Munich Cancer Registry

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- *Deutsch*

ICD-10 D37-D48: NPL unknown behaviour

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	12,197
Diseases	12,340
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/bD3748E-ICD-10-D37-D48-NPL-unknown-behaviour-incidence-and-mortality.pdf

Index of figures and tables

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

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

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

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

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

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

Munich Cancer Registry, December 2021

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

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

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

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

Code	Description
D37.-	Neoplasm of uncertain or unknown behaviour of oral cavity and digestive organs
D38.-	Neoplasm of uncertain or unknown behaviour of middle ear and respiratory and intrathoracic organs
D39.-	Neoplasm of uncertain or unknown behaviour of female genital organs
D40.-	Neoplasm of uncertain or unknown behaviour of male genital organs
D41.-	Neoplasm of uncertain or unknown behaviour of urinary organs
D42.-	Neoplasm of uncertain or unknown behaviour of meninges
D43.-	Neoplasm of uncertain or unknown behaviour of brain and central nervous system
D44.-	Neoplasm of uncertain or unknown behaviour of endocrine glands
D45	Polycythaemia vera
D46.-	Myelodysplastic syndromes
D47.-	Other neoplasms of uncertain or unknown behaviour of lymphoid, haematopoietic and related tissue
D48.-	Neoplasm of uncertain or unknown behaviour of other and unspecified sites

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	169	12.4	16.0	79.3	94.7
1999	180	13.8	15.9	77.2	98.9
2000	228	15.6	15.8	70.6	96.9
2001	244	15.5	15.8	66.4	95.9
2002	410	15.7	15.7	68.3	96.6 #
2003	443	16.4	15.6	69.8	95.0
2004	515	16.6	15.3	61.4	95.5
2005	592	17.2	15.3	65.5	95.1
2006	594	17.7	15.2	62.5	93.4
2007	763	17.5	15.1	59.6	90.6 #
2008	826	17.8	14.6	57.0	98.1
2009	832	18.4	14.4	55.2	97.1
2010	801	19.2	13.9	56.2	97.4
2011	853	19.7	13.8	59.3	97.3
2012	752	20.1	13.3	58.8	97.5
2013	735	20.4	12.8	55.5	98.1
2014	674	20.6	11.7	55.5	96.0
2015	667	21.0	11.1	53.1	92.4
2016	630	21.3	10.5	52.9	97.6
2017	549	21.8	9.4	50.8	97.6
2018	418	22.1	8.8	40.0	98.1
2019	268	22.3	7.7	23.9	98.1
2020	197	22.4	4.7	17.8	97.5 ##
1998-2020	12340	22.4	16.0	57.2	96.2

12,340 cases diagnosed 1998-2020 are related to a total of 12,197 patients. Currently, in 4,552 (37.3 %) of these 12,197 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 3,398 / 867 / 287 (27.9 % / 7.1 % / 2.4 %) 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 418 cases has been diagnosed, of which 22.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.8 % 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 1a

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

Year of diagnosis	Males n	Males %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	61	36.1	21.3	19.2	80.3	93.4
1999	76	42.2	19.0	19.2	82.9	100.0
2000	94	41.2	19.0	19.1	80.9	96.8
2001	99	40.6	19.4	19.1	64.6	94.9
2002	182	44.4	19.1	19.0	74.2	98.9 #
2003	183	41.3	18.3	18.8	75.4	95.1
2004	232	45.0	18.4	18.6	65.9	95.7
2005	260	43.9	19.6	18.4	75.8	97.7
2006	267	44.9	20.4	18.5	71.5	94.8
2007	338	44.3	20.3	18.4	63.0	92.0 #
2008	344	41.6	21.0	17.8	63.1	97.1
2009	362	43.5	21.5	17.3	58.8	97.0
2010	355	44.3	22.6	16.9	62.8	97.7
2011	373	43.7	23.3	16.7	68.4	98.7
2012	347	46.1	23.7	15.9	65.7	97.7
2013	319	43.4	24.1	15.9	65.8	97.8
2014	297	44.1	24.2	14.8	65.0	96.3
2015	286	42.9	24.6	14.4	60.5	93.7
2016	286	45.4	25.0	14.0	64.7	97.2
2017	231	42.1	25.6	12.7	60.2	97.4
2018	178	42.6	26.1	13.8	51.7	97.8
2019	90	33.6	26.4	12.1	34.4	97.8
2020	72	36.5	26.5	5.8	25.0	97.2 ##
1998-2020	5332	43.2	26.5	19.2	64.8	96.6

5,332 cases diagnosed 1998-2020 are related to a total of 5,250 patients. Currently, in 2,294 (43.7 %) of these 5,250 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,636 / 467 / 191 (31.2 % / 8.9 % / 3.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 178 cases has been diagnosed, of which 26.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 13.8 % 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 by year of diagnosis, proportions of further malignancies, deaths, and active follow-up (FEMALES)

Year of diagnosis	Females n	Females %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	108	63.9	7.4	13.6	78.7	95.4
1999	104	57.8	10.4	13.4	73.1	98.1
2000	134	58.8	13.3	13.4	63.4	97.0
2001	145	59.4	12.8	13.3	67.6	96.6
2002	228	55.6	13.2	13.1	63.6	94.7 #
2003	260	58.7	15.1	13.1	65.8	95.0
2004	283	55.0	15.3	12.8	57.6	95.4
2005	332	56.1	15.4	12.9	57.5	93.1
2006	327	55.1	15.7	12.7	55.0	92.4
2007	425	55.7	15.4	12.6	56.9	89.4 #
2008	482	58.4	15.5	12.2	52.7	98.8
2009	470	56.5	16.2	12.1	52.3	97.2
2010	446	55.7	16.6	11.7	50.9	97.1
2011	480	56.3	16.9	11.6	52.3	96.3
2012	405	53.9	17.3	11.4	52.8	97.3
2013	416	56.6	17.5	10.6	47.6	98.3
2014	377	55.9	17.8	9.5	48.0	95.8
2015	381	57.1	18.3	8.8	47.5	91.3
2016	344	54.6	18.4	8.1	43.0	98.0
2017	318	57.9	18.8	7.2	44.0	97.8
2018	240	57.4	19.0	5.7	31.3	98.3
2019	178	66.4	19.2	5.4	18.5	98.3
2020	125	63.5	19.3	4.1	13.6	97.6 ##
1998-2020	7008	56.8	19.3	13.6	51.4	95.9

7,008 cases diagnosed 1998-2020 are related to a total of 6,947 patients. Currently, in 2,258 (32.5 %) of these 6,947 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,762 / 400 / 96 (25.4 % / 5.8 % / 1.4 %) 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 240 cases has been diagnosed, of which 19.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 5.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

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

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	61	108	5.5	9.2	3.9	4.6	5.2	6.4	6.1	7.9
1999	76	104	6.8	8.8	4.5	4.5	6.4	6.1	9.2	7.5
2000	94	134	8.3	11.2	5.0	6.3	7.5	8.3	10.2	9.8
2001	99	145	8.5	11.9	6.0	6.3	7.7	8.4	9.7	10.3
2002	182	228	9.8	11.6	6.3	6.3	8.7	8.1	10.9	9.8
2003	183	260	9.8	13.2	6.0	6.9	8.3	9.2	10.7	11.2
2004	232	283	12.3	14.3	7.4	7.5	10.5	10.0	13.2	11.9
2005	260	332	13.7	16.7	7.8	8.5	11.1	11.4	14.8	13.9
2006	267	327	13.9	16.3	8.3	8.5	11.5	11.2	14.6	13.5
2007	338	425	15.3	18.4	9.0	9.8	12.3	12.9	15.7	15.5
2008	344	482	15.5	20.8	8.9	11.4	12.1	14.6	15.4	17.0
2009	362	470	16.2	20.2	9.1	10.6	12.5	14.0	16.1	16.8
2010	355	446	15.8	19.1	8.4	9.5	11.9	12.8	15.4	15.7
2011	373	480	16.7	20.5	8.6	10.6	12.1	13.9	15.9	16.5
2012	347	405	15.3	17.2	8.5	9.1	11.6	11.7	14.5	13.7
2013	319	416	13.9	17.4	6.9	9.3	9.8	12.1	13.0	14.3
2014	297	377	12.7	15.7	6.2	7.3	8.9	10.0	11.8	12.2
2015	286	381	12.0	15.7	5.7	7.4	8.3	10.1	10.9	12.2
2016	286	344	11.9	14.0	5.1	7.1	7.7	9.3	10.8	11.2
2017	231	318	9.6	12.9	4.0	6.5	6.1	8.6	8.4	10.1
2018	178	240	7.3	9.7	3.1	5.2	4.7	6.9	6.4	7.9
2019	90	178	3.7	7.2	1.5	4.3	2.4	5.4	3.2	6.2
2020	72	125	3.0	5.0	1.4	3.3	2.1	4.1	2.6	4.6
1998–2020	5332	7008	11.5	14.5	6.2	7.6	8.7	10.0	11.3	11.9

