

Munich Cancer Registry



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

ICD-10 C47: Neoplasm of peripheral nerves

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	180
Diseases	180
Creation date	08/21/2018
Export date	08/09/2018
Population	4.81 m



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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

Fig./Tbl.		Page
1	Annual cases, mult. malignancies, follow-up / yr	4
2	Incidence by year of diagnosis	7
3	Age distribution parameters by year of diagnosis	8
4	Age distribution by 5-year age group and sex	9
5	Age-specific incidence, proportion malignancies	10
6	Age distribution and age-specific incidence (chart)	11
6a	Age-specific incidence internationally (chart)	12
7	Standardized incidence ratio of further malignancies	13
8a	Map of cancer incidence (WS) by county (chart)	14
8b	Standardized incidence ratio (SIR) by county (chart)	15
9a	Pts incident cohorts and mortality / yr	16
9b	Incidence and mortality by year of diagnosis	17
9c	Cancer-related deaths, death certification available / yr	18
10	Medians of age at death / yr	19
11	Mortality by year of death	21
12	Distribution of age at death	22
13	Age-specific mortality	23
14	Further malignancies in deaths	24
15	Age-specific mortality (first primaries)	25
16	Age-specific mortality (single primaries)	26
17	Age distribution and age-specific mortality (chart)	27
18a	Map of cancer mortality (WS) by county (chart)	28
18b	Standardized mortality ratio (SMR) by county (chart)	29

**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, August 2018

[#] 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	6	12.5	11.5	83.3	100.0
2000	1	11.1	11.8	100.0	100.0
2001	3	8.3	11.9	100.0	100.0
2002	11	8.7	12.1	72.7	90.9 #
2003	7	13.3	11.7	71.4	100.0
2004	8	10.5	10.9	12.5	87.5
2005	9	10.6	11.5	66.7	88.9
2006	12	10.2	11.5	25.0	91.7
2007	17	11.8	11.9	29.4	58.8 #
2008	19	11.6	10.9	42.1	63.2
2009	6	10.9	11.0	50.0	83.3
2010	24	13.6	10.5	45.8	70.8
2011	11	14.7	9.4	36.4	72.7
2012	14	16.0	11.9	42.9	78.6
2013	14	16.5	10.7	35.7	78.6
2014	7	16.4	12.5	28.6	71.4
2015	4	17.7	11.1	75.0	100.0
2016	5	18.3	20.0	20.0	60.0 ##
1998-2016	180	18.3	11.4	45.0	78.3

180 cases diagnosed 1998-2016 are related to a total of 180 patients. Currently, in 47 (26.1 %) of these 180 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 31 / 12 / 4 (17.2 % / 6.7 % / 2.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2014, a subgroup of 7 cases has been diagnosed, of which 16.4 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 12.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 1a

Cases with invasive cancer by year of diagnosis, proportions of 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	2	33.3	0.0	11.5	100.0	100.0
2000	1	100.0	0.0	11.7	100.0	100.0
2001	0					
2002	6	54.5	0.0	11.8	66.7	100.0 #
2003	3	42.9	8.3	12.6	100.0	100.0
2004	4	50.0	6.3	11.9		75.0
2005	3	33.3	5.3	12.5	33.3	66.7
2006	9	75.0	7.1	13.0	22.2	88.9
2007	10	58.8	7.9	13.2	20.0	50.0 #
2008	10	52.6	10.4	10.3	50.0	70.0
2009	4	66.7	9.6	10.4	75.0	100.0
2010	16	66.7	13.2	9.1	37.5	62.5
2011	6	54.5	12.2	10.3	33.3	66.7
2012	9	64.3	13.3	13.0	33.3	88.9
2013	8	57.1	13.2	14.3	37.5	75.0
2014	4	57.1	13.7	14.3	25.0	75.0
2015	2	50.0	15.5	0.0	100.0	100.0
2016	1	20.0	16.3	0.0		100.0 ##
1998-2016	98	54.4	16.3	11.5	40.8	76.5

98 cases diagnosed 1998-2016 are related to a total of 98 patients. Currently, in 23 (23.5 %) of these 98 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 16 / 5 / 2 (16.3 % / 5.1 % / 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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 4 cases has been diagnosed, of which 13.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 14.3 % 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 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	11.3	50.0	100.0
1999	4	66.7	16.7	11.5	75.0	100.0
2000	0					
2001	3	100.0	11.1	12.0	100.0	100.0
2002	5	45.5	14.3	12.5	80.0	80.0 #
2003	4	57.1	16.7	10.4	50.0	100.0
2004	4	50.0	13.6	9.5	25.0	100.0
2005	6	66.7	14.3	10.2	83.3	100.0
2006	3	25.0	12.9	9.4	33.3	100.0
2007	7	41.2	15.8	10.0	42.9	71.4 #
2008	9	47.4	12.8	11.6	33.3	55.6
2009	2	33.3	12.2	11.8		50.0
2010	8	33.3	14.0	12.5	62.5	87.5
2011	5	45.5	17.7	8.3	40.0	80.0
2012	5	35.7	19.4	10.5	60.0	60.0
2013	6	42.9	20.5	7.1	33.3	83.3
2014	3	42.9	19.7	11.1	33.3	66.7
2015	2	50.0	20.5	16.7	50.0	100.0
2016	4	80.0	20.7	25.0	25.0	50.0 ##
1998-2016	82	45.6	20.7	11.3	50.0	80.5

82 cases diagnosed 1998-2016 are related to a total of 82 patients. Currently, in 24 (29.3 %) of these 82 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 15 / 7 / 2 (18.3 % / 8.5 % / 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 retrieved from the respective headings.

