

Munich Cancer Registry



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

ICD-10 C91.1: Chronic lymph. leukaemia

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	3,515
Diseases	3,520
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/bC911_E-ICD-10-C91.1-Chronic-lymph.-leukaemia-incidence-and-mortality.pdf

Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, DCO, 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, DCO rate, 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)	15
8b	Standardized incidence ratio (SIR) by county (chart)	16
9a	Pts incident cohorts and mortality / yr	17
9b	Incidence and mortality by year of diagnosis	18
9c	Cancer-related deaths, death certification available / yr	19
10	Medians of age at death / yr	20
11	Mortality by year of death	22
12	Distribution of age at death	23
13	Age-specific mortality	24
14	Further malignancies in deaths	25
15	Age-specific mortality (first primaries)	27
16	Age-specific mortality (single primaries)	28
17	Age distribution and age-specific mortality (chart)	29
18a	Map of cancer mortality (WS) by county (chart)	30
18b	Standardized mortality ratio (SMR) by county (chart)	31

**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.

Some remarks regarding this cancer type

The results for leukemias 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
C91.1	Chronic lymphocytic leukaemia of B-cell type

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	99	8	8.1	13.1	18.1	72.7	94.9
1999	96	7	7.3	14.4	18.2	70.8	95.8
2000	97	16	16.5	13.7	18.0	78.4	94.8
2001	141	36	25.5	13.2	17.8	73.8	95.7
2002	252	74	29.4	13.1	17.8	80.2	96.0 #
2003	216	64	29.6	13.7	17.7	72.7	93.5
2004	233	52	22.3	14.2	17.7	65.7	90.1
2005	215	55	25.6	15.3	17.6	71.6	88.8
2006	224	36	16.1	16.5	17.2	67.9	91.1
2007	262	56	21.4	16.8	16.3	62.2	78.6 #
2008	236	48	20.3	17.9	16.3	57.2	75.8
2009	253	49	19.4	18.0	14.9	52.2	73.9
2010	223	55	24.7	18.7	13.7	57.4	78.5
2011	222	49	22.1	19.5	13.5	45.9	73.9
2012	208	47	22.6	19.8	12.7	51.0	70.2
2013	185	47	25.4	20.4	11.2	48.6	72.4
2014	167	48	28.7	20.5	9.7	48.5	76.0
2015	100	40	40.0	21.0	9.1	55.0	96.0
2016	91	40	44.0	21.1	8.9	50.5	81.3 ##
1998-2016	3520	827	23.5	21.1	18.1	61.8	83.8

3,520 cases diagnosed 1998-2016 are related to a total of 3,515 patients. Currently, in 1,297 (36.9 %) of these 3,515 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 937 / 255 / 105 (26.7 % / 7.3 % / 3.0 %) 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 167 cases has been diagnosed, of which 20.5 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	52	52.5	2	3.8	15.4	21.5	69.2	92.3
1999	50	52.1	2	4.0	15.7	21.6	76.0	96.0
2000	60	61.9	10	16.7	14.8	21.5	83.3	95.0
2001	75	53.2	14	18.7	13.9	21.1	72.0	96.0
2002	139	55.2	31	22.3	13.8	21.0	79.1	95.0 #
2003	135	62.5	30	22.2	14.9	20.7	69.6	91.9
2004	132	56.7	26	19.7	15.2	20.4	67.4	90.2
2005	132	61.4	30	22.7	16.4	20.2	72.7	87.9
2006	140	62.5	19	13.6	18.0	19.8	68.6	90.7
2007	154	58.8	20	13.0	18.1	19.0	61.0	76.0 #
2008	136	57.6	22	16.2	19.0	18.9	57.4	76.5
2009	147	58.1	21	14.3	19.3	17.7	47.6	74.8
2010	129	57.8	31	24.0	20.0	16.1	58.1	81.4
2011	130	58.6	22	16.9	20.7	15.3	42.3	70.8
2012	122	58.7	21	17.2	20.9	13.5	45.9	65.6
2013	112	60.5	29	25.9	21.7	11.5	48.2	71.4
2014	102	61.1	22	21.6	21.8	9.7	41.2	73.5
2015	58	58.0	18	31.0	22.2	8.5	50.0	96.6
2016	53	58.2	23	43.4	22.3	5.8	49.1	88.7 ##
1998-2016	2058	58.5	393	19.1	22.3	21.5	60.3	83.0

2,058 cases diagnosed 1998-2016 are related to a total of 2,055 patients. Currently, in 838 (40.8 %) of these 2,055 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 590 / 165 / 83 (28.7 % / 8.0 % / 4.0 %) 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 102 cases has been diagnosed, of which 21.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.7 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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	47	47.5	6	12.8	10.6	13.3	76.6	97.9
1999	46	47.9	5	10.9	12.9	13.5	65.2	95.7
2000	37	38.1	6	16.2	12.3	13.1	70.3	94.6
2001	66	46.8	22	33.3	12.2	13.2	75.8	95.5
2002	113	44.8	43	38.1	12.3	13.3	81.4	97.3 #
2003	81	37.5	34	42.0	12.1	13.3	77.8	96.3
2004	101	43.3	26	25.7	12.8	14.0	63.4	90.1
2005	83	38.6	25	30.1	13.9	14.0	69.9	90.4
2006	84	37.5	17	20.2	14.3	13.5	66.7	91.7
2007	108	41.2	36	33.3	15.0	12.5	63.9	82.4 #
2008	100	42.4	26	26.0	16.3	12.6	57.0	75.0
2009	106	41.9	28	26.4	16.3	11.1	58.5	72.6
2010	94	42.2	24	25.5	17.0	10.4	56.4	74.5
2011	92	41.4	27	29.3	17.8	10.8	51.1	78.3
2012	86	41.3	26	30.2	18.1	11.7	58.1	76.7
2013	73	39.5	18	24.7	18.5	10.7	49.3	74.0
2014	65	38.9	26	40.0	18.8	9.8	60.0	80.0
2015	42	42.0	22	52.4	19.2	10.0	61.9	95.2
2016	38	41.8	17	44.7	19.6	13.2	52.6	71.1 ##
1998-2016	1462	41.5	434	29.7	19.6	13.3	63.9	84.9

1,462 cases diagnosed 1998-2016 are related to a total of 1,460 patients. Currently, in 459 (31.4 %) of these 1,460 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 347 / 90 / 22 (23.8 % / 6.2 % / 1.5 %) 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 2014, a subgroup of 65 cases has been diagnosed, of which 18.8 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 9.8 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 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 4.81 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	52	47	4.7	4.0	2.8	1.8	4.2	2.7	5.5	3.4
1999	50	46	4.5	3.9	2.6	2.0	4.0	2.8	5.2	3.4
2000	60	37	5.3	3.1	3.2	1.4	4.7	2.1	5.6	2.6
2001	75	66	6.5	5.4	3.8	2.3	5.7	3.5	7.3	4.3
2002	139	113	7.5	5.8	4.2	2.2	6.3	3.4	8.0	4.5
2003	135	81	7.2	4.1	3.9	1.6	5.9	2.5	7.8	3.3
2004	132	101	7.0	5.1	3.8	2.2	5.7	3.2	7.4	4.1
2005	132	83	7.0	4.2	3.5	1.5	5.5	2.4	7.4	3.3
2006	140	84	7.3	4.2	3.8	1.6	5.8	2.4	7.5	3.2
2007	154	108	7.0	4.7	3.5	1.8	5.4	2.8	7.2	3.6
2008	136	100	6.1	4.3	2.9	1.6	4.4	2.4	6.0	3.2
2009	147	106	6.6	4.6	3.3	1.7	5.0	2.5	6.3	3.3
2010	129	94	5.7	4.0	2.6	1.3	4.1	2.1	5.7	2.9
2011	130	92	5.8	3.9	2.7	1.4	4.2	2.1	5.4	2.7
2012	122	86	5.4	3.6	2.2	1.3	3.5	1.9	5.0	2.5
2013	112	73	4.9	3.1	2.1	1.2	3.3	1.8	4.5	2.3
2014	102	65	4.4	2.7	2.0	0.8	3.1	1.3	4.0	1.8
2015	58	42	2.4	1.7	1.0	0.5	1.6	0.8	2.2	1.1
2016	53	38	2.2	1.5	0.9	0.4	1.4	0.7	2.0	1.0
1998-2016	2058	1462	5.6	3.8	2.8	1.4	4.2	2.2	5.6	2.8

