Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C93-C95: Other leukaemias

Incidence and Mortality

Year of diagnosis	1998-2019
Patients	1,055
Diseases	1,057
Creation date	01/26/2021
Database export	01/07/2021
Population	4.92 m

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https://www.tumorregister-muenchen.de/en

https://www.tumorregister-muenchen.de/en/facts/base/bC9395E-ICD-10-C93-C95-Other-leukaemias-incidence-and-mortality.pdf

Index of figures and tables

Fig./Tbl.		Page
1	Annual cases, DCO, mult. malignancies, follow-up / yr	5
2	Incidence by year of diagnosis	8
3	Age distribution parameters by year of diagnosis	9
4	Age distribution by 5-year age group and sex	12
5	Age-specific incidence, DCO rate, proportion malignancies	13
6	Age distribution and age-specific incidence (chart)	14
6a	Age-specific incidence internationally (chart)	15
7	Standardized incidence ratio of further malignancies	16
8a	Map of cancer incidence (BRD-S) by county (chart)	18
8b	Standardized incidence ratio (SIR) by county (chart)	19
9a	Pts incident cohorts and mortality / yr	20
9b	Incidence and mortality by year of diagnosis	21
9c	Cancer-related deaths, death certification available / yr	22
10	Medians of age at death / yr	23
11	Mortality by year of death	25
12	Distribution of age at death	27
13	Age-specific mortality	28
14	Further malignancies in deaths	29
15	Age-specific mortality (first primaries)	31
16	Age-specific mortality (single primaries)	32
17	Age distribution and age-specific mortality (chart)	33
18a	Map of cancer mortality (BRD-S) by county (chart)	34
18b	Standardized mortality ratio (SMR) by county (chart)	35

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 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 2018) used for specifying cancer site

Code	Description
C93.-	Monocytic leukaemia
C94.-	Other leukaemias of specified cell type
C95.-	Leukaemia of unspecified cell type

... **excluding** ...

ICD-10 codes (ICD-10 2018) used for specifying cancer site

Code	Description
C93.0	Acute monoblastic/monocytic leukaemia
C94.0	Acute erythroid leukaemia
C94.2	Acute megakaryoblastic leukaemia
C94.4	Acute panmyelosis with myelofibrosis

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	41	26	63.4	12.2	8.4	97.6	100.0
1999	43	30	69.8	11.9	8.6	93.0	100.0
2000	43	33	76.7	15.0	8.8	90.7	97.7
2001	34	24	70.6	15.5	9.1	100.0	100.0
2002	65	54	83.1	18.1	9.3	98.5	100.0 #
2003	44	28	63.6	18.9	9.8	95.5	100.0
2004	53	39	73.6	19.8	9.5	96.2	100.0
2005	53	30	56.6	20.2	9.9	90.6	100.0
2006	38	23	60.5	19.1	9.9	92.1	97.4
2007	43	19	44.2	19.7	10.0	81.4	90.7 #
2008	50	30	60.0	19.5	10.4	90.0	100.0
2009	59	35	59.3	19.8	10.6	93.2	98.3
2010	48	21	43.8	20.0	11.7	85.4	100.0
2011	60	25	41.7	21.1	11.1	90.0	98.3
2012	70	36	51.4	22.0	10.7	88.6	95.7
2013	52	24	46.2	22.4	10.4	92.3	100.0
2014	66	25	37.9	23.0	9.4	80.3	98.5
2015	64	25	39.1	23.3	6.8	84.4	96.9
2016	60	26	43.3	23.2	6.3	73.3	96.7
2017	48	24	50.0	23.2	10.1	81.3	100.0
2018	19	5	26.3	23.0	14.3	63.2	100.0
2019	4	2	50.0	22.9	25.0	75.0	100.0 ##
1998-2019	1057	584	55.3	22.9	8.4	88.7	98.5

