771	47.1	206	1.9	16.9	16.1	26.3	94.9	

10,771 cases diagnosed 1998-2020 are related to a total of 10,394 patients. Currently, in 3,093 (29.8 %) of these 10,394 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 2,226 / 583 / 284 (21.4 % / 5.6 % / 2.7 %) 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 380 cases has been diagnosed, of which 16.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 7.3 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	247	240	22.3	20.4	15.3	12.4	20.0	16.1	23.2	18.3
1999	217	250	19.4	21.1	13.2	13.6	17.3	17.2	20.0	19.5
2000	281	241	24.7	20.1	16.1	13.2	21.6	16.5	25.1	18.7
2001	267	255	23.0	21.0	14.7	13.4	20.0	17.1	23.3	19.1
2002	470	418	25.2	21.3	16.0	13.8	21.7	17.3	24.9	19.3
2003	402	415	21.4	21.1	13.4	13.5	18.1	17.0	21.4	18.7
2004	455	454	24.2	23.0	14.9	14.3	20.1	18.2	24.4	20.6
2005	476	436	25.1	21.9	15.4	13.6	21.0	17.6	24.6	19.7
2006	478	459	25.0	22.8	14.9	13.5	20.4	17.5	24.5	20.0
2007	545	532	24.6	23.0	14.5	14.1	20.1	18.2	24.2	20.4
2008	656	572	29.5	24.6	17.4	14.3	23.6	18.7	27.6	21.2
2009	656	549	29.4	23.6	16.4	13.8	22.8	17.9	27.5	20.5
2010	736	678	32.7	29.0	18.6	17.5	25.5	22.4	30.8	25.3
2011	809	768	36.2	32.9	20.6	20.1	28.3	25.4	33.8	28.6
2012	761	692	33.5	29.3	18.2	17.3	25.4	22.4	30.7	25.4
2013	845	654	36.7	27.4	20.0	16.2	27.8	21.0	33.7	23.7
2014	691	563	29.6	23.4	15.8	13.5	22.1	17.4	26.9	19.9
2015	719	593	30.2	24.4	15.7	13.6	22.3	18.1	27.6	20.6
2016	643	569	26.8	23.2	13.9	13.1	19.6	17.3	24.4	19.7
2017	551	450	22.8	18.3	11.4	9.8	16.4	13.2	20.4	15.3
2018	419	380	17.2	15.3	8.1	7.7	11.8	10.6	15.2	12.4
2019	444	344	18.2	13.9	8.7	7.3	12.7	9.8	16.2	11.4
2020	312	259	12.8	10.4	6.4	5.1	9.2	7.0	11.4	8.3
1998-2020	12080	10771	26.0	22.3	14.8	13.3	20.5	17.2	24.7	19.5

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	487	57.7	16.8	17.2	96.2	33.5	47.2	58.8	70.0	79.0
1999	467	56.5	17.3	9.1	93.5	32.2	42.4	57.7	70.0	79.1
2000	522	56.9	17.2	15.6	98.4	33.7	43.4	58.6	69.9	78.9
2001	522	57.7	16.7	21.1	94.3	34.2	44.4	59.4	69.3	79.5
2002	888	58.3	17.4	7.6	99.0	34.0	44.6	60.5	71.3	80.5
2003	817	58.4	16.7	8.1	97.6	36.1	44.9	60.8	70.5	80.3
2004	909	59.4	16.5	15.6	95.6	36.5	46.3	61.6	72.3	80.4
2005	912	59.8	16.1	11.4	96.6	37.3	48.6	62.0	71.0	79.9
2006	937	61.3	16.6	3.1	102	38.1	48.8	64.1	73.4	82.4
2007	1077	60.8	16.8	14.6	99.9	37.7	48.2	63.1	73.1	81.7
2008	1228	61.5	15.9	14.1	99.3	39.4	49.8	64.7	72.7	80.6
2009	1205	62.4	15.8	13.9	101	40.5	50.1	65.5	73.8	81.4
2010	1414	61.4	16.6	4.9	98.5	38.3	49.0	64.5	73.6	81.7
2011	1577	61.0	16.7	4.9	98.3	38.0	48.3	63.1	73.6	81.6
2012	1453	62.4	16.1	0.2	98.2	40.5	50.2	64.8	74.5	82.0
2013	1499	62.4	15.9	17.5	103	41.3	50.5	64.3	74.5	81.9
2014	1254	63.2	16.6	21.8	105	40.1	50.6	66.4	75.8	83.1
2015	1312	64.1	15.8	19.3	101	42.5	53.1	66.8	75.9	83.0
2016	1212	64.1	15.7	16.7	94.2	42.8	52.1	66.4	76.5	82.6
2017	1001	65.3	15.3	18.9	98.0	44.9	53.8	68.3	77.6	82.5
2018	799	66.9	15.3	24.0	99.4	45.7	55.3	70.4	78.9	84.5
2019	788	66.6	15.7	22.8	104	43.9	55.2	69.8	79.0	84.4
2020	571	66.5	14.8	15.7	100	46.5	56.1	68.4	78.4	83.6
1998-2020	22851	61.8	16.4	0.2	105	38.5	50.0	64.0	74.5	81.9

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	247	56.8	16.1	17.2	93.0	32.6	47.4	58.8	68.3	76.2
1999	217	56.9	16.2	9.1	89.6	33.4	44.5	58.6	68.3	78.4
2000	281	58.4	15.2	15.6	92.3	34.8	51.3	60.0	68.7	76.8
2001	267	58.7	15.5	23.6	92.1	34.6	47.2	60.7	68.6	79.2
2002	470	60.1	15.3	7.6	98.4	37.1	50.6	63.2	70.8	77.3
2003	402	59.9	15.2	11.9	91.5	37.2	49.5	62.8	71.1	78.1
2004	455	60.8	15.7	15.6	94.1	38.1	49.9	63.3	73.5	80.5
2005	476	61.0	15.0	17.4	96.6	38.7	52.1	63.2	71.1	78.6
2006	478	62.3	15.4	3.1	95.4	39.6	51.9	65.0	73.2	79.6
2007	545	62.2	15.4	14.6	98.8	40.2	51.1	64.3	73.6	81.3
2008	656	62.2	14.4	14.1	93.5	42.1	53.0	65.4	71.9	78.1
2009	656	63.7	14.5	15.4	96.0	42.3	53.7	67.0	74.2	80.4
2010	736	63.6	15.2	4.9	98.5	41.7	54.4	66.6	74.4	81.4
2011	809	63.1	15.0	15.4	96.9	41.1	53.6	66.4	73.9	80.5
2012	761	64.3	14.3	19.7	93.8	44.6	54.2	67.8	74.6	81.2
2013	845	64.2	15.0	17.5	103	44.1	53.3	66.8	75.4	82.2
2014	691	65.0	15.0	21.8	97.7	44.5	53.8	67.9	76.1	82.2
2015	719	65.9	15.1	19.3	101	44.7	55.7	69.2	76.9	83.4
2016	643	66.2	14.8	19.4	94.1	45.1	55.1	69.5	77.3	83.0
2017	551	67.1	14.5	18.9	96.5	46.9	56.1	70.3	78.2	82.5
2018	419	68.9	14.2	24.0	99.4	48.2	59.9	73.5	79.2	84.0
2019	444	68.9	14.1	22.8	98.9	49.2	59.0	71.5	79.2	84.4
2020	312	67.0	13.5	31.7	93.1	47.8	57.0	69.2	77.6	81.9
1998-2020	12080	63.5	15.2	3.1	103	41.8	53.5	66.0	74.8	81.3

