Munich Cancer Registry

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ICD-10 C47: Neoplasm of peripheral nerves

Incidence and Mortality

Year of diagnosis	1998-2020
Patients	205
Diseases	206
Creation date	12/21/2021
Database export	12/20/2021
Population	4.95 m

Munich Cancer Registry
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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC47__E-ICD-10-C47-Neoplasm-of-peripheral-nerves-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
C47.-	Malignant neoplasm of peripheral nerves and autonomic nervous system
C47.0	Peripheral nerves of head, face and neck
C47.1	Peripheral nerves of upper limb, including shoulder
C47.2	Peripheral nerves of lower limb, including hip
C47.3	Peripheral nerves of thorax
C47.4	Peripheral nerves of abdomen
C47.5	Peripheral nerves of pelvis
C47.6	Peripheral nerves of trunk, unspecified
C47.8	Overlapping lesion of peripheral nerves and autonomic nervous system
C47.9	Peripheral nerves and autonomic nervous system, unspecified

INCIDENCE

Table 1

Cases with invasive cancer 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	2	0.0	11.4	50.0	100.0
1999	5	14.3	11.5	80.0	100.0
2000	1	12.5	11.7	100.0	100.0
2001	3	9.1	11.8	100.0	100.0
2002	11	9.1	12.0	72.7	90.9 #
2003	7	13.8	11.6	71.4	100.0
2004	9	15.8	10.9	22.2	100.0
2005	9	14.9	10.9	66.7	88.9
2006	11	13.8	10.9	36.4	90.9
2007	14	13.9	11.0	42.9	92.9 #
2008	17	13.5	9.9	47.1	100.0
2009	6	12.6	9.6	50.0	83.3
2010	21	13.8	9.3	47.6	85.7
2011	11	15.0	8.0	36.4	100.0
2012	14	16.3	9.2	50.0	100.0
2013	13	16.9	8.1	46.2	100.0
2014	7	16.8	7.8	57.1	85.7
2015	10	18.1	4.5	60.0	100.0
2016	5	18.8	2.9	60.0	100.0
2017	9	19.5	0.0	33.3	88.9
2018	6	19.9	0.0		100.0
2019	8	20.1	0.0	50.0	100.0
2020	7	20.4	0.0	42.9	100.0 ##
1998-2020	206	20.4	11.4	49.0	95.1

206 cases diagnosed 1998-2020 are related to a total of 205 patients. Currently, in 57 (27.8 %) of these 205 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 38 / 15 / 4 (18.5 % / 7.3 % / 2.0 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2018, a subgroup of 6 cases has been diagnosed, of which 19.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer 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	0						
1999	1	20.0	0.0	10.1	100.0	100.0	
2000	1	100.0	0.0	10.2	100.0	100.0	
2001	0						
2002	6	54.5	0.0	10.3	66.7	100.0	#
2003	3	42.9	9.1	10.9	100.0	100.0	
2004	4	44.4	13.3	10.2	25.0	100.0	
2005	3	33.3	11.1	10.6	33.3	66.7	
2006	8	72.7	11.5	11.0	37.5	87.5	
2007	9	64.3	11.4	10.8	22.2	88.9	#
2008	9	52.9	13.6	8.1	55.6	100.0	
2009	4	66.7	12.5	7.7	75.0	100.0	
2010	13	61.9	13.1	6.6	38.5	84.6	
2011	6	54.5	11.9	6.3	33.3	100.0	
2012	9	64.3	13.2	7.1	44.4	100.0	
2013	7	53.8	13.3	6.1	57.1	100.0	
2014	4	57.1	13.8	3.7	25.0	75.0	
2015	4	40.0	16.5	0.0	75.0	100.0	
2016	1	20.0	17.4	0.0		100.0	
2017	5	55.6	19.6	0.0	20.0	80.0	
2018	3	50.0	20.0	0.0		100.0	
2019	5	62.5	21.0	0.0	60.0	100.0	
2020	5	71.4	20.9	0.0	40.0	100.0	##
1998-2020	110	53.4	20.9	10.1	44.5	93.6	

110 cases diagnosed 1998-2020 are related to a total of 110 patients. Currently, in 29 (26.4 %) of these 110 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 21 / 6 / 2 (19.1 % / 5.5 % / 1.8 %) 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 3 cases has been diagnosed, of which 20.0 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1b

Cases with invasive cancer 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	2	100.0	0.0	12.9	50.0	100.0
1999	4	80.0	16.7	13.2	75.0	100.0
2000	0					
2001	3	100.0	11.1	13.6	100.0	100.0
2002	5	45.5	14.3	14.1	80.0	80.0 #
2003	4	57.1	16.7	12.5	50.0	100.0
2004	5	55.6	17.4	11.8	20.0	100.0
2005	6	66.7	17.2	11.3	83.3	100.0
2006	3	27.3	15.6	10.8	33.3	100.0
2007	5	35.7	16.2	11.3	80.0	100.0 #
2008	8	47.1	13.3	12.3	37.5	100.0
2009	2	33.3	12.8	12.2		50.0
2010	8	38.1	14.5	12.8	62.5	87.5
2011	5	45.5	18.3	10.3	40.0	100.0
2012	5	35.7	20.0	11.8	60.0	100.0
2013	6	46.2	21.1	10.3	33.3	100.0
2014	3	42.9	20.3	12.5	100.0	100.0
2015	6	60.0	20.0	9.5	50.0	100.0
2016	4	80.0	20.2	6.3	75.0	100.0
2017	4	44.4	19.3	0.0	50.0	100.0
2018	3	50.0	19.8	0.0		100.0
2019	3	37.5	19.1	0.0	33.3	100.0
2020	2	28.6	19.8	0.0	50.0	100.0 ##
1998-2020	96	46.6	19.8	12.9	54.2	96.9

96 cases diagnosed 1998-2020 are related to a total of 95 patients. Currently, in 28 (29.5 %) of these 95 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 17 / 9 / 2 (17.9 % / 9.5 % / 2.1 %) 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 3 cases has been diagnosed, of which 19.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 0.0 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

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

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998		2		0.2		0.2		0.2		0.2
1999	1	4	0.1	0.3	0.1	0.2	0.1	0.2	0.1	0.2
2000	1		0.1		0.1		0.1		0.1	
2001		3		0.2		0.2		0.3		0.3
2002	6	5	0.3	0.3	0.4	0.2	0.4	0.2	0.4	0.2
2003	3	4	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.2
2004	4	5	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.2
2005	3	6	0.2	0.3	0.2	0.4	0.2	0.3	0.2	0.3
2006	8	3	0.4	0.1	0.6	0.1	0.5	0.1	0.4	0.2
2007	9	5	0.4	0.2	0.6	0.2	0.5	0.2	0.4	0.2
2008	9	8	0.4	0.3	0.4	0.3	0.4	0.3	0.4	0.3
2009	4	2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
2010	13	8	0.6	0.3	0.7	0.3	0.6	0.3	0.6	0.3
2011	6	5	0.3	0.2	0.4	0.2	0.3	0.2	0.3	0.2
2012	9	5	0.4	0.2	0.5	0.3	0.5	0.2	0.4	0.2
2013	7	6	0.3	0.3	0.4	0.2	0.3	0.2	0.3	0.3
2014	4	3	0.2	0.1	0.3	0.1	0.2	0.1	0.2	0.1
2015	4	6	0.2	0.2	0.1	0.2	0.1	0.2	0.2	0.2
2016	1	4	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.1
2017	5	4	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2
2018	3	3	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
2019	5	3	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
2020	5	2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.1
1998-2020	110	96	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2