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.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	99	68.0	12.8	33.9	95.8	54.0	59.2	67.4	77.8	84.2
1999	96	66.3	11.9	31.9	89.4	52.0	58.1	65.9	76.4	80.4
2000	97	68.9	11.0	46.5	91.2	54.7	60.5	67.6	76.9	86.5
2001	141	70.6	11.9	40.5	94.0	56.6	63.1	69.0	78.4	87.7
2002	252	71.2	12.4	28.6	95.0	55.9	63.0	70.8	80.1	88.3
2003	216	71.3	12.3	35.6	98.9	53.9	63.1	72.2	80.4	87.7
2004	233	70.5	12.4	29.8	98.6	55.4	63.3	70.6	79.4	85.7
2005	215	72.8	11.2	34.4	97.1	57.6	65.8	74.4	79.8	85.6
2006	224	71.9	11.4	30.0	95.4	57.0	64.8	72.5	80.1	86.0
2007	262	71.7	12.6	37.6	99.8	53.3	63.3	72.7	81.1	87.0
2008	236	73.6	10.5	42.6	97.4	60.7	67.1	72.9	81.2	86.8
2009	253	72.0	12.5	28.2	98.6	55.8	64.1	72.4	82.0	87.5
2010	223	74.6	12.6	37.1	101	54.7	67.6	76.4	83.7	89.3
2011	222	72.9	12.4	41.8	101	54.4	66.0	73.1	81.7	89.1
2012	208	74.6	11.3	28.2	96.9	60.3	68.7	75.2	83.3	88.6
2013	185	74.2	11.9	40.0	100	59.1	67.1	75.2	83.5	89.5
2014	167	74.4	13.1	39.4	98.3	55.6	66.9	75.5	83.8	91.0
2015	100	77.4	11.3	44.4	96.6	62.8	71.1	78.5	86.1	92.0
2016	91	76.9	12.0	40.4	97.5	58.4	68.8	78.8	86.3	91.0
1998–2016	3520	72.4	12.2	28.2	101	56.1	64.4	73.1	81.3	88.0

Table 3a

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

Year of diagnosis	Cases n	Std.		Median						
		Mean	dev.	Min.	Max.	10%	25%	50%	75%	90%
1998	52	66.2	13.2	33.9	95.8	51.8	57.7	64.6	75.8	82.5
1999	50	66.0	12.6	31.9	89.4	51.9	56.4	65.0	77.8	81.5
2000	60	67.8	10.1	46.5	91.1	55.3	61.0	67.3	72.6	82.6
2001	75	67.6	11.1	40.5	90.7	53.2	60.6	67.3	76.0	83.2
2002	139	68.2	12.0	28.6	90.9	54.0	61.8	67.7	76.8	84.1
2003	135	69.3	11.4	35.6	90.7	54.6	62.5	69.7	77.2	83.8
2004	132	69.6	11.7	29.8	95.2	56.6	62.8	70.1	77.0	82.4
2005	132	71.0	11.0	34.4	91.3	55.9	65.5	71.7	77.9	84.6
2006	140	70.6	11.2	30.0	95.4	56.4	63.8	71.2	78.1	85.1
2007	154	69.9	12.3	37.6	97.8	51.2	61.0	71.3	79.3	84.9
2008	136	72.5	9.0	49.5	93.7	60.8	67.1	71.8	78.1	84.5
2009	147	70.2	11.6	42.0	97.0	53.7	63.1	70.9	78.2	85.4
2010	129	72.9	12.7	37.1	101	53.7	65.8	75.1	81.5	88.4
2011	130	70.8	11.9	41.8	101	52.8	63.9	71.7	79.1	85.0
2012	122	73.6	10.5	39.0	95.2	60.7	68.7	73.7	80.8	84.9
2013	112	73.9	11.8	46.3	100	57.7	68.1	74.3	83.3	87.5
2014	102	71.8	13.0	39.4	95.9	54.6	64.6	72.7	81.8	89.4
2015	58	75.3	11.5	44.4	96.6	61.4	68.4	76.5	82.2	88.2
2016	53	74.7	12.3	40.4	97.5	58.2	66.9	77.0	81.7	88.2
1998–2016	2058	70.8	11.8	28.6	101	54.7	63.5	71.5	79.2	85.3

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	Median				
						10%	25%	50%	75%	90%
1998	47	70.1	12.2	39.8	90.3	55.6	61.4	71.4	78.7	86.7
1999	46	66.7	11.2	39.1	88.4	52.3	60.1	67.7	75.1	78.2
2000	37	70.7	12.3	49.3	91.2	53.7	60.5	70.9	80.0	88.6
2001	66	74.0	12.0	51.2	94.0	59.0	64.8	73.5	84.7	92.5
2002	113	74.9	12.0	40.4	95.0	58.5	66.0	75.6	84.4	90.1
2003	81	74.5	13.3	47.3	98.9	53.7	65.0	76.4	83.2	91.5
2004	101	71.6	13.1	40.4	98.6	52.1	64.0	72.6	81.7	87.3
2005	83	75.6	10.9	43.7	97.1	62.4	69.1	76.6	82.3	89.8
2006	84	73.9	11.5	32.7	93.9	58.5	67.3	74.9	82.7	87.1
2007	108	74.3	12.6	39.5	99.8	56.7	64.5	76.2	85.0	89.0
2008	100	75.1	12.1	42.6	97.4	60.6	67.0	75.3	84.2	90.3
2009	106	74.5	13.3	28.2	98.6	57.5	68.6	75.8	84.8	88.7
2010	94	76.9	12.2	42.8	97.5	60.4	70.4	78.9	85.2	89.7
2011	92	75.9	12.6	44.4	96.7	56.7	69.0	75.6	86.9	90.8
2012	86	76.2	12.4	28.2	96.9	60.3	68.7	76.8	86.7	90.0
2013	73	74.6	12.2	40.0	97.3	61.9	65.9	75.7	83.9	90.6
2014	65	78.4	12.3	43.3	98.3	61.2	71.7	80.0	88.3	92.2
2015	42	80.3	10.4	55.1	95.9	65.8	73.9	79.7	88.4	93.1
2016	38	80.0	10.9	55.0	96.0	60.4	75.0	82.2	88.8	93.5
1998-2016	1462	74.7	12.4	28.2	99.8	58.1	66.1	75.9	84.4	90.0

Table 4

Age distribution by 5-year age group and sex for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	Males			Females				
		%	Cum.%	n	%	Cum.%	n	%	Cum.%
0-4									
5-9									
10-14									
15-19									
20-24									
25-29	2	0.1	0.1		0.0		2	0.2	0.2
30-34	0	0.0	0.1		0.0				0.2
35-39	8	0.4	0.5	6	0.5	0.5	2	0.2	0.5
40-44	22	1.1	1.6	11	1.0	1.5	11	1.4	1.9
45-49	48	2.5	4.1	38	3.3	4.8	10	1.2	3.1
50-54	81	4.2	8.3	60	5.2	10.1	21	2.6	5.7
55-59	112	5.8	14.0	70	6.1	16.2	42	5.2	10.9
60-64	146	7.5	21.5	85	7.4	23.6	61	7.6	18.5
65-69	264	13.6	35.1	170	14.9	38.5	94	11.7	30.2
70-74	320	16.4	51.5	211	18.5	57.0	109	13.6	43.8
75-79	287	14.7	66.3	178	15.6	72.5	109	13.6	57.3
80-84	290	14.9	81.2	170	14.9	87.4	120	14.9	72.3
85+	367	18.8	100.0	144	12.6	100.0	223	27.7	100.0
All ages	1947	100.0		1143	100.0		804	100.0	