How to interpret:

In 2014, a subgroup of 3 cases has been diagnosed, of which 19.7 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 11.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 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	2	4	0.2	0.3	0.1	0.2	0.1	0.2	0.2	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	4	0.2	0.2	0.3	0.3	0.3	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	9	3	0.5	0.1	0.6	0.1	0.5	0.1	0.5	0.2
2007	10	7	0.5	0.3	0.7	0.3	0.6	0.3	0.4	0.3
2008	10	9	0.4	0.4	0.5	0.4	0.5	0.4	0.5	0.4
2009	4	2	0.2	0.1	0.2	0.1	0.2	0.1	0.2	0.1
2010	16	8	0.7	0.3	0.8	0.3	0.8	0.3	0.7	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	8	6	0.3	0.3	0.5	0.2	0.4	0.2	0.4	0.3
2014	4	3	0.2	0.1	0.3	0.1	0.2	0.1	0.2	0.1
2015	2	2	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1
2016	1	4	0.0	0.2	0.0	0.1	0.0	0.1	0.0	0.1
1998-2016	98	82	0.3	0.2	0.3	0.2	0.3	0.2	0.3	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	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	2	28.3	8.1	22.6	34.0	22.6	22.6	28.3	34.0	34.0
1999	6	57.8	19.7	32.7	88.4	32.7	40.4	60.2	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	8	21.9	20.9	0.0	48.5	0.0	0.2	22.2	41.0	48.5
2005	9	39.6	31.0	1.1	76.3	1.1	8.2	47.7	70.8	76.3
2006	12	38.5	28.8	0.3	75.8	0.4	12.9	42.4	65.6	75.3
2007	17	32.7	28.4	0.1	87.7	0.6	1.9	39.2	53.3	69.6
2008	19	45.8	30.4	0.0	84.0	0.0	7.9	55.6	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	24	43.2	30.6	0.1	89.1	0.4	15.6	47.5	70.4	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	14	42.7	30.4	0.3	81.9	0.6	15.5	46.4	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	4	52.1	19.3	35.0	78.2	35.0	37.6	47.7	66.7	78.2
2016	5	64.0	21.5	30.9	86.1	30.9	55.5	73.6	74.1	86.1
1998–2016	180	40.2	28.0	0.0	89.1	0.6	13.8	40.7	65.4	76.1

Table 3a

Age distribution parameters by year of diagnosis (MALES)

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1999	2	48.9	22.9	32.7	65.0	32.7	32.7	48.9	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	19.3	22.9	0.0	45.9	0.0	0.1	15.6	38.4	45.9
2005	3	40.3	35.1	1.9	70.8	1.9	1.9	48.2	70.8	70.8
2006	9	35.6	30.1	0.3	75.8	0.3	6.7	38.6	56.2	75.8
2007	10	25.5	27.0	0.1	69.6	0.3	0.6	21.2	44.6	61.5
2008	10	50.6	34.8	0.0	84.0	0.0	4.7	66.5	78.2	81.6
2009	4	40.9	22.9	14.7	67.4	14.7	22.9	40.7	58.9	67.4
2010	16	38.3	26.3	0.1	83.6	0.3	16.7	43.8	53.5	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	8	36.4	36.0	0.3	81.9	0.3	3.0	26.8	74.7	81.9
2014	4	18.2	33.2	0.2	67.9	0.2	1.3	2.4	35.2	67.9
2015	2	59.1	26.9	40.1	78.2	40.1	40.1	59.1	78.2	78.2
2016	1	30.9		30.9	30.9	30.9	30.9	30.9	30.9	30.9
1998–2016	98	35.8	28.7	0.0	84.0	0.3	3.2	34.7	64.3	76.1

Table 3b

Age distribution parameters by year of diagnosis (FEMALES)

Year of diagnosis	Cases n	Mean	Std. dev.	Min. Max.		10% 25%		Median		
				Min.	Max.	10%	25%	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	4	24.5	21.8	0.2	48.5	0.2	6.8	24.7	42.3	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	7	43.0	29.0	1.9	87.7	1.9	17.4	52.3	58.4	87.7
2008	9	40.4	25.5	4.4	75.0	4.4	29.4	34.3	61.7	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	2	45.1	14.3	35.0	55.2	35.0	35.0	45.1	55.2	55.2
2016	4	72.3	12.6	55.5	86.1	55.5	64.6	73.9	80.1	86.1
1998-2016	82	45.6	26.4	0.2	89.1	7.9	24.7	47.8	71.1	76.2

Table 4

Age distribution by 5-year age group and sex for period 2007-2016

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	25	20.7	20.7	20	28.6	28.6	5	9.8	9.8
5-9	3	2.5	23.1	2	2.9	31.4	1	2.0	11.8
10-14	4	3.3	26.4	3	4.3	35.7	1	2.0	13.7
15-19	4	3.3	29.8	1	1.4	37.1	3	5.9	19.6
20-24	3	2.5	32.2	2	2.9	40.0	1	2.0	21.6
25-29	6	5.0	37.2	3	4.3	44.3	3	5.9	27.5
30-34	7	5.8	43.0	4	5.7	50.0	3	5.9	33.3
35-39	6	5.0	47.9	3	4.3	54.3	3	5.9	39.2
40-44	6	5.0	52.9	4	5.7	60.0	2	3.9	43.1
45-49	4	3.3	56.2	3	4.3	64.3	1	2.0	45.1
50-54	7	5.8	62.0	4	5.7	70.0	3	5.9	51.0
55-59	7	5.8	67.8	2	2.9	72.9	5	9.8	60.8
60-64	5	4.1	71.9	2	2.9	75.7	3	5.9	66.7
65-69	7	5.8	77.7	6	8.6	84.3	1	2.0	68.6
70-74	9	7.4	85.1	2	2.9	87.1	7	13.7	82.4
75-79	8	6.6	91.7	5	7.1	94.3	3	5.9	88.2
80-84	6	5.0	96.7	4	5.7	100.0	2	3.9	92.2
85+	4	3.3	100.0			100.0	4	7.8	100.0
All ages	121	100.0		70	100.0		51	100.0	