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	169	66.7	17.1	4.5	95.1	44.9	58.3	68.4	78.8	85.8
1999	180	67.7	17.8	1.7	94.6	46.0	59.1	71.0	81.1	86.1
2000	228	64.8	18.3	10.2	101	36.3	53.9	68.1	78.2	86.1
2001	244	64.2	20.1	0.0	96.0	34.2	55.1	68.3	79.5	86.8
2002	410	65.4	20.2	0.1	97.4	36.8	56.0	70.0	79.7	87.5
2003	443	66.0	18.7	1.1	96.7	38.5	57.0	68.2	79.8	87.0
2004	515	65.4	18.7	1.6	103	39.8	55.9	67.4	80.1	86.2
2005	592	66.8	18.3	0.0	97.1	41.6	58.3	70.3	80.9	85.2
2006	594	65.8	18.9	0.0	101	38.1	56.3	69.3	79.8	85.9
2007	763	65.8	19.0	0.0	100	38.9	56.9	69.1	79.4	86.2
2008	826	64.9	19.5	0.0	99.5	37.7	54.7	69.1	78.9	86.3
2009	832	65.5	18.9	1.9	101	37.8	55.9	69.5	79.4	85.9
2010	801	67.0	18.3	0.2	99.4	42.2	56.2	71.2	80.7	86.3
2011	853	67.0	18.6	0.0	99.2	40.5	56.5	71.7	80.5	86.7
2012	752	66.4	19.6	0.1	99.0	39.5	56.4	70.8	80.7	88.1
2013	735	67.0	18.6	0.0	97.5	43.0	57.4	71.6	80.0	86.3
2014	674	68.9	17.9	1.9	101	44.3	58.9	73.6	81.6	88.2
2015	667	68.9	17.5	5.2	98.2	44.9	57.7	72.8	82.0	88.2
2016	630	68.9	18.7	1.2	104	40.2	57.8	75.1	82.1	87.7
2017	549	69.3	17.8	4.1	98.5	43.2	58.9	74.6	82.1	88.8
2018	418	67.8	16.5	5.0	99.4	44.0	56.3	71.3	81.0	86.5
2019	268	64.3	18.2	18.8	98.7	35.1	52.6	67.6	78.5	84.2
2020	197	62.2	17.8	13.6	91.2	37.9	51.1	64.6	76.4	82.6
1998–2020	12340	66.6	18.6	0.0	104	40.2	56.6	70.7	80.3	86.6

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median 10%	25%	50%	75%	90%
1998	61	62.5	17.4	4.5	90.1	44.5	54.6	64.4	72.8	83.6
1999	76	67.3	19.1	1.7	94.1	44.8	61.0	72.3	80.0	84.8
2000	94	67.2	17.0	10.2	93.8	44.6	60.7	72.0	77.2	84.1
2001	99	60.4	20.3	0.0	91.2	30.9	51.0	64.1	75.6	81.3
2002	182	65.1	19.5	0.1	95.5	38.8	57.6	69.9	78.1	85.5
2003	183	65.8	17.8	1.1	93.9	42.0	60.0	67.3	78.1	84.2
2004	232	65.7	17.7	1.6	93.7	41.5	57.8	67.9	77.8	85.4
2005	260	67.3	17.7	0.0	96.5	44.0	60.5	70.8	79.3	84.2
2006	267	65.7	18.0	0.0	96.5	39.4	59.2	69.4	77.9	84.3
2007	338	65.9	18.6	0.0	100	42.5	58.9	69.7	78.1	84.9
2008	344	65.4	18.3	0.0	94.6	37.9	60.0	69.6	77.8	83.3
2009	362	66.0	18.2	2.6	95.8	40.1	58.4	69.9	79.1	84.4
2010	355	68.3	18.2	0.2	98.9	45.2	61.1	72.0	81.1	86.1
2011	373	68.2	17.4	0.0	92.6	44.1	63.0	72.7	79.5	84.8
2012	347	67.2	19.0	0.3	98.1	41.1	59.6	71.8	79.8	86.5
2013	319	69.2	17.2	1.2	93.0	48.3	63.5	73.8	80.1	84.9
2014	297	69.3	17.5	1.9	101	44.2	61.6	74.5	80.7	85.2
2015	286	70.8	16.4	5.2	97.9	49.5	63.7	73.8	82.2	87.4
2016	286	73.1	16.2	1.2	104	50.9	67.5	77.9	83.2	87.5
2017	231	73.0	14.7	22.1	97.5	53.8	67.0	76.9	82.9	87.5
2018	178	72.7	13.3	23.2	95.6	53.9	66.6	75.4	81.7	87.4
2019	90	71.8	12.8	37.8	93.9	51.0	64.9	76.0	80.1	85.2
2020	72	69.2	13.8	30.9	89.5	49.8	61.0	70.8	80.6	85.6
1998-2020	5332	67.9	17.7	0.0	104	44.3	60.8	71.9	79.9	85.5

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	108	69.1	16.5	4.9	95.1	46.5	60.1	70.2	81.7	87.9
1999	104	68.0	17.0	15.7	94.6	47.3	56.3	68.8	82.9	88.1
2000	134	63.2	19.0	17.7	101	34.8	51.1	63.6	79.0	87.5
2001	145	66.7	19.6	2.6	96.0	34.5	57.1	70.9	81.5	88.7
2002	228	65.6	20.9	1.6	97.4	35.9	54.3	70.5	80.9	88.9
2003	260	66.1	19.3	2.9	96.7	35.9	55.5	69.2	81.3	87.8
2004	283	65.2	19.4	8.5	103	37.8	52.6	66.7	80.7	86.9
2005	332	66.4	18.7	6.0	97.1	39.5	54.1	69.3	81.7	85.4
2006	327	65.9	19.6	1.7	101	37.2	55.1	68.9	81.3	87.3
2007	425	65.7	19.4	4.1	98.1	37.4	56.2	68.4	80.8	86.9
2008	482	64.5	20.4	0.0	99.5	37.7	50.4	68.6	80.8	87.7
2009	470	65.0	19.4	1.9	101	35.7	53.8	68.8	79.9	86.9
2010	446	66.0	18.2	12.3	99.4	40.7	52.6	70.3	80.6	86.4
2011	480	66.0	19.4	5.6	99.2	39.3	53.5	70.7	81.7	88.0
2012	405	65.7	20.1	0.1	99.0	38.7	54.2	70.3	81.7	88.8
2013	416	65.2	19.4	0.0	97.5	39.8	52.2	69.0	79.9	87.2
2014	377	68.5	18.3	5.0	100	44.9	56.7	72.4	82.8	89.4
2015	381	67.5	18.1	12.6	98.2	43.5	53.5	71.6	81.8	88.6
2016	344	65.4	19.9	1.3	102	36.7	52.5	69.8	81.2	88.3
2017	318	66.5	19.4	4.1	98.5	40.9	52.6	69.8	81.4	90.0
2018	240	64.2	17.6	5.0	99.4	40.9	52.2	65.8	78.3	85.9
2019	178	60.5	19.3	18.8	98.7	30.6	47.0	62.0	76.5	83.5
2020	125	58.1	18.6	13.6	91.2	31.5	47.1	60.2	74.4	79.9
1998–2020	7008	65.6	19.3	0.0	103	38.0	53.4	69.1	80.7	87.4

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	46	0.5	0.5	25	0.6	0.6	21	0.4	0.4
5-9	34	0.4	0.9	19	0.5	1.1	15	0.3	0.7
10-14	57	0.6	1.5	27	0.7	1.8	30	0.6	1.3
15-19	84	0.9	2.5	33	0.9	2.7	51	1.0	2.3
20-24	107	1.2	3.7	33	0.9	3.5	74	1.5	3.8
25-29	138	1.5	5.2	41	1.1	4.6	97	1.9	5.7
30-34	164	1.8	7.0	48	1.2	5.8	116	2.3	7.9
35-39	228	2.5	9.6	67	1.7	7.6	161	3.2	11.1
40-44	306	3.4	13.0	83	2.1	9.7	223	4.4	15.5
45-49	450	5.0	18.0	140	3.6	13.3	310	6.1	21.6
50-54	458	5.1	23.1	148	3.8	17.1	310	6.1	27.7
55-59	549	6.1	29.2	197	5.1	22.2	352	6.9	34.6
60-64	646	7.2	36.4	272	7.0	29.2	374	7.4	42.0
65-69	953	10.6	47.1	470	12.1	41.3	483	9.5	51.4
70-74	1129	12.6	59.7	587	15.1	56.5	542	10.7	62.1
75-79	1284	14.3	74.0	669	17.3	73.7	615	12.1	74.2
80-84	1091	12.2	86.2	563	14.5	88.2	528	10.4	84.6
85+	1241	13.8	100.0	456	11.8	100.0	785	15.4	100.0
All ages	8965	100.0		3878	100.0		5087	100.0	

