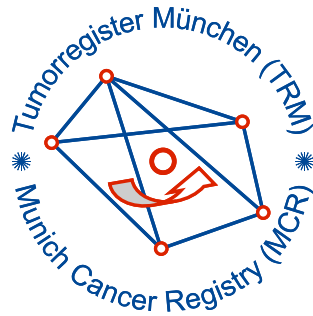


Munich Cancer Registry



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

ICD-10 C90: Plasmacytoma

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	5,000
Diseases	5,004
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m



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Marchioninstr. 15
Munich, 81377
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<https://www.tumorregister-muenchen.de/en>

https://www.tumorregister-muenchen.de/en/facts/base/bC90__E-ICD-10-C90-Plasmacytoma-incidence-and-mortality.pdf

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

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

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

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

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

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

Munich Cancer Registry, January 2021

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

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

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

Some remarks regarding this cancer type

The results for plasmacytomas should be interpreted with caution. As with other primarily non-surgically or non-radiologically treated cancer diseases, the MCR hardly manages to obtain even the simplest information on this cancer. The proportion of DCO cases indicates a situation that is far away from a satisfying cooperation. In the group of institutions that potentially participate in reporting are a few hospitals that refuse any contribution to MCR.

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

Code	Description
C90.-	Multiple myeloma and malignant plasma cell neoplasms
C90.0	Multiple myeloma
C90.1	Plasma cell leukaemia
C90.2	Extramedullary plasmacytoma
C90.3	Solitary plasmacytoma

INCIDENCE

Table 1

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

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	127	32	25.2	8.7	8.3	92.1	97.6
1999	131	30	22.9	12.4	8.2	95.4	98.5
2000	138	47	34.1	11.9	8.2	94.9	99.3
2001	115	34	29.6	11.5	8.2	93.9	99.1
2002	233	79	33.9	12.8	8.0	90.6	99.1 #
2003	238	59	24.8	12.6	8.0	90.3	98.3
2004	242	66	27.3	13.1	7.8	89.7	98.3
2005	237	46	19.4	13.9	7.6	89.0	98.3
2006	238	44	18.5	14.6	7.5	88.2	98.7
2007	319	68	21.3	14.8	7.4	87.1	97.5 #
2008	328	58	17.7	15.0	7.2	83.2	99.4
2009	285	44	15.4	15.2	6.8	80.7	99.3
2010	291	49	16.8	15.7	6.7	80.1	98.3
2011	325	61	18.8	16.2	6.3	74.2	98.2
2012	279	46	16.5	17.0	6.1	70.3	98.2
2013	282	49	17.4	17.4	5.7	72.0	97.9
2014	286	38	13.3	17.9	5.0	61.9	97.2
2015	277	50	18.1	17.9	4.6	70.0	96.8
2016	251	59	23.5	18.0	4.5	59.0	99.2
2017	184	36	19.6	18.2	3.2	48.9	99.5
2018	135	15	11.1	18.6	2.6	41.5	99.3
2019	63	5	7.9	18.7	1.6	25.4	74.6 ##
1998-2019	5004	1015	20.3	18.7	8.3	77.5	98.1

5,004 cases diagnosed 1998-2019 are related to a total of 5,000 patients. Currently, in 1,327 (26.5 %) of these 5,000 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 1,051 / 217 / 59 (21.0 % / 4.3 % / 1.2 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 184 cases has been diagnosed, of which 18.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.2 % 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 DCO, further malignancies, deaths, and active follow-up (MALES) (incl. DCO)

Year of diagnosis	Males n	Males %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	73	57.5	14	19.2	9.6	10.1	89.0	98.6
1999	66	50.4	14	21.2	12.9	10.0	95.5	98.5
2000	81	58.7	31	38.3	12.7	10.0	95.1	98.8
2001	57	49.6	14	24.6	13.0	10.0	89.5	98.2
2002	122	52.4	36	29.5	15.3	9.7	86.9	98.4 #
2003	143	60.1	34	23.8	14.4	9.8	88.8	97.9
2004	124	51.2	30	24.2	14.6	9.6	88.7	99.2
2005	123	51.9	21	17.1	15.0	9.3	90.2	99.2
2006	120	50.4	21	17.5	15.5	9.2	87.5	98.3
2007	173	54.2	40	23.1	15.6	9.0	86.1	96.5 #
2008	185	56.4	34	18.4	15.6	8.8	82.2	99.5
2009	144	50.5	21	14.6	15.9	8.6	78.5	99.3
2010	176	60.5	21	11.9	16.6	8.3	79.0	98.9
2011	174	53.5	22	12.6	17.3	7.7	73.0	98.9
2012	155	55.6	21	13.5	17.9	7.4	69.0	98.1
2013	165	58.5	28	17.0	18.3	7.0	69.7	97.6
2014	153	53.5	19	12.4	18.7	6.1	60.8	97.4
2015	151	54.5	27	17.9	18.4	5.7	65.6	96.0
2016	151	60.2	28	18.5	18.7	5.6	61.6	98.7
2017	104	56.5	18	17.3	19.3	3.3	47.1	100.0
2018	79	58.5	7	8.9	19.6	1.8	43.0	98.7
2019	35	55.6	3	8.6	19.6	2.9	28.6	77.1 ##
1998–2019	2754	55.0	504	18.3	19.6	10.1	76.1	98.1

2,754 cases diagnosed 1998-2019 are related to a total of 2,753 patients. Currently, in 795 (28.9 %) of these 2,753 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 610 / 137 / 48 (22.2 % / 5.0 % / 1.7 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 104 cases has been diagnosed, of which 19.3 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.3 % 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 by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (FEMALES) (incl. DCO)

Year of diagnosis	Females n	Females %	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	54	42.5	18	33.3	7.4	6.1	96.3	96.3
1999	65	49.6	16	24.6	11.8	6.0	95.4	98.5
2000	57	41.3	16	28.1	10.8	6.0	94.7	100.0
2001	58	50.4	20	34.5	9.8	6.1	98.3	100.0
2002	111	47.6	43	38.7	9.9	5.9	94.6	100.0 #
2003	95	39.9	25	26.3	10.5	5.9	92.6	98.9
2004	118	48.8	36	30.5	11.3	5.6	90.7	97.5
2005	114	48.1	25	21.9	12.6	5.4	87.7	97.4
2006	118	49.6	23	19.5	13.5	5.3	89.0	99.2
2007	146	45.8	28	19.2	13.9	5.4	88.4	98.6 #
2008	143	43.6	24	16.8	14.2	5.1	84.6	99.3
2009	141	49.5	23	16.3	14.4	4.6	83.0	99.3
2010	115	39.5	28	24.3	14.8	4.7	81.7	97.4
2011	151	46.5	39	25.8	14.9	4.6	75.5	97.4
2012	124	44.4	25	20.2	16.0	4.4	71.8	98.4
2013	117	41.5	21	17.9	16.3	4.0	75.2	98.3
2014	133	46.5	19	14.3	16.9	3.7	63.2	97.0
2015	126	45.5	23	18.3	17.4	3.1	75.4	97.6
2016	100	39.8	31	31.0	17.1	3.1	55.0	100.0
2017	80	43.5	18	22.5	16.9	3.1	51.3	98.8
2018	56	41.5	8	14.3	17.4	3.6	39.3	100.0
2019	28	44.4	2	7.1	17.6	0.0	21.4	71.4 ##
1998-2019	2250	45.0	511	22.7	17.6	6.1	79.3	98.1

2,250 cases diagnosed 1998-2019 are related to a total of 2,247 patients. Currently, in 532 (23.7 %) of these 2,247 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 441 / 80 / 11 (19.6 % / 3.6 % / 0.5 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:

In 2017, a subgroup of 80 cases has been diagnosed, of which 16.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 3.1 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Males n	Females n	Males Inc. raw	Fem. Inc. raw	Males Inc. WS	Fem. Inc. WS	Males Inc. ES	Fem. Inc. ES	Males Inc. BRD-S	Fem. Inc. BRD-S
1998	73	54	6.6	4.6	4.1	2.1	5.9	3.1	7.3	3.8
1999	66	65	5.9	5.5	3.7	2.2	5.4	3.5	7.2	4.6
2000	81	57	7.1	4.7	4.0	1.9	6.3	3.0	8.8	4.0
2001	57	58	4.9	4.8	2.9	2.2	4.4	3.2	6.0	4.2
2002	122	111	6.5	5.7	3.7	2.3	5.6	3.5	7.3	4.6
2003	143	95	7.6	4.8	4.2	2.0	6.2	3.1	8.0	4.0
2004	124	118	6.6	6.0	3.7	2.4	5.5	3.6	7.0	4.9
2005	123	114	6.5	5.7	3.3	2.3	5.0	3.5	6.7	4.7
2006	120	118	6.3	5.9	3.3	2.4	4.9	3.5	6.3	4.7
2007	173	146	7.8	6.3	3.9	2.5	6.0	3.8	8.0	4.9
2008	185	143	8.3	6.2	4.2	2.5	6.2	3.8	8.0	5.1
2009	144	141	6.5	6.1	3.1	2.3	4.6	3.5	6.0	4.6
2010	176	115	7.8	4.9	3.9	1.9	5.7	2.9	7.5	3.7
2011	174	151	7.8	6.5	3.5	2.6	5.4	3.9	7.3	5.1
2012	155	124	6.8	5.3	3.1	1.9	4.7	3.0	6.2	4.1
2013	165	117	7.2	4.9	3.2	2.0	4.9	2.9	6.6	3.8
2014	153	133	6.6	5.5	3.0	2.2	4.6	3.3	5.9	4.3
2015	151	126	6.3	5.2	2.8	1.8	4.3	2.9	5.8	3.9
2016	151	100	6.3	4.1	2.8	1.4	4.2	2.2	5.6	3.0
2017	104	80	4.3	3.2	2.0	1.3	3.0	1.9	3.8	2.4
2018	79	56	3.2	2.3	1.4	0.8	2.2	1.2	2.9	1.7
2019	35	28	1.4	1.1	0.6	0.4	1.0	0.6	1.3	0.8
1998-2019	2754	2250	6.2	4.9	3.1	1.9	4.6	2.9	6.1	3.8

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

Table 3

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	127	67.4	12.9	26.1	94.0	52.7	58.7	67.6	75.7	85.3
1999	131	69.5	13.0	23.9	92.8	53.5	60.0	71.0	79.0	84.3
2000	138	72.0	11.8	38.2	94.4	55.7	64.6	73.1	80.0	86.5
2001	115	68.9	11.1	36.1	93.7	50.9	60.8	70.5	77.5	81.4
2002	233	71.0	12.1	32.7	93.5	55.9	62.7	71.8	79.9	86.3
2003	238	69.4	11.3	31.4	99.0	54.8	62.2	68.9	78.2	83.7
2004	242	70.3	11.8	37.1	93.4	55.3	62.6	70.7	79.0	84.2
2005	237	71.6	11.0	38.9	102	56.6	65.2	72.3	79.4	84.7
2006	238	70.9	12.3	22.7	94.9	55.3	64.8	71.5	79.6	85.3
2007	319	71.2	11.0	30.9	93.2	58.1	64.6	71.5	80.1	84.5
2008	328	71.0	11.7	33.8	97.9	56.1	64.8	71.0	79.4	85.2
2009	285	71.6	11.4	34.7	94.6	56.3	65.6	71.8	79.5	85.6
2010	291	70.6	12.3	5.0	97.2	53.7	63.6	71.8	79.5	85.8
2011	325	71.4	12.1	31.0	97.4	52.9	66.1	73.0	79.6	85.1
2012	279	71.4	11.8	31.5	97.5	53.2	64.9	72.6	80.1	84.8
2013	282	71.6	11.7	38.5	93.1	54.6	64.0	74.2	80.3	85.0
2014	286	71.5	11.3	38.1	98.4	55.2	63.3	73.7	79.8	85.4
2015	277	73.0	10.8	43.9	95.2	56.9	65.2	74.5	80.8	86.0
2016	251	72.1	12.0	35.7	99.9	54.7	65.0	75.0	80.7	85.2
2017	184	71.8	12.4	34.9	96.6	56.1	64.7	73.3	80.4	85.8
2018	135	71.8	10.7	39.1	92.7	56.2	65.1	74.3	79.4	84.1
2019	63	71.5	11.4	42.8	93.5	52.2	62.5	73.8	79.8	84.7
1998-2019	5004	71.1	11.7	5.0	102	55.0	63.8	72.4	79.6	85.1

Table 3a

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	73	64.8	13.4	26.1	92.3	49.5	56.2	64.7	73.6	83.9
1999	66	66.7	13.5	23.9	91.7	48.5	58.5	68.3	77.0	83.7
2000	81	71.0	11.5	38.2	92.3	56.5	61.6	71.8	79.5	86.5
2001	57	67.7	10.8	44.4	85.3	49.1	59.2	69.7	76.3	80.3
2002	122	69.2	12.0	32.7	93.5	54.4	62.1	69.9	78.0	83.6
2003	143	68.0	10.2	36.7	99.0	54.8	61.3	67.4	75.6	81.4
2004	124	68.5	12.1	37.1	93.4	52.6	60.7	69.0	76.3	83.1
2005	123	70.6	10.9	38.9	102	57.6	64.8	69.8	77.8	83.8
2006	120	69.5	11.9	27.5	94.8	54.7	64.0	69.7	76.8	84.0
2007	173	70.0	11.4	30.9	93.2	55.9	63.4	70.5	79.3	82.7
2008	185	69.6	12.2	33.8	97.9	51.6	63.4	70.2	78.4	85.1
2009	144	70.0	10.7	34.7	94.1	54.9	65.3	71.0	77.5	83.8
2010	176	69.1	12.4	5.0	93.0	51.9	63.2	70.6	77.1	84.5
2011	174	70.8	12.1	31.0	97.4	51.6	66.3	72.8	78.4	84.0
2012	155	70.2	11.7	41.0	92.5	52.0	64.2	72.0	77.8	84.1
2013	165	71.3	11.7	38.5	93.1	52.2	64.2	74.1	79.3	84.8
2014	153	71.1	11.5	38.1	96.6	56.7	63.4	73.4	79.4	85.4
2015	151	72.5	10.6	43.9	95.1	58.2	65.0	73.5	80.3	85.7
2016	151	70.8	11.5	41.5	99.9	54.5	63.2	73.3	79.0	82.8
2017	104	71.3	12.4	34.9	94.1	53.8	64.8	72.4	81.0	85.5
2018	79	70.4	10.9	39.1	92.7	53.8	62.2	73.7	78.5	82.8
2019	35	70.1	11.8	42.8	88.1	52.1	61.2	73.8	79.1	83.0
1998-2019	2754	69.9	11.7	5.0	102	53.7	63.0	71.1	78.3	84.1

Table 3b

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

Year of diagnosis	Cases n	Std.		Min.	Max.	Median				
		Mean	dev.			10%	25%	50%	75%	90%
1998	54	70.8	11.6	37.6	94.0	57.6	62.1	70.0	78.6	88.1
1999	65	72.3	11.9	49.2	92.8	56.1	62.1	74.6	80.1	87.9
2000	57	73.4	12.1	40.6	94.4	55.7	67.0	76.1	80.4	86.2
2001	58	70.1	11.3	36.1	93.7	57.3	63.3	70.7	79.1	83.2
2002	111	73.0	11.9	38.9	93.2	56.3	63.7	74.3	82.6	87.8
2003	95	71.5	12.6	31.4	94.2	55.4	63.7	72.6	80.7	85.6
2004	118	72.2	11.1	38.8	92.1	56.1	65.5	73.1	81.3	84.5
2005	114	72.7	11.0	42.1	96.8	55.9	65.3	74.8	81.8	84.7
2006	118	72.4	12.5	22.7	94.9	55.3	66.0	74.4	81.9	85.7
2007	146	72.7	10.3	44.4	92.3	60.8	66.6	73.0	81.3	86.1
2008	143	72.8	10.7	37.5	94.3	59.1	66.3	73.9	80.0	85.5
2009	141	73.2	11.8	35.0	94.6	58.8	67.3	73.1	83.1	87.1
2010	115	72.8	12.0	40.5	97.2	55.9	66.5	73.1	82.1	87.1
2011	151	72.0	12.2	41.9	97.1	54.5	65.3	73.4	80.8	87.1
2012	124	72.9	11.8	31.5	97.5	55.1	66.6	75.3	81.9	85.4
2013	117	72.1	11.7	41.6	92.2	56.3	64.0	74.3	80.9	85.5
2014	133	72.0	11.2	42.1	98.4	54.7	63.3	74.5	80.6	85.4
2015	126	73.5	11.0	45.3	95.2	56.1	65.2	75.9	81.2	86.2
2016	100	73.9	12.5	35.7	95.8	55.1	70.0	76.3	82.8	87.3
2017	80	72.4	12.4	37.7	96.6	57.1	64.0	74.8	79.2	88.5
2018	56	73.7	10.3	48.8	92.1	57.0	68.4	74.7	80.4	85.0
2019	28	73.3	10.7	50.1	93.5	55.5	68.5	73.9	81.2	85.5
1998-2019	2250	72.6	11.6	22.7	98.4	56.3	65.2	74.0	81.2	86.1