1,057 cases diagnosed 1998-2019 are related to a total of 1,055 patients. Currently, in 334 (31.7 %) of these 1,055 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 267 / 51 / 16 (25.3 % / 4.8 % / 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 48 cases has been diagnosed, of which 23.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 10.1 % 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 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	23	56.1	15	65.2	8.7	9.2	95.7	100.0	
1999	25	58.1	18	72.0	12.5	9.4	100.0	100.0	
2000	22	51.2	15	68.2	14.3	9.8	86.4	95.5	
2001	20	58.8	13	65.0	14.4	10.0	100.0	100.0	
2002	33	50.8	27	81.8	17.1	10.5	100.0	100.0	#
2003	25	56.8	14	56.0	17.6	10.8	96.0	100.0	
2004	25	47.2	20	80.0	19.7	10.4	100.0	100.0	
2005	34	64.2	20	58.8	20.8	10.8	88.2	100.0	
2006	21	55.3	9	42.9	19.3	10.9	90.5	95.2	
2007	28	65.1	14	50.0	19.9	10.7	82.1	92.9	#
2008	31	62.0	17	54.8	20.6	11.0	96.8	100.0	
2009	30	50.8	16	53.3	20.8	10.7	93.3	96.7	
2010	22	45.8	11	50.0	20.9	11.6	95.5	100.0	
2011	32	53.3	11	34.4	22.6	10.9	93.8	100.0	
2012	39	55.7	21	53.8	23.9	10.7	89.7	94.9	
2013	26	50.0	12	46.2	24.3	11.3	92.3	100.0	
2014	40	60.6	14	35.0	24.8	9.9	75.0	97.5	
2015	35	54.7	13	37.1	24.9	6.9	82.9	97.1	
2016	36	60.0	14	38.9	25.2	5.9	75.0	97.2	
2017	22	45.8	9	40.9	25.1	12.1	81.8	100.0	
2018	11	57.9	1	9.1	25.0	18.2	63.6	100.0	
2019	1	25.0	1	100.0	25.0	0.0	100.0	100.0	##
1998-2019	581	55.0	305	52.5	25.0	9.2	89.5	98.3	

581 cases diagnosed 1998-2019 are related to a total of 579 patients. Currently, in 199 (34.4 %) of these 579 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 155 / 35 / 9 (26.8 % / 6.0 % / 1.6 %) patients exist having 2 / 3 / 4+ malignancies.

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

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

How to interpret:
In 2017, a subgroup of 22 cases has been diagnosed, of which 25.1 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 12.1 % 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 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	18	43.9	11	61.1	16.7	7.3	100.0	100.0	
1999	18	41.9	12	66.7	11.1	7.6	83.3	100.0	
2000	21	48.8	18	85.7	15.8	7.5	95.2	100.0	
2001	14	41.2	11	78.6	16.9	7.9	100.0	100.0	
2002	32	49.2	27	84.4	19.4	7.9	96.9	100.0	#
2003	19	43.2	14	73.7	20.5	8.5	94.7	100.0	
2004	28	52.8	19	67.9	20.0	8.4	92.9	100.0	
2005	19	35.8	10	52.6	19.5	8.8	94.7	100.0	
2006	17	44.7	14	82.4	18.8	8.7	94.1	100.0	
2007	15	34.9	5	33.3	19.4	9.2	80.0	86.7	#
2008	19	38.0	13	68.4	18.2	9.7	78.9	100.0	
2009	29	49.2	19	65.5	18.5	10.5	93.1	100.0	
2010	26	54.2	10	38.5	18.9	11.8	76.9	100.0	
2011	28	46.7	14	50.0	19.1	11.3	85.7	96.4	
2012	31	44.3	15	48.4	19.8	10.7	87.1	96.8	
2013	26	50.0	12	46.2	20.0	9.3	92.3	100.0	
2014	26	39.4	11	42.3	20.7	8.8	88.5	100.0	
2015	29	45.3	12	41.4	21.4	6.8	86.2	96.6	
2016	24	40.0	12	50.0	20.7	6.7	70.8	95.8	
2017	26	54.2	15	57.7	20.9	8.3	80.8	100.0	
2018	8	42.1	4	50.0	20.5	10.0	62.5	100.0	
2019	3	75.0	1	33.3	20.4	33.3	66.7	100.0	##
1998-2019	476	45.0	279	58.6	20.4	7.3	87.8	98.7	

476 cases diagnosed 1998-2019 are related to a total of 476 patients. Currently, in 135 (28.4 %) of these 476 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 112 / 16 / 7 (23.5 % / 3.4 % / 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 retreived from the respective headings.