Table 5

Age-specific incidence
for period 2007-2020

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.
0- 4	25	20	1.5	1.3
5- 9	19	15	1.2	1.0
10-14	27	30	1.7	2.0
15-19	33	51	1.9	3.2
20-24	33	74	1.6	3.9
25-29	40	97	1.8	4.3
30-34	48	116	2.1	5.1
35-39	67	161	2.9	7.1
40-44	82	223	3.3	9.2
45-49	140	310	5.2	11.9
50-54	147	310	5.8	12.3
55-59	196	350	9.2	16.1
60-64	272	374	15.4	19.7
65-69	466	482	28.5	26.6
70-74	580	539	38.7	31.3
75-79	666	611	55.0	40.7
80-84	555	525	76.6	49.3
85+	453	783	97.0	75.1
All ages	3849	5071		
Incidence				
Raw			11.8	15.1
WS			6.0	7.9
ES			8.5	10.3
BRD-S			11.0	12.2

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).

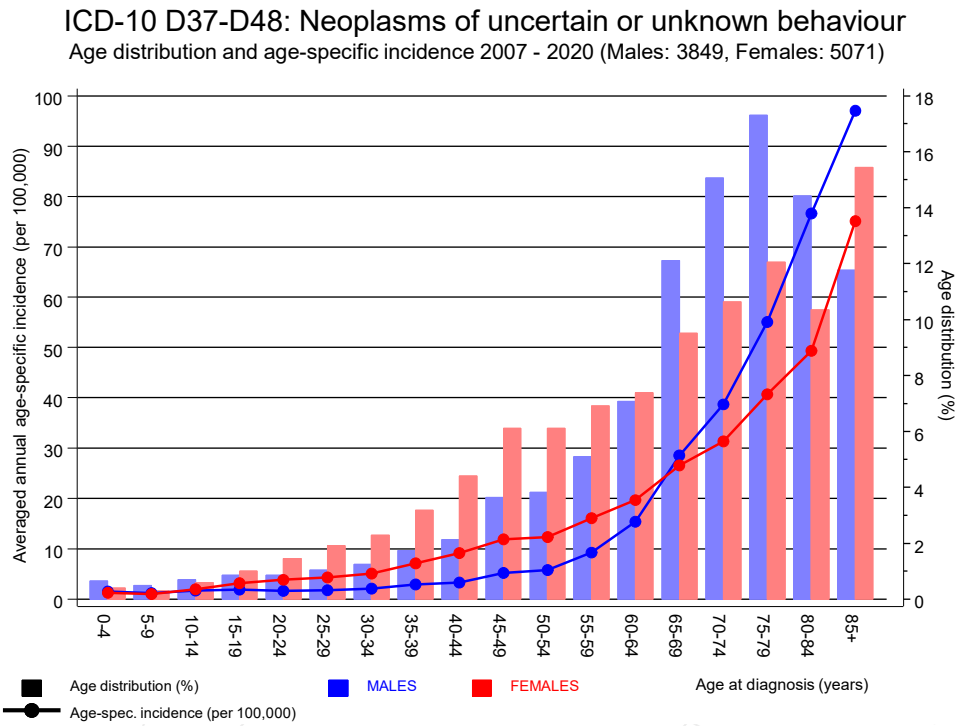

Figure 6. Age distribution (males: mean=68.7 yrs, median=72.8 yrs; females: mean=65.5 yrs, median=69.2 yrs) and age-specific incidence.

Table 7a

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

MALES

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C03–C06	Oral cavity	13	1.9	6.9	3.7	11.9	#	6.9	
C07–C08	Salivary gland	3	0.6	5.1	1.1	15.0	#	1.5	
C09–C10	Oropharynx	4	2.3	1.8	0.5	4.5		1.1	
C12–C13	Hypopharynx	4	1.2	3.2	0.9	8.3		1.7	25.0
C15	Oesophagus	13	4.7	2.8	1.5	4.7	#	5.1	7.7
C16	Stomach	27	9.4	2.9	1.9	4.2	#	10.9	11.1
C17	Small intestine	9	1.5	6.1	2.8	11.5	#	4.7	
C18	Colon	56	23.3	2.4	1.8	3.1	#	20.2	5.4
C19–C20	Rectum	27	12.4	2.2	1.4	3.2	#	9.0	
C21	Anus/canal	5	0.6	8.7	2.8	20.3	#	2.7	
C22	Liver	20	7.0	2.9	1.7	4.4	#	8.0	10.0
C23–C24	Bile	6	2.6	2.3	0.8	5.0		2.1	
C25	Pancreas	23	9.6	2.4	1.5	3.6	#	8.3	13.0
C32	Larynx	7	2.3	3.1	1.2	6.4	#	2.9	
C33–C34	Lung	119	27.8	4.3	3.5	5.1	#	56.5	8.4
C37	Thymus	4	0.1	28.8	7.8	73.7	#	2.4	
C38,C45	Mesothelioma	7	1.7	4.1	1.6	8.4	#	3.3	14.3
C43	Malign. melanoma	32	11.2	2.9	2.0	4.0	#	12.9	
C46,C49	Soft tissue	6	1.4	4.3	1.6	9.3	#	2.8	
C50	Breast	3	0.7	4.5	0.9	13.2		1.4	
C61	Prostate	129	66.3	1.9	1.6	2.3	#	38.8	3.1
C64	Kidney	26	8.1	3.2	2.1	4.7	#	11.1	
C65	Renal pelvis	4	1.1	3.6	1.0	9.2		1.8	
C66	Ureter	4	0.7	6.0	1.6	15.3	#	2.1	
C67	Bladder	30	11.6	2.6	1.7	3.7	#	11.4	10.0
C68	Urethra	2	0.3	8.0	1.0	28.8		1.1	
C68	Urinary org.	2	0.2	12.2	1.5	44.1	#	1.1	50.0
C69	Eye carcinoma	2	0.1	21.7	2.6	78.5	#	1.2	
C70–C72	CNS cancer	15	3.0	4.9	2.8	8.1	#	7.4	6.7
C73	Thyroid	5	1.5	3.3	1.1	7.7	#	2.2	
C76–C79	CUP	17	4.1	4.2	2.4	6.7	#	8.0	5.9
C81	Hodgkin lymphoma	6	0.6	9.9	3.6	21.5	#	3.3	
C82–C85	NHL	131	10.3	12.7	10.6	15.1	#	74.7	1.5
C90	Mult. myeloma	86	3.2	26.8	21.4	33.1	#	51.3	2.3
C91–C96	Leukaemia	184	3.8	48.4	41.7	56.0	#	111.6	17.4
Others, specified		6	2.3	2.6	0.9	5.6		2.3	
Not observed		0	1.8	0.0	0.0	2.1		-1.1	
All further malignancies		1037	241.2	4.3	4.0	4.6	#	492.8	6.8

Patients	4198
Median age at next malignancy (years)	74.4
Person-years	16150
Mean observation time (years)	3.8
Median observation time (years)	2.2

The occurrence of further specified malignancy is statistically significant.