Table 5

Age-specific incidence and proportion of all cancers
for period 2007-2016

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males Prop.all cancers n=113978 %	Females Prop.all cancers n=112253 %
0- 4	20	5	1.8	0.5	10.2	3.4
5- 9	2	1	0.2	0.1	1.9	1.2
10-14	3	1	0.3	0.1	2.6	1.0
15-19	1	3	0.1	0.3	0.4	1.4
20-24	2	1	0.1	0.1	0.4	0.3
25-29	3	3	0.2	0.2	0.4	0.4
30-34	4	3	0.3	0.2	0.4	0.2
35-39	3	3	0.2	0.2	0.2	0.1
40-44	4	2	0.2	0.1	0.2	0.0
45-49	3	1	0.2	0.1	0.1	0.0
50-54	4	3	0.2	0.2	0.1	0.0
55-59	2	5	0.1	0.3	0.0	0.1
60-64	2	3	0.2	0.2	0.0	0.0
65-69	6	1	0.5	0.1	0.0	0.0
70-74	2	7	0.2	0.6	0.0	0.0
75-79	5	3	0.6	0.3	0.0	0.0
80-84	4	2	0.9	0.3	0.0	0.0
85+		4		0.5		0.0
All ages	70	51			0.1	0.0
Incidence						
Raw			0.3	0.2		
WS			0.4	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).

ICD-10 C47: Malignant neoplasm of peripheral nerves and autonomic nervous system

Age distribution and age-specific incidence 2007 - 2016 (Males: 70, Females: 51)

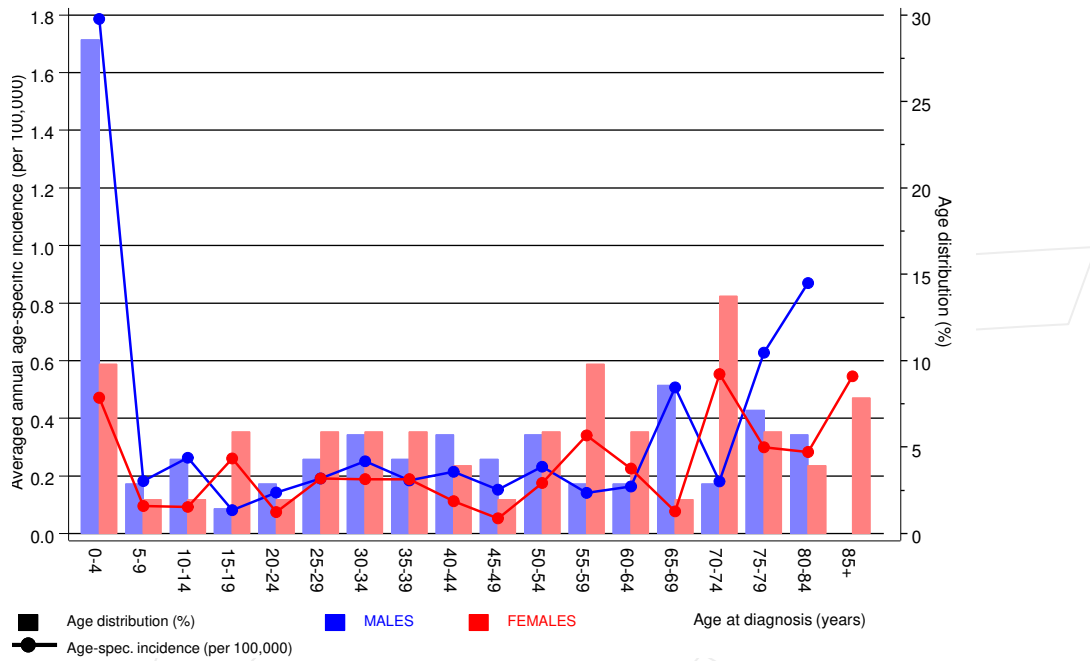


Figure 6. Age distribution (males: mean=35.4 yrs, median=34.6 yrs; females: mean=48.6 yrs, median=54.5 yrs) and age-specific incidence.

CD-10 C47: Malignant neoplasm of peripheral nerves and autonomic nervous system

Age-specific incidence rates: international comparison

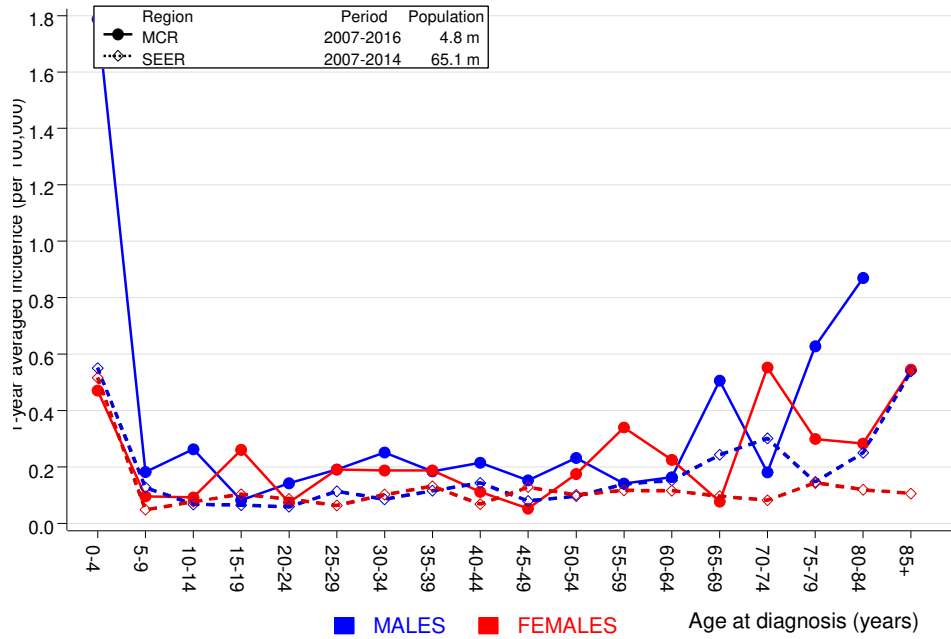


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 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 1998–2016

MALES

Diagnosis	Observed	Expected	SIR	CI		EAR	DCO %	
	n	n		95%	95%			
C43 Malign. melanoma	3	0.1	29.4	6.1	85.8 #	86.5		
Others, specified	5	1.0	5.2	1.7	12.1 #	120.4		
Not observed	0	1.1	0.0	0.0	3.4	-32.5		
All further malignancies	8	2.2	3.7	1.6	7.3 #	174.4		
Patients								98
Median age at next malignancy (years)								68.9
Person-years								335
Mean observation time (years)								3.4
Median observation time (years)								2.1

The occurrence of further malignancy listed is statistically significant.