How to interpret:
In 2017, a subgroup of 26 cases has been diagnosed, of which 20.9 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 8.3 % 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 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	23	18	2.1	1.5	1.2	0.6	1.9	1.0	2.5	1.3
1999	25	18	2.2	1.5	1.3	0.6	2.1	0.8	3.0	1.2
2000	22	21	1.9	1.7	1.2	0.6	1.8	1.0	2.6	1.4
2001	20	14	1.7	1.2	1.0	0.2	1.5	0.5	2.0	0.7
2002	33	32	1.8	1.6	0.9	0.6	1.5	0.8	2.2	1.2
2003	25	19	1.3	1.0	0.6	0.3	1.1	0.5	1.6	0.6
2004	25	28	1.3	1.4	0.6	0.6	1.1	0.8	1.7	1.1
2005	34	19	1.8	1.0	0.9	0.3	1.4	0.5	2.1	0.7
2006	21	17	1.1	0.8	0.7	0.3	0.9	0.4	1.2	0.6
2007	28	15	1.3	0.6	0.6	0.3	0.9	0.4	1.4	0.5
2008	31	19	1.4	0.8	0.7	0.3	1.1	0.5	1.5	0.6
2009	30	29	1.3	1.2	0.5	0.4	0.9	0.7	1.4	0.9
2010	22	26	1.0	1.1	0.4	0.5	0.7	0.7	0.9	0.9
2011	32	28	1.4	1.2	0.7	0.4	1.1	0.6	1.5	0.8
2012	39	31	1.7	1.3	0.6	0.5	1.1	0.7	1.7	1.0
2013	26	26	1.1	1.1	0.6	0.5	0.8	0.6	1.1	0.8
2014	40	26	1.7	1.1	0.6	0.3	1.0	0.5	1.6	0.7
2015	35	29	1.5	1.2	0.7	0.4	1.0	0.6	1.4	0.8
2016	36	24	1.5	1.0	0.6	0.5	1.0	0.6	1.4	0.7
2017	22	26	0.9	1.1	0.4	0.3	0.6	0.5	0.8	0.7
2018	11	8	0.5	0.3	0.2	0.1	0.3	0.2	0.4	0.2
2019	1	3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1
1998–2019	581	476	1.3	1.0	0.6	0.4	0.9	0.6	1.3	0.7

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	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	41	72.4	15.7	36.8	93.5	45.9	59.2	76.0	85.2	88.3
1999	43	73.1	15.4	22.0	95.6	50.8	63.9	76.3	84.0	90.8
2000	43	72.2	18.5	6.2	95.1	53.4	68.7	76.3	84.5	89.7
2001	34	76.2	13.9	30.9	95.5	57.2	68.1	80.6	86.8	90.7
2002	65	76.8	12.7	4.2	99.3	65.8	72.2	78.3	82.3	90.6
2003	44	78.7	10.4	58.0	95.1	63.1	69.7	80.5	87.5	91.3
2004	53	77.2	14.1	14.3	96.1	62.8	73.2	79.9	85.4	88.6
2005	53	75.4	17.4	3.5	98.2	53.0	72.9	79.5	85.2	90.2
2006	38	71.6	22.4	0.6	94.8	34.4	67.8	76.9	87.1	92.0
2007	43	72.3	13.8	33.7	89.9	46.3	69.2	77.0	81.2	85.1
2008	50	72.5	16.1	0.5	95.3	55.2	66.3	76.8	82.0	87.1
2009	59	76.1	11.9	36.7	93.8	59.8	69.4	78.4	84.1	88.7
2010	48	74.2	16.7	17.3	98.9	60.7	67.9	78.2	84.7	89.3
2011	60	75.4	15.8	16.9	94.9	54.3	67.4	80.1	85.6	89.8
2012	70	76.9	11.1	48.3	94.5	59.5	71.3	78.7	84.3	89.7
2013	52	72.3	19.6	0.4	95.2	49.4	65.4	78.3	86.0	89.4
2014	66	78.8	10.6	44.2	94.9	65.0	74.1	80.5	86.0	90.1
2015	64	73.6	15.2	13.3	94.9	54.7	68.1	75.8	83.6	87.7
2016	60	71.5	19.7	3.2	96.4	38.4	64.1	77.4	84.6	89.8
2017	48	76.5	13.6	20.2	99.2	64.3	70.2	77.4	85.2	92.1
2018	19	75.4	13.4	47.6	92.9	49.4	67.1	78.1	85.3	89.2
2019	4	81.5	6.0	77.5	90.2	77.5	77.6	79.1	85.4	90.2
1998–2019	1057	74.9	15.3	0.4	99.3	56.9	69.1	78.2	84.9	89.7