Table 4

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

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4	1	0.0	0.0	1	0.1	0.1			0.0
5-9	0	0.0	0.0			0.1			0.0
10-14	0	0.0	0.0			0.1			0.0
15-19	0	0.0	0.0			0.1			0.0
20-24	0	0.0	0.0			0.1			0.0
25-29	0	0.0	0.0			0.1			0.0
30-34	8	0.2	0.3	6	0.3	0.4	2	0.1	0.1
35-39	15	0.5	0.7	10	0.5	0.9	5	0.3	0.5
40-44	48	1.5	2.2	37	2.0	2.9	11	0.8	1.2
45-49	109	3.3	5.5	67	3.6	6.6	42	2.9	4.1
50-54	151	4.6	10.0	90	4.9	11.4	61	4.2	8.3
55-59	214	6.5	16.5	114	6.2	17.6	100	6.8	15.1
60-64	299	9.0	25.6	178	9.6	27.3	121	8.3	23.4
65-69	459	13.9	39.5	270	14.6	41.9	189	12.9	36.4
70-74	589	17.8	57.3	357	19.3	61.2	232	15.9	52.3
75-79	600	18.2	75.4	330	17.9	79.1	270	18.5	70.8
80-84	463	14.0	89.4	231	12.5	91.7	232	15.9	86.6
85+	349	10.6	100.0	154	8.3	100.0	195	13.4	100.0
All ages	3305	100.0		1845	100.0		1460	100.0	

Table 5

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

Age at diagnosis Years	Males n	Females n	Males Age- spec. incid.	Females Age- spec. incid.	Males DCO rate n=289 %	Females DCO rate n=288 %	Males	Females
							Prop.all cancers n=143063 %	Prop.all cancers n=144724 %
0- 4	1		0.1				0.5	
5- 9								
10-14								
15-19								
20-24								
25-29								
30-34	6	2	0.3	0.1			0.5	0.1
35-39	10	5	0.5	0.2			0.6	0.2
40-44	37	11	1.6	0.5			1.4	0.2
45-49	67	42	2.7	1.7			1.4	0.5
50-54	90	60	3.8	2.6	6.7	5.0	1.1	0.5
55-59	114	100	5.9	5.0	4.4	4.0	1.0	0.8
60-64	178	121	10.9	6.9	5.6	5.0	1.1	0.8
65-69	270	189	17.8	11.2	8.1	6.9	1.2	1.1
70-74	357	232	25.5	14.4	11.5	10.3	1.4	1.2
75-79	330	270	29.8	19.6	17.3	17.0	1.5	1.5
80-84	231	232	35.2	23.8	27.3	31.5	1.6	1.6
85+	154	194	36.1	20.1	55.2	61.3	1.6	1.3
All ages	1845	1458			15.7	19.8	1.3	1.0
Incidence								
Raw			6.1	4.7				
WS			2.9	1.8				
ES			4.3	2.7				
BRD-S			5.6	3.6				

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

ICD-10 C90: Multiple myeloma and malignant plasma cell neoplasms

Age distribution and age-specific incidence 2007 - 2019 (Males: 1845, Females: 1458)

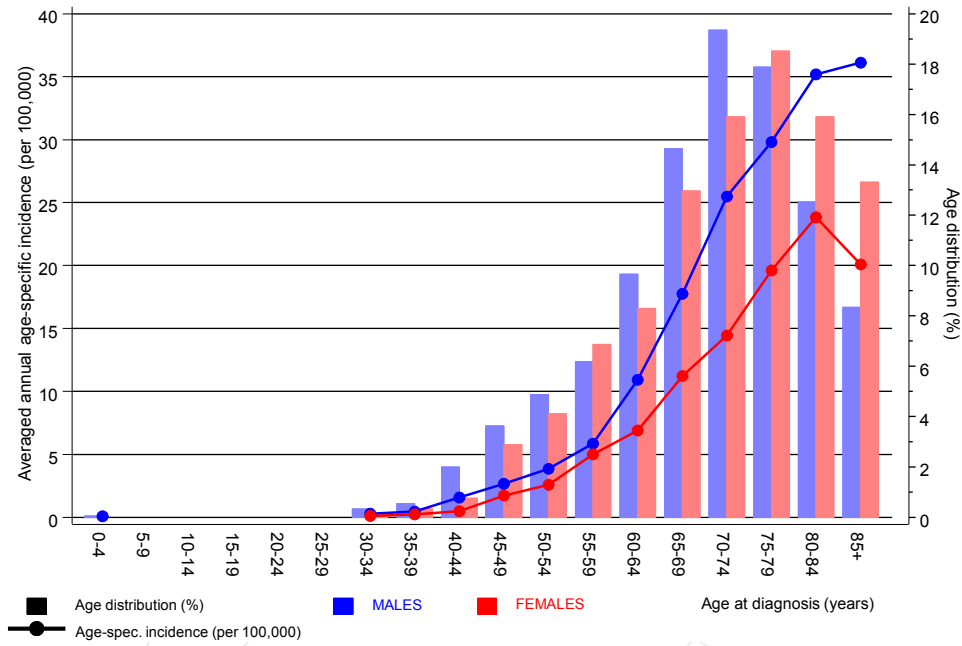


Figure 6. Age distribution (males: mean=70.5 yrs, median=72.0 yrs; females: mean=72.8 yrs, median=74.3 yrs) and age-specific incidence.

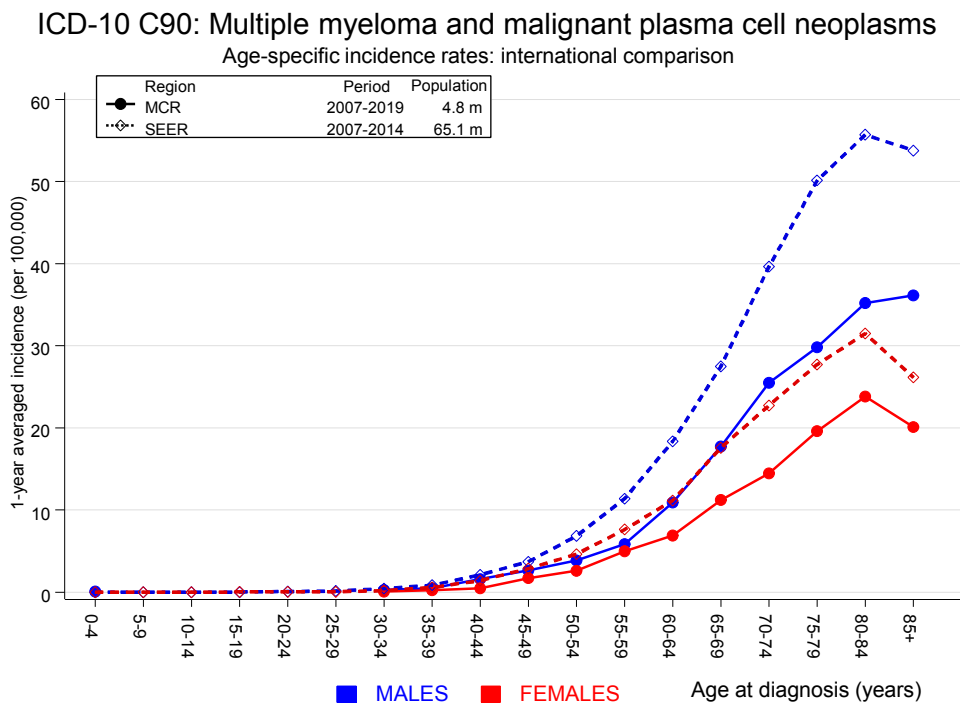


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2019, based on the November 2018 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 1998-2019

MALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	1	0.1	7.5	0.2	41.5	1.1	
C03-C06 Oral cavity	3	1.0	2.9	0.6	8.4	2.6	
C07-C08 Salivary gland	1	0.3	3.6	0.1	20.3	1.0	
C12-C13 Hypopharynx	1	0.7	1.4	0.0	7.8	0.4	
C15 Oesophagus	5	2.5	2.0	0.7	4.7	3.3	20.0
C16 Stomach	10	4.8	2.1	1.0	3.9 #	6.9	
C17 Small intestine	2	0.7	2.7	0.3	9.8	1.7	
C18 Colon	17	11.7	1.5	0.8	2.3	7.0	
C19-C20 Rectum	9	6.6	1.4	0.6	2.6	3.1	
C22 Liver	6	3.7	1.6	0.6	3.6	3.1	16.7
C23-C24 Bile	2	1.3	1.5	0.2	5.6	0.9	
C25 Pancreas	9	4.8	1.9	0.9	3.6	5.5	22.2
C32 Larynx	2	1.3	1.6	0.2	5.7	1.0	
C33-C34 Lung	24	14.8	1.6	1.0	2.4 #	12.1	4.2
C37 Thymus	2	0.1	28.2	3.4	101.7 #	2.5	
C38,C45 Mesothelioma	2	0.9	2.3	0.3	8.2	1.5	
C40-C41 Bone	3	0.1	30.3	6.3	88.7 #	3.8	
C43 Malign. melanoma	11	5.6	2.0	1.0	3.5	7.1	
C44 Skin others	1	0.0	31.0	0.8	172.5	1.3	
C46,C49 Soft tissue	3	0.7	4.4	0.9	12.9	3.1	
C61 Prostate	72	35.7	2.0	1.6	2.5 #	47.8	4.2
C64 Kidney	12	4.3	2.8	1.4	4.9 #	10.1	8.3
C65 Renal pelvis	1	0.6	1.8	0.0	10.1	0.6	
C67 Bladder	10	5.6	1.8	0.9	3.3	5.8	10.0
C69 Eye carcinoma	1	0.0	21.4	0.5	119.5	1.3	100.0
C70-C72 CNS cancer	6	1.6	3.8	1.4	8.3 #	5.8	16.7
C73 Thyroid	4	0.8	4.9	1.3	12.6 #	4.2	
C76-C79 CUP	7	2.0	3.4	1.4	7.0 #	6.5	
C81 Hodgkin lymphoma	1	0.3	3.5	0.1	19.5	0.9	
C82-C85 NHL	32	5.2	6.2	4.2	8.7 #	35.3	3.1
C90 Mult. myeloma	1	1.7	0.6	0.0	3.4	-0.9	100.0
C91-C96 Leukaemia	11	1.8	6.0	3.0	10.7 #	12.1	9.1
Not observed	0	4.1	0.0	0.0	0.9 #	-5.4	
All further malignancies	272	125.3	2.2	1.9	2.4 #	193.1	5.5
Patients		2323					
Median age at next malignancy (years)		73.4					
Person-years		7600					
Mean observation time (years)		3.3					
Median observation time (years)		2.1					

The occurrence of further specified malignancy is statistically significant.

Table 7b

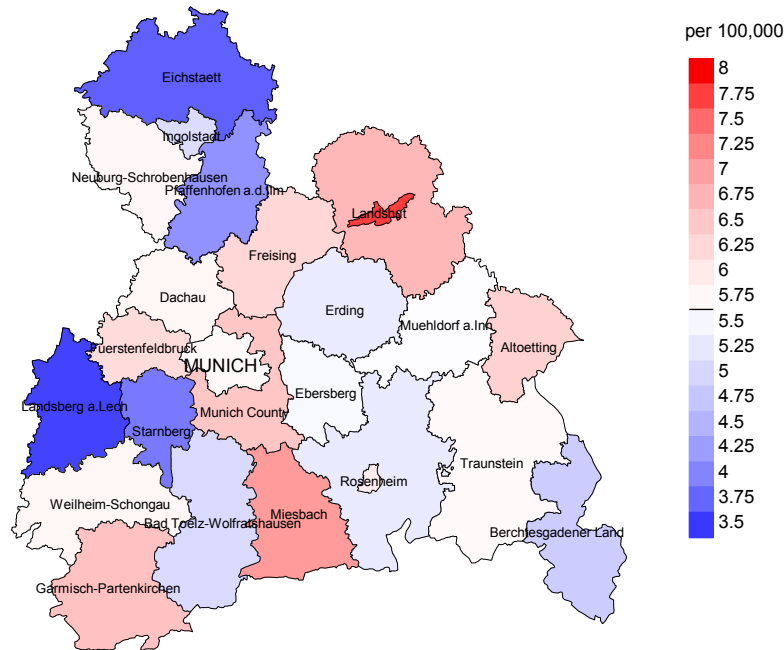
Standardized incidence ratio (SIR, with 95% confidence limits),
excess absolute risk (EAR) and DCO rate of further malignancies
for period 1998-2019

FEMALES

Diagnosis	Observed n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C00 Lip	1	0.0	22.2	0.6	123.7	1.7	
C03-C06 Oral cavity	1	0.4	2.6	0.1	14.6	1.1	
C09-C10 Oropharynx	2	0.3	7.3	0.9	26.4	3.0	
C15 Oesophagus	1	0.4	2.3	0.1	12.8	1.0	
C16 Stomach	7	2.2	3.2	1.3	6.6 #	8.5	
C18 Colon	14	6.3	2.2	1.2	3.7 #	13.6	7.1
C19-C20 Rectum	3	2.6	1.1	0.2	3.4	0.7	
C21 Anus/canal	1	0.4	2.8	0.1	15.4	1.1	
C22 Liver	1	0.8	1.2	0.0	6.7	0.3	
C23-C24 Bile	1	0.9	1.1	0.0	6.0	0.1	
C25 Pancreas	3	3.1	1.0	0.2	2.9	-0.1	66.7
C26 GI cancer	1	0.1	10.1	0.3	56.2	1.6	100.0
C33-C34 Lung	8	5.2	1.5	0.7	3.0	5.0	
C38,C45 Mesothelioma	1	0.1	7.9	0.2	43.9	1.5	
C43 Malign. melanoma	9	2.5	3.7	1.7	6.9 #	11.5	
C46,C49 Soft tissue	1	0.4	2.7	0.1	15.1	1.1	
C48 Peritoneal	3	0.3	10.6	2.2	30.9 #	4.8	
C50 Breast	25	20.3	1.2	0.8	1.8	8.3	12.0
C51 Vulva	2	0.7	2.9	0.4	10.5	2.3	
C53 Cervix uteri	1	0.8	1.3	0.0	7.1	0.4	
C54 Corpus uteri	2	3.8	0.5	0.1	1.9	-3.2	
C56 Ovary	3	2.7	1.1	0.2	3.3	0.5	33.3
C64 Kidney	1	1.6	0.6	0.0	3.5	-1.1	
C65 Renal pelvis	1	0.2	4.7	0.1	26.1	1.4	
C67 Bladder	2	1.3	1.6	0.2	5.8	1.3	
C70-C72 CNS cancer	1	0.9	1.2	0.0	6.4	0.2	100.0
C73 Thyroid	1	1.0	1.0	0.0	5.4	-0.1	
C74-C80 Cancer others	1	0.2	4.8	0.1	26.5	1.4	
C76-C79 CUP	2	1.2	1.7	0.2	6.2	1.5	
C81 Hodgkin lymphoma	1	0.1	8.7	0.2	48.7	1.6	
C82-C85 NHL	14	2.6	5.4	2.9	9.0 #	20.0	14.3
C90 Mult. myeloma	2	0.8	2.4	0.3	8.6	2.0	50.0
C91-C96 Leukaemia	10	1.0	10.4	5.0	19.0 #	15.9	20.0
Not observed	0	1.4	0.0	0.0	2.6	-2.5	
All further malignancies	127	66.5	1.9	1.6	2.3 #	106.5	11.0
Patients		1812					
Median age at next malignancy (years)		73.1					
Person-years		5685					
Mean observation time (years)		3.1					
Median observation time (years)		2.0					

The occurrence of further specified malignancy is statistically significant.