Table 5

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

Age at diagnosis Years	Males		Females		Males		Females		Males	Females
	n	n	Age- spec. incid.	Age- spec. incid.	DCO rate n=229 %	DCO rate n=250 %	Prop.all cancers %	Prop.all cancers %	Prop.all cancers %	Prop.all cancers %
0- 4										
5- 9										
10-14										
15-19										
20-24										
25-29		2		0.1			50.0			0.2
30-34										
35-39	6	2	0.4	0.1					0.4	0.1
40-44	11	11	0.6	0.6					0.5	0.2
45-49	38	10	1.9	0.5					1.0	0.1
50-54	60	21	3.5	1.2	5.0				1.0	0.2
55-59	70	42	4.9	2.9	8.6		2.4		0.8	0.4
60-64	85	61	6.9	4.6	5.9		6.6		0.6	0.5
65-69	170	94	14.3	7.2	7.6		7.4		0.9	0.7
70-74	211	109	19.1	8.6	8.1		11.0		1.0	0.7
75-79	178	109	22.3	10.9	20.8		20.2		1.1	0.8
80-84	170	120	37.0	17.0	29.4		43.3		1.5	1.1
85+	144	223	47.0	30.4	68.1		67.7		1.8	1.8
All ages	1143	804			20.0		31.1		1.0	0.7
Incidence										
Raw			5.0	3.4						
WS			2.3	1.2						
ES			3.5	1.8						
BRD-S			4.7	2.4						

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 C91.1: Chronic lymphocytic leukaemia of B-cell type
 Age distribution and age-specific incidence 2007 - 2016 (Males: 1143, Females: 804)

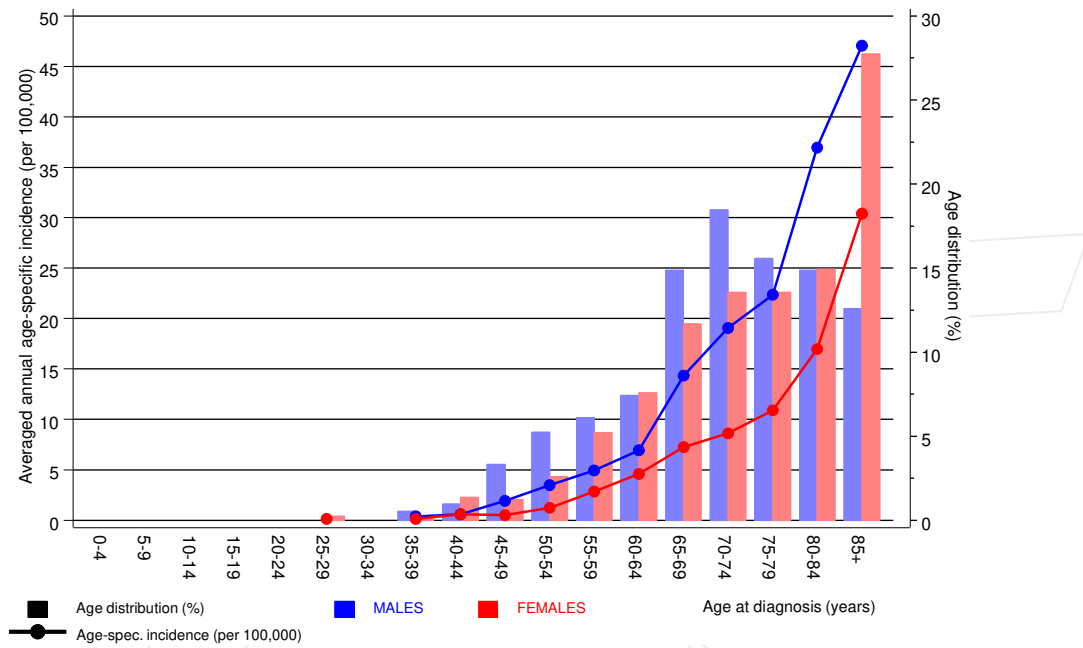


Figure 6. Age distribution (males: mean=72.1 yrs, median=72.8 yrs; females: mean=76.1 yrs, median=77.6 yrs) and age-specific incidence.