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

Table 3

Age distribution parameters by year of diagnosis (ALL PATIENTS)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	2	28.3	8.1	22.6	34.0	22.6	22.6	28.3	34.0	34.0
1999	5	62.9	17.1	40.4	88.4	40.4	59.9	60.6	65.0	88.4
2000	1	64.3		64.3	64.3	64.3	64.3	64.3	64.3	64.3
2001	3	37.8	15.5	21.1	51.6	21.1	21.1	40.9	51.6	51.6
2002	11	45.3	28.2	1.7	81.6	10.8	16.1	51.1	66.8	75.8
2003	7	31.0	25.7	2.6	70.9	2.6	7.6	31.0	56.2	70.9
2004	9	29.3	19.7	0.0	48.5	0.0	13.4	36.0	45.0	48.5
2005	9	39.6	31.0	1.1	76.3	1.1	8.2	47.7	70.8	76.3
2006	11	35.2	27.7	0.3	75.8	0.4	6.7	38.6	56.2	75.3
2007	14	35.4	28.3	0.1	87.7	0.6	0.8	41.1	53.3	69.6
2008	17	50.9	27.8	0.0	84.0	4.7	33.2	61.7	71.6	79.1
2009	6	40.1	17.9	14.7	67.4	14.7	31.0	38.4	50.4	67.4
2010	21	41.5	32.4	0.1	89.1	0.4	6.6	42.4	75.6	83.6
2011	11	36.0	28.9	0.0	81.9	0.3	14.3	27.7	68.6	72.6
2012	14	32.2	27.6	0.4	78.5	0.5	11.5	25.2	63.8	72.2
2013	13	44.8	30.5	0.3	81.9	0.6	16.7	54.5	68.2	81.2
2014	7	39.3	36.1	0.2	76.2	0.2	2.3	51.9	74.5	76.2
2015	10	52.8	26.0	4.7	91.7	19.9	39.1	47.7	74.8	84.9
2016	5	64.0	21.5	30.9	86.1	30.9	55.5	73.6	74.1	86.1
2017	9	51.7	24.4	4.1	80.5	4.1	45.9	48.4	68.3	80.5
2018	6	54.0	19.8	23.9	79.0	23.9	40.1	57.7	65.6	79.0
2019	8	48.7	16.6	29.9	69.5	29.9	34.2	44.5	66.4	69.5
2020	7	56.0	23.9	23.0	84.3	23.0	33.9	61.2	82.8	84.3
1998-2020	206	43.0	27.2	0.0	91.7	1.0	22.4	44.0	67.4	78.2

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1999	1	65.0		65.0	65.0	65.0	65.0	65.0	65.0	65.0
2000	1	64.3		64.3	64.3	64.3	64.3	64.3	64.3	64.3
2002	6	40.0	30.8	1.7	81.6	1.7	16.1	37.8	64.8	81.6
2003	3	36.5	32.0	7.6	70.9	7.6	7.6	31.0	70.9	70.9
2004	4	30.1	21.1	0.0	45.9	0.0	15.5	37.2	44.7	45.9
2005	3	40.3	35.1	1.9	70.8	1.9	1.9	48.2	70.8	70.8
2006	8	30.6	28.0	0.3	75.8	0.3	3.5	29.8	51.2	75.8
2007	9	28.0	27.4	0.1	69.6	0.1	0.6	39.2	44.6	69.6
2008	9	56.2	31.8	0.0	84.0	0.0	55.6	70.4	78.2	84.0
2009	4	40.9	22.9	14.7	67.4	14.7	22.9	40.7	58.9	67.4
2010	13	34.4	27.7	0.1	83.6	0.3	6.6	32.6	49.9	76.1
2011	6	26.1	27.5	0.0	68.6	0.0	0.3	19.8	48.3	68.6
2012	9	29.7	27.1	0.4	78.5	0.4	12.5	22.4	36.6	78.5
2013	7	39.4	37.8	0.3	81.9	0.3	0.6	38.2	81.2	81.9
2014	4	18.2	33.2	0.2	67.9	0.2	1.3	2.4	35.2	67.9
2015	4	56.8	20.1	39.1	78.2	39.1	39.6	54.9	73.9	78.2
2016	1	30.9		30.9	30.9	30.9	30.9	30.9	30.9	30.9
2017	5	58.2	15.4	45.9	80.5	45.9	48.0	48.4	68.3	80.5
2018	3	47.1	21.3	23.9	65.6	23.9	23.9	52.0	65.6	65.6
2019	5	49.2	18.8	29.9	69.5	29.9	37.0	40.4	69.3	69.5
2020	5	60.8	23.1	33.9	84.3	33.9	41.7	61.2	82.8	84.3
1998–2020	110	39.5	27.9	0.0	84.3	0.4	12.5	41.0	66.1	78.2

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	2	28.3	8.1	22.6	34.0	22.6	22.6	28.3	34.0	34.0
1999	4	62.3	19.7	40.4	88.4	40.4	50.1	60.2	74.5	88.4
2001	3	37.8	15.5	21.1	51.6	21.1	21.1	40.9	51.6	51.6
2002	5	51.6	26.6	10.8	75.8	10.8	39.0	65.6	66.8	75.8
2003	4	26.9	24.2	2.6	56.2	2.6	7.5	24.5	46.4	56.2
2004	5	28.6	21.0	0.2	48.5	0.2	13.4	36.0	45.0	48.5
2005	6	39.3	32.2	1.1	76.3	1.1	8.2	38.0	74.1	76.3
2006	3	47.4	28.1	19.1	75.3	19.1	19.1	47.8	75.3	75.3
2007	5	48.7	27.6	17.4	87.7	17.4	27.9	52.3	58.4	87.7
2008	8	44.9	23.1	7.9	75.0	7.9	31.3	40.5	66.4	75.0
2009	2	38.4	4.3	35.3	41.4	35.3	35.3	38.4	41.4	41.4
2010	8	53.0	38.0	0.9	89.1	0.9	12.9	70.4	83.8	89.1
2011	5	47.9	28.7	15.1	81.9	15.1	27.7	42.2	72.6	81.9
2012	5	36.7	31.2	1.3	72.2	1.3	11.5	34.8	63.8	72.2
2013	6	51.0	20.9	16.7	76.1	16.7	37.8	56.9	61.6	76.1
2014	3	67.5	13.6	51.9	76.2	51.9	51.9	74.5	76.2	76.2
2015	6	50.2	30.9	4.7	91.7	4.7	35.0	47.5	74.8	91.7
2016	4	72.3	12.6	55.5	86.1	55.5	64.6	73.9	80.1	86.1
2017	4	43.4	33.2	4.1	77.6	4.1	16.5	46.1	70.4	77.6
2018	3	60.9	19.6	40.1	79.0	40.1	40.1	63.5	79.0	79.0
2019	3	47.8	16.0	31.5	63.4	31.5	31.5	48.5	63.4	63.4
2020	2	44.2	30.0	23.0	65.4	23.0	23.0	44.2	65.4	65.4
1998–2020	96	47.1	25.8	0.2	91.7	8.2	28.1	48.1	71.7	77.6