Observed further 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 1998–2016

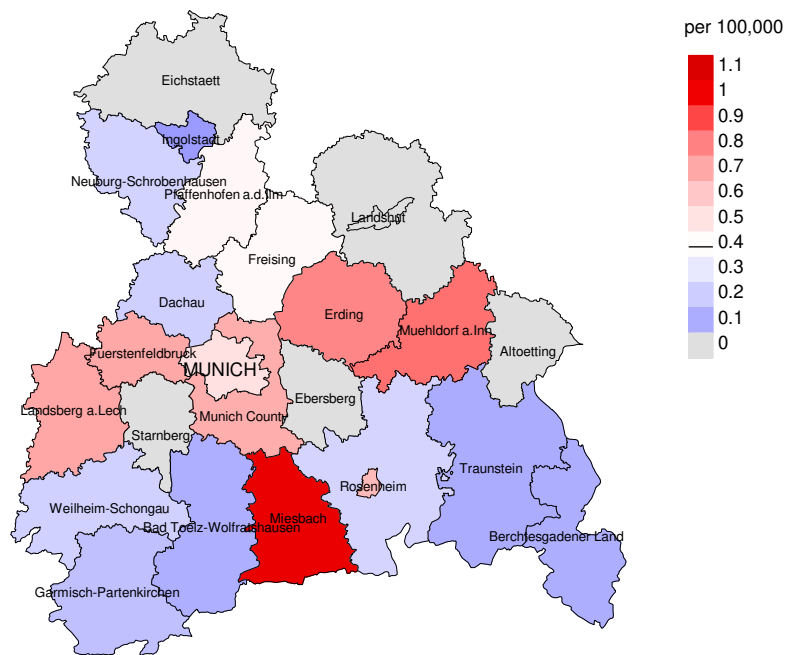
FEMALES

Diagnosis	Observed	Expected	SIR	CI		EAR	DCO %	
	n	n		95%	95%			
C50 Breast	3	0.5	5.9	1.2	17.4 #	90.1	33.3	
Others, specified	6	0.3	21.7	8.0	47.3 #	206.8	16.7	
Not observed	0	0.8	0.0	0.0	4.4	-30.0		
All further malignancies	9	1.6	5.6	2.6	10.6 #	266.9	22.2	
Patients								78
Median age at next malignancy (years)								76.6
Person-years								277
Mean observation time (years)								3.5
Median observation time (years)								2.2

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category "Others, specified".

Average incidence (world standard population) 2007 - 2016: Males



Average incidence (world standard population) 2007 - 2016: Females

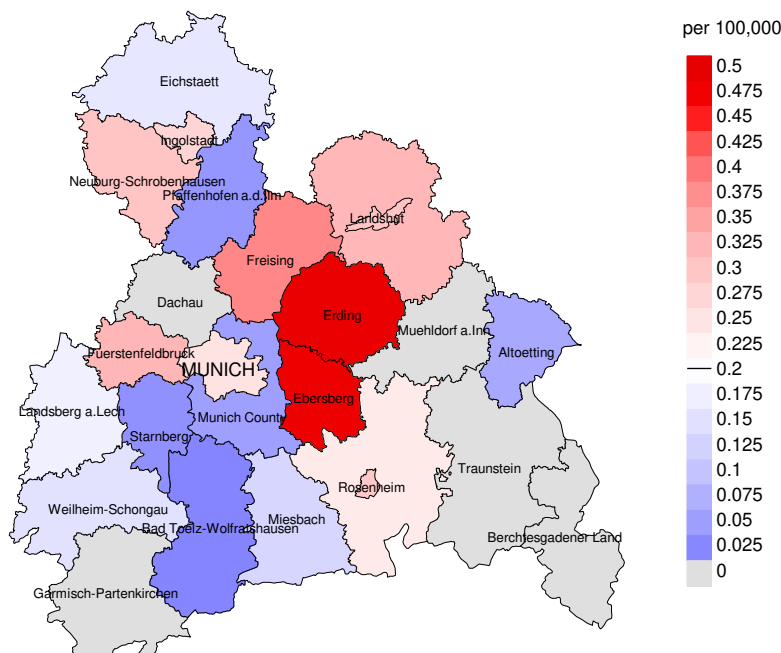
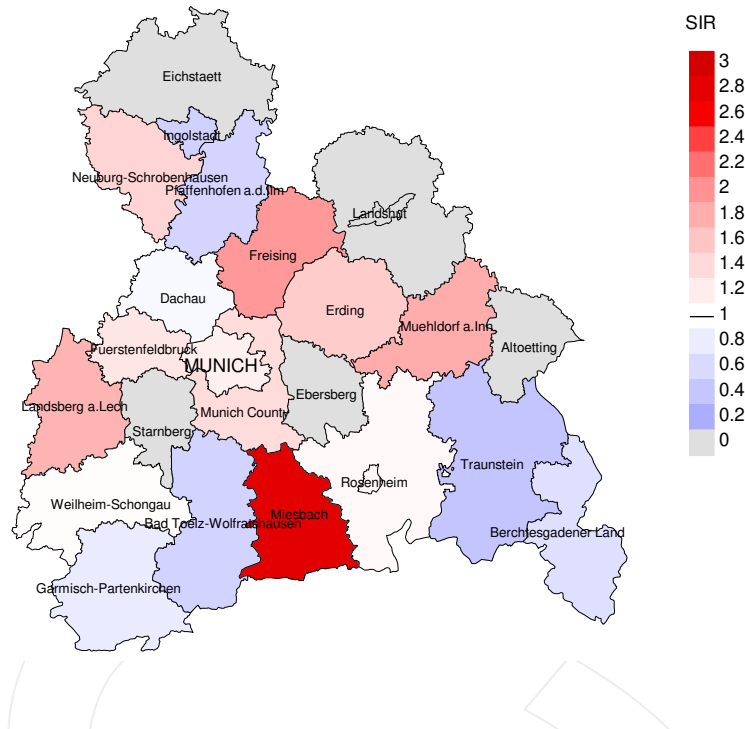