Table 3a

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	23	73.1	14.5	41.7	90.1	56.6	59.2	78.3	86.4	88.3
1999	25	71.2	11.9	48.4	90.8	50.6	64.1	71.0	81.1	84.0
2000	22	69.6	22.5	6.2	90.6	36.3	59.4	76.9	84.5	89.7
2001	20	70.2	14.6	30.9	93.5	55.1	60.9	71.1	81.1	87.3
2002	33	76.2	8.3	58.5	98.3	67.4	71.8	75.1	81.3	85.6
2003	25	76.3	9.2	61.0	91.2	62.4	68.6	77.1	83.5	85.1
2004	25	80.2	9.4	52.3	96.1	72.2	74.7	80.1	87.5	92.2
2005	34	74.0	17.9	3.5	91.9	52.0	72.9	78.3	84.3	86.5
2006	21	65.7	21.9	9.6	93.4	34.4	58.9	68.1	79.3	90.4
2007	28	73.2	14.2	37.5	89.9	45.7	69.9	78.7	81.1	86.8
2008	31	72.2	16.2	0.5	89.0	59.0	66.3	77.1	81.9	83.4
2009	30	75.6	11.0	39.9	93.4	62.3	73.4	77.8	82.2	85.5
2010	22	77.8	10.2	61.2	98.9	65.9	68.7	78.2	86.7	89.0
2011	32	72.9	17.5	16.9	94.9	51.9	65.7	79.6	85.1	86.9
2012	39	78.0	9.1	54.0	94.3	64.2	73.4	79.4	83.9	89.3
2013	26	70.5	20.4	19.7	95.2	32.9	66.7	75.2	83.7	90.1
2014	40	78.6	10.2	44.2	94.9	66.3	74.3	79.1	85.4	90.3
2015	35	70.0	17.0	13.3	89.7	52.6	64.5	75.1	83.1	85.9
2016	36	74.1	13.7	28.1	93.2	58.5	66.5	77.4	84.2	86.4
2017	22	76.2	12.7	43.9	95.8	58.3	70.0	77.4	86.0	88.6
2018	11	72.8	11.0	47.6	84.6	60.3	67.1	75.8	81.1	83.9
2019	1	90.2		90.2	90.2	90.2	90.2	90.2	90.2	90.2
1998–2019	581	74.0	14.6	0.5	98.9	57.4	68.6	77.2	83.8	88.1