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



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

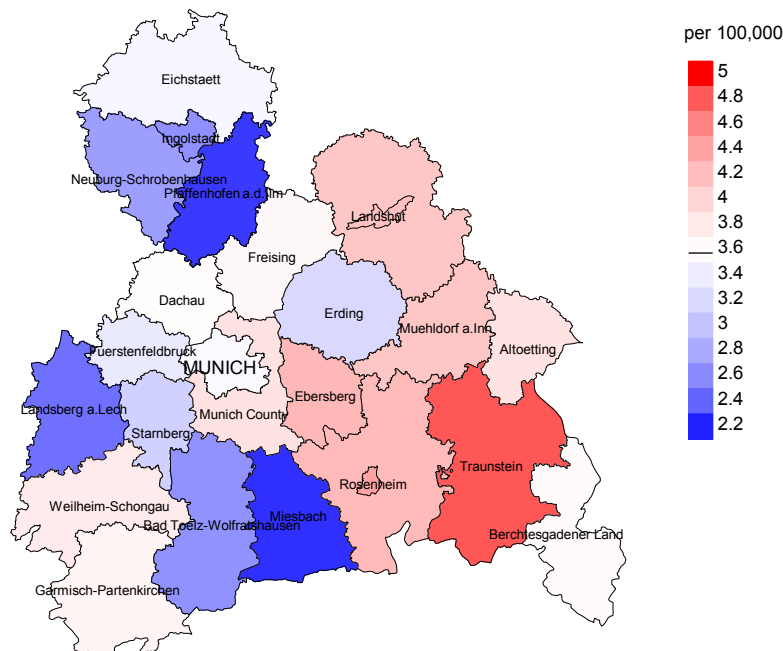
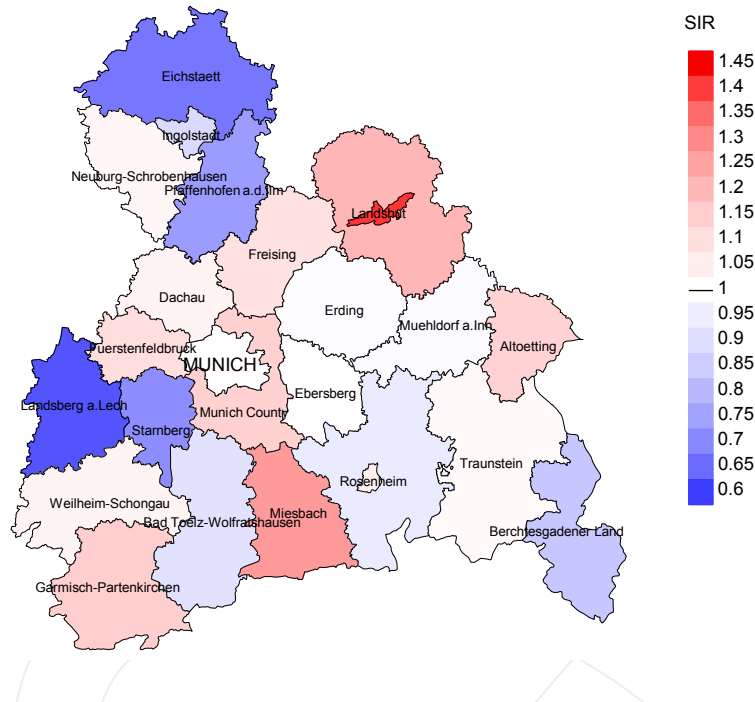


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 5.6/100,000 WS N=1,845, females 3.6/100,000 WS N=1,458).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 47 women were identified with newly diagnosed plasmacytoma. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 4.2/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 2.8 and 6.2/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

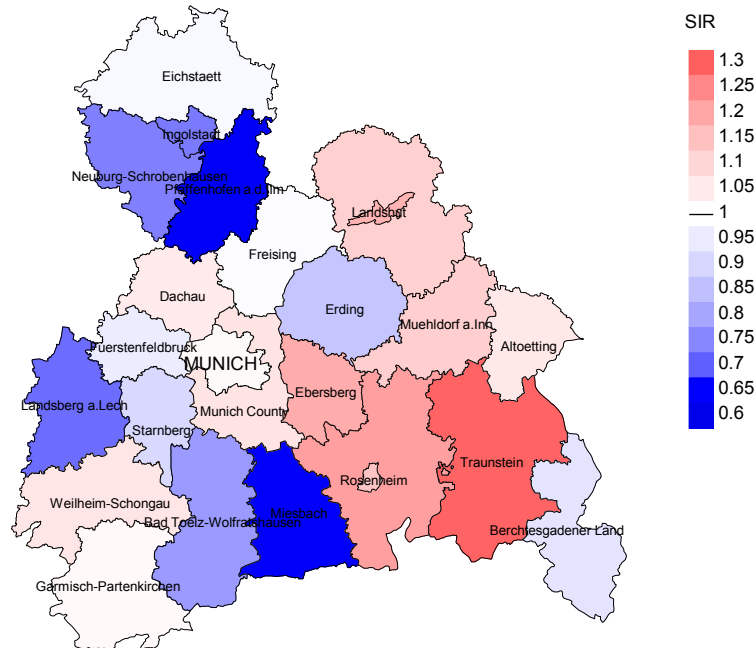


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,845, females N=1,458).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 47 women were identified with newly diagnosed plasmacytoma. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 1.19. Though, the value of this parameter may vary with an underlying probability of 99% between 0.79 and 1.71, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	127	97.6	25.2	117	92.1	94.0
1999	131	98.5	22.9	125	95.4	94.4
2000	138	99.3	34.1	131	94.9	95.4
2001	115	99.1	29.6	108	93.9	96.3
2002	233	99.1	33.9	211	90.6	96.7
2003	238	98.3	24.8	215	90.3	97.7
2004	242	98.3	27.3	217	89.7	97.7
2005	237	98.3	19.4	211	89.0	96.7
2006	238	98.7	18.5	210	88.2	97.1
2007	319	97.5	21.3	278	87.1	96.8
2008	328	99.4	17.7	273	83.2	96.0
2009	285	99.3	15.4	230	80.7	94.8
2010	291	98.3	16.8	233	80.1	97.0
2011	325	98.2	18.8	241	74.2	94.2
2012	279	98.2	16.5	196	70.3	93.4
2013	282	97.9	17.4	203	72.0	87.7
2014	286	97.2	13.3	177	61.9	89.3
2015	277	96.8	18.1	194	70.0	88.7
2016	251	99.2	23.5	148	59.0	94.6
2017	184	99.5	19.6	90	48.9	77.8
2018	135	99.3	11.1	56	41.5	62.5
2019	63	74.6	7.9	16	25.4	75.0
1998-2019	5004	98.1	20.3	3880	77.5	93.8

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.92 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	127	85	92.9	36	28.3
1999	131	98	95.9	43	32.8
2000	138	112	91.1	49	35.5
2001	115	103	94.2	37	32.2
2002	233	145	95.9	87	37.3
2003	238	163	99.4	80	33.6
2004	242	193	98.4	91	37.6
2005	237	150	98.0	66	27.8
2006	238	154	96.8	66	27.7
2007	319	183	98.9	90	28.2
2008	328	215	97.2	83	25.3
2009	285	214	97.2	71	24.9
2010	291	224	99.1	75	25.8
2011	325	235	97.9	81	24.9
2012	279	212	97.2	63	22.6
2013	282	226	99.1	71	25.2
2014	286	256	98.0	76	26.6
2015	277	242	99.6	83	30.0
2016	251	226	98.7	86	34.3
2017	184	223	97.3	53	28.8
2018	135	158	36.1	31	23.0
2019	63	134	46.3	12	19.0
1998–2019	5004	3951	93.4	1430	28.6

Table 9c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates
(incl. DCO)

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.92 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	85	54.1	45.9	94.9
1999	98	72.4	27.6	96.8
2000	112	65.2	34.8	96.1
2001	103	58.3	41.7	99.0
2002	145	81.4	18.6	97.1
2003	163	81.0	19.0	96.9
2004	193	82.9	17.1	96.8
2005	150	83.3	16.7	95.2
2006	154	84.4	15.6	96.6
2007	183	85.2	14.8	95.6
2008	215	83.3	16.7	92.3
2009	214	81.3	18.7	96.6
2010	224	81.7	18.3	90.5
2011	235	79.6	20.4	93.0
2012	212	82.5	17.5	93.2
2013	226	81.9	18.1	92.9
2014	256	82.8	17.2	92.0
2015	242	80.2	19.8	89.6
2016	226	79.2	20.8	93.7
2017	223	76.2	23.8	88.9
2018	158	44.3	55.7	84.2
2019	134	52.2	47.8	77.4
1998–2019	3951	77.2	22.8	93.4

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	36	68.5	64.6	78.5	70.0
1999	51	71.9	71.5	74.0	71.8
2000	63	75.4	71.8	77.0	77.8
2001	47	75.5	74.2	76.6	75.5
2002	74	71.3	72.1	68.1	71.7
2003	83	72.4	71.5	74.9	72.4
2004	103	73.4	73.1	77.2	73.5
2005	76	74.0	74.0	73.7	73.8
2006	80	73.7	73.4	79.7	73.4
2007	94	74.3	74.1	79.9	74.6
2008	124	72.3	70.4	81.3	71.5
2009	114	72.6	72.6	72.6	73.1
2010	117	74.1	73.7	76.6	73.6
2011	130	75.8	75.8	78.1	75.8
2012	109	75.0	74.9	76.1	76.1
2013	141	76.3	75.3	79.1	75.8
2014	140	77.3	76.4	78.3	76.7
2015	131	77.0	76.9	78.6	77.2
2016	122	77.2	77.3	77.2	77.3
2017	127	76.8	76.8	77.4	76.5
2018	93	77.0	78.8	76.6	76.8
2019	71	77.3	74.9	77.9	75.2
1998-2019	2126	75.0	74.5	77.2	74.9