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	240	58.6	17.5	18.0	96.2	33.7	47.0	59.0	72.2	81.4
1999	250	56.2	18.3	19.9	93.5	31.7	40.6	56.3	71.3	79.7
2000	241	55.2	19.1	18.3	98.4	30.9	38.9	53.7	71.7	82.3
2001	255	56.7	18.0	21.1	94.3	33.0	41.8	57.4	71.1	80.9
2002	418	56.4	19.3	13.9	99.0	31.5	39.0	55.9	72.2	83.9
2003	415	57.0	17.9	8.1	97.6	34.4	41.6	58.4	69.6	81.7
2004	454	58.0	17.2	18.8	95.6	36.2	43.8	59.3	71.8	80.1
2005	436	58.5	17.2	11.4	96.1	35.3	45.0	58.6	70.8	81.6
2006	459	60.3	17.6	14.1	102	35.7	46.7	62.0	74.0	83.7
2007	532	59.3	17.9	14.9	99.9	34.6	45.5	61.1	72.0	82.8
2008	572	60.7	17.4	14.5	99.3	37.9	46.0	63.7	73.6	83.3
2009	549	60.8	17.0	13.9	101	38.3	47.2	63.1	73.5	82.7
2010	678	58.9	17.6	15.1	94.1	35.3	44.9	60.0	72.4	82.3
2011	768	58.7	18.1	4.9	98.3	33.5	45.1	58.9	73.3	82.3
2012	692	60.3	17.6	0.2	98.2	37.9	47.3	60.8	74.3	83.6
2013	654	60.0	16.7	18.4	94.2	36.5	47.6	61.4	72.8	81.0
2014	563	60.9	18.0	22.8	105	35.0	46.8	62.4	75.1	84.7
2015	593	62.0	16.4	20.7	98.6	38.4	49.8	62.8	74.5	82.7
2016	569	61.7	16.3	16.7	94.2	38.5	50.1	62.6	75.1	82.0
2017	450	63.2	16.1	21.9	98.0	42.0	51.0	65.4	76.4	82.7
2018	380	64.7	16.1	27.9	98.5	43.4	52.4	66.9	78.0	84.8
2019	344	63.6	17.0	23.8	104	40.5	50.7	64.7	77.6	84.4
2020	259	65.9	16.1	15.7	100	45.3	54.8	66.3	80.3	84.8
1998-2020	10771	60.0	17.5	0.2	105	35.8	46.7	61.0	73.9	82.7

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	3	0.0	0.0	1	0.0	0.0	2	0.0	0.0
5-9	3	0.0	0.0	1	0.0	0.0	2	0.0	0.1
10-14	5	0.0	0.1	2	0.0	0.0	3	0.0	0.1
15-19	46	0.3	0.3	23	0.3	0.3	23	0.3	0.4
20-24	131	0.8	1.1	47	0.5	0.8	84	1.1	1.5
25-29	292	1.8	2.9	77	0.9	1.7	215	2.8	4.3
30-34	441	2.7	5.6	159	1.8	3.5	282	3.7	8.0
35-39	612	3.7	9.4	273	3.1	6.6	339	4.5	12.5
40-44	950	5.8	15.1	404	4.6	11.2	546	7.2	19.7
45-49	1277	7.8	22.9	596	6.8	18.0	681	9.0	28.6
50-54	1368	8.3	31.3	652	7.4	25.4	716	9.4	38.1
55-59	1363	8.3	39.6	762	8.7	34.1	601	7.9	46.0
60-64	1479	9.0	48.6	814	9.3	43.4	665	8.7	54.7
65-69	1979	12.1	60.7	1179	13.4	56.8	800	10.5	65.2
70-74	2192	13.4	74.1	1367	15.6	72.3	825	10.9	76.1
75-79	1888	11.5	85.6	1170	13.3	85.7	718	9.4	85.5
80-84	1315	8.0	93.6	789	9.0	94.6	526	6.9	92.4
85+	1046	6.4	100.0	471	5.4	100.0	575	7.6	100.0
All ages	16390	100.0		8787	100.0		7603	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=126 %	Females DCO rate n=130 %	Males Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	1	2	0.1	0.1			0.5	1.2
5- 9	1	2	0.1	0.1			0.9	2.0
10-14	2	3	0.1	0.2			1.5	2.3
15-19	23	23	1.3	1.4			7.2	8.7
20-24	46	83	2.3	4.4			7.3	16.0
25-29	76	213	3.3	9.5	1.3		8.0	18.0
30-34	157	277	6.8	12.1			12.1	12.9
35-39	271	335	11.7	14.7	0.7		14.8	9.5
40-44	396	543	15.8	22.4		0.4	14.2	8.8
45-49	588	668	21.9	25.7	0.2	0.1	11.6	7.1
50-54	637	707	25.0	28.1	0.5	0.1	7.5	5.7
55-59	745	596	35.1	27.4	0.4	1.2	5.9	4.5
60-64	801	656	45.3	34.6	0.6	0.6	4.6	4.2
65-69	1144	786	70.1	43.3	0.6	0.8	4.7	4.1
70-74	1330	811	88.7	47.2	1.7	1.2	4.8	4.1
75-79	1119	712	92.5	47.4	1.3	2.0	4.7	3.6
80-84	763	521	105.4	48.9	4.5	3.6	5.0	3.4
85+	455	565	97.4	54.2	7.3	11.7	4.3	3.5
All ages	8555	7503			1.5	1.7	5.6	4.8
Incidence								
Raw			26.3	22.3				
WS			14.3	12.9				
ES			19.9	16.8				
BRD-S			24.2	19.2				

The age-specific incidence characterizes the disease risk in a particular age group. The age distribution depends on the patient population frequency in each age group and reflects the tangible clinical picture of everyday patients care (see following chart).

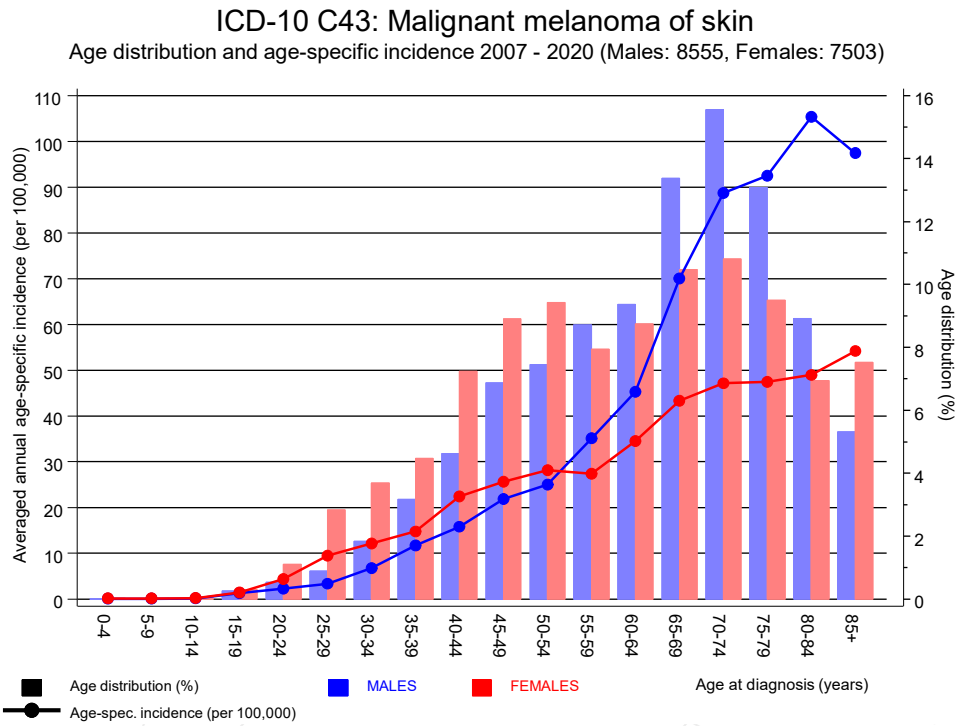


Figure 6. Age distribution (males: mean=64.7 yrs, median=67.6 yrs; females: mean=61.0 yrs, median=62.2 yrs) and age-specific incidence.