Further observed malignancies with count 1 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	2	1.2	1.6	0.2	5.9		0.4	
C15	Oesophagus	9	1.4	6.4	2.9	12.1	#	3.4	
C16	Stomach	29	6.8	4.3	2.9	6.2	#	10.1	6.9
C17	Small intestine	5	1.2	4.3	1.4	10.1	#	1.7	
C18	Colon	64	19.5	3.3	2.5	4.2	#	20.1	3.1
C19–C20	Rectum	23	8.0	2.9	1.8	4.3	#	6.8	
C21	Anus/canal	5	1.2	4.2	1.4	9.9	#	1.7	
C22	Liver	8	2.6	3.1	1.3	6.1	#	2.4	
C23–C24	Bile	5	2.8	1.8	0.6	4.1		1.0	20.0
C25	Pancreas	32	9.7	3.3	2.3	4.7	#	10.1	25.0
C26	GI cancer	3	0.3	9.2	1.9	27.0	#	1.2	
C32	Larynx	3	0.4	7.8	1.6	22.8	#	1.2	33.3
C33–C34	Lung	57	16.1	3.6	2.7	4.6	#	18.5	1.8
C38,C45	Mesothelioma	3	0.4	7.7	1.6	22.6	#	1.2	
C43	Malign. melanoma	23	8.6	2.7	1.7	4.0	#	6.5	4.3
C46,C49	Soft tissue	14	1.2	11.5	6.3	19.3	#	5.8	
C48	Peritoneal	14	0.9	15.6	8.6	26.2	#	5.9	
C50	Breast	172	65.6	2.6	2.2	3.0	#	48.1	2.9
C51	Vulva	5	2.2	2.2	0.7	5.2		1.3	
C53	Cervix uteri	14	3.0	4.7	2.6	7.9	#	5.0	
C54	Corpus uteri	35	11.5	3.0	2.1	4.2	#	10.6	5.7
C55,C57	Fem. genitals un	2	0.4	4.9	0.6	17.7		0.7	
C56	Ovary	37	8.3	4.5	3.1	6.2	#	13.0	5.4
C64	Kidney	16	4.8	3.3	1.9	5.4	#	5.1	6.3
C66	Ureter	2	0.4	5.7	0.7	20.5		0.7	
C67	Bladder	14	4.0	3.5	1.9	5.8	#	4.5	7.1
C70–C72	CNS cancer	11	2.7	4.0	2.0	7.2	#	3.7	
C73	Thyroid	9	3.8	2.4	1.1	4.5	#	2.4	
C76–C79	CUP	18	3.7	4.9	2.9	7.7	#	6.5	11.1
C81	Hodgkin lymphoma	5	0.4	11.3	3.7	26.4	#	2.1	
C82–C85	NHL	93	8.1	11.5	9.3	14.1	#	38.4	2.2
C90	Mult. myeloma	59	2.5	23.5	17.9	30.3	#	25.6	
C91–C96	Leukaemia	149	3.1	48.3	40.8	56.7	#	66.0	13.4
Others, specified		5	2.1	2.4	0.8	5.6		1.3	
Not observed		0	2.5	0.0	0.0	1.4		−1.2	
All further malignancies		945	211.3	4.5	4.2	4.8	#	331.9	5.4

Patients	5530
Median age at next malignancy (years)	71.8
Person-years	22103
Mean observation time (years)	4.0
Median observation time (years)	2.2

The occurrence of further specified malignancy is statistically significant.

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

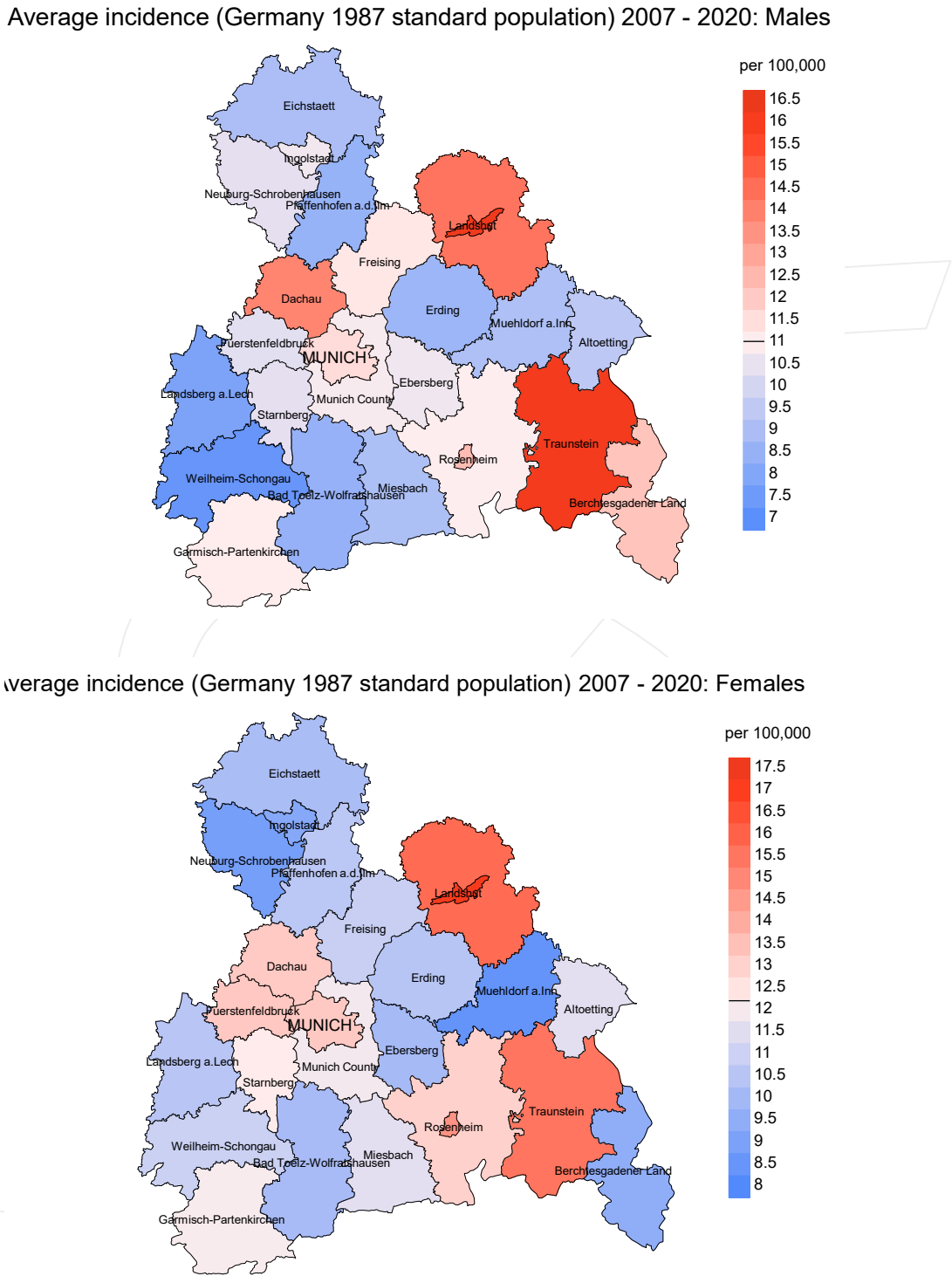

Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 11.0/100,000 WS N=3,849, females 12.2/100,000 WS N=5,071).

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 113 women were identified with newly diagnosed NPL unknown behaviour. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 10.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 7.7 and 12.9/100,000.