Figure 8a. Map of cancer incidence (world standard population) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.4/100,000 WS N=70, females 0.2/100,000 WS N=51).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 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 0.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 2.0/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

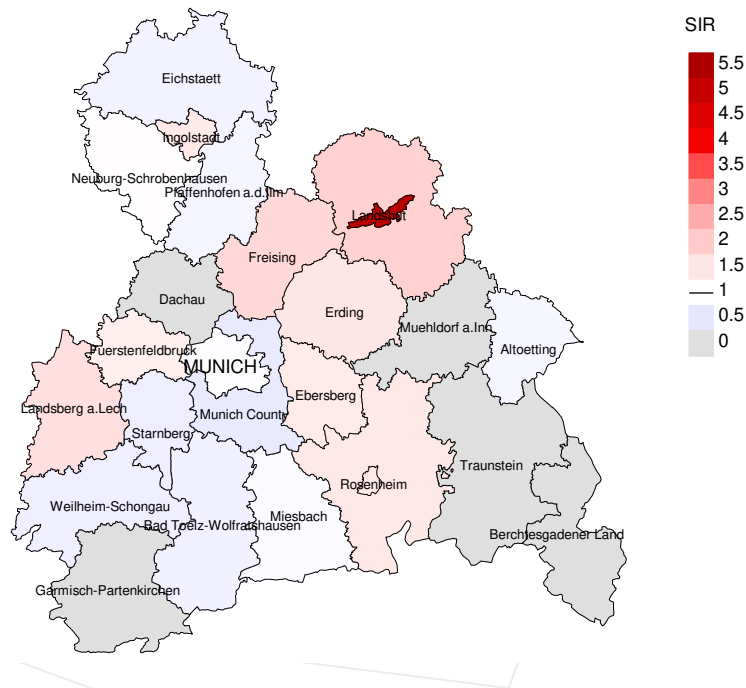


Figure 8b. Map of standardized incidence ratio (SIR) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=70, females N=51).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 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 1.42. Though, the value of this parameter may vary with an underlying probability of 99% between 0.07 and 6.58, 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 4.81 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	6	100.0	5	83.3	80.0
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	8	87.5	1	12.5	100.0
2005	9	88.9	6	66.7	66.7
2006	12	91.7	3	25.0	100.0
2007	17	58.8	5	29.4	100.0
2008	19	63.2	8	42.1	100.0
2009	6	83.3	3	50.0	100.0
2010	24	70.8	11	45.8	100.0
2011	11	72.7	4	36.4	100.0
2012	14	78.6	6	42.9	83.3
2013	14	78.6	5	35.7	100.0
2014	7	71.4	2	28.6	100.0
2015	4	100.0	3	75.0	100.0
2016	5	60.0	1	20.0	
1998-2016	180	78.3	81	45.0	93.8

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 4.81 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	6	2		
2000	1	1		
2001	3	4	2	66.7
2002	11	2	1	9.1
2003	7	3	1	14.3
2004	8	5		
2005	9	5	2	22.2
2006	12	2		
2007	17	2		
2008	19	4	2	10.5
2009	6	8		
2010	24	4	2	8.3
2011	11	10		
2012	14	8	1	7.1
2013	14	5	1	7.1
2014	7	10	1	14.3
2015	4	6	2	50.0
2016	5	4		
1998-2016	180	87	15	8.3

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 4.81 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	10	80.0	20.0	70.0
2012	8	87.5	12.5	100.0
2013	5	80.0	20.0	100.0
2014	10	80.0	20.0	88.9
2015	6	83.3	16.7	66.7
2016	4	50.0	50.0	75.0
1998-2016	87	87.4	12.6	89.2

Table 10a

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	1	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	5	52.5	52.4	80.4	52.5
2012	6	53.7	53.7		53.7
2013	2	77.8	77.3	78.2	77.3
2014	6	42.3	42.3		42.3
2015	3	25.8	25.8		25.8
2016	3	41.4	24.9	86.6	24.9
1998–2016	43	52.5	52.4	80.4	52.5

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	3	77.8	66.5	90.7	55.3
2016	1	76.6		76.6	76.6
1998–2016	44	57.8	53.6	83.3	55.3

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 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	0.95	0.3	1.08	0.3	1.27
2005	1	0.1	0.33	0.0	0.23	0.1	0.29	0.1	0.32
2006									
2007	1	0.0	0.10	0.0	0.05	0.0	0.07	0.0	0.11
2008	3	0.1	0.30	0.1	0.13	0.1	0.20	0.1	0.29
2009	3	0.1	0.75	0.1	0.44	0.1	0.61	0.1	0.79
2010	3	0.1	0.19	0.1	0.06	0.1	0.11	0.1	0.20
2011	4	0.2	0.67	0.2	0.40	0.2	0.55	0.2	0.67
2012	6	0.3	0.67	0.2	0.43	0.2	0.54	0.2	0.56
2013	1	0.0	0.13	0.0	0.02	0.0	0.06	0.0	0.11
2014	6	0.3	1.50	0.3	0.74	0.2	0.99	0.3	1.56
2015	3	0.1	1.50	0.2	3.34	0.1	2.02	0.1	1.67
2016	2	0.1	2.00	0.1	3.68	0.1	2.65	0.1	2.01
1998-2016	40	0.1	0.41	0.1	0.29	0.1	0.35	0.1	0.41