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	23	15.5	15.5	18	21.4	21.4	5	7.8	7.8
5-9	3	2.0	17.6	2	2.4	23.8	1	1.6	9.4
10-14	4	2.7	20.3	3	3.6	27.4	1	1.6	10.9
15-19	3	2.0	22.3			27.4	3	4.7	15.6
20-24	5	3.4	25.7	3	3.6	31.0	2	3.1	18.8
25-29	8	5.4	31.1	4	4.8	35.7	4	6.3	25.0
30-34	9	6.1	37.2	5	6.0	41.7	4	6.3	31.3
35-39	9	6.1	43.2	5	6.0	47.6	4	6.3	37.5
40-44	9	6.1	49.3	6	7.1	54.8	3	4.7	42.2
45-49	8	5.4	54.7	6	7.1	61.9	2	3.1	45.3
50-54	7	4.7	59.5	4	4.8	66.7	3	4.7	50.0
55-59	5	3.4	62.8	1	1.2	67.9	4	6.3	56.3
60-64	8	5.4	68.2	2	2.4	70.2	6	9.4	65.6
65-69	13	8.8	77.0	11	13.1	83.3	2	3.1	68.8
70-74	10	6.8	83.8	2	2.4	85.7	8	12.5	81.3
75-79	10	6.8	90.5	5	6.0	91.7	5	7.8	89.1
80-84	9	6.1	96.6	7	8.3	100.0	2	3.1	92.2
85+	5	3.4	100.0			100.0	5	7.8	100.0
All ages	148	100.0		84	100.0		64	100.0	

Table 5

Age-specific incidence 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 Prop.all cancers n=153686 %	Females Prop.all cancers n=155051 %
0- 4	18	5	1.1	0.3	8.2	2.9
5- 9	2	1	0.1	0.1	1.7	1.0
10-14	3	1	0.2	0.1	2.2	0.8
15-19		3		0.2		1.1
20-24	3	2	0.1	0.1	0.5	0.4
25-29	4	4	0.2	0.2	0.4	0.3
30-34	5	4	0.2	0.2	0.4	0.2
35-39	5	4	0.2	0.2	0.3	0.1
40-44	6	3	0.2	0.1	0.2	0.0
45-49	6	2	0.2	0.1	0.1	0.0
50-54	4	3	0.2	0.1	0.0	0.0
55-59	1	4	0.0	0.2	0.0	0.0
60-64	2	6	0.1	0.3	0.0	0.0
65-69	11	2	0.7	0.1	0.0	0.0
70-74	2	8	0.1	0.5	0.0	0.0
75-79	5	5	0.4	0.3	0.0	0.0
80-84	7	2	1.0	0.2	0.0	0.0
85+		5		0.5		0.0
All ages	84	64			0.1	0.0
Incidence						
Raw			0.3	0.2		
WS			0.3	0.2		
ES			0.3	0.2		
BRD-S			0.3	0.2		

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).

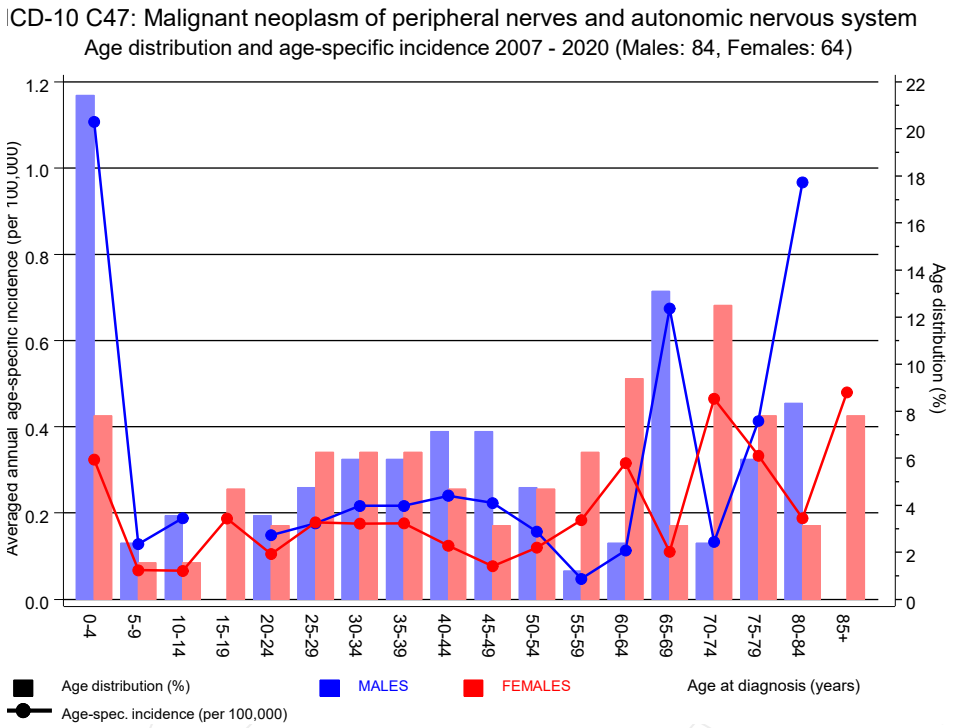


Figure 6. Age distribution (males: mean=40.3 yrs, median=41.0 yrs; females: mean=50.2 yrs, median=54.9 yrs) and age-specific incidence.

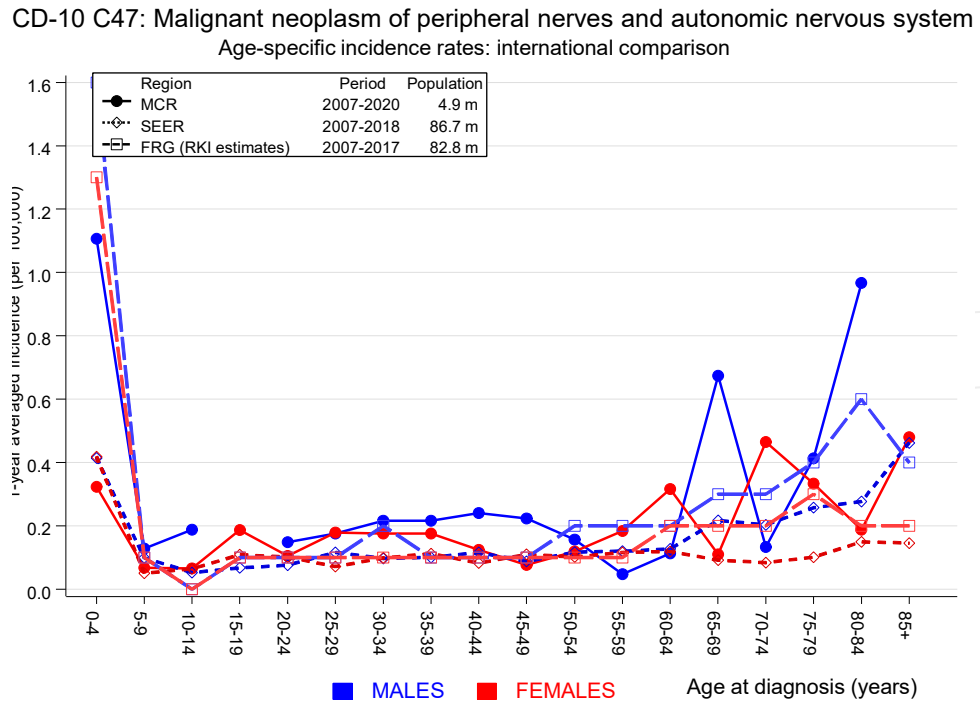


Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, RKI estimates) and SEER (Surveillance, Epidemiology, and End Results, USA).