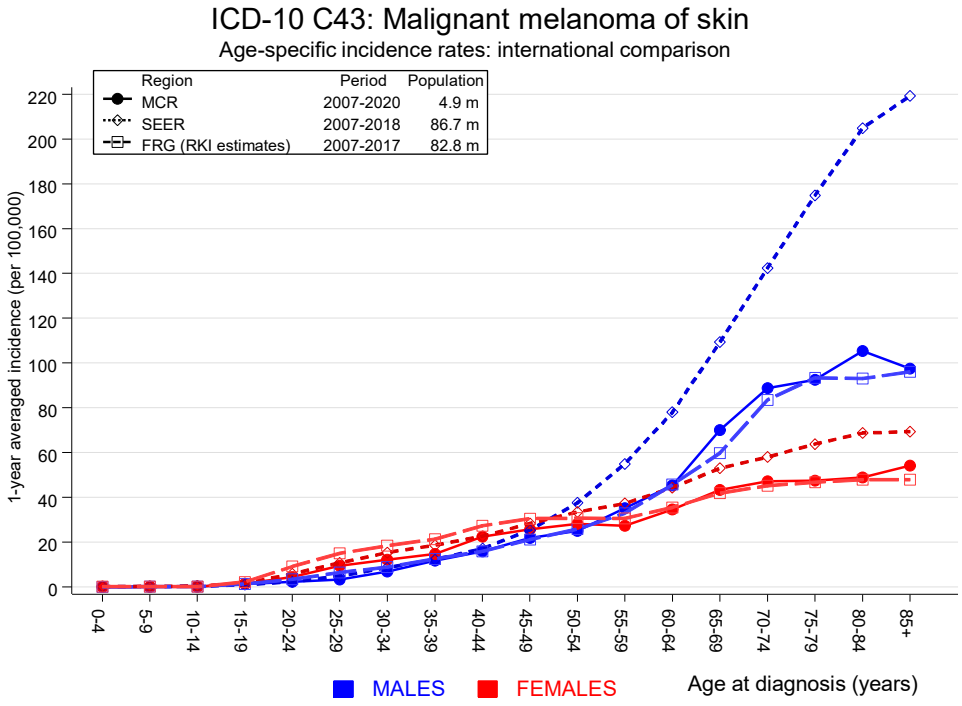


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Estimated age-specific patient population of Germany, latest update: 16 March 2021. German Centre for Cancer Registry Data, Robert Koch Institute (RKI), based on data of the population based cancer registries. http://www.krebsdaten.de. Last access: 08/17/2021
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 21 Regs Research Data, released April 2021, based on the November 2020 submission. http://www.seer.cancer.gov.

Table 7a

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

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C00	Lip	4	0.7	5.5	1.5	14.2	#	0.7	
C03–C06	Oral cavity	8	5.5	1.4	0.6	2.8		0.5	12.5
C09–C10	Oropharynx	10	6.7	1.5	0.7	2.7		0.7	
C12–C13	Hypopharynx	6	3.6	1.6	0.6	3.6		0.5	16.7
C15	Oesophagus	27	13.2	2.0	1.3	3.0	#	3.0	
C16	Stomach	42	26.5	1.6	1.1	2.1	#	3.3	4.8
C17	Small intestine	14	4.1	3.4	1.8	5.7	#	2.1	
C18	Colon	137	65.2	2.1	1.8	2.5	#	15.4	2.9
C19–C20	Rectum	55	35.1	1.6	1.2	2.0	#	4.3	
C22	Liver	43	19.4	2.2	1.6	3.0	#	5.1	14.0
C23–C24	Bile	10	7.2	1.4	0.7	2.5		0.6	
C25	Pancreas	71	26.8	2.6	2.1	3.3	#	9.5	16.9
C32	Larynx	3	6.5	0.5	0.1	1.3		-0.8	
C33–C34	Lung	125	77.7	1.6	1.3	1.9	#	10.1	11.2
C37	Thymus	3	0.4	7.5	1.6	22.1	#	0.6	
C38,C45	Mesothelioma	13	4.8	2.7	1.5	4.7	#	1.8	
C43	Malign. melanoma	753	31.6	23.8	22.2	25.6	#	154.9	0.3
C46,C49	Soft tissue	21	4.0	5.2	3.2	8.0	#	3.6	
C50	Breast	6	1.9	3.2	1.2	7.0	#	0.9	
C60	Penis	3	1.7	1.7	0.4	5.0		0.3	
C61	Prostate	429	186.2	2.3	2.1	2.5	#	52.1	4.2
C62	Testis	3	2.7	1.1	0.2	3.2		0.1	
C64	Kidney	74	23.0	3.2	2.5	4.0	#	11.0	4.1
C65	Renal pelvis	9	3.0	3.0	1.4	5.6	#	1.3	
C66	Ureter	4	1.8	2.2	0.6	5.6		0.5	
C67	Bladder	54	32.4	1.7	1.3	2.2	#	4.6	1.9
C69	Eye carcinoma	4	0.3	15.7	4.3	40.2	#	0.8	
C69	Eye melanoma	5	0.8	6.5	2.1	15.3	#	0.9	
C70–C72	CNS cancer	22	8.6	2.6	1.6	3.9	#	2.9	13.6
C73	Thyroid	24	4.5	5.4	3.4	8.0	#	4.2	
C74–C80	Cancer others	3	1.5	2.0	0.4	5.8		0.3	
C76–C79	CUP	27	11.4	2.4	1.6	3.4	#	3.3	
C82–C85	NHL	101	29.0	3.5	2.8	4.2	#	15.5	10.9
C90	Mult. myeloma	22	8.9	2.5	1.5	3.7	#	2.8	22.7
C91–C96	Leukaemia	30	10.5	2.8	1.9	4.1	#	4.2	33.3
Others, specified		13	8.9	1.5	0.8	2.5		0.9	15.4
Not observed		0	1.8	0.0	0.0	2.0		-0.4	
All further malignancies		2178	677.9	3.2	3.1	3.4	#	322.0	4.4

Patients	10997
Median age at next malignancy (years)	72.7
Person-years	46583
Mean observation time (years)	4.2
Median observation time (years)	2.5

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 to 2 are pooled in category “Others, specified”.

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	8	2.3	3.4	1.5	6.8	#	1.3	
C09–C10	Oropharynx	7	1.7	4.2	1.7	8.6	#	1.2	
C15	Oesophagus	7	2.6	2.7	1.1	5.6	#	1.0	
C16	Stomach	22	13.1	1.7	1.1	2.5	#	2.0	18.2
C17	Small intestine	14	2.1	6.6	3.6	11.0	#	2.7	
C18	Colon	88	37.4	2.4	1.9	2.9	#	11.5	3.4
C19–C20	Rectum	29	15.3	1.9	1.3	2.7	#	3.1	
C21	Anus/canal	6	2.3	2.7	1.0	5.8		0.9	16.7
C22	Liver	10	4.8	2.1	1.0	3.8	#	1.2	10.0
C23–C24	Bile	9	5.4	1.7	0.8	3.2		0.8	22.2
C25	Pancreas	55	18.0	3.1	2.3	4.0	#	8.4	20.0
C30–C31	Sinuses	4	0.6	7.2	2.0	18.4	#	0.8	
C33–C34	Lung	70	29.3	2.4	1.9	3.0	#	9.3	14.3
C38,C45	Mesothelioma	3	0.7	4.2	0.9	12.3		0.5	33.3
C43	Malign. melanoma	376	16.6	22.6	20.4	25.0	#	82.0	0.3
C46,C49	Soft tissue	9	2.3	3.9	1.8	7.4	#	1.5	11.1
C48	Peritoneal	6	1.6	3.8	1.4	8.2	#	1.0	16.7
C50	Breast	401	126.1	3.2	2.9	3.5	#	62.7	2.7
C51	Vulva	6	4.2	1.4	0.5	3.1		0.4	
C52	Vagina	2	0.7	2.7	0.3	9.8		0.3	
C53	Cervix uteri	15	6.3	2.4	1.3	3.9	#	2.0	13.3
C54	Corpus uteri	44	21.3	2.1	1.5	2.8	#	5.2	4.5
C55,C57	Fem. genitals un	4	0.9	4.6	1.2	11.7	#	0.7	
C56	Ovary	34	15.6	2.2	1.5	3.0	#	4.2	
C64	Kidney	23	8.9	2.6	1.6	3.9	#	3.2	13.0
C66	Ureter	4	0.6	6.3	1.7	16.1	#	0.8	
C67	Bladder	17	7.7	2.2	1.3	3.5	#	2.1	
C69	Eye melanoma	3	0.5	6.3	1.3	18.3	#	0.6	
C70–C72	CNS cancer	24	5.2	4.6	3.0	6.9	#	4.3	16.7
C73	Thyroid	34	7.7	4.4	3.1	6.2	#	6.0	2.9
C74–C80	Cancer others	2	1.4	1.4	0.2	5.2		0.1	50.0
C76–C79	CUP	18	7.2	2.5	1.5	4.0	#	2.5	
C81	Hodgkin lymphoma	4	0.9	4.6	1.2	11.7	#	0.7	
C82–C85	NHL	40	15.2	2.6	1.9	3.6	#	5.6	7.5
C90	Mult. myeloma	13	4.6	2.8	1.5	4.8	#	1.9	15.4
C91–C96	Leukaemia	21	5.8	3.6	2.2	5.5	#	3.5	19.0
Others, specified		5	2.1	2.3	0.8	5.5		0.7	
Not observed		0	3.3	0.0	0.0	1.1		−0.8	
All further malignancies		1437	402.6	3.6	3.4	3.8	#	236.0	4.8

Patients	10017
Median age at next malignancy (years)	70.5
Person-years	43830
Mean observation time (years)	4.4
Median observation time (years)	2.6

The occurrence of further specified malignancy is statistically significant.