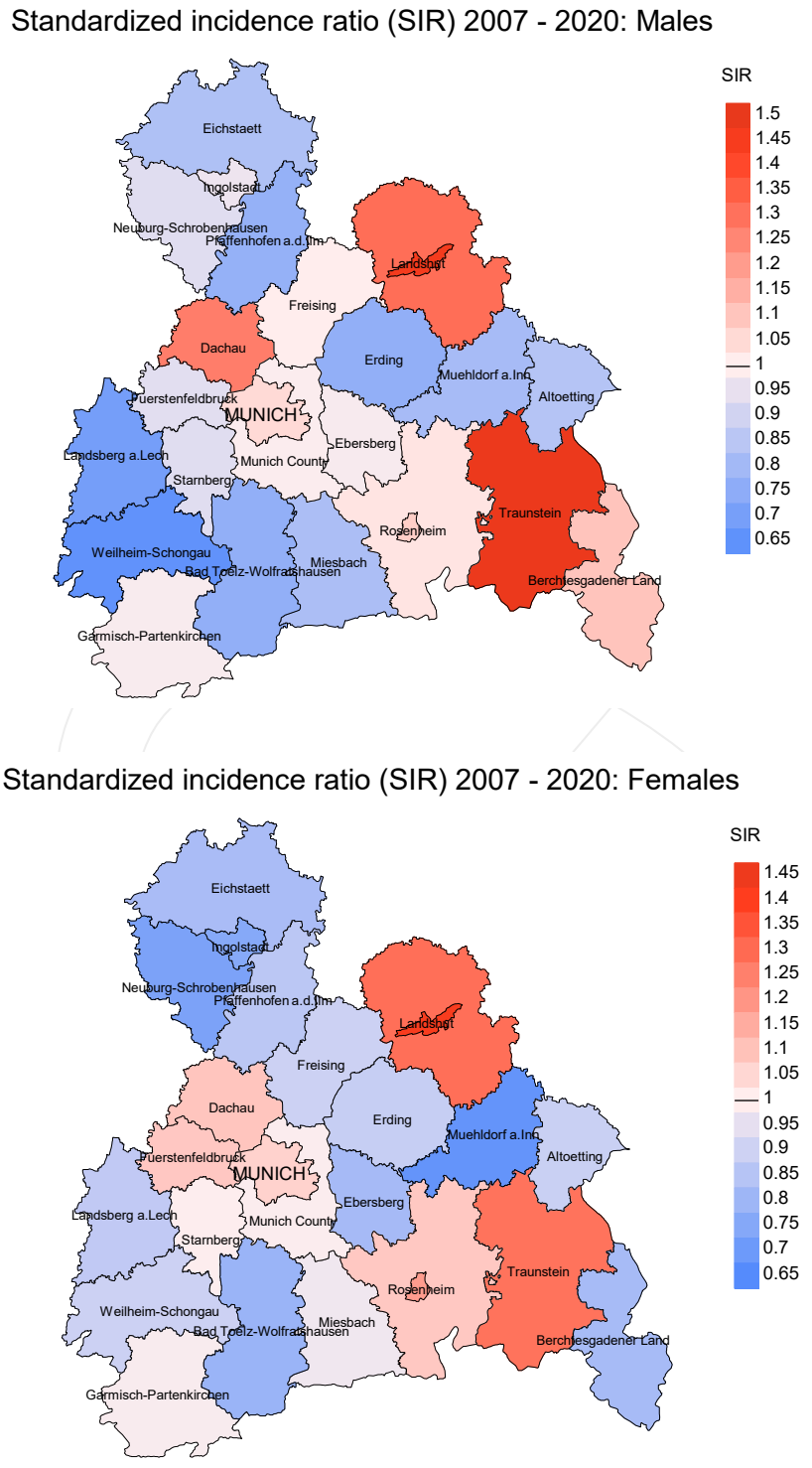

Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=3,849, females N=5,071).

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 113 women were identified with newly diagnosed NPL unknown behaviour. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.82. Though, the value of this parameter may vary with an underlying probability of 99% between 0.63 and 1.03, and is therefore not statistically striking.

MORTALITY

Table 9a

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

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

Year of diagnosis	Incident cases n	Prop. actively followed %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	169	94.7	134	79.3	95.5
1999	180	98.9	139	77.2	94.2
2000	228	96.9	161	70.6	95.0
2001	244	95.9	162	66.4	95.7
2002	410	96.6	280	68.3	95.4
2003	443	95.0	309	69.8	96.8
2004	515	95.5	316	61.4	96.2
2005	592	95.1	388	65.5	96.1
2006	594	93.4	371	62.5	96.0
2007	763	90.6	455	59.6	96.7
2008	826	98.1	471	57.0	96.0
2009	832	97.1	459	55.2	95.0
2010	801	97.4	450	56.2	96.2
2011	853	97.3	506	59.3	96.2
2012	752	97.5	442	58.8	95.5
2013	735	98.1	408	55.5	95.1
2014	674	96.0	374	55.5	93.9
2015	667	92.4	354	53.1	95.2
2016	630	97.6	333	52.9	92.8
2017	549	97.6	279	50.8	93.2
2018	418	98.1	167	40.0	84.4
2019	268	98.1	64	23.9	87.5
2020	197	97.5	35	17.8	82.9
1998–2020	12340	96.2	7057	57.2	95.0

Table 9b

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

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

Year of diagnosis/ death	Incident cases n	Deaths n	Deaths in same year n	Prop. deaths in same year %
1998	169	72	46	27.2
1999	180	94	52	28.9
2000	228	106	67	29.4
2001	244	101	65	26.6
2002	410	154	125	30.5
2003	443	183	142	32.1
2004	515	187	153	29.7
2005	592	228	182	30.7
2006	594	251	183	30.8
2007	763	251	184	24.1
2008	826	271	185	22.4
2009	832	315	186	22.4
2010	801	324	191	23.8
2011	853	372	218	25.6
2012	752	365	201	26.7
2013	735	380	185	25.2
2014	674	401	200	29.7
2015	667	446	205	30.7
2016	630	402	219	34.8
2017	549	395	187	34.1
2018	418	361	104	24.9
2019	268	243	23	8.6
2020	197	290	21	10.7
1998–2020	12340	6192	3324	26.9

Table 9c

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

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

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	72	55.6	44.4	97.0
1999	94	48.9	51.1	87.6
2000	106	52.8	47.2	91.3
2001	101	39.6	60.4	92.9
2002	154	59.7	40.3	92.8
2003	183	60.1	39.9	88.9
2004	187	58.3	41.7	92.9
2005	228	59.6	40.4	87.8
2006	251	59.8	40.2	90.9
2007	251	63.7	36.3	88.5
2008	271	63.5	36.5	86.2
2009	315	63.8	36.2	84.7
2010	324	63.3	36.7	83.6
2011	372	64.2	35.8	86.5
2012	365	64.4	35.6	82.2
2013	380	65.3	34.7	81.8
2014	401	60.8	39.2	78.9
2015	446	61.0	39.0	78.2
2016	402	63.4	36.6	82.9
2017	395	55.4	44.6	72.3
2018	361	50.4	49.6	67.4
2019	243	27.2	72.8	66.1
2020	290	39.0	61.0	64.8
1998-2020	6192	58.0	42.0	82.2

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	25	72.3	69.4	73.1	72.3
1999	41	80.0	74.3	82.4	80.4
2000	54	75.8	75.9	75.7	75.9
2001	39	73.8	73.0	80.0	74.9
2002	69	77.6	76.8	79.7	77.6
2003	78	76.3	75.9	78.8	75.9
2004	76	78.4	77.6	78.6	78.5
2005	116	76.5	76.5	77.7	76.8
2006	132	75.6	73.9	81.4	75.7
2007	119	78.4	78.4	78.7	79.2
2008	133	77.0	74.2	81.1	76.0
2009	147	77.2	75.8	79.5	76.9
2010	174	79.1	76.9	81.6	78.9
2011	185	78.1	76.1	81.9	76.9
2012	190	78.0	76.8	80.4	77.0
2013	194	77.7	76.6	79.4	77.2
2014	198	78.9	78.1	79.2	79.1
2015	202	79.2	76.9	82.3	79.2
2016	207	79.2	77.5	81.6	79.0
2017	209	79.1	78.0	80.8	78.7
2018	180	79.6	78.0	81.3	78.8
2019	122	79.5	76.4	81.3	78.2
2020	148	81.0	77.9	81.6	79.3
1998–2020	3038	78.2	76.8	80.6	77.8

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	47	82.0	81.7	83.8	83.2
1999	53	82.6	83.2	80.7	82.9
2000	52	80.7	75.7	82.2	80.6
2001	62	81.8	78.5	84.0	82.8
2002	85	80.5	78.1	85.9	80.0
2003	105	81.0	78.8	83.3	81.0
2004	111	82.8	80.8	84.5	83.4
2005	112	82.8	80.2	85.3	83.2
2006	119	81.4	81.9	81.2	81.6
2007	132	82.0	79.9	84.0	81.7
2008	138	80.7	78.0	82.7	80.5
2009	168	80.7	79.5	83.6	80.6
2010	150	81.5	79.8	85.3	81.0
2011	187	81.3	77.7	83.4	80.8
2012	175	80.5	75.9	84.8	79.3
2013	186	79.2	77.7	84.2	78.9
2014	203	81.2	78.9	84.3	80.5
2015	244	80.1	78.1	85.4	80.2
2016	195	80.8	79.4	83.3	79.9
2017	186	80.8	78.4	83.8	79.1
2018	181	80.0	79.7	80.6	79.8
2019	121	80.0	77.3	81.4	79.7
2020	142	81.1	76.6	82.6	77.6
1998–2020	3154	80.9	78.8	83.6	80.6