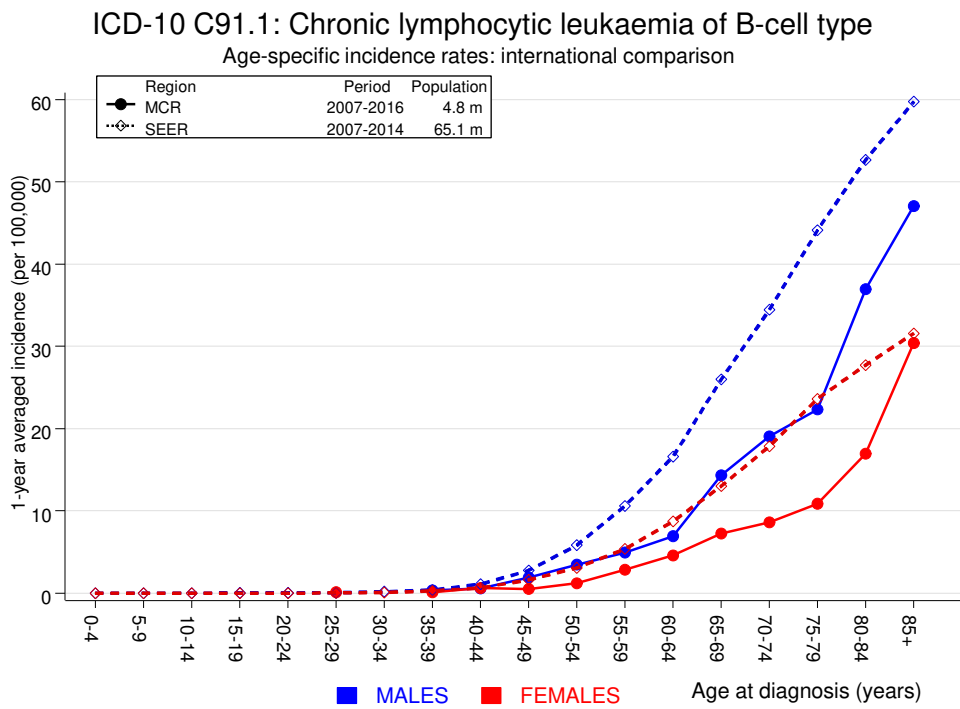


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 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 n	Expected n	SIR	CI 95%	CI 95%	EAR	DCO %
C03–C06 Oral cavity	2	1.0	1.9	0.2	7.0	1.3	
C07–C08 Salivary gland	5	0.3	15.8	5.1	36.9 #	6.4	
C15 Oesophagus	5	2.4	2.1	0.7	4.8	3.5	
C16 Stomach	15	5.4	2.8	1.5	4.6 #	13.0	
C18 Colon	22	13.1	1.7	1.1	2.5 #	12.1	4.5
C19–C20 Rectum	17	7.1	2.4	1.4	3.8 #	13.4	
C22 Liver	7	3.8	1.8	0.7	3.8	4.3	14.3
C25 Pancreas	9	5.1	1.8	0.8	3.4	5.3	
C33–C34 Lung	46	15.8	2.9	2.1	3.9 #	41.1	4.3
C43 Malign. melanoma	29	5.7	5.0	3.4	7.2 #	31.7	
C46,C49 Soft tissue	5	0.7	6.7	2.2	15.7 #	5.8	
C50 Breast	2	0.3	5.8	0.7	21.0	2.3	
C61 Prostate	75	38.8	1.9	1.5	2.4 #	49.3	5.3
C62 Testis	2	0.3	7.7	0.9	27.7	2.4	
C64 Kidney	12	4.7	2.6	1.3	4.5 #	10.0	
C65 Renal pelvis	2	0.6	3.4	0.4	12.1	1.9	
C67 Bladder	17	6.2	2.8	1.6	4.4 #	14.7	
C70–C72 CNS cancer	5	1.7	2.9	0.9	6.8	4.5	
C76–C79 CUP	5	2.3	2.2	0.7	5.1	3.7	
C81 Hodgkin lymphoma	6	0.3	20.5	7.5	44.5 #	7.8	
C82–C85 NHL	22	5.6	4.0	2.5	6.0 #	22.4	13.6
C90 Mult. myeloma	5	1.8	2.8	0.9	6.5	4.4	
C91–C96 Leukaemia	10	2.3	4.4	2.1	8.2 #	10.6	30.0
Others, specified	10	5.2	1.9	0.9	3.6	6.6	10.0
Not observed	0	4.7	0.0	0.0	0.8 #	-6.4	
All further malignancies	335	135.2	2.5	2.2	2.8 #	272.1	4.5
Patients		1661					
Median age at next malignancy (years)		73.6					
Person-years		7344					
Mean observation time (years)		4.4					
Median observation time (years)		3.7					

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

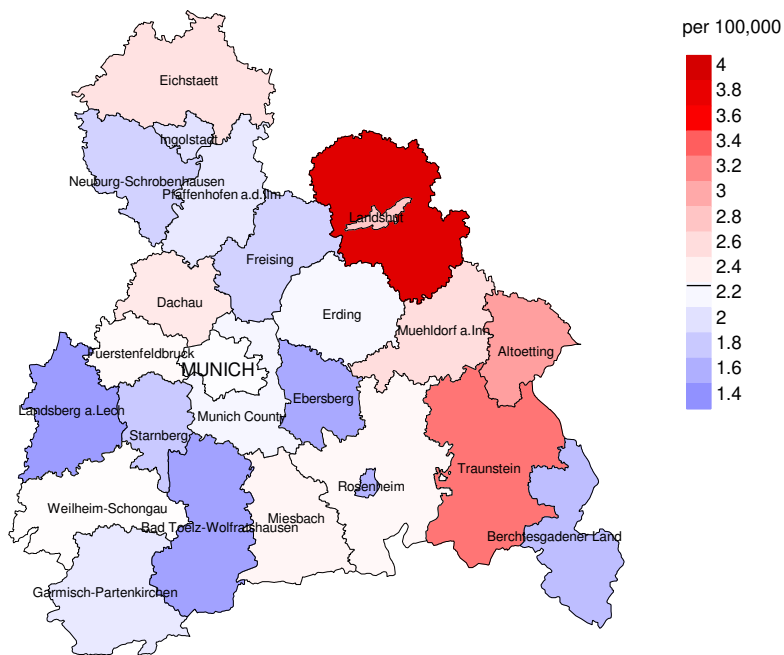
Diagnosis	Observed	Expected	SIR	CI		EAR	DCO %
	n	n		95%	95%		
C09–C10 Oropharynx	2	0.2	9.5	1.1	34.2 #	3.9	
C16 Stomach	4	2.1	1.9	0.5	4.9	4.1	
C18 Colon	10	5.9	1.7	0.8	3.1	9.0	10.0
C19–C20 Rectum	4	2.4	1.6	0.4	4.2	3.4	
C21 Anus/canal	2	0.3	6.6	0.8	24.0	3.7	
C22 Liver	2	0.7	2.8	0.3	10.0	2.8	
C25 Pancreas	6	2.8	2.2	0.8	4.7	7.1	
C33–C34 Lung	15	4.3	3.5	2.0	5.8 #	23.5	6.7
C43 Malign. melanoma	9	2.1	4.4	2.0	8.3 #	15.2	
C50 Breast	44	16.7	2.6	1.9	3.5 #	59.6	
C54 Corpus uteri	7	3.2	2.2	0.9	4.5	8.2	
C56 Ovary	5	2.4	2.1	0.7	4.9	5.8	
C64 Kidney	7	1.5	4.7	1.9	9.8 #	12.1	
C70–C72 CNS cancer	3	0.8	3.8	0.8	11.1	4.8	
C73 Thyroid	3	0.8	3.5	0.7	10.3	4.7	
C76–C79 CUP	4	1.1	3.7	1.0	9.5 #	6.4	
C81 Hodgkin lymphoma	2	0.1	19.7	2.4	71.3 #	4.1	
C82–C85 NHL	20	2.3	8.6	5.2	13.2 #	38.5	10.0
C90 Mult. myeloma	4	0.8	5.3	1.4	13.5 #	7.1	
C91–C96 Leukaemia	7	1.0	7.3	2.9	15.0 #	13.2	
Others, specified	6	1.4	4.4	1.6	9.6 #	10.1	
Not observed	0	5.1	0.0	0.0	0.7 #	-11.1	
All further malignancies	166	57.8	2.9	2.5	3.3 #	236.2	2.4

Patients	1039
Median age at next malignancy (years)	73.6
Person-years	4582
Mean observation time (years)	4.4
Median observation time (years)	3.5

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

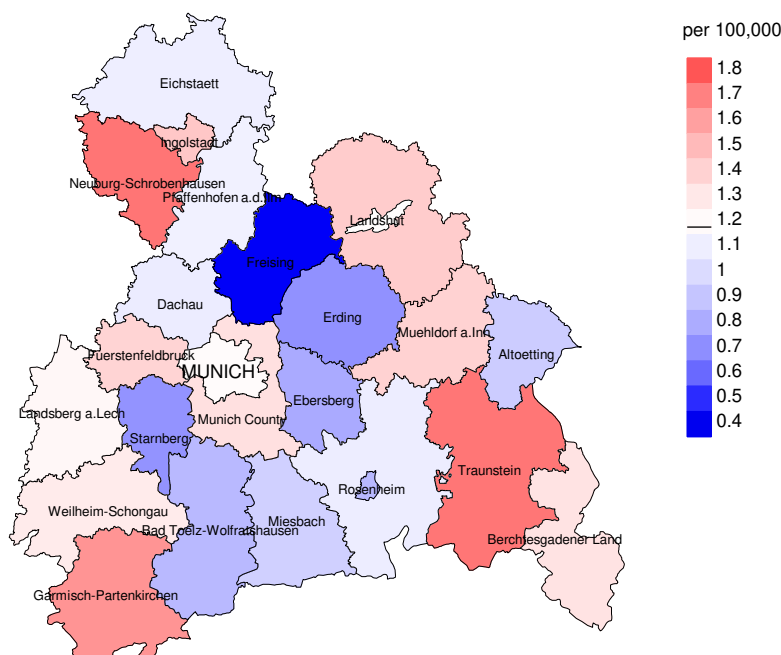
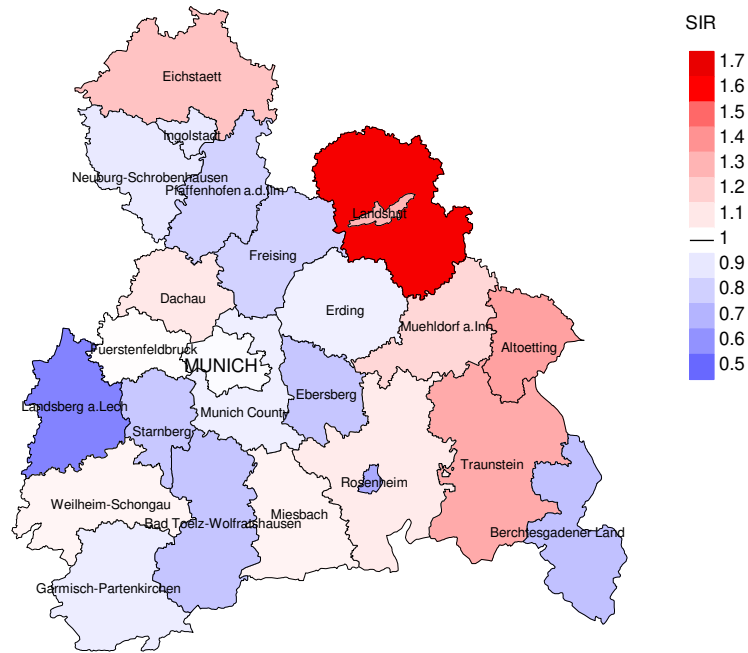


Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 2.3/100,000 WS N=1,143, females 1.2/100,000 WS N=804).

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 17 women were identified with newly diagnosed chronic lymph. leukaemia. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.3 and 1.8/100,000.

Standardized incidence ratio (SIR) 2007 - 2016: Males



Standardized incidence ratio (SIR) 2007 - 2016: Females

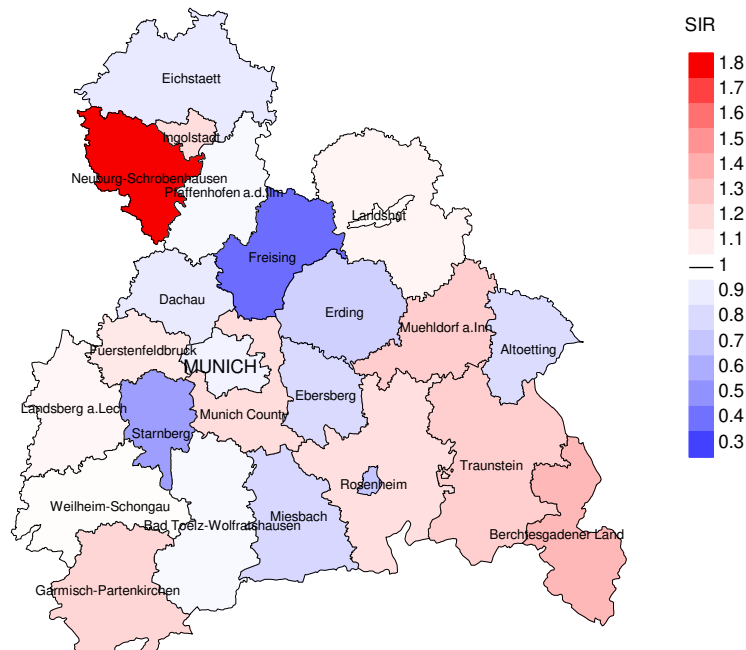


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=1,143, females N=804).

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 17 women were identified with newly diagnosed chronic lymph. leukaemia. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.80. Though, the value of this parameter may vary with an underlying probability of 99% between 0.39 and 1.45, 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 4.81 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	99	94.9	8.1	72	72.7	98.6
1999	96	95.8	7.3	68	70.8	95.6
2000	97	94.8	16.5	76	78.4	98.7
2001	141	95.7	25.5	104	73.8	98.1
2002	252	96.0	29.4	202	80.2	99.0
2003	216	93.5	29.6	157	72.7	99.4
2004	233	90.1	22.3	153	65.7	99.3
2005	215	88.8	25.6	154	71.6	97.4
2006	224	91.1	16.1	152	67.9	99.3
2007	262	78.6	21.4	163	62.2	98.8
2008	236	75.8	20.3	135	57.2	97.8
2009	253	73.9	19.4	132	52.2	99.2
2010	223	78.5	24.7	128	57.4	98.4
2011	222	73.9	22.1	102	45.9	97.1
2012	208	70.2	22.6	106	51.0	98.1
2013	185	72.4	25.4	90	48.6	97.8
2014	167	76.0	28.7	81	48.5	98.8
2015	100	96.0	40.0	55	55.0	92.7
2016	91	81.3	44.0	46	50.5	95.7
1998-2016	3520	83.8	23.5	2176	61.8	98.3

Table 9b

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

(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	99	40	97.5	7	7.1
1999	96	50	92.0	5	5.2
2000	97	50	92.0	14	14.4
2001	141	89	96.6	40	28.4
2002	252	132	98.5	83	32.9
2003	216	121	98.3	75	34.7
2004	233	119	100.0	54	23.2
2005	215	150	100.0	64	29.8
2006	224	140	97.9	49	21.9
2007	262	154	100.0	66	25.2
2008	236	154	98.7	53	22.5
2009	253	133	100.0	52	20.6
2010	223	157	99.4	62	27.8
2011	222	154	99.4	55	24.8
2012	208	170	98.2	55	26.4
2013	185	165	99.4	57	30.8
2014	167	164	99.4	58	34.7
2015	100	155	98.7	46	46.0
2016	91	137	97.8	44	48.4
1998-2016	3520	2434	98.6	939	26.7

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 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer- related %	Prop. non-cancer- related %	Prop. cancer recorded on death certificate %
1998	40	57.5	42.5	89.7
1999	50	62.0	38.0	87.0
2000	50	62.0	38.0	97.8
2001	89	55.1	44.9	93.0
2002	132	76.5	23.5	96.2
2003	121	80.2	19.8	94.1
2004	119	85.7	14.3	95.8
2005	150	80.0	20.0	96.7
2006	140	75.7	24.3	92.0
2007	154	74.7	25.3	89.6
2008	154	81.8	18.2	89.5
2009	133	82.0	18.0	94.0
2010	157	80.3	19.7	93.6
2011	154	73.4	26.6	90.2
2012	170	78.2	21.8	89.2
2013	165	72.7	27.3	85.4
2014	164	67.1	32.9	84.7
2015	155	71.0	29.0	85.0
2016	137	62.0	38.0	85.8
1998-2016	2434	74.2	25.8	90.7

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	23	73.9	70.0	83.5	74.3
1999	28	76.0	68.2	82.7	73.5
2000	34	73.5	71.4	80.6	73.5
2001	42	74.2	73.7	79.2	74.0
2002	76	76.5	75.9	77.1	77.1
2003	67	74.2	72.8	75.8	74.2
2004	76	74.5	74.2	81.2	74.5
2005	91	77.2	75.6	79.4	77.1
2006	83	76.0	73.7	81.9	75.0
2007	82	78.1	77.3	81.6	78.0
2008	96	75.7	74.9	80.8	75.6
2009	78	78.9	76.7	84.0	78.9
2010	93	77.7	77.4	80.8	77.9
2011	98	77.4	76.4	79.1	77.4
2012	108	78.0	77.5	82.6	78.6
2013	107	77.9	74.8	83.2	78.6
2014	109	79.1	77.0	83.6	78.9
2015	89	79.4	78.2	85.3	79.2
2016	84	80.5	80.2	81.2	80.3
1998–2016	1464	77.3	76.0	81.3	77.2