Table 3b

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	18	71.4	17.4	36.8	93.5	45.3	57.0	75.7	84.7	89.4
1999	18	75.8	19.2	22.0	95.6	50.8	63.0	80.9	88.3	94.8
2000	21	75.1	13.0	35.1	95.1	64.9	70.7	76.3	83.0	87.7
2001	14	84.7	6.6	70.4	95.5	75.8	81.2	86.4	88.5	91.4
2002	32	77.4	16.1	4.2	99.3	65.7	75.3	80.7	84.8	90.9
2003	19	81.8	11.3	58.0	95.1	64.0	70.2	86.3	91.3	93.3
2004	28	74.5	16.9	14.3	95.4	48.1	69.1	79.9	84.9	88.4
2005	19	77.7	16.7	30.3	98.2	53.0	67.2	80.6	88.2	97.8
2006	17	78.8	21.4	0.6	94.8	71.4	76.9	82.7	89.2	93.2
2007	15	70.6	13.5	33.7	85.9	54.4	62.6	72.0	82.1	83.6
2008	19	72.9	16.5	36.5	95.3	48.7	56.9	76.5	86.9	94.8
2009	29	76.7	13.0	36.7	93.8	59.8	69.4	79.8	85.7	90.9
2010	26	71.3	20.4	17.3	98.7	31.3	63.4	77.9	82.4	89.3
2011	28	78.3	13.3	45.4	94.5	57.3	71.1	82.7	87.3	93.8
2012	31	75.5	13.2	48.3	94.5	54.5	67.7	77.2	86.7	89.9
2013	26	74.0	19.1	0.4	92.4	58.8	64.2	81.3	86.1	87.3
2014	26	79.0	11.4	49.7	93.2	64.5	74.1	81.2	87.8	90.1
2015	29	78.0	11.4	36.6	94.9	66.2	74.1	79.6	84.5	90.6
2016	24	67.7	26.1	3.2	96.4	33.8	50.4	77.1	86.9	94.3
2017	26	76.6	14.6	20.2	99.2	65.9	70.5	77.4	83.0	92.8
2018	8	79.0	16.3	49.4	92.9	49.4	70.3	85.6	89.1	92.9
2019	3	78.6	1.7	77.5	80.5	77.5	77.5	77.7	80.5	80.5
1998–2019	476	75.9	16.1	0.4	99.3	56.5	69.7	79.9	86.3	91.0

Table 4

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

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	3	0.5	0.5	1	0.3	0.3	2	0.7	0.7
5-9	0	0.0	0.5			0.3			0.7
10-14	1	0.2	0.6	1	0.3	0.6			0.7
15-19	4	0.6	1.2	2	0.6	1.1	2	0.7	1.4
20-24	4	0.6	1.9	2	0.6	1.7	2	0.7	2.1
25-29	1	0.2	2.0	1	0.3	2.0			2.1
30-34	5	0.8	2.8	2	0.6	2.5	3	1.0	3.1
35-39	9	1.4	4.2	4	1.1	3.7	5	1.7	4.8
40-44	5	0.8	5.0	4	1.1	4.8	1	0.3	5.2
45-49	13	2.0	7.0	5	1.4	6.2	8	2.8	7.9
50-54	13	2.0	9.0	8	2.3	8.5	5	1.7	9.7
55-59	24	3.7	12.8	11	3.1	11.6	13	4.5	14.1
60-64	35	5.4	18.2	18	5.1	16.7	17	5.9	20.0
65-69	61	9.5	27.7	37	10.5	27.2	24	8.3	28.3
70-74	72	11.2	38.9	46	13.0	40.2	26	9.0	37.2
75-79	115	17.9	56.8	69	19.5	59.8	46	15.9	53.1
80-84	123	19.1	75.9	73	20.7	80.5	50	17.2	70.3
85+	155	24.1	100.0	69	19.5	100.0	86	29.7	100.0
All ages	643	100.0		353	100.0		290	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=154 %	Females DCO rate n=143 %	Males Prop.all cancers n=143063 %	Females Prop.all cancers n=144724 %
0- 4	1	2	0.1	0.1		50.0	0.5	1.2
5- 9								
10-14	1		0.1				0.8	
15-19	2	2	0.1	0.1			0.7	0.8
20-24	2	2	0.1	0.1	50.0		0.3	0.4
25-29	1		0.0				0.1	
30-34	2	3	0.1	0.1	50.0		0.2	0.2
35-39	4	5	0.2	0.2		20.0	0.2	0.2
40-44	4	1	0.2	0.0			0.2	0.0
45-49	5	8	0.2	0.3	20.0	12.5	0.1	0.1
50-54	8	5	0.3	0.2			0.1	0.0
55-59	11	13	0.6	0.7	18.2	15.4	0.1	0.1
60-64	18	17	1.1	1.0	5.6	5.9	0.1	0.1
65-69	37	24	2.4	1.4	27.0	25.0	0.2	0.1
70-74	46	26	3.3	1.6	26.1	26.9	0.2	0.1
75-79	69	46	6.2	3.3	39.1	34.8	0.3	0.3
80-84	73	50	11.1	5.1	63.0	66.0	0.5	0.4
85+	69	86	16.2	8.9	76.8	87.2	0.7	0.6
All ages	353	290			43.6	49.3	0.2	0.2
Incidence								
Raw			1.2	0.9				
WS			0.5	0.3				
ES			0.8	0.5				
BRD-S			1.1	0.7				