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

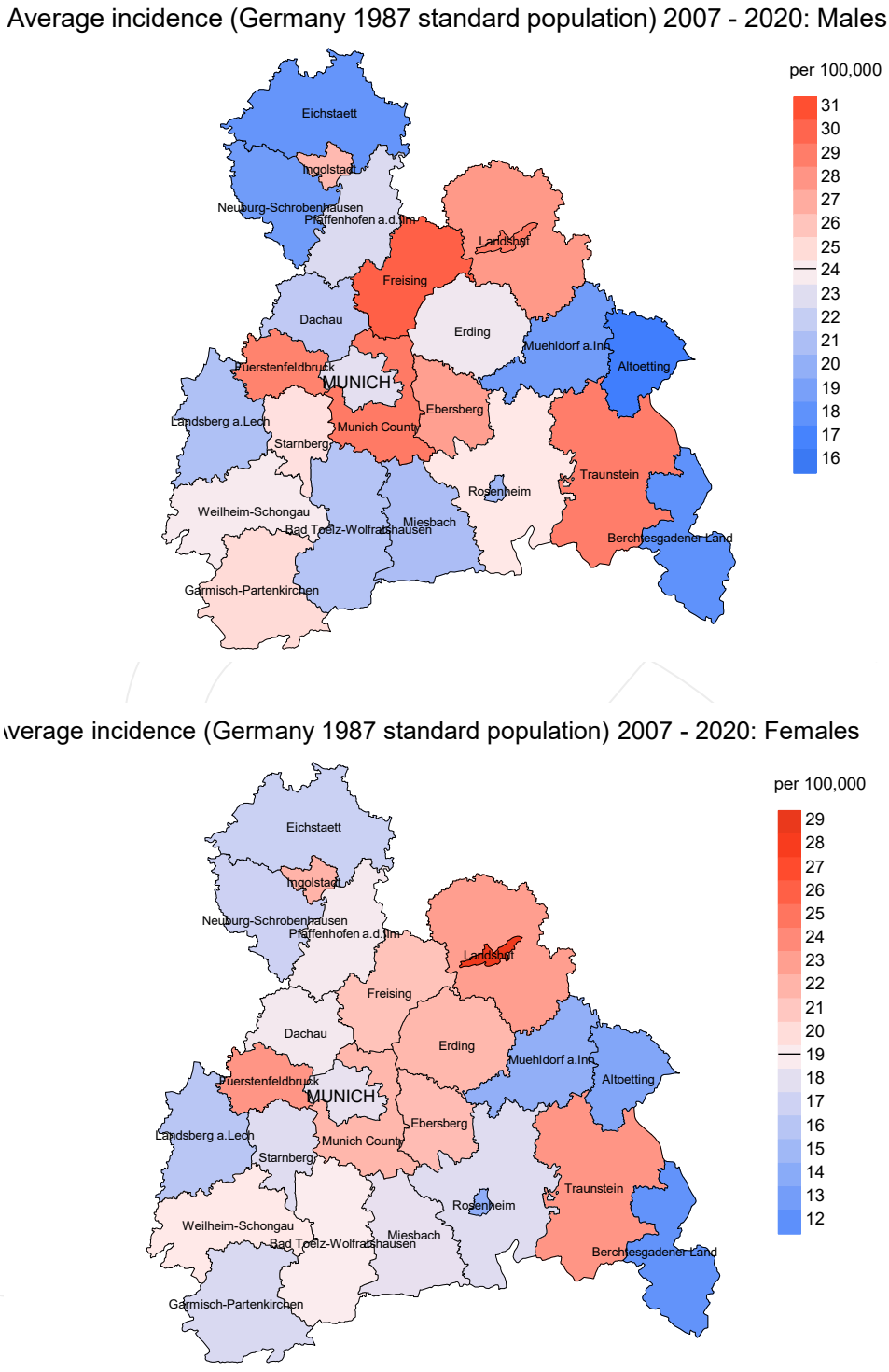
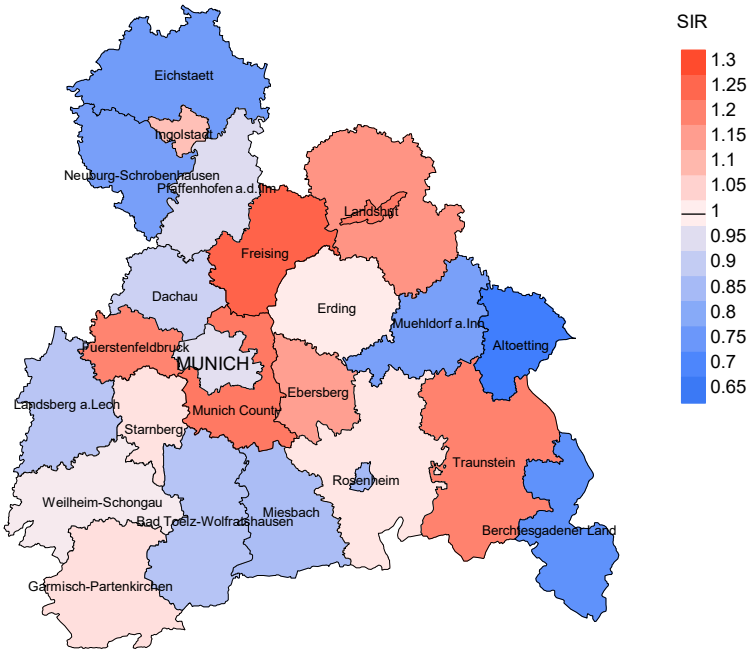


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 24.2/100,000 WS N=8,555, females 19.2/100,000 WS N=7,503).

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 237 women were identified with newly diagnosed malignant melanoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 21.5/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 18.0 and 25.5/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

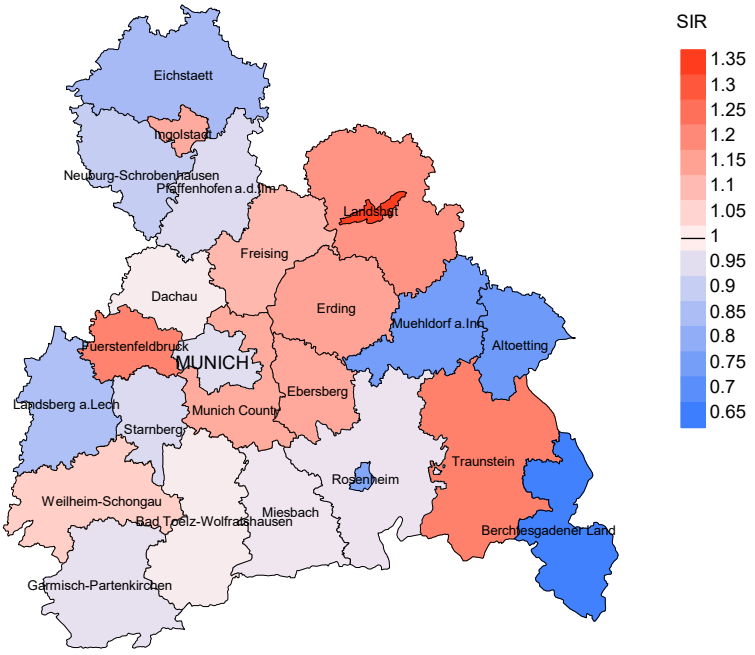


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=8,555, females N=7,503).