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	1	0.0	310.2	7.9	1728	#	25.2	
C19–C20	Rectum	2	0.1	13.6	1.6	49.0	#	46.9	
C33–C34	Lung	2	0.3	6.3	0.8	22.8		42.6	
C43	Malign. melanoma	2	0.1	14.2	1.7	51.3	#	47.1	
C90	Mult. myeloma	1	0.0	26.7	0.7	148.6		24.4	
Not observed		0	2.2	0.0	0.0	1.7		-55.7	
All further malignancies		8	2.8	2.8	1.2	5.5	#	130.5	

Patients	109
Median age at next malignancy (years)	72.2
Person-years	395
Mean observation time (years)	3.6
Median observation time (years)	1.8

The occurrence of further specified malignancy is statistically significant.

Table 7b

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

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C15	Oesophagus	1	0.0	88.8	2.2	494.5	#	31.0	
C17	Small intestine	1	0.0	104.4	2.6	581.8	#	31.0	
C22	Liver	1	0.0	49.2	1.2	274.3	#	30.7	
C25	Pancreas	1	0.1	12.9	0.3	72.0		28.9	
C33–C34	Lung	1	0.1	7.7	0.2	42.7		27.2	
C40–C41	Bone	1	0.0	362.0	9.2	2017	#	31.2	
C43	Malign. melanoma	1	0.1	12.0	0.3	66.8		28.7	
C46,C49	Soft tissue	1	0.0	86.0	2.2	478.9	#	30.9	100.0
C50	Breast	3	0.6	5.0	1.0	14.5	#	75.0	33.3
C70–C72	CNS cancer	1	0.0	37.4	0.9	208.6		30.5	
C82–C85	NHL	1	0.1	14.3	0.4	79.9		29.1	
Not observed		0	0.8	0.0	0.0	4.4		−26.3	
All further malignancies		13	1.9	6.9	3.7	11.8	#	348.0	15.4

Patients	94
Median age at next malignancy (years)	75.4
Person-years	319
Mean observation time (years)	3.4
Median observation time (years)	1.7

The occurrence of further specified malignancy is statistically significant.

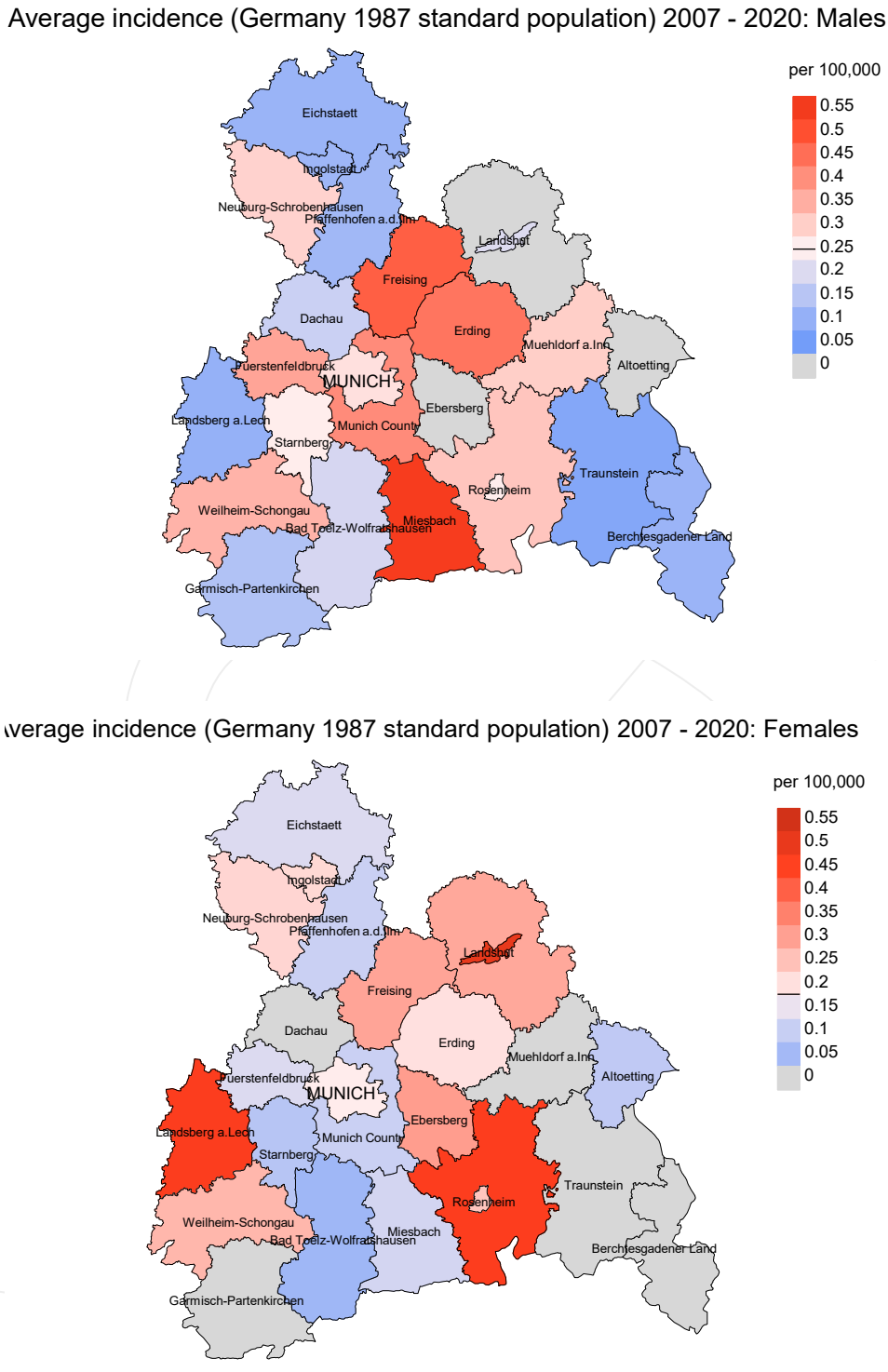
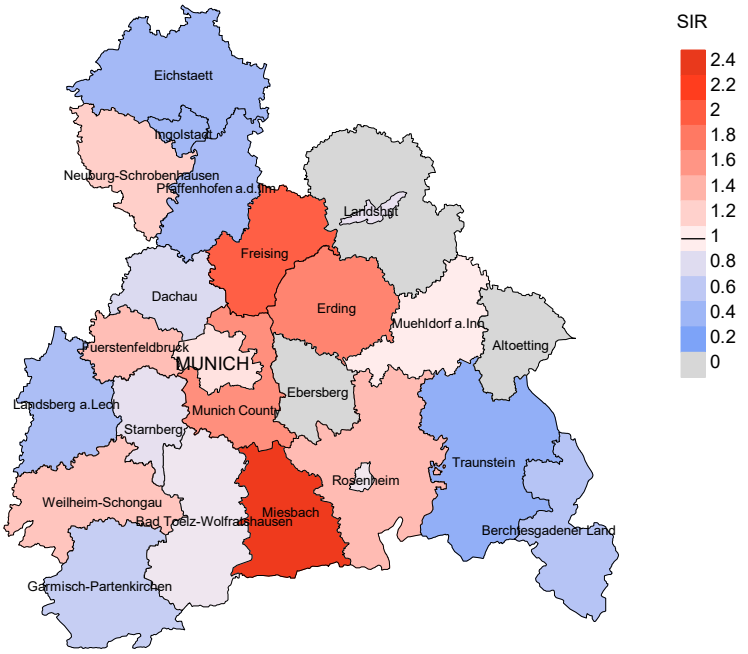


Figure 8a. Map of cancer incidence (german standard population) by county averaged for period 2007 to 2020. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.3/100,000 WS N=84, females 0.2/100,000 WS N=64).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,727 female residents (averaged) in the period from 2007 to 2020 a total of 2 women were identified with newly diagnosed neoplasm of peripheral nerves. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.3/100,000.