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	17	79.9	79.9	80.4	78.6
1999	22	79.8	74.9	83.9	76.8
2000	16	85.5	83.1	88.6	85.5
2001	47	78.8	77.8	80.6	78.8
2002	56	83.1	76.1	88.7	82.9
2003	54	79.4	77.9	85.2	79.1
2004	43	79.7	77.3	84.5	78.9
2005	59	81.6	78.2	89.3	81.4
2006	57	79.9	78.8	81.8	78.8
2007	72	81.8	79.0	87.5	81.8
2008	58	82.8	81.7	91.3	81.9
2009	55	81.8	79.6	83.5	80.9
2010	64	82.3	82.2	89.6	82.3
2011	56	82.4	80.9	84.2	81.6
2012	62	81.7	80.7	84.2	80.3
2013	58	83.2	82.7	86.2	83.4
2014	55	85.6	83.4	87.6	84.2
2015	66	80.1	79.0	83.1	78.5
2016	53	81.4	80.4	82.4	80.9
1998–2016	970	81.8	79.8	85.8	80.9

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	16	1.4	0.31	0.9	0.32	1.3	0.32	1.6	0.30
1999	15	1.3	0.30	0.8	0.31	1.2	0.30	1.5	0.30
2000	24	2.1	0.40	1.2	0.39	1.9	0.41	2.4	0.44
2001	27	2.3	0.36	1.3	0.34	2.1	0.36	2.8	0.38
2002	63	3.4	0.45	1.7	0.40	2.8	0.45	4.1	0.51
2003	55	2.9	0.41	1.5	0.38	2.4	0.41	3.4	0.44
2004	66	3.5	0.50	1.8	0.46	2.8	0.50	3.9	0.53
2005	71	3.7	0.54	1.7	0.50	2.9	0.52	4.2	0.57
2006	63	3.3	0.45	1.5	0.40	2.4	0.42	3.5	0.46
2007	64	2.9	0.42	1.3	0.36	2.1	0.40	3.2	0.44
2008	77	3.5	0.57	1.5	0.53	2.5	0.57	3.5	0.59
2009	66	3.0	0.45	1.3	0.40	2.1	0.43	3.0	0.48
2010	75	3.3	0.58	1.3	0.50	2.2	0.53	3.4	0.59
2011	77	3.4	0.59	1.4	0.51	2.3	0.55	3.4	0.62
2012	81	3.6	0.66	1.4	0.62	2.3	0.66	3.5	0.69
2013	79	3.4	0.71	1.4	0.66	2.2	0.67	3.1	0.70
2014	76	3.3	0.75	1.2	0.61	2.0	0.66	3.0	0.75
2015	68	2.9	1.17	1.1	1.04	1.8	1.10	2.6	1.16
2016	57	2.4	1.08	0.7	0.77	1.3	0.88	2.1	1.07
1998-2016	1120	3.0	0.54	1.3	0.48	2.2	0.51	3.2	0.57

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	7	0.6	0.15	0.2	0.11	0.3	0.12	0.5	0.13
1999	16	1.3	0.35	0.5	0.26	0.8	0.29	1.1	0.33
2000	7	0.6	0.19	0.2	0.14	0.3	0.16	0.4	0.16
2001	22	1.8	0.34	0.6	0.27	1.0	0.29	1.5	0.34
2002	38	1.9	0.34	0.7	0.30	1.1	0.32	1.5	0.34
2003	42	2.1	0.52	0.8	0.46	1.2	0.48	1.7	0.52
2004	36	1.8	0.36	0.6	0.28	1.0	0.31	1.4	0.35
2005	49	2.5	0.59	0.8	0.52	1.3	0.54	1.8	0.55
2006	43	2.1	0.51	0.6	0.41	1.1	0.45	1.6	0.51
2007	51	2.2	0.47	0.7	0.40	1.2	0.42	1.6	0.45
2008	49	2.1	0.49	0.6	0.38	1.0	0.42	1.5	0.47
2009	43	1.8	0.41	0.6	0.36	1.0	0.38	1.4	0.41
2010	51	2.2	0.54	0.6	0.44	1.0	0.48	1.5	0.52
2011	36	1.5	0.39	0.4	0.31	0.7	0.33	1.0	0.38
2012	52	2.2	0.60	0.5	0.41	0.9	0.48	1.5	0.58
2013	41	1.7	0.56	0.4	0.36	0.7	0.42	1.2	0.50
2014	34	1.4	0.52	0.4	0.46	0.6	0.48	0.9	0.49
2015	42	1.7	1.00	0.5	1.04	0.8	1.03	1.2	1.11
2016	28	1.1	0.74	0.3	0.74	0.5	0.73	0.7	0.79
1998-2016	687	1.8	0.47	0.5	0.38	0.9	0.41	1.3	0.45

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									
5-9									
10-14									
15-19									
20-24									
25-29									
30-34	1	0.1	0.1	1	0.1	0.1			0.0
35-39	0	0.0	0.1			0.1			0.0
40-44	3	0.3	0.3	2	0.3	0.4	1	0.2	0.2
45-49	7	0.6	1.0	5	0.7	1.1	2	0.5	0.7
50-54	17	1.5	2.4	12	1.7	2.8	5	1.2	1.9
55-59	27	2.4	4.8	20	2.8	5.6	7	1.6	3.5
60-64	65	5.7	10.5	43	6.0	11.5	22	5.2	8.7
65-69	106	9.2	19.7	75	10.4	21.9	31	7.3	15.9
70-74	189	16.5	36.2	131	18.2	40.1	58	13.6	29.5
75-79	232	20.2	56.4	160	22.2	62.4	72	16.9	46.4
80-84	252	22.0	78.4	150	20.8	83.2	102	23.9	70.3
85+	248	21.6	100.0	121	16.8	100.0	127	29.7	100.0
All ages	1147	100.0		720	100.0		427	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 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								
30-34	1		0.1	1.00			1.0	
35-39								
40-44	2	1	0.1	0.18	0.1	0.09	0.4	0.1
45-49	5	2	0.3	0.13	0.1	0.20	0.4	0.2
50-54	12	5	0.7	0.20	0.3	0.24	0.6	0.3
55-59	20	7	1.4	0.29	0.5	0.17	0.6	0.2
60-64	43	22	3.5	0.51	1.7	0.36	0.9	0.6
65-69	75	31	6.3	0.44	2.4	0.33	1.0	0.6
70-74	131	58	11.8	0.62	4.6	0.53	1.4	0.9
75-79	160	72	20.1	0.90	7.2	0.66	1.8	1.0
80-84	150	102	32.6	0.88	14.4	0.85	2.0	1.5
85+	121	127	39.5	0.84	17.3	0.57	1.9	1.4
All ages	720	427					1.4	0.9
Mortality								
Raw			3.2	0.63	1.8	0.53		
WS			1.2	0.55	0.5	0.43		
ES			2.1	0.59	0.8	0.46		
BRD-S			3.0	0.65	1.2	0.51		
PYLL-70								
per 100,000			5.8		2.5			
ES			5.0		2.0			
AYLL-70			7.4		7.2			

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 ←%
C16 Stomach	16	2.2	4	25.0	2	12.5	10	62.5
C18 Colon	53	7.2	19	35.8	6	11.3	28	52.8
C19–C20 Rectum	29	4.0	8	27.6	6	20.7	15	51.7
C25 Pancreas	13	1.8			3	23.1	10	76.9
C33–C34 Lung	72	9.8	9	12.5	16	22.2	47	65.3
C43 Malign. melanoma	32	4.4	13	40.6	3	9.4	16	50.0
C44 Skin others	218	29.7	29	13.3	16	7.3	173	79.4
C46,C49 Soft tissue	11	1.5	3	27.3	1	9.1	7	63.6
C61 Prostate	113	15.4	50	44.2	14	12.4	49	43.4
C64 Kidney	17	2.3	9	52.9	2	11.8	6	35.3
C67 Bladder	26	3.5	9	34.6	4	15.4	13	50.0
C76–C79 CUP	9	1.2			1	11.1	8	88.9
C81 Hodgkin lymphoma	12	1.6	3	25.0	2	16.7	7	58.3
C82–C85 NHL	35	4.8			4	11.4	31	88.6
C91–C96 Leukaemia	12	1.6					12	100.0
Others, specified	65	8.9	18	27.7	12	18.5	35	53.8
All further malignancies	733	100.0	174	23.7	92	12.6	467	63.7

Further malignancies with number of cases 1 to 7 are pooled in category “Others, specified”.