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 237 women were identified with newly diagnosed malignant melanoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.14. Though, the value of this parameter may vary with an underlying probability of 99% between 0.96 and 1.34, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	487	95.3	2.7	228	46.8	89.5
1999	467	95.5	2.1	204	43.7	91.2
2000	522	95.8	2.5	233	44.6	90.6
2001	522	96.6	1.9	236	45.2	92.4
2002	888	95.9	1.8	390	43.9	92.1
2003	817	95.0	2.2	347	42.5	94.2
2004	909	96.1	3.0	397	43.7	92.9
2005	912	93.4	1.3	378	41.4	94.2
2006	937	90.2	1.7	380	40.6	92.9
2007	1077	83.7	1.9	382	35.5	95.3
2008	1228	97.2	2.0	437	35.6	96.6
2009	1205	97.0	1.9	423	35.1	93.4
2010	1414	97.8	1.5	457	32.3	94.1
2011	1577	97.0	1.3	468	29.7	91.7
2012	1453	96.9	1.8	400	27.5	91.8
2013	1499	97.0	1.3	357	23.8	89.1
2014	1254	96.8	1.6	341	27.2	90.0
2015	1312	91.8	1.8	304	23.2	87.5
2016	1212	98.3	1.8	253	20.9	82.6
2017	1001	98.3	1.6	167	16.7	79.6
2018	799	98.6	2.4	135	16.9	76.3
2019	788	98.4	0.3	92	11.7	85.9
2020	571	99.1		29	5.1	72.4
1998-2020	22851	95.7	1.7	7038	30.8	91.3

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	487	126	89.7	13	2.7
1999	467	118	90.7	14	3.0
2000	522	184	90.2	23	4.4
2001	522	167	91.0	18	3.4
2002	888	239	95.4	29	3.3
2003	817	258	91.1	31	3.8
2004	909	280	96.8	52	5.7
2005	912	318	95.6	31	3.4
2006	937	298	95.3	34	3.6
2007	1077	374	98.1	36	3.3
2008	1228	402	98.3	52	4.2
2009	1205	413	97.3	47	3.9
2010	1414	376	97.9	50	3.5
2011	1577	437	98.4	62	3.9
2012	1453	473	96.0	59	4.1
2013	1499	522	97.9	50	3.3
2014	1254	523	97.3	52	4.1
2015	1312	547	98.0	59	4.5
2016	1212	578	98.3	52	4.3
2017	1001	567	97.0	43	4.3
2018	799	502	72.9	39	4.9
2019	788	481	46.2	28	3.6
2020	571	597	82.6	13	2.3
1998-2020	22851	8780	91.5	887	3.9

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.94 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	126	58.7	41.3	67.3
1999	118	63.6	36.4	77.6
2000	184	66.8	33.2	74.7
2001	167	62.3	37.7	69.7
2002	239	63.6	36.4	68.9
2003	258	61.6	38.4	72.3
2004	280	67.5	32.5	70.5
2005	318	62.9	37.1	67.8
2006	298	59.7	40.3	65.8
2007	374	63.6	36.4	68.1
2008	402	57.7	42.3	64.1
2009	413	65.1	34.9	68.9
2010	376	65.7	34.3	71.5
2011	437	57.4	42.6	63.7
2012	473	60.7	39.3	64.3
2013	522	60.5	39.5	66.7
2014	523	64.1	35.9	67.4
2015	547	52.5	47.5	59.9
2016	578	50.9	49.1	55.3
2017	567	49.6	50.4	57.1
2018	502	46.0	54.0	54.4
2019	481	31.8	68.2	57.2
2020	597	31.0	69.0	55.6
1998-2020	8780	55.4	44.6	64.0

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	74	74.5	69.2	79.5	71.4
1999	67	74.9	69.8	85.2	71.1
2000	95	73.9	68.1	82.0	70.2
2001	84	72.8	65.1	79.5	66.2
2002	131	72.8	68.6	81.3	68.6
2003	134	73.3	70.1	79.3	71.7
2004	147	74.3	71.5	81.8	72.6
2005	176	74.8	70.9	82.1	71.0
2006	157	74.4	71.2	81.5	71.6
2007	207	75.4	70.3	81.1	70.5
2008	209	78.0	74.4	82.7	74.3
2009	238	74.5	71.0	82.6	71.2
2010	201	76.2	72.7	81.6	73.7
2011	237	78.6	74.4	84.4	75.7
2012	280	75.9	73.3	82.0	73.8
2013	285	76.7	74.4	81.3	74.4
2014	304	78.1	74.6	84.3	74.8
2015	306	79.8	76.7	82.7	77.5
2016	328	80.2	76.6	83.0	77.1
2017	318	81.4	77.4	85.0	77.8
2018	293	80.3	77.4	82.1	79.7
2019	300	81.9	79.3	82.5	83.0
2020	331	82.6	78.3	84.0	80.7
1998–2020	4902	78.1	73.9	82.8	74.8

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	52	79.5	72.9	86.4	74.7
1999	51	78.3	75.6	79.2	78.0
2000	89	78.1	75.0	84.6	75.6
2001	83	83.4	78.2	87.7	79.6
2002	108	82.0	68.4	85.4	70.9
2003	124	80.8	70.2	88.1	73.4
2004	133	81.6	74.3	84.8	74.3
2005	142	82.2	77.5	87.2	77.0
2006	141	81.8	76.5	88.0	76.5
2007	167	77.9	71.3	86.9	71.5
2008	193	82.6	74.0	86.9	77.9
2009	175	82.2	75.9	87.7	77.4
2010	175	81.1	74.7	86.1	74.9
2011	200	82.2	73.4	86.8	75.8
2012	193	83.3	72.7	88.5	74.2
2013	237	83.7	78.3	87.6	78.4
2014	219	83.3	76.5	87.5	76.1
2015	241	83.6	76.4	89.3	77.1
2016	250	83.2	78.6	87.7	79.3
2017	249	84.3	78.4	88.6	78.8
2018	209	83.1	75.7	87.7	76.4
2019	181	81.9	77.3	83.3	80.0
2020	266	85.3	79.7	86.2	80.0
1998–2020	3878	82.3	76.1	87.1	77.1

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	47	4.2	0.19	2.6	0.17	3.9	0.20	5.2	0.23
1999	43	3.8	0.20	2.3	0.17	3.5	0.21	4.5	0.23
2000	64	5.6	0.23	3.4	0.21	5.0	0.24	6.4	0.26
2001	60	5.2	0.23	3.1	0.22	4.5	0.23	5.9	0.26
2002	96	5.2	0.21	2.9	0.19	4.4	0.21	5.8	0.24
2003	91	4.9	0.23	2.8	0.21	4.2	0.23	5.2	0.25
2004	110	5.8	0.25	3.1	0.21	4.7	0.24	6.3	0.27
2005	125	6.6	0.27	3.4	0.23	5.2	0.25	6.9	0.29
2006	99	5.2	0.21	2.6	0.18	4.0	0.20	5.3	0.22
2007	132	6.0	0.25	3.1	0.22	4.7	0.24	6.2	0.27
2008	133	6.0	0.21	2.8	0.17	4.4	0.19	6.3	0.24
2009	165	7.4	0.26	3.8	0.24	5.6	0.26	7.2	0.27
2010	138	6.1	0.19	2.9	0.16	4.4	0.18	6.0	0.20
2011	148	6.6	0.19	3.0	0.15	4.6	0.17	6.3	0.20
2012	177	7.8	0.24	3.5	0.20	5.4	0.22	7.2	0.24
2013	187	8.1	0.23	3.5	0.18	5.5	0.20	7.4	0.23
2014	195	8.4	0.29	3.6	0.23	5.6	0.26	7.5	0.29
2015	163	6.9	0.23	2.8	0.18	4.5	0.20	6.2	0.23
2016	169	7.0	0.27	2.9	0.21	4.5	0.24	6.3	0.27
2017	160	6.6	0.30	2.6	0.23	4.1	0.26	5.7	0.29
2018	152	6.2	0.37	2.4	0.30	3.8	0.33	5.4	0.36
2019	99	4.1	0.22	1.5	0.17	2.4	0.19	3.5	0.22
2020	111	4.6	0.36	1.8	0.29	2.9	0.32	3.9	0.34
1998-2020	2864	6.2	0.24	2.9	0.20	4.5	0.22	6.0	0.25