Standardized incidence ratio (SIR) 2007 - 2020: Males



Standardized incidence ratio (SIR) 2007 - 2020: Females

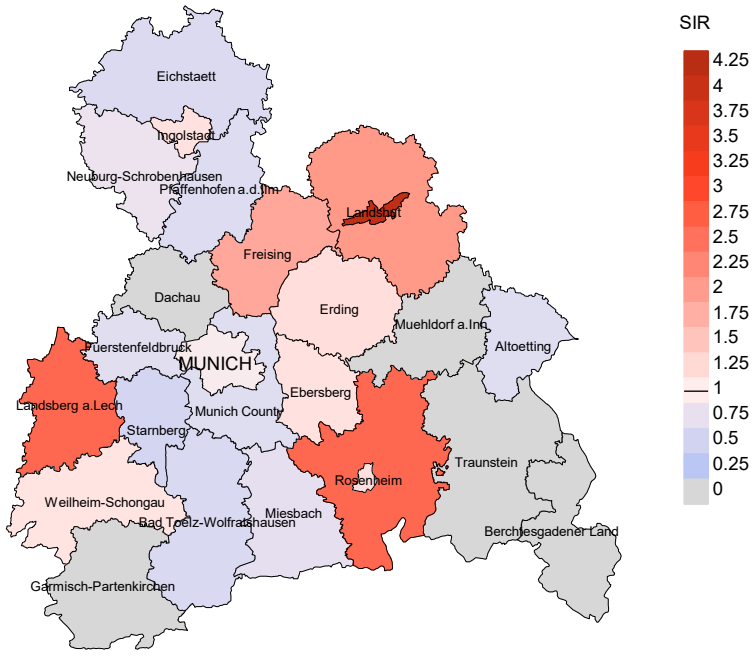


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2020. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=84, females N=64).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2020 a total of 2 women were identified with newly diagnosed neoplasm of peripheral nerves. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.13. Though, the value of this parameter may vary with an underlying probability of 99% between 0.06 and 5.26, 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	2	100.0	1	50.0	100.0
1999	5	100.0	4	80.0	75.0
2000	1	100.0	1	100.0	100.0
2001	3	100.0	3	100.0	100.0
2002	11	90.9	8	72.7	100.0
2003	7	100.0	5	71.4	100.0
2004	9	100.0	2	22.2	100.0
2005	9	88.9	6	66.7	66.7
2006	11	90.9	4	36.4	100.0
2007	14	92.9	6	42.9	100.0
2008	17	100.0	8	47.1	100.0
2009	6	83.3	3	50.0	100.0
2010	21	85.7	10	47.6	100.0
2011	11	100.0	4	36.4	100.0
2012	14	100.0	7	50.0	71.4
2013	13	100.0	6	46.2	100.0
2014	7	85.7	4	57.1	100.0
2015	10	100.0	6	60.0	100.0
2016	5	100.0	3	60.0	100.0
2017	9	88.9	3	33.3	100.0
2018	6	100.0			
2019	8	100.0	4	50.0	100.0
2020	7	100.0	3	42.9	100.0
1998–2020	206	95.1	101	49.0	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	2	2		
1999	5	2		
2000	1	1		
2001	3	4	2	66.7
2002	11	2	1	9.1
2003	7	3	1	14.3
2004	9	5	1	11.1
2005	9	5	2	22.2
2006	11	2		
2007	14	2		
2008	17	4	2	11.8
2009	6	8		
2010	21	4	2	9.5
2011	11	9		
2012	14	7	1	7.1
2013	13	6	1	7.7
2014	7	10	1	14.3
2015	10	7	2	20.0
2016	5	5		
2017	9	4	1	11.1
2018	6	4		
2019	8	3	1	12.5
2020	7	9	3	42.9
1998–2020	206	108	21	10.2

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	2	50.0	50.0	50.0
1999	2	100.0		100.0
2000	1	100.0		100.0
2001	4	75.0	25.0	100.0
2002	2	100.0		100.0
2003	3	100.0		100.0
2004	5	100.0		100.0
2005	5	100.0		100.0
2006	2	100.0		100.0
2007	2	100.0		100.0
2008	4	100.0		100.0
2009	8	100.0		87.5
2010	4	100.0		100.0
2011	9	77.8	22.2	66.7
2012	7	85.7	14.3	100.0
2013	6	83.3	16.7	100.0
2014	10	80.0	20.0	88.9
2015	7	85.7	14.3	71.4
2016	5	60.0	40.0	80.0
2017	4	100.0		100.0
2018	4	50.0	50.0	75.0
2019	3	33.3	66.7	100.0
2020	9	77.8	22.2	66.7
1998-2020	108	84.3	15.7	87.4

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	1	38.1	38.1		38.1
1999					
2000	1	66.2	66.2		66.2
2001					
2002					
2003					
2004	5	43.6	43.6		43.6
2005	1	32.8	32.8		32.8
2006					
2007	1	46.6	46.6		46.6
2008	3	71.6	71.6		71.6
2009	3	58.5	58.5		58.5
2010	3	78.6	78.6		78.6
2011	4	60.2	52.5	80.4	60.2
2012	5	49.7	49.7		49.7
2013	3	77.3	68.2	78.2	68.2
2014	6	42.3	42.3		42.3
2015	3	25.8	25.8		25.8
2016	4	56.1	41.4	86.6	41.4
2017	2	64.9	64.9		64.9
2018	1	85.8		85.8	
2019	1	85.8		85.8	
2020	6	77.1	77.1	63.7	61.5
1998–2020	53	61.5	56.6	85.8	53.7

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	1	86.1		86.1	
1999	2	29.9	29.9		29.9
2000					
2001	4	47.0	52.2	41.8	52.2
2002	2	44.0	44.0		44.0
2003	3	36.9	36.9		36.9
2004					
2005	4	55.1	55.1		61.8
2006	2	46.4	46.4		46.4
2007	1	76.8	76.8		76.8
2008	1	81.5	81.5		81.5
2009	5	47.5	47.5		51.3
2010	1	25.0	25.0		25.0
2011	5	76.6	76.0	89.6	76.0
2012	2	49.1	15.2	83.1	49.1
2013	3	61.7	61.7		61.7
2014	4	68.5	68.5	60.2	68.5
2015	4	72.1	66.4	90.7	60.9
2016	1	76.6		76.6	76.6
2017	2	74.6	74.6		74.6
2018	3	64.2	59.7	77.0	64.2
2019	2	60.8	31.7	89.9	60.8
2020	3	39.4	39.4		39.4
1998-2020	55	61.7	55.3	83.3	61.0