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

Table 14b

Further malignancies in deaths in period 1998–2016
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C16 Stomach	8	2.7	1	12.5	4	50.0	3	37.5
C18 Colon	20	6.7	8	40.0	2	10.0	10	50.0
C19–C20 Rectum	8	2.7	4	50.0	1	12.5	3	37.5
C23–C24 Bile	3	1.0	1	33.3	1	33.3	1	33.3
C25 Pancreas	7	2.4					7	100.0
C33–C34 Lung	18	6.1			3	16.7	15	83.3
C43 Malign. melanoma	12	4.0	6	50.0			6	50.0
C44 Skin others	72	24.2	23	31.9	4	5.6	45	62.5
C50 Breast	58	19.5	32	55.2	7	12.1	19	32.8
C51 Vulva	3	1.0	3	100.0				
C53 Cervix uteri	4	1.3	4	100.0				
C54 Corpus uteri	10	3.4	5	50.0	2	20.0	3	30.0
C56 Ovary	9	3.0	2	22.2	2	22.2	5	55.6
C64 Kidney	11	3.7	2	18.2	3	27.3	6	54.5
C67 Bladder	3	1.0	2	66.7	1	33.3		
C70–C72 CNS cancer	6	2.0	1	16.7	3	50.0	2	33.3
C76–C79 CUP	3	1.0	1	33.3			2	66.7
C82–C85 NHL	20	6.7			1	5.0	19	95.0
C91–C96 Leukaemia	3	1.0	1	33.3			2	66.7
Others, specified	19	6.4	5	26.3	3	15.8	11	57.9
All further malignancies	297	100.0	101	34.0	37	12.5	159	53.5

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

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

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(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								
30-34	1		0.1	1.00			1.0	
35-39								
40-44	1	1	0.1	0.09	0.1	0.10	0.2	0.2
45-49	5	2	0.3	0.14	0.1	0.22	0.5	0.2
50-54	9	4	0.5	0.16	0.2	0.22	0.5	0.2
55-59	18	6	1.3	0.29	0.4	0.18	0.6	0.3
60-64	31	17	2.5	0.50	1.3	0.33	0.7	0.6
65-69	56	23	4.7	0.44	1.8	0.34	1.0	0.5
70-74	104	48	9.4	0.73	3.8	0.63	1.4	0.9
75-79	126	50	15.8	1.09	5.0	0.74	1.9	0.9
80-84	110	80	23.9	0.98	11.3	0.93	2.0	1.5
85+	79	103	25.8	0.85	14.0	0.57	1.7	1.4
All ages	540	334					1.3	0.9
Mortality								
Raw			2.4	0.66	1.4	0.55		
WS			0.9	0.55	0.4	0.44		
ES			1.5	0.60	0.7	0.47		
BRD-S			2.3	0.67	1.0	0.53		
PYLL-70								
per 100,000			4.6		2.0			
ES			4.0		1.6			
AYLL-70			7.7		7.6			

* 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 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						
30-34	1		0.1	1.00	1.0	
35-39						
40-44	1	1	0.1	0.09	0.1	0.10
45-49	3	2	0.2	0.09	0.1	0.29
50-54	7	2	0.4	0.13	0.1	0.17
55-59	12	6	0.8	0.21	0.4	0.23
60-64	15	10	1.2	0.30	0.8	0.24
65-69	32	17	2.7	0.34	1.3	0.31
70-74	64	34	5.8	0.70	2.7	0.52
75-79	70	32	8.8	0.74	3.2	0.60
80-84	69	62	15.0	0.74	8.8	0.76
85+	59	83	19.3	0.67	11.3	0.48
All ages	333	249			0.8	0.7
Mortality						
Raw			1.5	0.50	1.1	0.47
WS			0.6	0.41	0.3	0.38
ES			1.0	0.45	0.5	0.41
BRD-S			1.4	0.51	0.7	0.46
PYLL-70						
per 100,000			3.0		1.5	
ES			2.5		1.2	
AYLL-70			8.4		7.9	

* See corresponding tables with multiple malignancies.

ICD-10 C91.1: Chronic lymphocytic leukaemia of B-cell type
 Age distribution and age-specific mortality 2007 - 2016 (Males: 720, Females: 427)

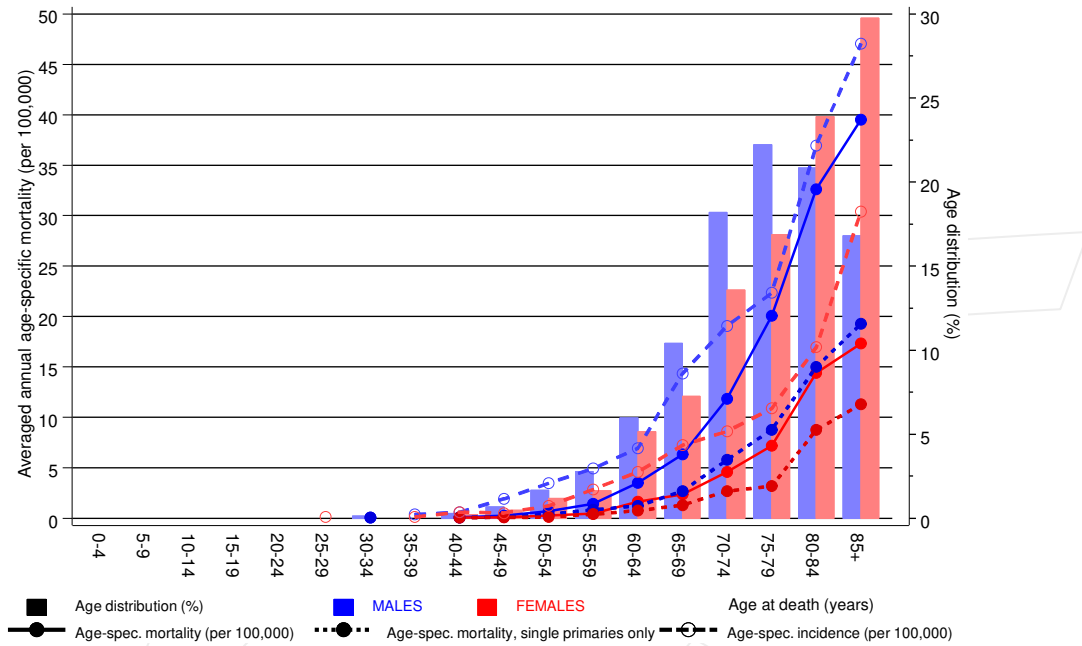
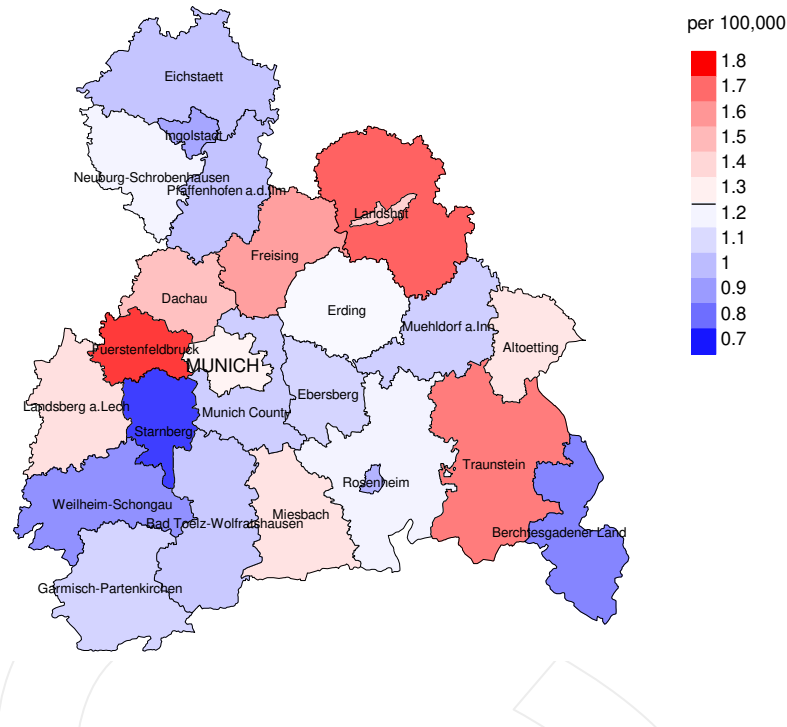