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

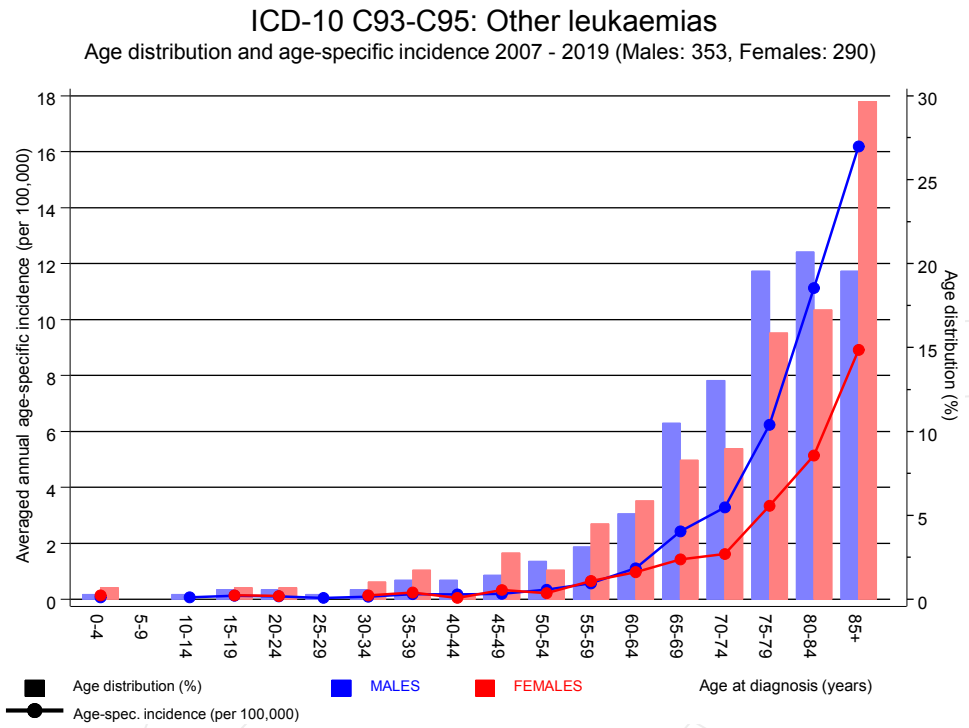


Figure 6. Age distribution (males: mean=74.5 yrs, median=77.9 yrs; females: mean=75.1 yrs, median=78.6 yrs) and age-specific incidence.