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	15	1.4	0.25	0.8	0.21	1.2	0.24	1.5	0.24
1999	19	1.7	0.25	1.1	0.25	1.7	0.26	2.3	0.25
2000	29	2.5	0.31	1.3	0.26	2.3	0.30	3.5	0.34
2001	16	1.4	0.16	0.8	0.13	1.2	0.16	1.7	0.18
2002	40	2.1	0.22	1.1	0.18	1.9	0.21	2.6	0.24
2003	54	2.9	0.30	1.4	0.24	2.3	0.28	3.5	0.33
2004	49	2.6	0.21	1.2	0.17	2.1	0.20	3.1	0.24
2005	77	4.1	0.30	1.9	0.24	3.1	0.29	4.6	0.31
2006	83	4.3	0.31	2.0	0.25	3.3	0.29	4.6	0.32
2007	79	3.6	0.23	1.6	0.18	2.7	0.22	3.8	0.24
2008	91	4.1	0.27	1.8	0.21	2.9	0.24	4.1	0.27
2009	98	4.4	0.27	1.9	0.21	3.1	0.24	4.5	0.28
2010	115	5.1	0.33	2.2	0.26	3.5	0.30	5.0	0.33
2011	122	5.5	0.33	2.4	0.28	3.7	0.31	5.3	0.34
2012	121	5.3	0.35	2.3	0.27	3.7	0.32	5.0	0.35
2013	131	5.7	0.41	2.3	0.33	3.7	0.38	5.3	0.41
2014	126	5.4	0.43	2.1	0.34	3.4	0.38	5.0	0.43
2015	128	5.4	0.45	2.0	0.35	3.3	0.40	4.9	0.45
2016	141	5.9	0.50	2.3	0.44	3.7	0.48	5.2	0.49
2017	119	4.9	0.52	1.8	0.46	3.0	0.49	4.3	0.51
2018	89	3.7	0.50	1.3	0.42	2.1	0.45	3.1	0.49
2019	33	1.4	0.37	0.6	0.38	0.9	0.37	1.2	0.38
2020	54	2.2	0.76	0.8	0.57	1.3	0.64	1.9	0.74
1998-2020	1829	3.9	0.35	1.7	0.27	2.7	0.32	3.9	0.35

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	25	2.1	0.23	0.8	0.18	1.3	0.20	1.7	0.22
1999	27	2.3	0.26	0.7	0.16	1.2	0.19	1.7	0.23
2000	27	2.2	0.20	0.9	0.15	1.3	0.16	1.7	0.17
2001	24	2.0	0.17	0.7	0.11	1.1	0.13	1.6	0.16
2002	52	2.7	0.23	0.9	0.15	1.5	0.19	2.1	0.21
2003	56	2.8	0.22	1.2	0.17	1.7	0.18	2.1	0.19
2004	60	3.0	0.21	1.1	0.14	1.6	0.16	2.3	0.19
2005	59	3.0	0.18	0.9	0.11	1.5	0.13	2.2	0.16
2006	67	3.3	0.21	1.1	0.13	1.7	0.15	2.4	0.18
2007	81	3.5	0.19	1.1	0.11	1.8	0.14	2.6	0.17
2008	81	3.5	0.17	1.3	0.11	1.9	0.13	2.6	0.15
2009	103	4.4	0.22	1.4	0.13	2.2	0.16	3.1	0.19
2010	90	3.8	0.20	1.2	0.13	2.0	0.15	2.9	0.18
2011	117	5.0	0.24	1.6	0.15	2.5	0.18	3.5	0.21
2012	114	4.8	0.28	1.6	0.18	2.6	0.22	3.4	0.25
2013	117	4.9	0.28	1.7	0.19	2.6	0.22	3.5	0.25
2014	118	4.9	0.31	1.4	0.19	2.3	0.23	3.4	0.28
2015	144	5.9	0.38	2.0	0.27	3.0	0.30	4.2	0.34
2016	114	4.6	0.33	1.4	0.20	2.3	0.24	3.1	0.28
2017	100	4.1	0.32	1.3	0.20	2.0	0.23	2.8	0.28
2018	93	3.7	0.39	1.2	0.23	1.8	0.27	2.5	0.32
2019	34	1.4	0.19	0.4	0.10	0.7	0.13	1.0	0.16
2020	59	2.4	0.47	0.8	0.24	1.2	0.30	1.6	0.35
1998-2020	1762	3.7	0.25	1.2	0.16	1.9	0.19	2.6	0.22

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	1	0.0	0.0	1	0.1	0.1			0.0
5-9	2	0.1	0.1	2	0.1	0.2			0.0
10-14	1	0.0	0.1			0.2	1	0.1	0.1
15-19	4	0.1	0.3	2	0.1	0.3	2	0.1	0.2
20-24	1	0.0	0.3	1	0.1	0.4			0.2
25-29	6	0.2	0.5	2	0.1	0.6	4	0.3	0.5
30-34	9	0.3	0.9	6	0.4	1.0	3	0.2	0.7
35-39	9	0.3	1.2	4	0.3	1.2	5	0.4	1.1
40-44	22	0.8	2.0	5	0.3	1.6	17	1.2	2.3
45-49	40	1.4	3.4	16	1.1	2.7	24	1.8	4.1
50-54	57	2.0	5.4	24	1.7	4.4	33	2.4	6.5
55-59	78	2.8	8.2	37	2.6	6.9	41	3.0	9.5
60-64	175	6.2	14.4	101	7.0	13.9	74	5.4	14.9
65-69	255	9.1	23.5	138	9.5	23.4	117	8.6	23.5
70-74	460	16.4	39.8	271	18.7	42.2	189	13.8	37.4
75-79	544	19.3	59.2	291	20.1	62.3	253	18.5	55.9
80-84	559	19.9	79.1	293	20.2	82.5	266	19.5	75.4
85+	589	20.9	100.0	253	17.5	100.0	336	24.6	100.0
All ages	2812	100.0		1447	100.0		1365	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index
0- 4	1		0.1	0.04		
5- 9	2		0.1	0.11		
10-14		1			0.1	0.03
15-19	2	2	0.1	0.06	0.1	0.04
20-24	1		0.0	0.03		
25-29	2	4	0.1	0.05	0.2	0.04
30-34	6	3	0.3	0.13	0.1	0.03
35-39	4	5	0.2	0.06	0.2	0.03
40-44	5	17	0.2	0.06	0.7	0.08
45-49	16	24	0.6	0.11	0.9	0.08
50-54	24	33	0.9	0.16	1.3	0.11
55-59	37	41	1.7	0.19	1.9	0.12
60-64	101	74	5.7	0.37	3.9	0.20
65-69	138	117	8.5	0.30	6.5	0.24
70-74	271	189	18.1	0.47	11.0	0.35
75-79	291	253	24.0	0.44	16.8	0.41
80-84	293	266	40.5	0.53	25.0	0.51
85+	253	336	54.2	0.56	32.2	0.43
All ages	1447	1365				
Mortality						
Raw			4.4	0.38	4.1	0.27
WS			1.8	0.30	1.3	0.17
ES			2.9	0.34	2.1	0.20
BRD-S			4.1	0.37	2.9	0.23
PYLL-70						
per 100,000			11.4		12.6	
ES			10.3		10.8	
AYLL-70			9.6		11.1	

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	3	0.2	2	66.7			1	33.3
C03–C06	Oral cavity	12	0.9	7	58.3	1	8.3	4	33.3
C09–C10	Oropharynx	8	0.6	4	50.0	2	25.0	2	25.0
C12–C13	Hypopharynx	3	0.2					3	100.0
C15	Oesophagus	16	1.2	4	25.0	5	31.3	7	43.8
C16	Stomach	32	2.5	17	53.1	1	3.1	14	43.8
C17	Small intestine	3	0.2					3	100.0
C18	Colon	79	6.1	39	49.4	15	19.0	25	31.6
C19–C20	Rectum	37	2.9	21	56.8	4	10.8	12	32.4
C21	Anus/canal	3	0.2	2	66.7			1	33.3
C22	Liver	23	1.8	6	26.1	4	17.4	13	56.5
C23–C24	Bile	5	0.4	3	60.0			2	40.0
C25	Pancreas	25	1.9	6	24.0	8	32.0	11	44.0
C32	Larynx	15	1.2	9	60.0	1	6.7	5	33.3
C33–C34	Lung	123	9.5	23	18.7	33	26.8	67	54.5
C38,C45	Mesothelioma	7	0.5					7	100.0
C43	Malign. melanoma	36	2.8	27	75.0	1	2.8	8	22.2
C44	Skin others	120	9.3	45	37.5	8	6.7	67	55.8
C46,C49	Soft tissue	7	0.5	1	14.3	2	28.6	4	57.1
C61	Prostate	201	15.5	154	76.6	13	6.5	34	16.9
C62	Testis	5	0.4	5	100.0				
C64	Kidney	40	3.1	23	57.5	6	15.0	11	27.5
C65	Renal pelvis	7	0.5	5	71.4			2	28.6
C66	Ureter	6	0.5	2	33.3	1	16.7	3	50.0
C67	Bladder	46	3.5	28	60.9			18	39.1
C69	Eye melanoma	5	0.4	4	80.0			1	20.0
C70–C72	CNS cancer	20	1.5	6	30.0	2	10.0	12	60.0
C73	Thyroid	7	0.5	5	71.4			2	28.6
C74–C80	Cancer others	3	0.2	1	33.3	1	33.3	1	33.3
C76–C79	CUP	17	1.3	1	5.9	4	23.5	12	70.6
C81	Hodgkin lymphoma	5	0.4	1	20.0	1	20.0	3	60.0
C82–C85	NHL	100	7.7	36	36.0	34	34.0	30	30.0
C90	Mult. myeloma	59	4.5	10	16.9	5	8.5	44	74.6
C91–C96	Leukaemia	206	15.9			64	31.1	142	68.9
Others, specified		13	1.0	9	69.2			4	30.8
All further malignancies		1297	100.0	506	39.0	216	16.7	575	44.3