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	27	2.3	0.11	1.0	0.09	1.5	0.10	1.8	0.10
1999	32	2.7	0.13	1.1	0.08	1.7	0.10	2.3	0.12
2000	59	4.9	0.25	2.2	0.16	3.2	0.19	4.2	0.22
2001	45	3.7	0.18	1.5	0.11	2.2	0.13	2.9	0.15
2002	56	2.9	0.14	1.4	0.10	1.9	0.11	2.3	0.12
2003	68	3.5	0.17	1.6	0.12	2.3	0.14	2.8	0.15
2004	79	4.0	0.18	1.7	0.12	2.5	0.14	3.1	0.15
2005	76	3.8	0.17	1.4	0.10	2.2	0.12	3.0	0.15
2006	80	4.0	0.18	1.5	0.11	2.3	0.13	3.1	0.16
2007	106	4.6	0.20	2.0	0.14	2.9	0.16	3.8	0.19
2008	99	4.3	0.18	1.7	0.12	2.6	0.14	3.3	0.16
2009	107	4.6	0.20	1.8	0.13	2.6	0.15	3.5	0.17
2010	109	4.7	0.16	1.8	0.10	2.6	0.12	3.4	0.14
2011	104	4.4	0.14	1.8	0.09	2.7	0.11	3.4	0.12
2012	111	4.7	0.16	1.9	0.11	2.8	0.13	3.4	0.14
2013	129	5.4	0.20	1.9	0.12	2.9	0.14	3.9	0.17
2014	140	5.8	0.25	2.1	0.16	3.1	0.18	4.1	0.21
2015	125	5.1	0.21	1.9	0.14	2.8	0.16	3.6	0.18
2016	127	5.2	0.23	1.8	0.14	2.7	0.16	3.6	0.19
2017	122	4.9	0.27	1.5	0.16	2.5	0.19	3.3	0.22
2018	80	3.2	0.21	1.3	0.17	1.8	0.18	2.3	0.19
2019	55	2.2	0.16	0.8	0.11	1.2	0.12	1.6	0.14
2020	75	3.0	0.29	0.9	0.17	1.4	0.21	1.9	0.23
1998-2020	2011	4.2	0.19	1.6	0.12	2.4	0.14	3.1	0.16

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	2	0.1	0.1	2	0.1	0.1			0.0
20-24	6	0.2	0.2	3	0.1	0.2	3	0.2	0.2
25-29	8	0.2	0.4	7	0.3	0.6	1	0.1	0.3
30-34	18	0.5	0.9	12	0.6	1.1	6	0.4	0.7
35-39	32	0.9	1.8	19	0.9	2.0	13	0.9	1.5
40-44	62	1.7	3.5	31	1.5	3.5	31	2.1	3.6
45-49	113	3.1	6.7	61	2.9	6.3	52	3.5	7.1
50-54	143	4.0	10.6	80	3.8	10.1	63	4.2	11.3
55-59	182	5.0	15.6	104	4.9	15.0	78	5.2	16.6
60-64	263	7.3	22.9	147	6.9	21.9	116	7.8	24.4
65-69	381	10.5	33.4	233	10.9	32.8	148	9.9	34.3
70-74	539	14.9	48.3	367	17.2	50.1	172	11.6	45.9
75-79	597	16.5	64.8	374	17.6	67.6	223	15.0	60.8
80-84	565	15.6	80.5	359	16.9	84.5	206	13.8	74.7
85+	707	19.5	100.0	330	15.5	100.0	377	25.3	100.0
All ages	3618	100.0		2129	100.0		1489	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	2		0.1	0.09			4.2	
20-24	3	3	0.1	0.07	0.2	0.04	4.1	7.0
25-29	7	1	0.3	0.09	0.0	0.00	7.5	1.0
30-34	12	6	0.5	0.08	0.3	0.02	8.4	3.3
35-39	19	13	0.8	0.07	0.6	0.04	7.1	3.2
40-44	31	31	1.2	0.08	1.3	0.06	5.1	3.6
45-49	61	52	2.3	0.10	2.0	0.08	4.3	3.1
50-54	80	63	3.1	0.13	2.5	0.09	3.0	2.4
55-59	104	78	4.9	0.14	3.6	0.13	2.4	2.0
60-64	147	116	8.3	0.18	6.1	0.18	2.3	2.3
65-69	233	148	14.3	0.20	8.2	0.19	2.5	2.1
70-74	367	172	24.5	0.28	10.0	0.21	3.1	2.0
75-79	374	223	30.9	0.33	14.9	0.31	3.0	2.3
80-84	359	206	49.6	0.47	19.4	0.40	3.4	2.2
85+	330	377	70.7	0.73	36.2	0.67	3.6	3.2
All ages	2129	1489					3.1	2.4
Mortality								
Raw			6.5	0.25	4.4	0.20		
WS			2.9	0.20	1.6	0.13		
ES			4.4	0.22	2.5	0.15		
BRD-S			6.0	0.25	3.2	0.17		
PYLL-70								
per 100,000			28.7		21.8			
ES			24.8		18.4			
AYLL-70			11.8		12.1			

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	5	0.2	3	60.0			2	40.0
C03–C06	Oral cavity	14	0.7	5	35.7	2	14.3	7	50.0
C07–C08	Salivary gland	3	0.1			1	33.3	2	66.7
C09–C10	Oropharynx	8	0.4	3	37.5			5	62.5
C12–C13	Hypopharynx	7	0.3	2	28.6			5	71.4
C15	Oesophagus	16	0.7	1	6.3			15	93.8
C16	Stomach	46	2.1	9	19.6	2	4.3	35	76.1
C17	Small intestine	8	0.4	3	37.5	1	12.5	4	50.0
C18	Colon	122	5.7	50	41.0	2	1.6	70	57.4
C19–C20	Rectum	76	3.5	27	35.5			49	64.5
C22	Liver	37	1.7	3	8.1	3	8.1	31	83.8
C23–C24	Bile	14	0.7	3	21.4			11	78.6
C25	Pancreas	75	3.5	5	6.7	4	5.3	66	88.0
C26	GI cancer	4	0.2	2	50.0			2	50.0
C32	Larynx	12	0.6	6	50.0	1	8.3	5	41.7
C33–C34	Lung	163	7.6	14	8.6	12	7.4	137	84.0
C38,C45	Mesothelioma	17	0.8	3	17.6			14	82.4
C43	Malign. melanoma	281	13.1			69	24.6	212	75.4
C44	Skin others	419	19.5	110	26.3	97	23.2	212	50.6
C46,C49	Soft tissue	27	1.3	7	25.9	1	3.7	19	70.4
C61	Prostate	375	17.4	176	46.9	12	3.2	187	49.9
C62	Testis	5	0.2	5	100.0				
C64	Kidney	71	3.3	26	36.6	5	7.0	40	56.3
C65	Renal pelvis	6	0.3	1	16.7			5	83.3
C66	Ureter	4	0.2	1	25.0			3	75.0
C67	Bladder	68	3.2	20	29.4	2	2.9	46	67.6
C69	Eye melanoma	11	0.5	3	27.3	2	18.2	6	54.5
C70–C72	CNS cancer	33	1.5	4	12.1	1	3.0	28	84.8
C73	Thyroid	10	0.5	3	30.0			7	70.0
C74–C80	Cancer others	3	0.1	1	33.3			2	66.7
C76–C79	CUP	33	1.5	7	21.2	1	3.0	25	75.8
C81	Hodgkin lymphoma	3	0.1	2	66.7			1	33.3
C82–C85	NHL	105	4.9	49	46.7	5	4.8	51	48.6
C90	Mult. myeloma	25	1.2	6	24.0	1	4.0	18	72.0
C91–C96	Leukaemia	27	1.3	4	14.8	1	3.7	22	81.5
Others, specified		17	0.8	8	47.1	1	5.9	8	47.1
All further malignancies		2150	100.0	572	26.6	226	10.5	1352	62.9

Further malignancies with number of cases 1 to 2 are pooled in category “Others, specified”.