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	0.14	0.0	0.04	0.0	0.07	0.0	0.14
2008	1	0.0	0.11	0.0	0.02	0.0	0.03	0.0	0.08
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	2	0.1	1.00	0.0	0.54	0.1	0.67	0.1	0.84
2016									
1998-2016	36	0.1	0.44	0.1	0.34	0.1	0.39	0.1	0.46

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	1	1.9	1.9	1	3.1	3.1			0.0
5-9	3	5.8	7.7	3	9.4	12.5			0.0
10-14	0	0.0	7.7			12.5			0.0
15-19	3	5.8	13.5	1	3.1	15.6	2	10.0	10.0
20-24	2	3.8	17.3			15.6	2	10.0	20.0
25-29	4	7.7	25.0	3	9.4	25.0	1	5.0	25.0
30-34	0	0.0	25.0			25.0			25.0
35-39	1	1.9	26.9			25.0	1	5.0	30.0
40-44	2	3.8	30.8	2	6.3	31.3			30.0
45-49	5	9.6	40.4	4	12.5	43.8	1	5.0	35.0
50-54	3	5.8	46.2	3	9.4	53.1			35.0
55-59	4	7.7	53.8	2	6.3	59.4	2	10.0	45.0
60-64	3	5.8	59.6			59.4	3	15.0	60.0
65-69	5	9.6	69.2	5	15.6	75.0			60.0
70-74	1	1.9	71.2	1	3.1	78.1			60.0
75-79	9	17.3	88.5	4	12.5	90.6	5	25.0	85.0
80-84	5	9.6	98.1	3	9.4	100.0	2	10.0	95.0
85+	1	1.9	100.0			100.0	1	5.0	100.0
All ages	52	100.0		32	100.0		20	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(incl. multiple malignancies)

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1		0.1	0.05			6.7	
5- 9	3		0.3	1.50			12.5	
10-14								
15-19	1	2	0.1	1.00	0.2	0.67	2.3	9.1
20-24		2			0.1	2.00		6.1
25-29	3	1	0.2	1.00	0.1	0.33	4.1	1.4
30-34								
35-39		1			0.1	0.33		0.4
40-44	2		0.1	0.50			0.4	
45-49	4	1	0.2	1.33	0.1	1.00	0.3	0.1
50-54	3		0.2	0.75			0.1	
55-59	2	2	0.1	1.00	0.1	0.40		0.1
60-64		3			0.2	1.00		0.1
65-69	5		0.4	0.83			0.1	
70-74	1		0.1	0.50			0.0	
75-79	4	5	0.5	0.80	0.5	1.67	0.0	0.1
80-84	3	2	0.7	0.75	0.3	1.00	0.0	0.0
85+		1			0.1	0.25		0.0
All ages	32	20					0.1	0.0
Mortality								
Raw			0.1	0.46	0.1	0.39		
WS			0.1	0.30	0.1	0.30		
ES			0.1	0.37	0.1	0.34		
BRD-S			0.1	0.45	0.1	0.42		
PYLL-70								
per 100,000			3.3		1.7			
ES			3.7		1.9			
AYLL-70			27.9		28.8			

Table 14a

Further malignancies in deaths in period 1998-2016
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C07-C08 Salivary gland	1	7.7					1	100.0
C18 Colon	1	7.7	1	100.0				
C19-C20 Rectum	1	7.7					1	100.0
C33-C34 Lung	1	7.7					1	100.0
C43 Malign. melanoma	3	23.1	1	33.3	1	33.3	1	33.3
C44 Skin others	2	15.4	1	50.0			1	50.0
C61 Prostate	1	7.7	1	100.0				
C70-C72 CNS cancer	1	7.7					1	100.0
C82-C85 NHL	1	7.7					1	100.0
C90 Mult. myeloma	1	7.7	1	100.0				
All further malignancies	13	100.0	5	38.5	1	7.7	7	53.8

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 1998-2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C15 Oesophagus	1	7.1					1	100.0
C22 Liver	1	7.1			1	100.0		
C23-C24 Bile	1	7.1					1	100.0
C25 Pancreas	1	7.1					1	100.0
C33-C34 Lung	1	7.1					1	100.0
C43 Malign. melanoma	1	7.1	1	100.0				
C44 Skin others	1	7.1	1	100.0				
C46,C49 Soft tissue	2	14.3			1	50.0	1	50.0
C50 Breast	3	21.4	1	33.3			2	66.7
C70-C72 CNS cancer	1	7.1					1	100.0
C82-C85 NHL	1	7.1			1	100.0		
All further malignancies	14	100.0	3	21.4	3	21.4	8	57.1

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 2007-2016
(First primaries only *)

Age at death Years	Males		Females		Males		Females	
	n	n	Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index	Prop.all cancers %	Prop.all cancers %
0- 4	1		0.1	0.05			7.1	
5- 9	3		0.3	1.50			13.0	
10-14								
15-19	1	1	0.1	1.00	0.1	0.50	2.4	5.0
20-24		1			0.1	1.00		3.2
25-29	2	1	0.1	1.00	0.1	0.33	3.0	1.5
30-34								
35-39		1			0.1	0.50		0.4
40-44	1		0.1	0.33			0.2	
45-49	3	1	0.2	1.00	0.1	1.00	0.3	0.1
50-54	2		0.1	0.67			0.1	
55-59	1	2	0.1	1.00	0.1	0.67	0.0	0.1
60-64		2			0.2	1.00		0.1
65-69	4		0.3	1.33			0.1	
70-74								
75-79	2	3	0.3	0.67	0.3	3.00	0.0	0.1
80-84	2	2	0.4	0.67	0.3	1.00	0.0	0.0
85+		1			0.1	0.33		0.0
All ages	22	15					0.1	0.0
Mortality								
Raw			0.1	0.41	0.1	0.41		
WS			0.1	0.27	0.0	0.26		
ES			0.1	0.33	0.0	0.32		
BRD-S			0.1	0.40	0.1	0.42		
PYLL-70								
per 100,000			2.7		1.2			
ES			3.1		1.2			
AYLL-70			30.3		26.4			