Figure 17. Distribution of age at death (bars; males: mean=69.5 yrs, median=69.8 yrs; females: mean=73.2 yrs, median=74.1 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

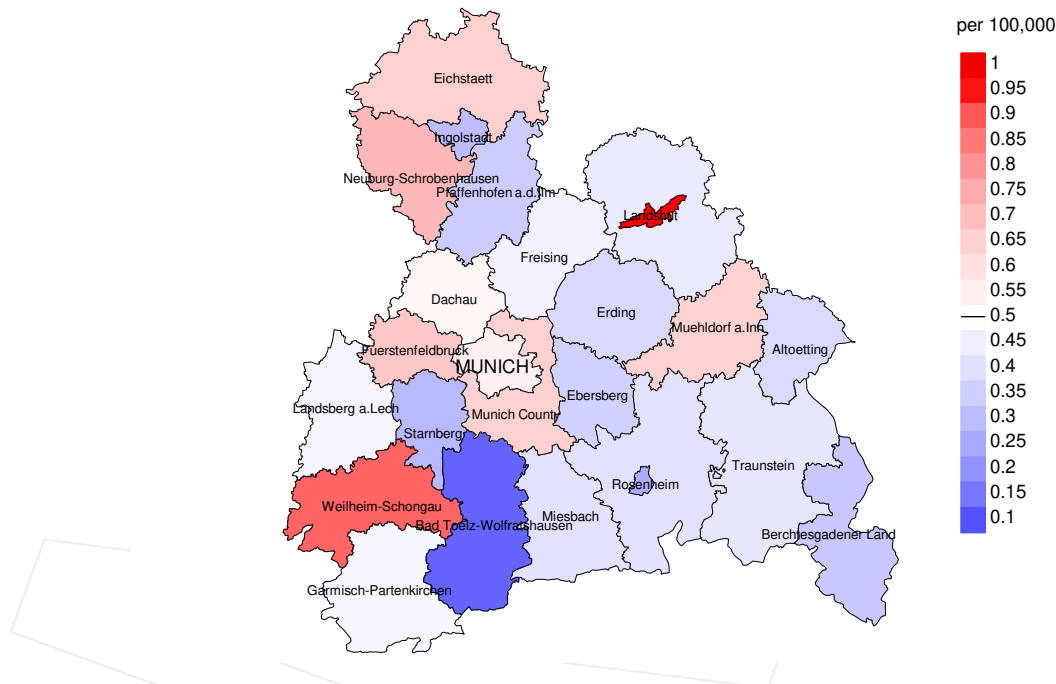
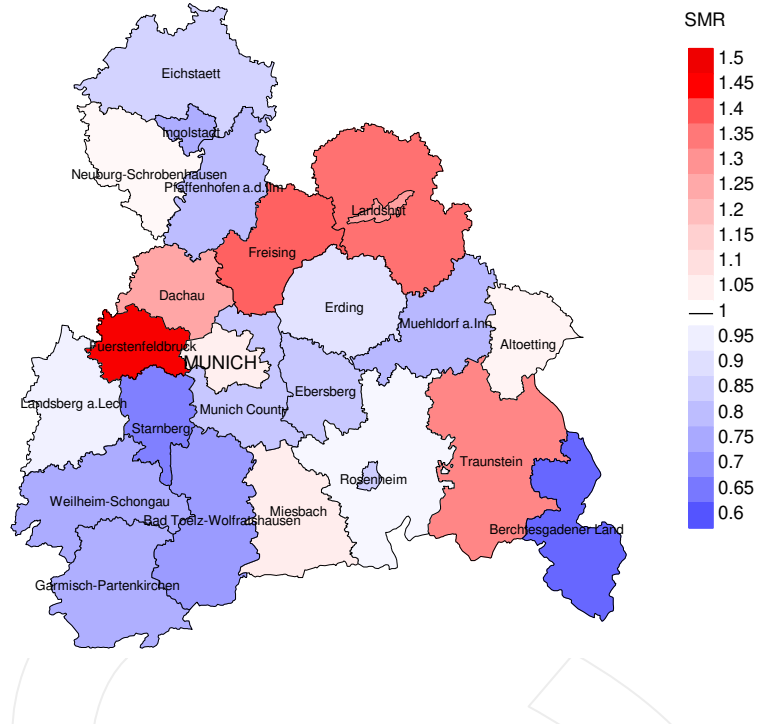


Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.2/100,000 WS N=720, females 0.5/100,000 WS N=427).

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 13 women died from chronic lymph. leukaemia. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.4/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 1.2/100,000.

Standardized mortality ratio (SMR) 2007 - 2016: Males



Standardized mortality ratio (SMR) 2007 - 2016: Females

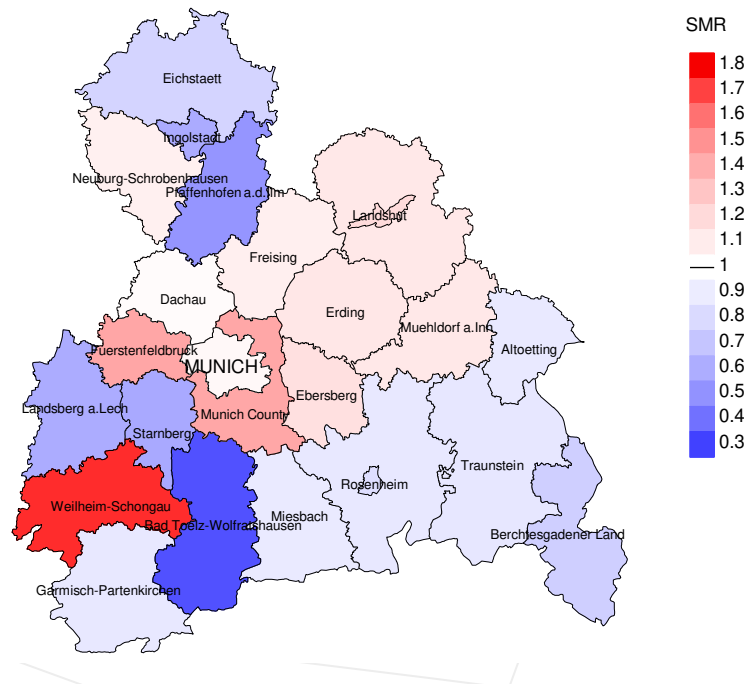


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=720, females N=427).

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 13 women died from chronic lymph. leukaemia. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 1.17. Though, the value of this parameter may vary with an underlying probability of 99% between 0.50 and 2.29, 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

Recommended Citation

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