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	1	0.1		0.1		0.1		0.1	
1999									
2000	1	0.1	1.00	0.1	1.21	0.1	1.29	0.1	1.29
2001									
2002									
2003									
2004	5	0.3	1.25	0.3	1.30	0.3	1.28	0.3	1.37
2005	1	0.1	0.33	0.0	0.23	0.1	0.29	0.1	0.32
2006									
2007	1	0.0	0.11	0.0	0.06	0.0	0.08	0.0	0.13
2008	3	0.1	0.33	0.1	0.17	0.1	0.24	0.1	0.32
2009	3	0.1	0.75	0.1	0.44	0.1	0.61	0.1	0.79
2010	3	0.1	0.23	0.1	0.07	0.1	0.14	0.1	0.24
2011	3	0.1	0.50	0.1	0.32	0.1	0.42	0.1	0.52
2012	5	0.2	0.56	0.2	0.38	0.2	0.45	0.2	0.46
2013	2	0.1	0.29	0.0	0.10	0.1	0.19	0.1	0.27
2014	6	0.3	1.50	0.3	0.74	0.2	0.99	0.3	1.56
2015	3	0.1	0.75	0.2	1.43	0.1	0.91	0.1	0.80
2016	3	0.1	3.00	0.1	4.26	0.1	3.40	0.1	2.95
2017	2	0.1	0.40	0.0	0.31	0.1	0.33	0.1	0.39
2018									
2019									
2020	4	0.2	0.80	0.1	0.60	0.1	0.72	0.1	0.78
1998-2020	46	0.1	0.42	0.1	0.30	0.1	0.36	0.1	0.42

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									
1999	2	0.2	0.50	0.2	1.00	0.2	0.72	0.2	0.82
2000									
2001	3	0.2	1.00	0.2	0.73	0.2	0.85	0.2	0.78
2002	2	0.1	0.40	0.1	0.50	0.1	0.47	0.1	0.54
2003	3	0.2	0.75	0.1	0.39	0.1	0.53	0.1	0.66
2004									
2005	4	0.2	0.67	0.1	0.39	0.2	0.50	0.2	0.59
2006	2	0.1	0.67	0.1	0.72	0.1	0.67	0.1	0.69
2007	1	0.0	0.20	0.0	0.06	0.0	0.11	0.0	0.20
2008	1	0.0	0.13	0.0	0.02	0.0	0.04	0.0	0.09
2009	5	0.2	2.50	0.2	2.30	0.2	2.31	0.2	2.66
2010	1	0.0	0.13	0.1	0.17	0.1	0.17	0.1	0.21
2011	4	0.2	0.80	0.1	0.47	0.1	0.60	0.2	0.84
2012	1	0.0	0.20	0.1	0.28	0.1	0.25	0.1	0.31
2013	3	0.1	0.50	0.1	0.65	0.1	0.56	0.1	0.55
2014	2	0.1	0.67	0.0	0.76	0.1	0.70	0.1	0.75
2015	3	0.1	0.50	0.1	0.25	0.1	0.37	0.1	0.47
2016									
2017	2	0.1	0.50	0.0	0.14	0.0	0.26	0.1	0.40
2018	2	0.1	0.67	0.1	0.68	0.1	0.72	0.1	0.67
2019	1	0.0	0.33	0.0	0.36	0.0	0.35	0.0	0.33
2020	3	0.1	1.50	0.1	1.83	0.1	1.65	0.1	1.21
1998-2020	45	0.1	0.47	0.1	0.38	0.1	0.42	0.1	0.48

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	1.5	1.5	1	2.6	2.6			0.0
5-9	4	6.0	7.5	3	7.9	10.5	1	3.4	3.4
10-14	0	0.0	7.5			10.5			3.4
15-19	3	4.5	11.9	1	2.6	13.2	2	6.9	10.3
20-24	2	3.0	14.9			13.2	2	6.9	17.2
25-29	4	6.0	20.9	3	7.9	21.1	1	3.4	20.7
30-34	1	1.5	22.4			21.1	1	3.4	24.1
35-39	2	3.0	25.4			21.1	2	6.9	31.0
40-44	2	3.0	28.4	2	5.3	26.3			31.0
45-49	6	9.0	37.3	5	13.2	39.5	1	3.4	34.5
50-54	2	3.0	40.3	2	5.3	44.7			34.5
55-59	5	7.5	47.8	2	5.3	50.0	3	10.3	44.8
60-64	5	7.5	55.2	1	2.6	52.6	4	13.8	58.6
65-69	7	10.4	65.7	5	13.2	65.8	2	6.9	65.5
70-74	4	6.0	71.6	3	7.9	73.7	1	3.4	69.0
75-79	10	14.9	86.6	4	10.5	84.2	6	20.7	89.7
80-84	7	10.4	97.0	5	13.2	97.4	2	6.9	96.6
85+	2	3.0	100.0	1	2.6	100.0	1	3.4	100.0
All ages	67	100.0		38	100.0		29	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	MI-index	Females Age-spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	0.06			5.3	
5- 9	3	1	0.2	1.50	0.1	1.00	10.7	4.0
10-14								
15-19	1	2	0.1	1.00	0.1	0.67	2.1	8.0
20-24		2			0.1	1.00		4.7
25-29	3	1	0.1	0.75	0.0	0.25	3.2	1.0
30-34		1			0.0	0.25		0.6
35-39		2			0.1	0.50		0.5
40-44	2		0.1	0.33			0.3	
45-49	5	1	0.2	0.83	0.0	0.50	0.4	0.1
50-54	2		0.1	0.50			0.1	
55-59	2	3	0.1	2.00	0.1	0.75	0.0	0.1
60-64	1	4	0.1	0.50	0.2	0.67	0.0	0.1
65-69	5	2	0.3	0.45	0.1	1.00	0.1	0.0
70-74	3	1	0.2	1.50	0.1	0.13	0.0	0.0
75-79	4	6	0.3	0.80	0.4	1.20	0.0	0.1
80-84	5	2	0.7	0.71	0.2	1.00	0.0	0.0
85+	1	1	0.2	1.00	0.1	0.20	0.0	0.0
All ages	38	29					0.1	0.0
Mortality								
Raw			0.1	0.45	0.1	0.45		
WS			0.1	0.31	0.1	0.38		
ES			0.1	0.37	0.1	0.41		
BRD-S			0.1	0.45	0.1	0.47		
PYLL-70								
per 100,000			2.4		1.8			
ES			2.6		1.9			
AYLL-70			27.3		26.4			

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 ←%
C07-C08	Salivary gland	1	4.2					1	100.0
C18	Colon	1	4.2	1	100.0				
C19-C20	Rectum	2	8.3					2	100.0
C25	Pancreas	1	4.2					1	100.0
C33-C34	Lung	1	4.2					1	100.0
C43	Malign. melanoma	4	16.7	2	50.0	1	25.0	1	25.0
C44	Skin others	6	25.0	1	16.7	2	33.3	3	50.0
C61	Prostate	2	8.3	2	100.0				
C64	Kidney	1	4.2					1	100.0
C70-C72	CNS cancer	4	16.7					4	100.0
C82-C85	NHL	1	4.2					1	100.0
All further malignancies		24	100.0	6	25.0	3	12.5	15	62.5