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

Table 14b

Further malignancies in deaths in period 1998–2020
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C00	Lip	3	0.2	3	100.0				
C03–C06	Oral cavity	5	0.4	3	60.0	1	20.0	1	20.0
C15	Oesophagus	6	0.5	1	16.7			5	83.3
C16	Stomach	32	2.5	6	18.8			26	81.3
C17	Small intestine	4	0.3	1	25.0			3	75.0
C18	Colon	68	5.3	18	26.5	4	5.9	46	67.6
C19–C20	Rectum	24	1.9	10	41.7	1	4.2	13	54.2
C21	Anus/canal	6	0.5	3	50.0			3	50.0
C22	Liver	16	1.3	2	12.5	1	6.3	13	81.3
C23–C24	Bile	17	1.3	2	11.8			15	88.2
C25	Pancreas	66	5.2	1	1.5	2	3.0	63	95.5
C30–C31	Sinuses	5	0.4	2	40.0	2	40.0	1	20.0
C33–C34	Lung	90	7.0	5	5.6	2	2.2	83	92.2
C43	Malign. melanoma	126	9.8			19	15.1	107	84.9
C44	Skin others	141	11.0	41	29.1	31	22.0	69	48.9
C46,C49	Soft tissue	14	1.1	4	28.6	2	14.3	8	57.1
C48	Peritoneal	8	0.6	2	25.0			6	75.0
C50	Breast	296	23.1	136	45.9	16	5.4	144	48.6
C51	Vulva	12	0.9	7	58.3	2	16.7	3	25.0
C53	Cervix uteri	25	2.0	13	52.0	1	4.0	11	44.0
C54	Corpus uteri	44	3.4	21	47.7	1	2.3	22	50.0
C55,C57	Fem. genitals un	4	0.3	2	50.0			2	50.0
C56	Ovary	48	3.8	14	29.2	2	4.2	32	66.7
C64	Kidney	24	1.9	8	33.3	5	20.8	11	45.8
C66	Ureter	3	0.2					3	100.0
C67	Bladder	15	1.2	1	6.7			14	93.3
C69	Eye melanoma	13	1.0	10	76.9			3	23.1
C70–C72	CNS cancer	25	2.0	4	16.0			21	84.0
C73	Thyroid	16	1.3	5	31.3			11	68.8
C76–C79	CUP	19	1.5	2	10.5	2	10.5	15	78.9
C81	Hodgkin lymphoma	5	0.4	4	80.0			1	20.0
C82–C85	NHL	51	4.0	26	51.0	1	2.0	24	47.1
C90	Mult. myeloma	21	1.6	10	47.6			11	52.4
C91–C96	Leukaemia	17	1.3	1	5.9			16	94.1
Others, specified		11	0.9	5	45.5			6	54.5
All further malignancies		1280	100.0	373	29.1	95	7.4	812	63.4

Further malignancies with number of cases 1 to 2 are pooled in category “Others, specified”.

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

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	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	0.04			2.2	
20-24	3	3	0.1	0.07	0.2	0.04	4.5	7.3
25-29	6	1	0.3	0.08	0.0	0.00	7.1	1.1
30-34	11	6	0.5	0.07	0.3	0.02	8.0	3.8
35-39	18	12	0.8	0.07	0.5	0.04	7.2	3.3
40-44	30	28	1.2	0.08	1.2	0.06	5.4	3.7
45-49	57	39	2.1	0.11	1.5	0.07	4.4	2.7
50-54	71	49	2.8	0.13	2.0	0.08	3.0	2.2
55-59	91	68	4.3	0.15	3.1	0.14	2.4	2.1
60-64	113	94	6.4	0.18	5.0	0.18	2.1	2.3
65-69	180	103	11.0	0.23	5.7	0.18	2.5	1.9
70-74	251	126	16.7	0.32	7.3	0.23	2.8	1.9
75-79	224	148	18.5	0.38	9.9	0.32	2.5	2.0
80-84	222	145	30.7	0.54	13.6	0.41	3.0	2.0
85+	189	275	40.5	0.88	26.4	0.73	2.9	2.9
All ages	1467	1097					2.7	2.2
Mortality								
Raw			4.5	0.24	3.3	0.19		
WS			2.1	0.19	1.3	0.12		
ES			3.2	0.21	1.9	0.14		
BRD-S			4.2	0.24	2.4	0.15		
PYLL-70								
per 100,000			25.2		18.1			
ES			21.8		15.4			
AYLL-70			12.4		12.7			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2020
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	1		0.1	0.05			2.2	
20-24	3	3	0.1	0.07	0.2	0.04	4.5	7.5
25-29	6	1	0.3	0.09	0.0	0.01	7.1	1.1
30-34	11	5	0.5	0.08	0.2	0.02	8.0	3.2
35-39	18	12	0.8	0.08	0.5	0.04	7.3	3.3
40-44	26	24	1.0	0.07	1.0	0.05	4.7	3.2
45-49	53	32	2.0	0.11	1.2	0.06	4.1	2.3
50-54	62	43	2.4	0.12	1.7	0.08	2.7	1.9
55-59	74	49	3.5	0.14	2.2	0.11	1.9	1.6
60-64	75	68	4.2	0.15	3.6	0.15	1.4	1.7
65-69	127	63	7.8	0.20	3.5	0.13	1.8	1.2
70-74	160	71	10.7	0.26	4.1	0.16	1.8	1.1
75-79	121	88	10.0	0.25	5.9	0.23	1.4	1.2
80-84	124	89	17.1	0.36	8.4	0.30	1.8	1.3
85+	116	174	24.8	0.62	16.7	0.52	1.9	1.9
All ages	977	722					1.9	1.5
Mortality								
Raw			3.0	0.19	2.1	0.14		
WS			1.5	0.16	0.9	0.09		
ES			2.2	0.17	1.3	0.11		
BRD-S			2.8	0.19	1.6	0.12		
PYLL-70								
per 100,000			21.8		14.8			
ES			18.9		12.6			
AYLL-70			13.7		13.9			

* See corresponding tables with multiple malignancies.

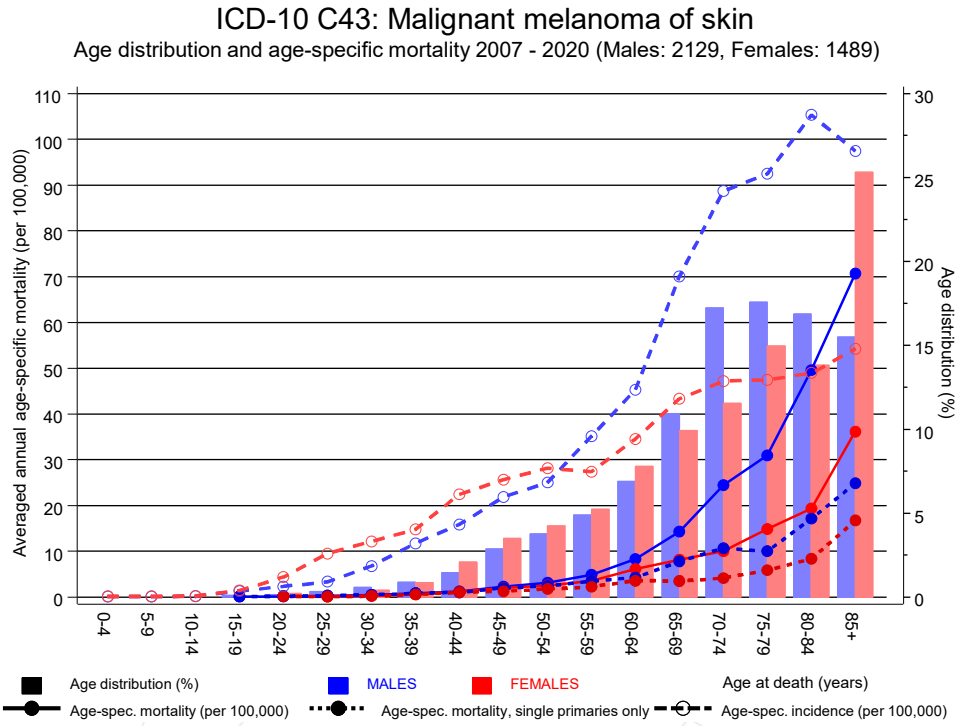


Figure 17. Distribution of age at death (bars; males: mean=67.0 yrs, median=69.2 yrs; females: mean=66.4 yrs, median=68.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