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	49	78.3	70.4	80.6	78.2
1999	47	78.4	76.8	82.5	78.4
2000	49	77.2	76.7	78.8	76.5
2001	56	76.9	74.5	77.5	76.6
2002	71	76.5	74.0	82.1	77.0
2003	80	75.1	73.3	82.1	75.1
2004	90	75.5	74.3	81.4	75.4
2005	74	76.4	74.8	84.7	75.7
2006	74	76.3	76.1	78.8	77.2
2007	89	78.1	77.3	84.1	78.2
2008	91	77.4	77.1	80.8	77.4
2009	100	73.4	71.9	80.7	73.0
2010	107	76.1	74.9	81.8	75.9
2011	105	76.0	74.2	83.9	75.5
2012	103	77.8	76.6	81.4	76.4
2013	85	79.2	79.0	79.8	79.2
2014	116	77.7	76.1	83.0	77.9
2015	111	77.4	77.3	83.2	77.6
2016	104	78.2	77.9	79.6	78.0
2017	96	78.0	77.7	80.8	77.7
2018	65	79.4	76.9	81.0	76.3
2019	63	78.4	78.4	80.0	78.4
1998-2019	1825	77.1	76.1	81.2	76.8

By 2018, Bavarians' life expectancy at birth is estimated at 79.3 years for boys and 83.8 years for girls.

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

Table 11a

Mortality measures (cancer-related death) and mortality-incidence-index
by year of death

MALES

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	23	2.1	0.32	1.3	0.31	1.8	0.30	2.1	0.29
1999	36	3.2	0.55	2.0	0.54	3.0	0.56	4.2	0.58
2000	40	3.5	0.49	2.0	0.49	3.1	0.49	4.6	0.52
2001	30	2.6	0.53	1.4	0.48	2.3	0.52	3.4	0.56
2002	58	3.1	0.48	1.7	0.46	2.6	0.47	3.6	0.50
2003	68	3.6	0.48	1.9	0.45	2.9	0.47	4.0	0.50
2004	84	4.5	0.68	2.3	0.63	3.6	0.65	4.8	0.70
2005	64	3.4	0.52	1.7	0.51	2.7	0.53	3.7	0.55
2006	67	3.5	0.56	1.7	0.51	2.6	0.53	3.6	0.57
2007	84	3.8	0.49	1.8	0.46	2.9	0.48	4.0	0.50
2008	107	4.8	0.58	2.4	0.57	3.6	0.58	4.7	0.59
2009	93	4.2	0.65	1.9	0.62	3.0	0.65	4.0	0.67
2010	92	4.1	0.52	1.7	0.44	2.8	0.48	3.9	0.52
2011	109	4.9	0.63	2.0	0.58	3.3	0.61	4.7	0.65
2012	87	3.8	0.56	1.6	0.51	2.5	0.54	3.6	0.58
2013	111	4.8	0.67	1.9	0.58	3.0	0.62	4.4	0.67
2014	114	4.9	0.75	1.9	0.63	3.1	0.68	4.4	0.75
2015	105	4.4	0.70	1.7	0.59	2.7	0.64	4.0	0.68
2016	95	4.0	0.63	1.6	0.58	2.6	0.61	3.5	0.63
2017	100	4.1	0.96	1.6	0.80	2.5	0.86	3.6	0.94
2018	39	1.6	0.49	0.6	0.43	1.0	0.46	1.4	0.47
2019	34	1.4	0.97	0.6	0.90	0.9	0.92	1.2	0.97
1998-2019	1640	3.7	0.60	1.7	0.54	2.6	0.57	3.7	0.61

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	23	2.0	0.43	0.9	0.43	1.3	0.43	1.7	0.44
1999	35	2.9	0.54	1.1	0.48	1.7	0.50	2.4	0.53
2000	33	2.7	0.58	1.0	0.54	1.6	0.54	2.2	0.56
2001	30	2.5	0.52	1.0	0.45	1.6	0.49	2.2	0.52
2002	60	3.1	0.54	1.2	0.53	1.8	0.52	2.4	0.53
2003	64	3.2	0.67	1.3	0.64	2.0	0.65	2.6	0.66
2004	76	3.8	0.64	1.5	0.60	2.3	0.62	3.1	0.64
2005	61	3.1	0.54	1.2	0.51	1.8	0.52	2.4	0.52
2006	63	3.1	0.53	1.1	0.46	1.7	0.49	2.5	0.54
2007	72	3.1	0.50	1.1	0.42	1.7	0.45	2.4	0.49
2008	72	3.1	0.50	1.1	0.45	1.7	0.46	2.4	0.48
2009	81	3.5	0.57	1.3	0.57	2.0	0.57	2.6	0.57
2010	91	3.9	0.79	1.3	0.69	2.1	0.72	2.9	0.77
2011	78	3.3	0.52	1.2	0.48	1.9	0.49	2.6	0.51
2012	88	3.7	0.71	1.3	0.66	2.0	0.68	2.7	0.65
2013	74	3.1	0.63	1.0	0.49	1.5	0.52	2.3	0.59
2014	98	4.1	0.74	1.3	0.61	2.1	0.65	3.0	0.70
2015	89	3.7	0.71	1.1	0.63	1.8	0.65	2.6	0.67
2016	84	3.4	0.84	1.0	0.72	1.7	0.77	2.4	0.80
2017	70	2.8	0.88	0.9	0.67	1.4	0.73	2.0	0.81
2018	31	1.2	0.55	0.4	0.52	0.6	0.52	0.9	0.55
2019	36	1.5	1.29	0.4	1.01	0.7	1.07	1.0	1.18
1998-2019	1409	3.1	0.63	1.1	0.55	1.7	0.58	2.3	0.61

Table 12

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

Age at death Years	Cases			Males			Females		
	n	%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	1	0.0	0.0	1	0.1	0.1			0.0
30-34	1	0.0	0.1	1	0.1	0.2			0.0
35-39	3	0.1	0.2	2	0.2	0.3	1	0.1	0.1
40-44	8	0.4	0.6	6	0.5	0.9	2	0.2	0.3
45-49	25	1.2	1.8	19	1.6	2.5	6	0.6	0.9
50-54	56	2.6	4.4	38	3.2	5.7	18	1.9	2.8
55-59	90	4.2	8.6	43	3.7	9.4	47	4.9	7.7
60-64	133	6.2	14.9	83	7.1	16.5	50	5.2	12.9
65-69	276	12.9	27.8	154	13.2	29.7	122	12.7	25.5
70-74	410	19.2	47.0	227	19.4	49.1	183	19.0	44.5
75-79	443	20.8	67.8	249	21.3	70.3	194	20.1	64.6
80-84	378	17.7	85.5	192	16.4	86.8	186	19.3	83.9
85+	310	14.5	100.0	155	13.2	100.0	155	16.1	100.0
All ages	2134	100.0		1170	100.0		964	100.0	

Table 13

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	Males MI-index	Females Age- spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.0	1.00			1.2	
30-34	1		0.0	0.17			0.8	
35-39	2	1	0.1	0.20	0.0	0.20	0.8	0.3
40-44	6	2	0.3	0.16	0.1	0.18	1.0	0.2
45-49	19	6	0.8	0.28	0.2	0.14	1.4	0.4
50-54	38	18	1.6	0.42	0.8	0.30	1.5	0.7
55-59	43	47	2.2	0.38	2.4	0.47	1.0	1.3
60-64	83	50	5.1	0.47	2.8	0.41	1.4	1.1
65-69	154	122	10.1	0.57	7.2	0.65	1.8	1.9
70-74	227	183	16.2	0.64	11.4	0.79	2.0	2.2
75-79	249	194	22.5	0.75	14.1	0.72	2.2	2.2
80-84	192	186	29.2	0.83	19.1	0.80	2.0	2.2
85+	155	155	36.3	1.01	16.1	0.80	1.9	1.4
All ages	1170	964					1.8	1.7
Mortality								
Raw			3.9	0.63	3.1	0.66		
WS			1.6	0.57	1.0	0.57		
ES			2.6	0.60	1.6	0.60		
BRD-S			3.6	0.64	2.3	0.63		
PYLL-70								
per 100,000			11.1		6.9			
ES			9.4		5.6			
AYLL-70			8.5		7.3			