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 ←%
C15	Oesophagus	1	5.0					1	100.0
C17	Small intestine	1	5.0					1	100.0
C22	Liver	1	5.0			1	100.0		
C23-C24	Bile	1	5.0					1	100.0
C25	Pancreas	1	5.0					1	100.0
C33-C34	Lung	1	5.0					1	100.0
C43	Malign. melanoma	2	10.0	2	100.0				
C44	Skin others	1	5.0	1	100.0				
C46,C49	Soft tissue	2	10.0	1	50.0			1	50.0
C50	Breast	3	15.0	1	33.3			2	66.7
C70-C72	CNS cancer	4	20.0			1	25.0	3	75.0
C76-C79	CUP	1	5.0			1	100.0		
C82-C85	NHL	1	5.0			1	100.0		
All further malignancies		20	100.0	5	25.0	4	20.0	11	55.0

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

Table 15

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	0.06			5.3	
5- 9	3	1	0.2	1.50	0.1	1.00	11.1	4.0
10-14								
15-19	1	1	0.1	1.00	0.1	0.50	2.2	4.3
20-24		1			0.1	1.00		2.4
25-29	2	1	0.1	1.00	0.0	0.25	2.4	1.1
30-34		1			0.0	0.33		0.6
35-39		1			0.0	0.33		0.3
40-44	1		0.0	0.20			0.2	
45-49	4	1	0.1	0.80	0.0	0.50	0.3	0.1
50-54	2		0.1	0.67			0.1	
55-59	2	3	0.1	2.00	0.1	1.00	0.1	0.1
60-64	1	3	0.1	1.00	0.2	0.60	0.0	0.1
65-69	4		0.2	0.80			0.1	
70-74		1			0.1	0.17		0.0
75-79	2	4	0.2	0.67	0.3	1.33	0.0	0.1
80-84	4	2	0.6	0.80	0.2	1.00	0.1	0.0
85+		1			0.1	0.33		0.0
All ages	27	21					0.1	0.0
Mortality								
Raw			0.1	0.43	0.1	0.44		
WS			0.1	0.30	0.0	0.33		
ES			0.1	0.35	0.1	0.38		
BRD-S			0.1	0.43	0.1	0.44		
PYLL-70								
per 100,000			2.0		1.3			
ES			2.3		1.4			
AYLL-70			28.0		27.5			

* 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	Males Prop.all cancers %	Females Prop.all cancers %
0- 4	1		0.1	0.06			5.3	
5- 9	3	1	0.2	1.50	0.1	1.00	11.1	4.0
10-14								
15-19	1	1	0.1	1.00	0.1	0.50	2.2	4.5
20-24		1			0.1	1.00		2.5
25-29	2	1	0.1	1.00	0.0	0.25	2.4	1.1
30-34		1			0.0	0.33		0.6
35-39		1			0.0	0.33		0.3
40-44								
45-49	4	1	0.1	1.00	0.0	0.50	0.3	0.1
50-54	2		0.1	1.00			0.1	
55-59	1	3	0.0	1.00	0.1	1.00	0.0	0.1
60-64	1	3	0.1	1.00	0.2	0.75	0.0	0.1
65-69	3		0.2	0.60			0.0	
70-74		1			0.1	0.33		0.0
75-79	1	3	0.1	0.50	0.2	1.00	0.0	0.0
80-84	3		0.4	0.60			0.0	
85+		1			0.1	0.33		0.0
All ages	22	18					0.0	0.0
Mortality								
Raw			0.1	0.38	0.1	0.42		
WS			0.1	0.28	0.0	0.33		
ES			0.1	0.32	0.0	0.38		
BRD-S			0.1	0.38	0.1	0.42		
PYLL-70								
per 100,000			1.9		1.3			
ES			2.2		1.4			
AYLL-70			30.3		27.5			

* See corresponding tables with multiple malignancies.

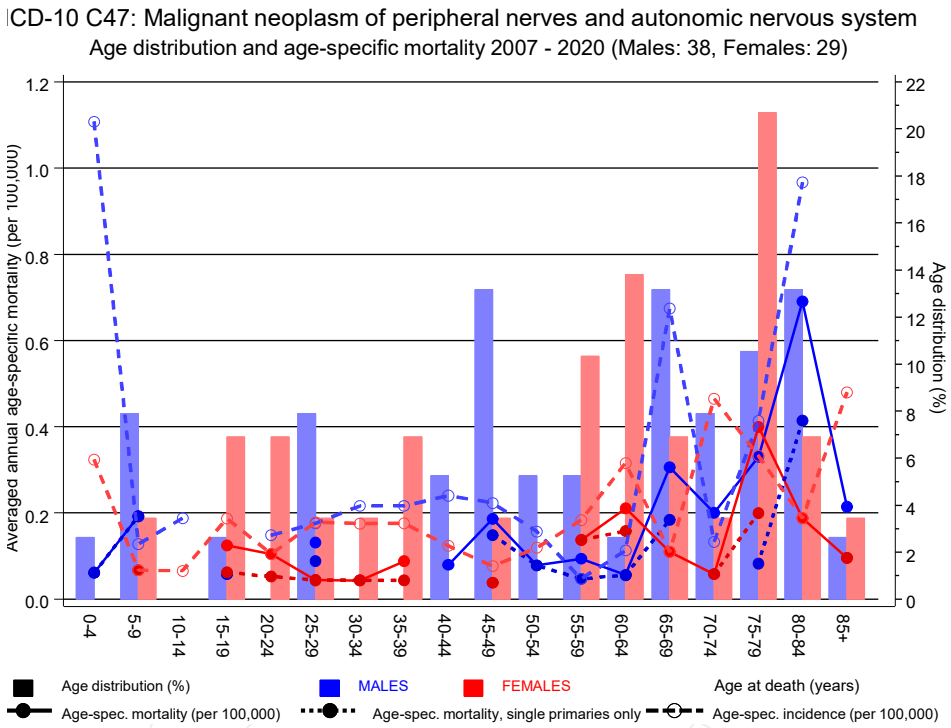


Figure 17. Distribution of age at death (bars; males: mean=51.6 yrs, median=54.8 yrs; females: mean=52.6 yrs, median=59.4 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at neoplasm of peripheral nerves-related death (see Table 10) should be considered.