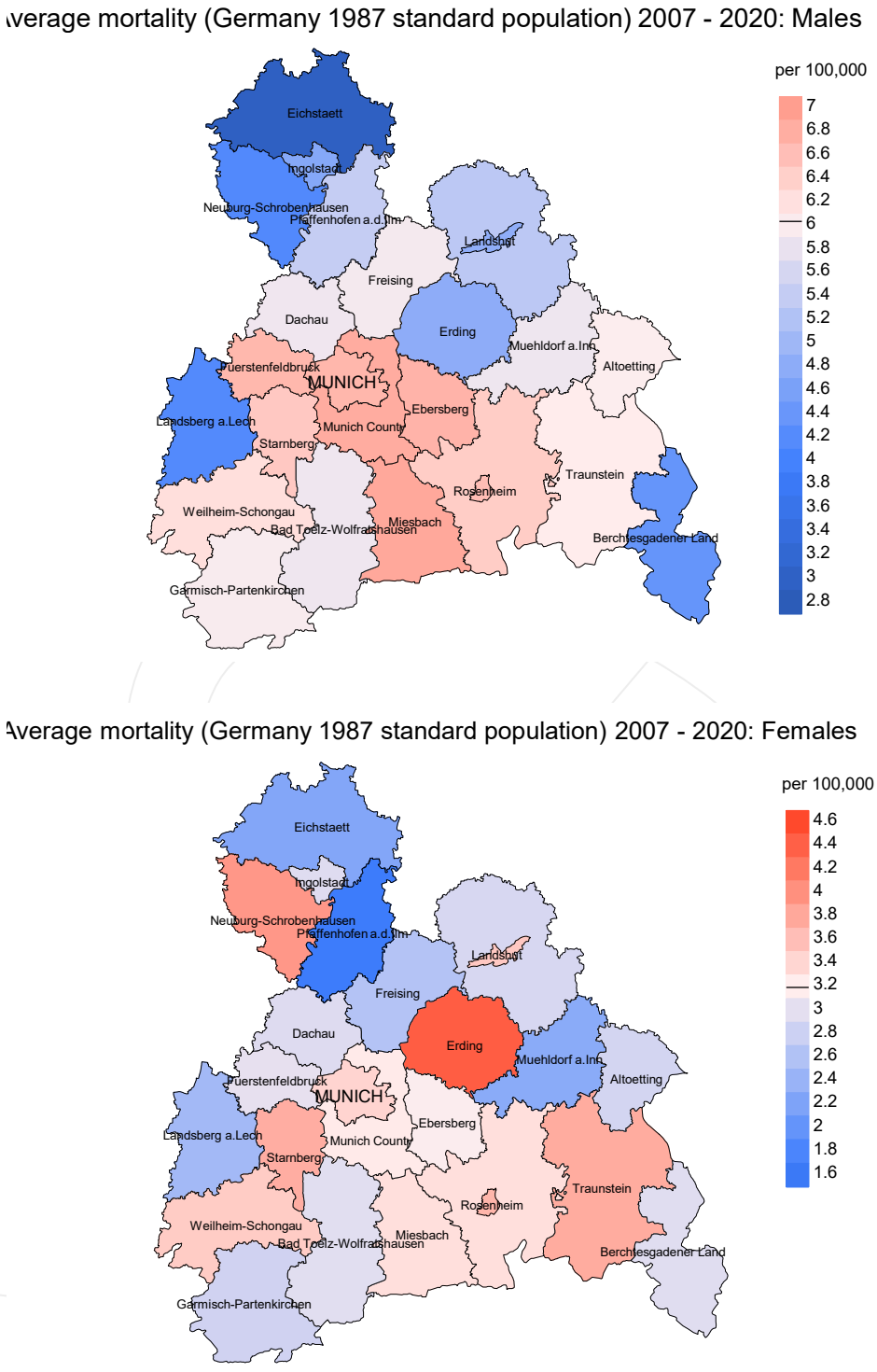
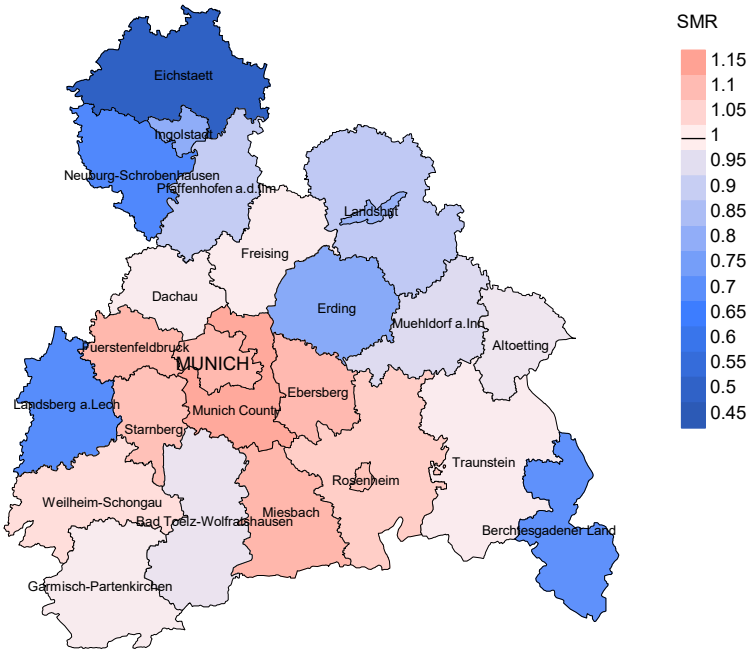


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 6.0/100,000 WS N=2,129, females 3.2/100,000 WS N=1,489).

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 41 women died from malignant melanoma. 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 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

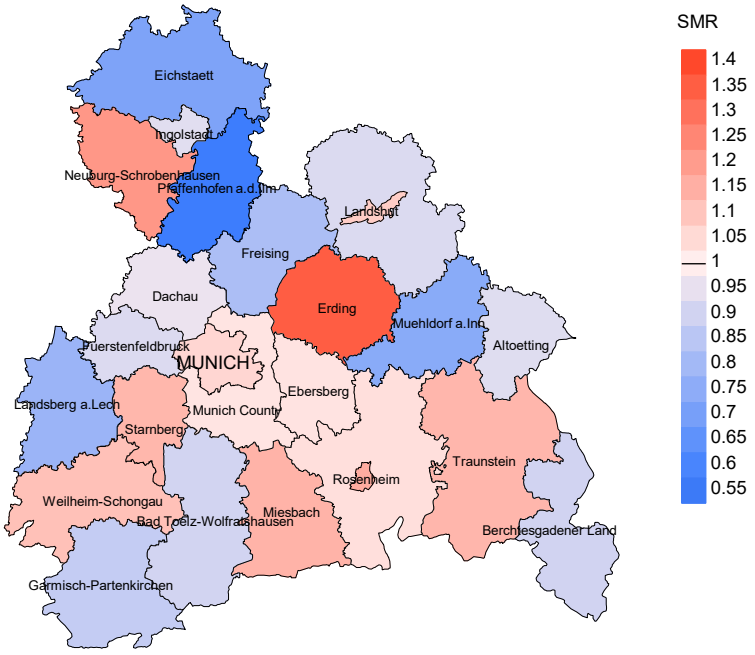


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=2,129, females N=1,489).

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 41 women died from malignant melanoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.03. Though, the value of this parameter may vary with an underlying probability of 99% between 0.66 and 1.51, 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

Munich Cancer Registry. ICD-10 C43: Malignant melanoma - Incidence and Mortality [Internet]. 2021 [updated 2021 Dec 21; cited 2022 Feb 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bC43__E-ICD-10-C43-Malignant-melanoma-incidence-and-mortality.pdf

Copyright

Disclaimer