Table 14a

Further malignancies in deaths in period 1998-2019
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	1	0.2					1	100.0
C07-C08 Salivary gland	1	0.2					1	100.0
C09-C10 Oropharynx	2	0.4	2	100.0				
C12-C13 Hypopharynx	1	0.2					1	100.0
C15 Oesophagus	8	1.5	3	37.5	2	25.0	3	37.5
C16 Stomach	15	2.8	8	53.3	1	6.7	6	40.0
C17 Small intestine	2	0.4	2	100.0				
C18 Colon	28	5.2	16	57.1	3	10.7	9	32.1
C19-C20 Rectum	21	3.9	14	66.7			7	33.3
C22 Liver	9	1.7	2	22.2	1	11.1	6	66.7
C23-C24 Bile	2	0.4	1	50.0			1	50.0
C25 Pancreas	9	1.7	1	11.1	1	11.1	7	77.8
C30-C31 Sinuses	3	0.6	2	66.7			1	33.3
C32 Larynx	4	0.7	2	50.0			2	50.0
C33-C34 Lung	31	5.8	8	25.8	5	16.1	18	58.1
C38,C45 Mesothelioma	2	0.4					2	100.0
C40-C41 Bone	5	0.9			1	20.0	4	80.0
C43 Malign. melanoma	27	5.1	20	74.1	1	3.7	6	22.2
C44 Skin others	43	8.1	16	37.2	2	4.7	25	58.1
C46,C49 Soft tissue	3	0.6					3	100.0
C60 Penis	1	0.2			1	100.0		
C61 Prostate	151	28.3	109	72.2	9	6.0	33	21.9
C62 Testis	3	0.6	2	66.7	1	33.3		
C64 Kidney	26	4.9	12	46.2	4	15.4	10	38.5
C65 Renal pelvis	1	0.2					1	100.0
C66 Ureter	1	0.2	1	100.0				
C67 Bladder	15	2.8	9	60.0			6	40.0
C69 Eye carcinoma	1	0.2					1	100.0
C69 Eye melanoma	1	0.2					1	100.0
C70-C72 CNS cancer	7	1.3	1	14.3	1	14.3	5	71.4
C73 Thyroid	5	0.9	3	60.0			2	40.0
C76-C79 CUP	6	1.1	1	16.7			5	83.3
C81 Hodgkin lymphoma	3	0.6	1	33.3			2	66.7
C82-C85 NHL	39	7.3	10	25.6	11	28.2	18	46.2
C90 Mult. myeloma	47	8.8			1	2.1	46	97.9
C91-C96 Leukaemia	10	1.9	1	10.0	1	10.0	8	80.0
All further malignancies	534	100.0	247	46.3	46	8.6	241	45.1

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 14b

Further malignancies in deaths in period 1998-2019
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	3	0.8	2	66.7			1	33.3
C07-C08 Salivary gland	1	0.3	1	100.0				
C09-C10 Oropharynx	1	0.3					1	100.0
C16 Stomach	11	2.9	4	36.4	3	27.3	4	36.4
C18 Colon	28	7.5	16	57.1	3	10.7	9	32.1
C19-C20 Rectum	19	5.1	14	73.7	1	5.3	4	21.1
C21 Anus/canal	4	1.1	3	75.0			1	25.0
C22 Liver	2	0.5					2	100.0
C25 Pancreas	8	2.1			4	50.0	4	50.0
C30-C31 Sinuses	1	0.3	1	100.0				
C33-C34 Lung	11	2.9	3	27.3	3	27.3	5	45.5
C38,C45 Mesothelioma	1	0.3					1	100.0
C43 Malign. melanoma	23	6.1	13	56.5			10	43.5
C44 Skin others	21	5.6	11	52.4	1	4.8	9	42.9
C46,C49 Soft tissue	2	0.5					2	100.0
C48 Peritoneal	3	0.8	1	33.3	1	33.3	1	33.3
C50 Breast	102	27.2	79	77.5	5	4.9	18	17.6
C51 Vulva	3	0.8	2	66.7			1	33.3
C53 Cervix uteri	7	1.9	7	100.0				
C54 Corpus uteri	13	3.5	11	84.6			2	15.4
C56 Ovary	7	1.9	4	57.1	2	28.6	1	14.3
C64 Kidney	10	2.7	8	80.0	1	10.0	1	10.0
C65 Renal pelvis	2	0.5	1	50.0			1	50.0
C66 Ureter	1	0.3	1	100.0				
C67 Bladder	3	0.8					3	100.0
C70-C72 CNS cancer	3	0.8	1	33.3			2	66.7
C73 Thyroid	4	1.1	3	75.0			1	25.0
C76-C79 CUP	6	1.6	3	50.0	1	16.7	2	33.3
C81 Hodgkin lymphoma	1	0.3	1	100.0				
C82-C85 NHL	21	5.6	6	28.6	7	33.3	8	38.1
C90 Mult. myeloma	43	11.5			2	4.7	41	95.3
C91-C96 Leukaemia	10	2.7	1	10.0	1	10.0	8	80.0
All further malignancies	375	100.0	197	52.5	35	9.3	143	38.1

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 2007-2019
(**First primaries only** *)

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.0	1.00			1.3	
30-34	1		0.0	0.17			0.8	
35-39	2	1	0.1	0.25	0.0	0.20	0.9	0.3
40-44	4	2	0.2	0.11	0.1	0.18	0.8	0.3
45-49	16	3	0.6	0.26	0.1	0.08	1.3	0.2
50-54	36	15	1.5	0.46	0.6	0.30	1.6	0.7
55-59	43	41	2.2	0.45	2.1	0.47	1.2	1.4
60-64	77	42	4.7	0.49	2.4	0.45	1.5	1.1
65-69	130	93	8.5	0.59	5.5	0.63	1.9	1.8
70-74	183	144	13.1	0.64	9.0	0.82	2.2	2.3
75-79	187	152	16.9	0.84	11.0	0.73	2.2	2.2
80-84	134	147	20.4	0.97	15.1	0.80	2.0	2.2
85+	102	117	23.9	0.92	12.1	0.76	1.7	1.3
All ages	916	757					1.8	1.7
Mortality								
Raw			3.0	0.64	2.4	0.66		
WS			1.3	0.57	0.8	0.57		
ES			2.1	0.60	1.3	0.59		
BRD-S			2.8	0.65	1.8	0.63		
PYLL-70								
per 100,000			10.1		5.6			
ES			8.6		4.6			
AYLL-70			8.7		7.5			

* See corresponding tables with multiple malignancies.

Table 16

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

Age at death Years	Males n	Females n	Males Age- spec. mortal.	MI-index	Females Age- spec. mortal.	MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19								
20-24								
25-29	1		0.0	1.00			1.3	
30-34	1		0.0	0.17			0.8	
35-39	2	1	0.1	0.33	0.0	0.20	0.9	0.3
40-44	4	2	0.2	0.11	0.1	0.18	0.8	0.3
45-49	16	3	0.6	0.28	0.1	0.08	1.3	0.2
50-54	35	14	1.5	0.50	0.6	0.29	1.6	0.7
55-59	37	41	1.9	0.42	2.1	0.51	1.0	1.4
60-64	69	39	4.2	0.50	2.2	0.43	1.4	1.1
65-69	116	87	7.6	0.58	5.2	0.64	1.7	1.7
70-74	161	135	11.5	0.62	8.4	0.83	2.0	2.2
75-79	157	133	14.2	0.79	9.7	0.68	2.0	2.0
80-84	116	136	17.7	0.90	14.0	0.77	1.8	2.2
85+	88	111	20.6	0.81	11.5	0.73	1.6	1.3
All ages	803	702					1.7	1.6
Mortality								
Raw			2.7	0.62	2.3	0.64		
WS			1.2	0.56	0.8	0.56		
ES			1.8	0.58	1.2	0.58		
BRD-S			2.5	0.62	1.7	0.62		
PYLL-70								
per 100,000			9.4		5.4			
ES			8.0		4.4			
AYLL-70			8.9		7.6			

* See corresponding tables with multiple malignancies.