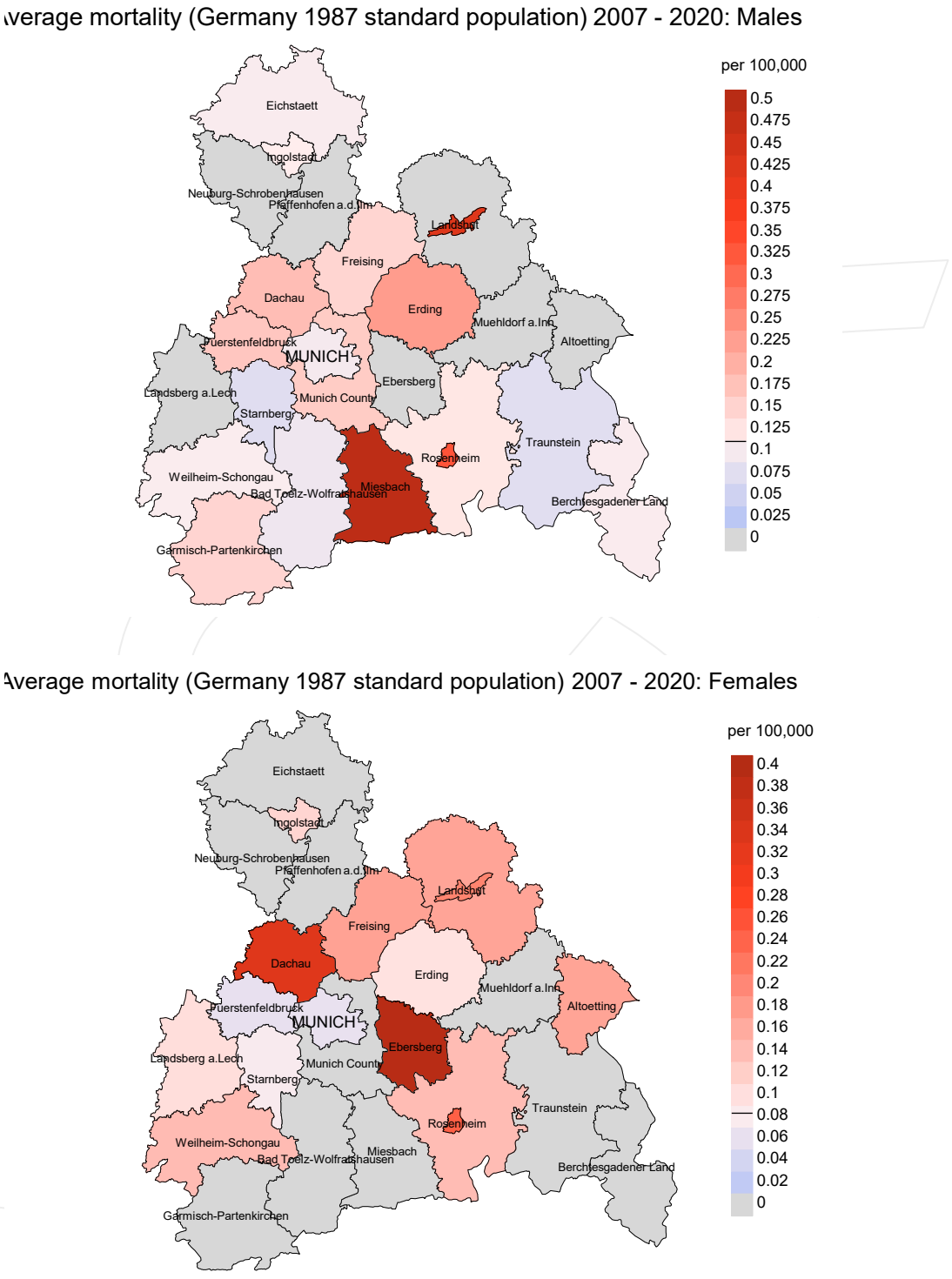
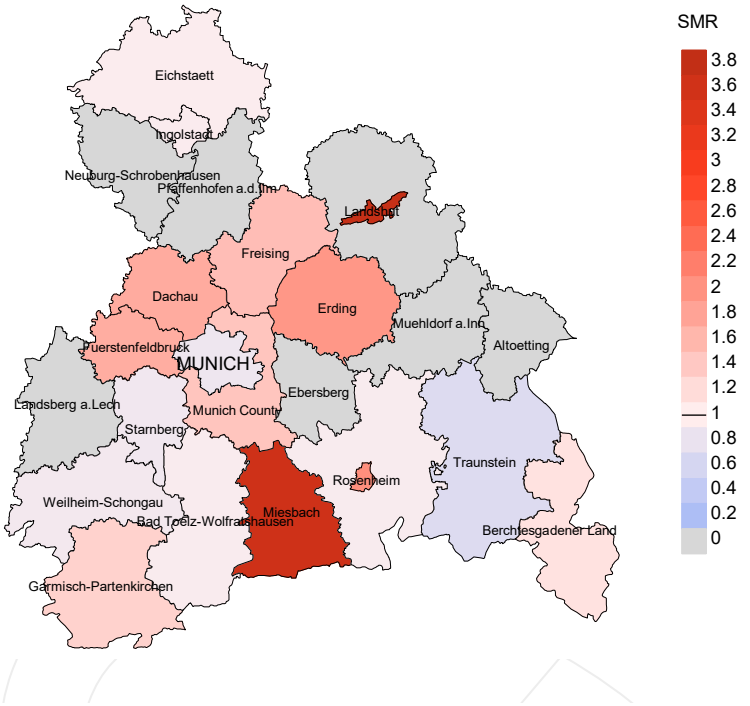


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2020. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.1/100,000 WS N=38, females 0.1/100,000 WS N=29).

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 3 women died from neoplasm of peripheral nerves. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.4/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.4/100,000.

Standardized mortality ratio (SMR) 2007 - 2020: Males



Standardized mortality ratio (SMR) 2007 - 2020: Females

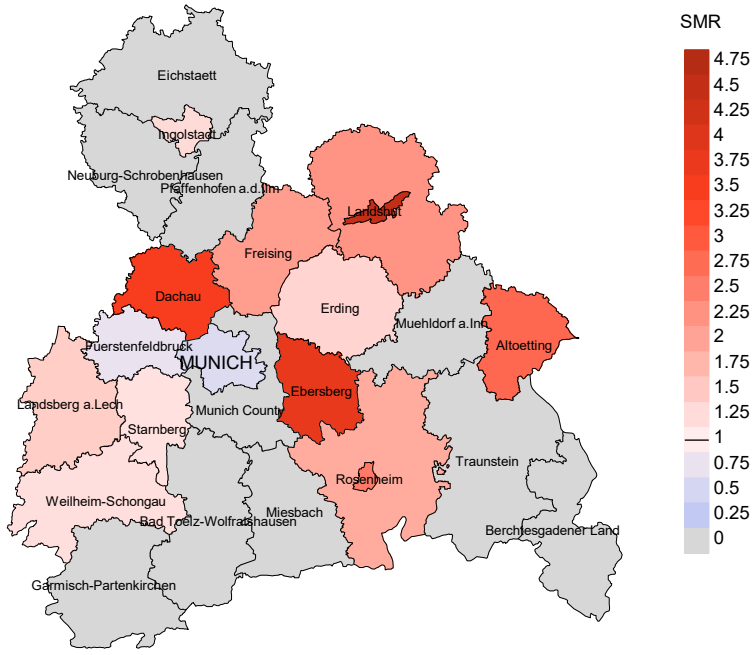


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2020. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=38, females N=29).

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 3 women died from neoplasm of peripheral nerves. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 3.77. Though, the value of this parameter may vary with an underlying probability of 99% between 0.42 and 13.80, and is therefore not statistically striking.

Statistical Notes

In all tables and figures the respective reference values should be carefully considered. The incidence rates include diagnoses (with multiple primary), and death certificate only (DCO) cases, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. **All multiple primaries included**

   The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. **First singular primary** (no information about other prior or synchronous malignancy)

   The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. **Single primary** (no information about other prior, syn- or metachronous malignancy)

   The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head&neck and lung).

The ratio of mortality and incidence (mortality-to-incidence ratio, **MIR**, **MI-Index**) is a statistical index that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MIR. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

MCR	Munich Cancer Registry (Tumorregister München)
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
SEER	Surveillance, Epidemiology, and End Results (USA)
DCO	Death certificate only
BRD-S	German (FRG) standard population
ES	European standard population (old)
WS	World standard population
SIR	Standardized incidence ratio
CI	Confidence interval
EAR	Excess absolute risk = excess cancer cases (O - E) per 10,000 person-years
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
AYLL-70	Average years of life lost prior to age 70 given a person dies before that age
SMR	Standardized mortality ratio
MI-index	Ratio of mortality to incidence, MIR
FRG	Federal Republic of Germany

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