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**Single primaries only** *)

Age at death Years	Males n	Females n	Males		Females		Males Prop.all cancers %	Females Prop.all cancers %
			Age- spec. mortal.	MI-index	Age- spec. mortal.	MI-index		
0- 4	1		0.1	0.05			7.1	
5- 9	3		0.3	1.50			13.0	
10-14								
15-19	1	1	0.1	1.00	0.1	0.50	2.4	5.3
20-24		1			0.1	1.00		3.2
25-29	2	1	0.1	1.00	0.1	0.33	3.0	1.5
30-34								
35-39		1			0.1	0.50		0.4
40-44								
45-49	3	1	0.2	1.50	0.1	1.00	0.3	0.1
50-54	2		0.1	1.00			0.1	
55-59	1	2	0.1	1.00	0.1	0.67	0.0	0.1
60-64		2			0.2	2.00		0.1
65-69	3		0.3	1.00			0.1	
70-74								
75-79	1	3	0.1	0.50	0.3	3.00	0.0	0.1
80-84	2		0.4	0.67			0.0	
85+		1			0.1	0.33		0.0
All ages	19	13					0.0	0.0
Mortality								
Raw			0.1	0.39	0.1	0.38		
WS			0.1	0.26	0.0	0.26		
ES			0.1	0.31	0.0	0.32		
BRD-S			0.1	0.39	0.1	0.40		
PYLL-70								
per 100,000			2.6		1.2			
ES			3.0		1.2			
AYLL-70			32.2		26.4			

* See corresponding tables with multiple malignancies.

ICD-10 C47: Malignant neoplasm of peripheral nerves and autonomic nervous system

Age distribution and age-specific mortality 2007 - 2016 (Males: 32, Females: 20)

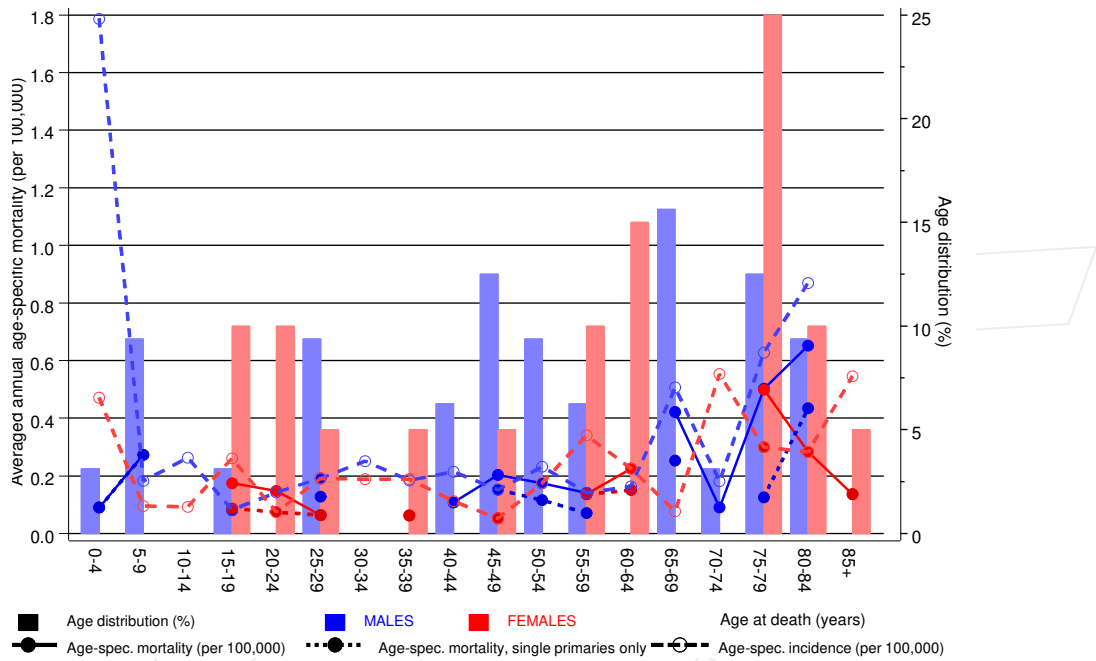
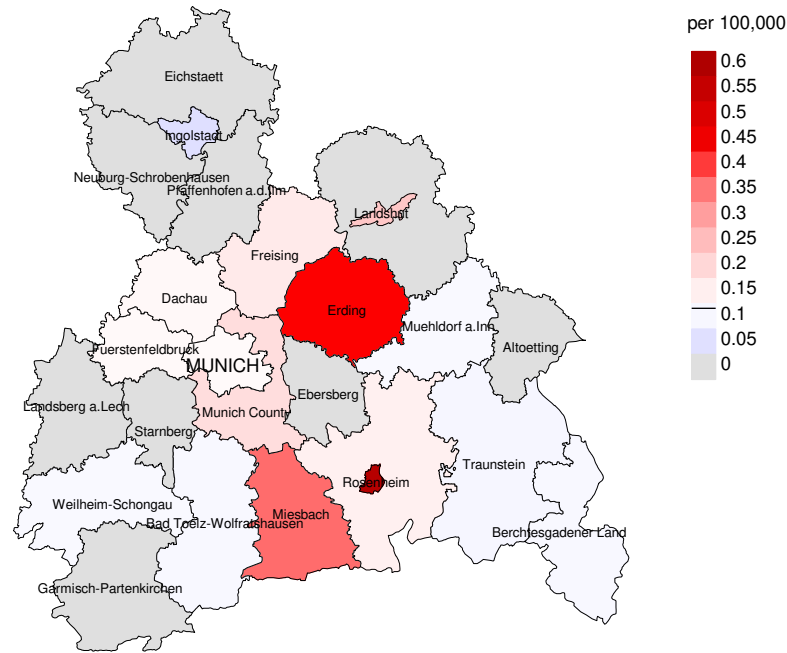