ICD-10 C90: Multiple myeloma and malignant plasma cell neoplasms

Age distribution and age-specific mortality 2007 - 2019 (Males: 1170, Females: 964)

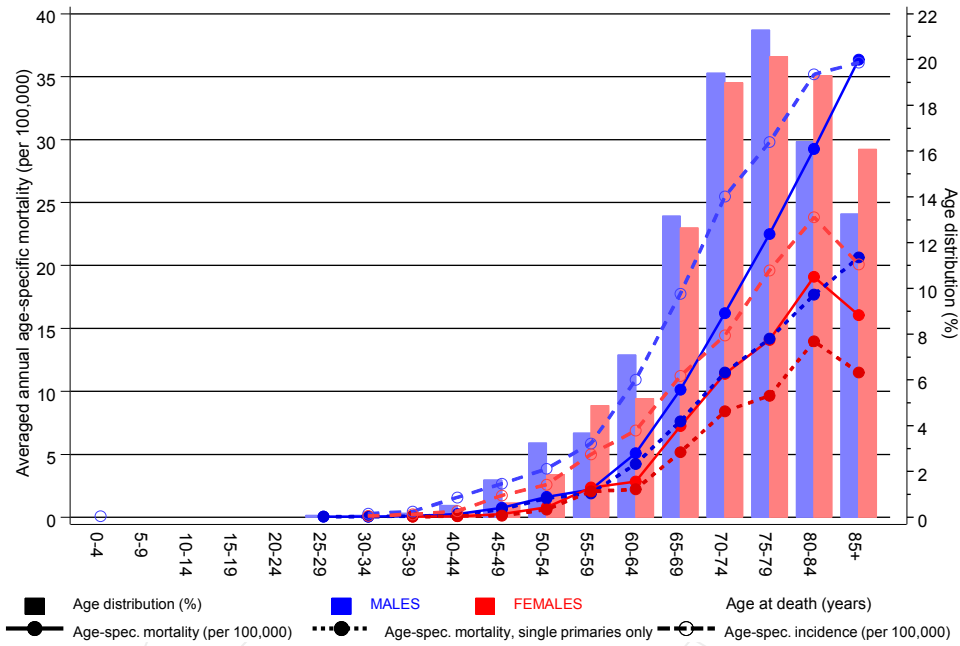
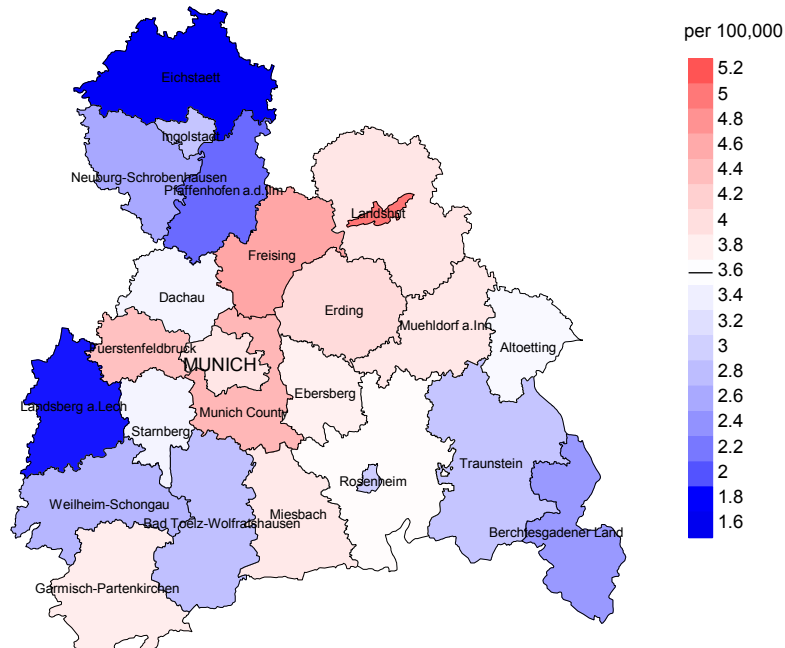


Figure 17. Distribution of age at death (bars; males: mean=70.4 yrs, median=71.6 yrs; females: mean=71.7 yrs, median=73.0 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

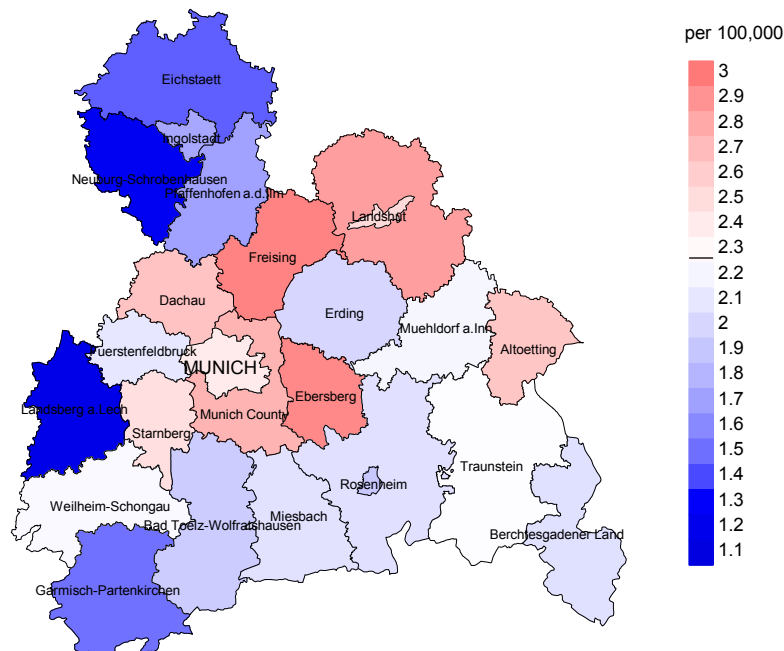
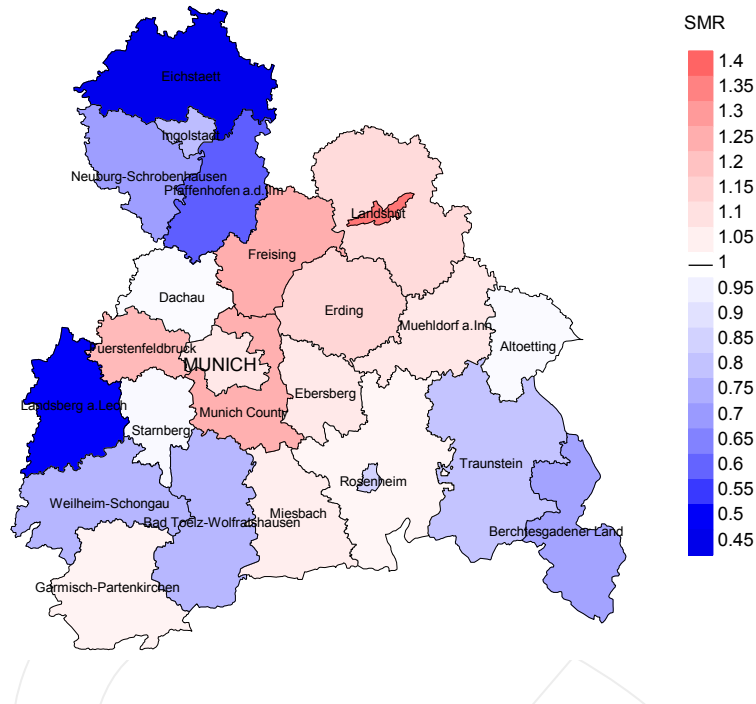


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 3.6/100,000 WS N=1,170, females 2.3/100,000 WS N=964).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,462 female residents (averaged) in the period from 2007 to 2019 a total of 34 women died from plasmacytoma. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 2.9/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 1.8 and 4.6/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

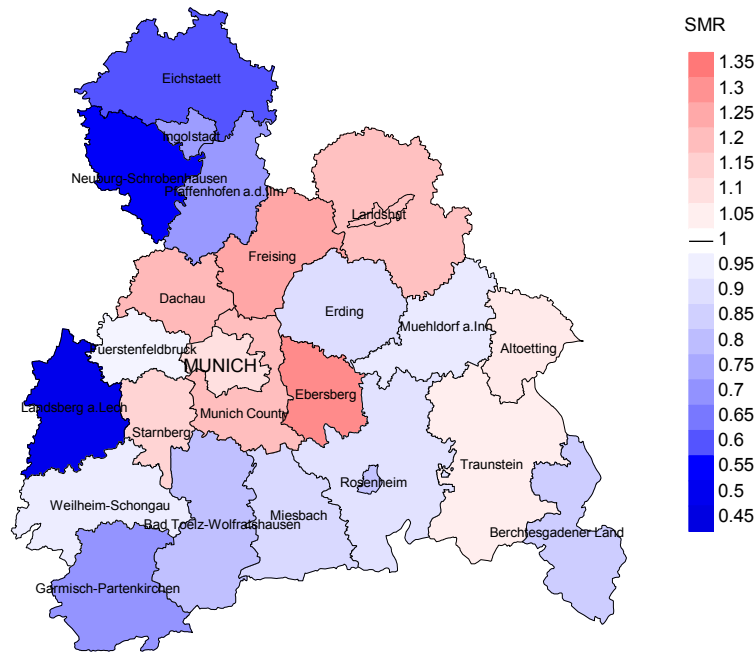


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,170, females N=964).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 67,153 female residents (averaged) in the period from 2007 to 2019 a total of 34 women died from plasmacytoma. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.31. Though, the value of this parameter may vary with an underlying probability of 99% between 0.81 and 2.01, 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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