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 ←%
C03–C06	Oral cavity	3	0.3	2	66.7			1	33.3
C15	Oesophagus	5	0.5	1	20.0	2	40.0	2	40.0
C16	Stomach	24	2.2	6	25.0	3	12.5	15	62.5
C17	Small intestine	5	0.5	3	60.0	1	20.0	1	20.0
C18	Colon	60	5.5	30	50.0	9	15.0	21	35.0
C19–C20	Rectum	16	1.5	6	37.5	2	12.5	8	50.0
C21	Anus/canal	10	0.9	7	70.0			3	30.0
C22	Liver	7	0.6			1	14.3	6	85.7
C23–C24	Bile	10	0.9	5	50.0	2	20.0	3	30.0
C25	Pancreas	48	4.4	10	20.8	10	20.8	28	58.3
C26	GI cancer	3	0.3			1	33.3	2	66.7
C30–C31	Sinuses	3	0.3	3	100.0				
C32	Larynx	2	0.2	1	50.0			1	50.0
C33–C34	Lung	63	5.8	19	30.2	13	20.6	31	49.2
C38,C45	Mesothelioma	2	0.2			1	50.0	1	50.0
C40–C41	Bone	2	0.2	2	100.0				
C43	Malign. melanoma	28	2.6	19	67.9	2	7.1	7	25.0
C44	Skin others	59	5.4	25	42.4	3	5.1	31	52.5
C46,C49	Soft tissue	9	0.8	1	11.1			8	88.9
C48	Peritoneal	8	0.7	2	25.0	1	12.5	5	62.5
C50	Breast	206	19.0	138	67.0	16	7.8	52	25.2
C51	Vulva	10	0.9	5	50.0	1	10.0	4	40.0
C53	Cervix uteri	18	1.7	10	55.6	2	11.1	6	33.3
C54	Corpus uteri	48	4.4	27	56.3	11	22.9	10	20.8
C55,C57	Fem. genitals un	3	0.3	1	33.3			2	66.7
C56	Ovary	44	4.0	13	29.5	7	15.9	24	54.5
C64	Kidney	27	2.5	18	66.7	6	22.2	3	11.1
C66	Ureter	3	0.3	2	66.7			1	33.3
C67	Bladder	12	1.1	4	33.3	1	8.3	7	58.3
C69	Eye melanoma	2	0.2	2	100.0				
C70–C72	CNS cancer	11	1.0			1	9.1	10	90.9
C73	Thyroid	17	1.6	13	76.5			4	23.5
C76–C79	CUP	15	1.4	2	13.3	5	33.3	8	53.3
C82–C85	NHL	65	6.0	26	40.0	19	29.2	20	30.8
C90	Mult. myeloma	54	5.0	4	7.4	4	7.4	46	85.2
C91–C96	Leukaemia	177	16.3	4	2.3	49	27.7	124	70.1
Others, specified		8	0.7	4	50.0	3	37.5	1	12.5
All further malignancies		1087	100.0	415	38.2	176	16.2	496	45.6

Further malignancies with number of cases 1 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
0- 4	1		0.1	0.04		
5- 9	2		0.1	0.11		
10-14		1			0.1	0.03
15-19	2	1	0.1	0.06	0.1	0.02
20-24						
25-29	2	3	0.1	0.06	0.1	0.03
30-34	6	3	0.3	0.14	0.1	0.03
35-39	4	3	0.2	0.06	0.1	0.02
40-44	4	12	0.2	0.05	0.5	0.06
45-49	14	15	0.5	0.11	0.6	0.06
50-54	18	21	0.7	0.15	0.8	0.08
55-59	26	24	1.2	0.17	1.1	0.08
60-64	70	52	4.0	0.35	2.7	0.19
65-69	93	72	5.7	0.29	4.0	0.21
70-74	180	120	12.0	0.49	7.0	0.34
75-79	183	173	15.1	0.47	11.5	0.40
80-84	158	185	21.8	0.52	17.4	0.51
85+	144	240	30.8	0.56	23.0	0.42
All ages	907	925				
Mortality						
Raw			2.8	0.35	2.8	0.24
WS			1.2	0.26	0.9	0.14
ES			1.8	0.31	1.4	0.17
BRD-S			2.6	0.35	1.9	0.20
PYLL-70						
per 100,000			8.9		8.3	
ES			8.2		7.2	
AYLL-70			10.6		11.4	

* 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.	MI-index	Females Age-spec. mortal.	MI-index
0- 4	1		0.1	0.04		
5- 9	2		0.1	0.11		
10-14		1			0.1	0.03
15-19	2		0.1	0.06		
20-24						
25-29	1		0.0	0.03		
30-34	6	1	0.3	0.15	0.0	0.01
35-39	2	1	0.1	0.03	0.0	0.01
40-44	2	4	0.1	0.03	0.2	0.02
45-49	7	4	0.3	0.06	0.2	0.02
50-54	8	9	0.3	0.08	0.4	0.04
55-59	19	12	0.9	0.15	0.6	0.05
60-64	50	28	2.8	0.33	1.5	0.12
65-69	52	42	3.2	0.24	2.3	0.15
70-74	109	58	7.3	0.41	3.4	0.22
75-79	97	111	8.0	0.32	7.4	0.32
80-84	112	131	15.5	0.46	12.3	0.41
85+	100	195	21.4	0.42	18.7	0.35
All ages	570	597				
Mortality						
Raw			1.8	0.27	1.8	0.18
WS			0.7	0.20	0.5	0.09
ES			1.2	0.24	0.8	0.11
BRD-S			1.6	0.27	1.2	0.14
PYLL-70						
per 100,000			6.0		3.4	
ES			5.7		2.9	
AYLL-70			11.3		9.3	

* See corresponding tables with multiple malignancies.

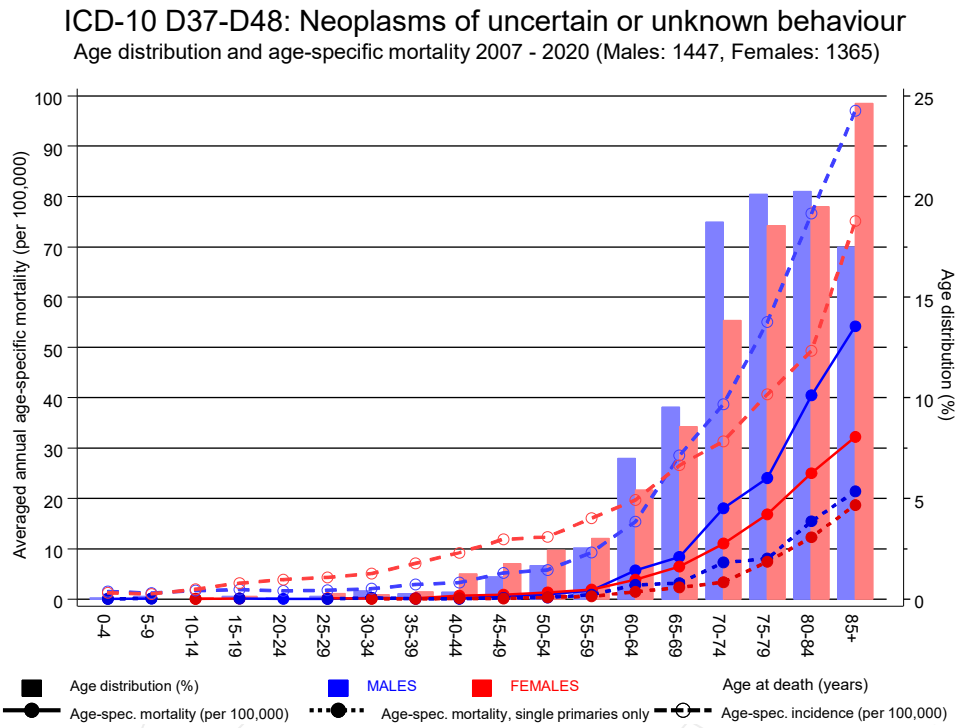

Figure 17. Distribution of age at death (bars; males: mean=71.6 yrs, median=73.3 yrs; females: mean=71.9 yrs, median=74.7 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