Figure 17. Distribution of age at death (bars; males: mean=48.4 yrs, median=50.8 yrs; females: mean=53.5 yrs, median=60.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2016: Males



Average mortality (world standard population) 2007 - 2016: Females

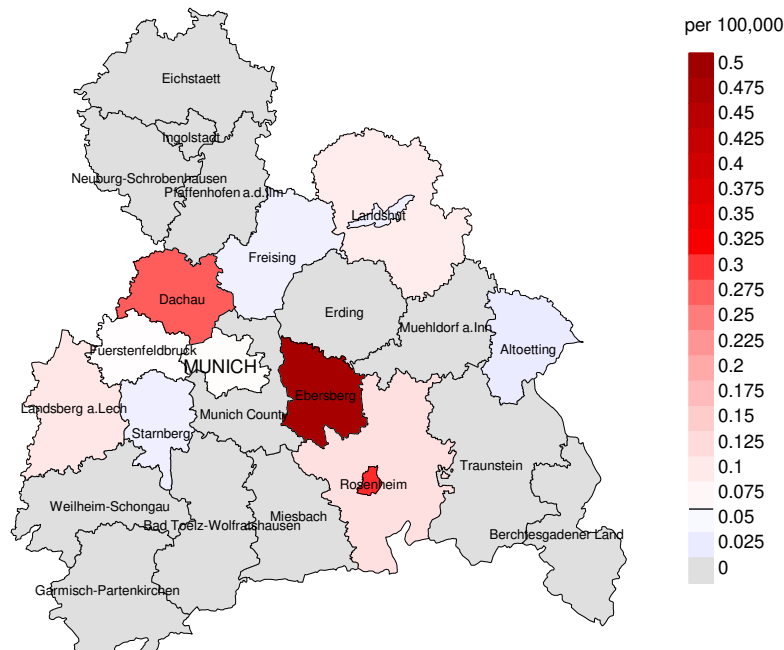
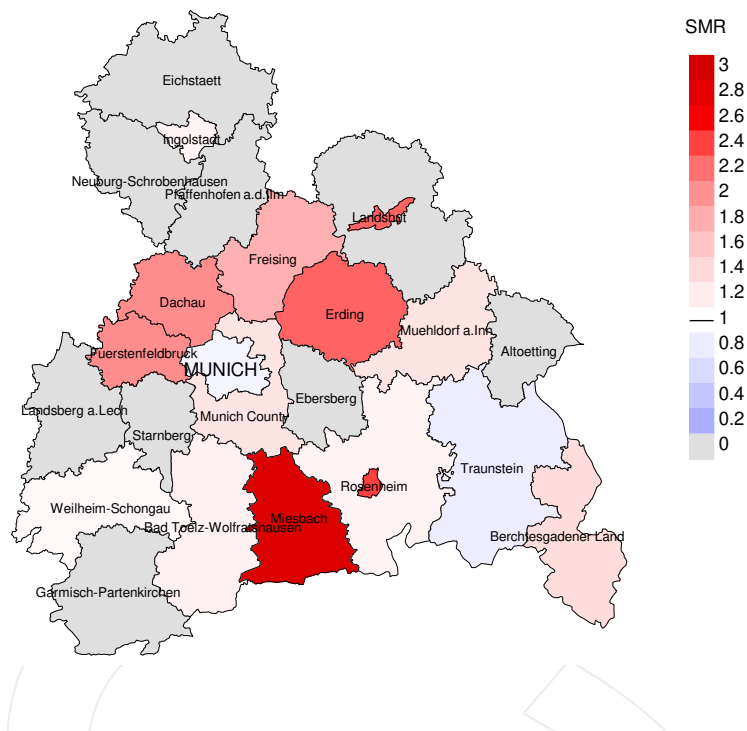


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.1/100,000 WS N=32, females 0.1/100,000 WS N=20).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 2 women died from neoplasm of peripheral nerves. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 2.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

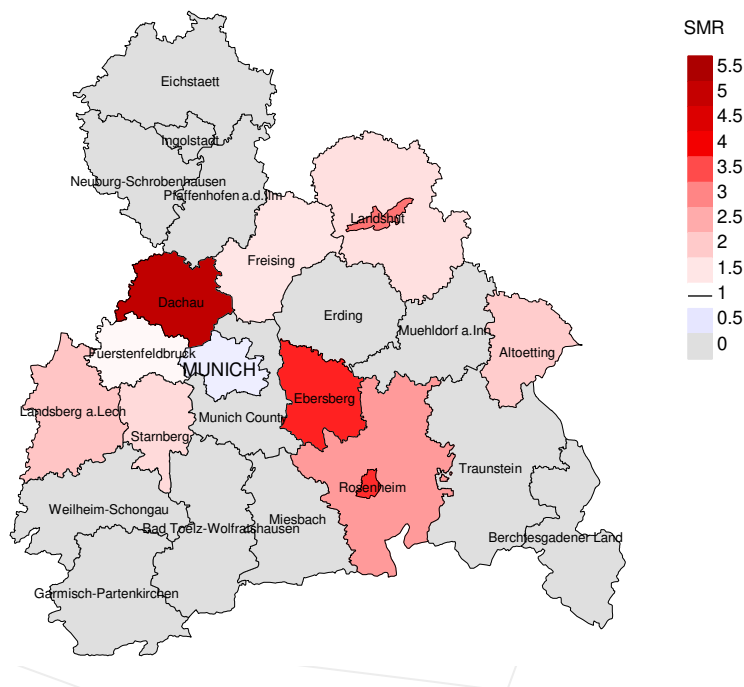


Figure 18b. Map of standardized mortality ratio (SMR) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=32, females N=20).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 2 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 3.70. Though, the value of this parameter may vary with an underlying probability of 99% between 0.19 and 17.16, 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 index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic 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 MI- index. 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 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 between mortality and incidence
FRG	Federal Republic of Germany

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