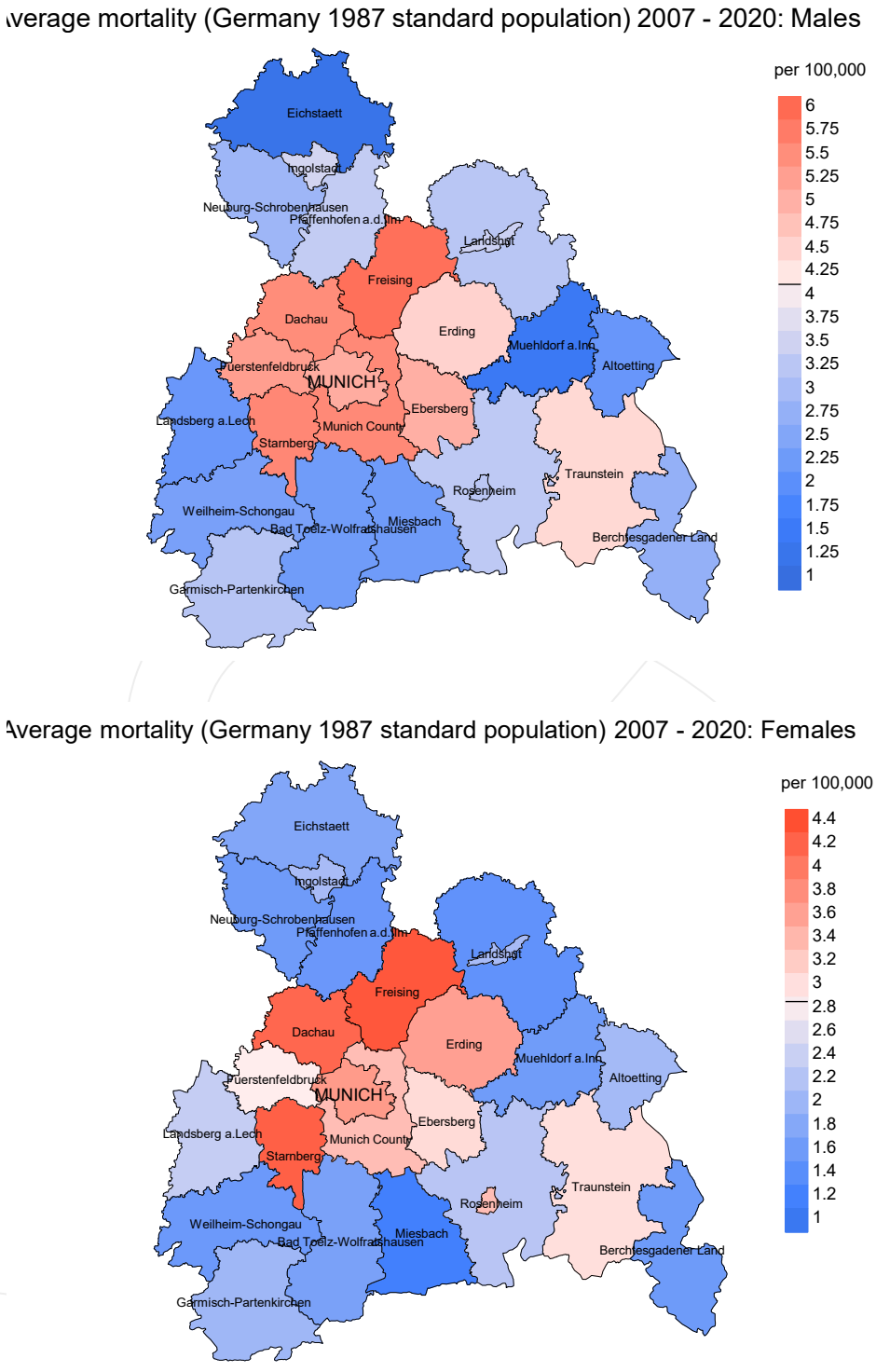

Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 4.1/100,000 WS N=1,447, females 2.9/100,000 WS N=1,365).

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 37 women died from NPL unknown behaviour. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 3.0/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.9 and 4.7/100,000.

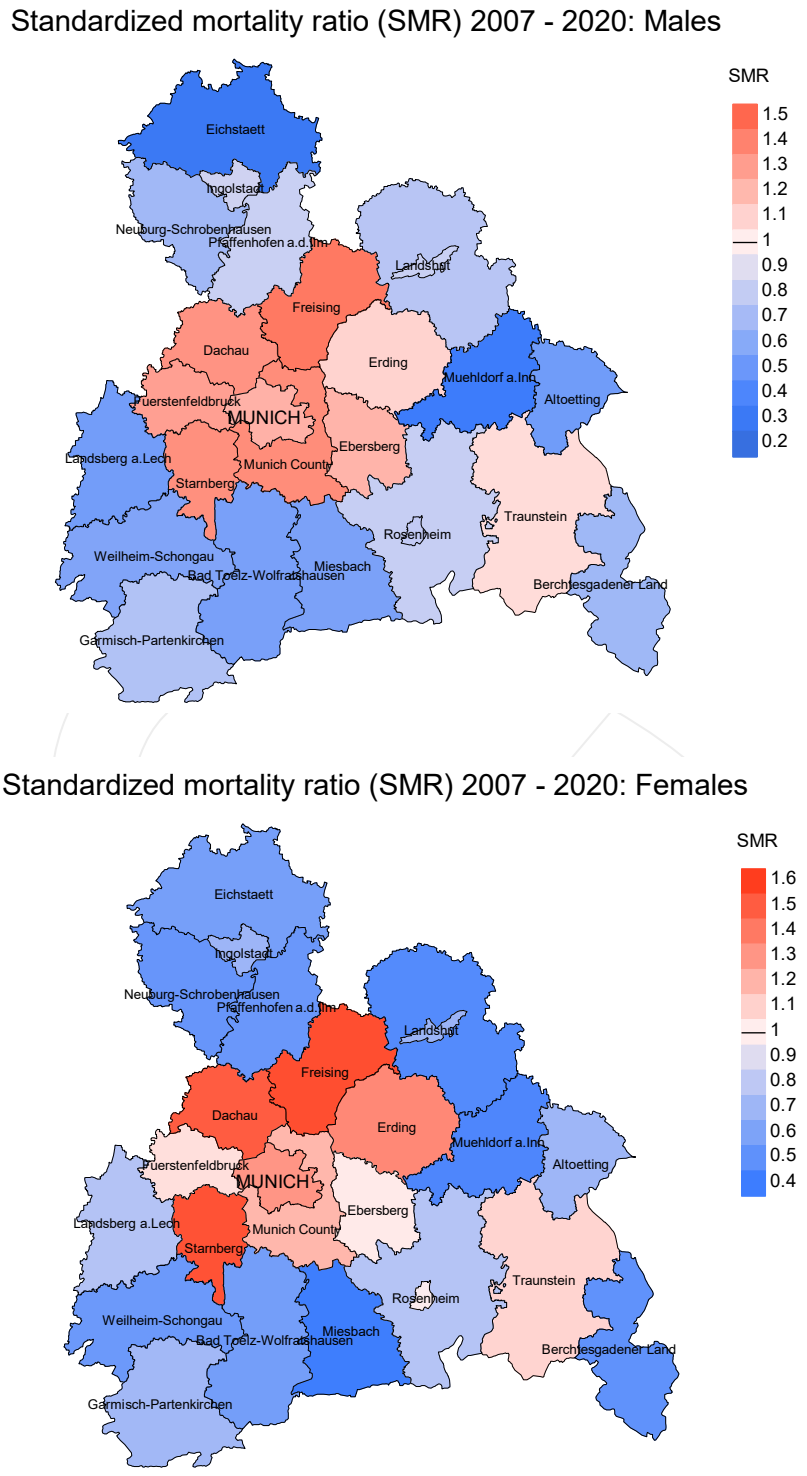

Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,447, females N=1,365).

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 37 women died from NPL unknown behaviour. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.02. Though, the value of this parameter may vary with an underlying probability of 99% between 0.64 and 1.53, 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 D37-D48: NPL unknown behaviour - Incidence and Mortality [Internet]. 2021 [updated 2021 Dec 21; cited 2022 Feb 1]. Available from: https://www.tumorregister-muenchen.de/en/facts/base/bD3748E-ICD-10-D37-D48-NPL-unknown-behaviour-incidence-and-mortality.pdf

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