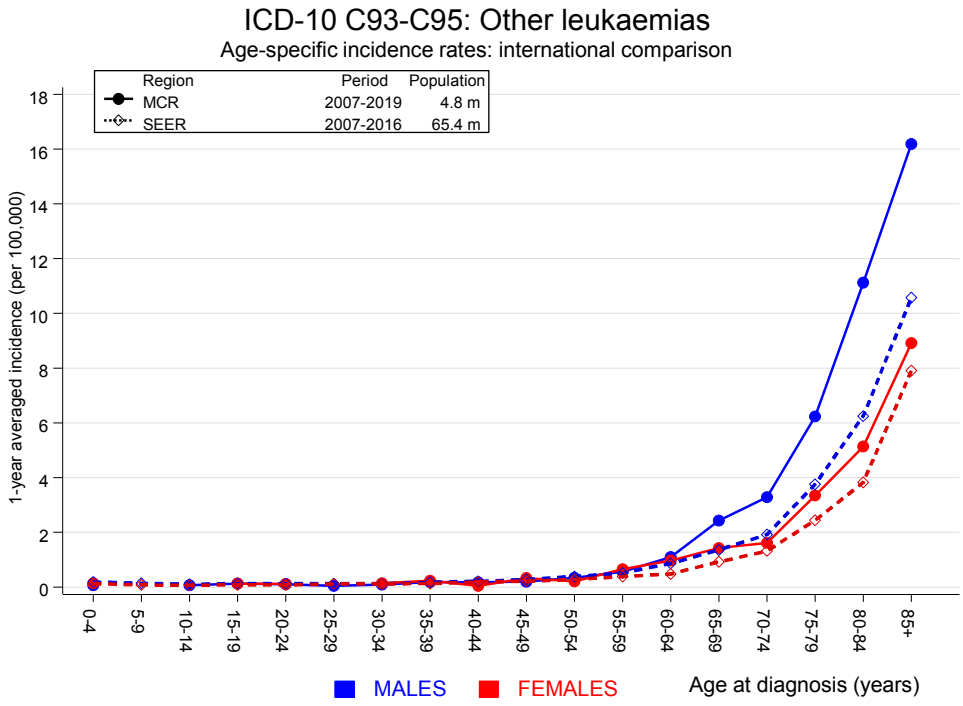


Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:
Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 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 %
C03–C06	Oral cavity	1	0.1	12.6	0.3	70.3		14.1	100.0
C09–C10	Oropharynx	1	0.1	10.6	0.3	59.2		13.9	
C16	Stomach	1	0.4	2.2	0.1	12.5		8.5	
C18	Colon	3	1.1	2.8	0.6	8.2		29.7	
C19–C20	Rectum	1	0.6	1.8	0.0	9.8		6.7	
C22	Liver	1	0.3	3.2	0.1	17.7		10.5	
C25	Pancreas	2	0.4	4.7	0.6	16.8		24.1	
C43	Malign. melanoma	1	0.5	2.2	0.1	12.0		8.2	
C61	Prostate	6	3.1	2.0	0.7	4.3		45.0	33.3
C64	Kidney	3	0.4	8.3	1.7	24.3	#	40.5	
C76–C79	CUP	2	0.2	10.8	1.3	38.8	#	27.8	
C82–C85	NHL	8	0.5	17.4	7.5	34.3	#	115.6	
C91–C96	Leukaemia	20	0.2	116.5	71.2	180.0	#	304.1	15.0
Not observed		0	3.2	0.0	0.0	1.2		-49.0	
All further malignancies		50	10.9	4.6	3.4	6.1	#	599.7	12.0

Patients	344
Median age at next malignancy (years)	74.3
Person-years	652
Mean observation time (years)	1.9
Median observation time (years)	0.9

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 %
C18	Colon	6	0.5	11.7	4.3	25.4	#	118.7	16.7
C22	Liver	1	0.1	15.2	0.4	84.8		20.2	100.0
C33–C34	Lung	1	0.4	2.5	0.1	14.2		13.1	
C50	Breast	9	1.5	6.1	2.8	11.5	#	162.6	
C51	Vulva	1	0.1	17.6	0.4	98.1		20.4	
C54	Corpus uteri	1	0.3	3.6	0.1	20.0		15.6	
C64	Kidney	1	0.1	8.0	0.2	44.8		18.9	100.0
C82–C85	NHL	2	0.2	9.7	1.2	35.1	#	38.8	
C91–C96	Leukaemia	11	0.1	136.2	68.0	243.7	#	236.3	9.1
Not observed		0	1.9	0.0	0.0	1.9		-41.6	
All further malignancies		33	5.1	6.4	4.4	9.0	#	603.2	12.1

Patients	250
Median age at next malignancy (years)	74.7
Person-years	462
Mean observation time (years)	1.8
Median observation time (years)	0.5

The occurrence of further specified malignancy is statistically significant.

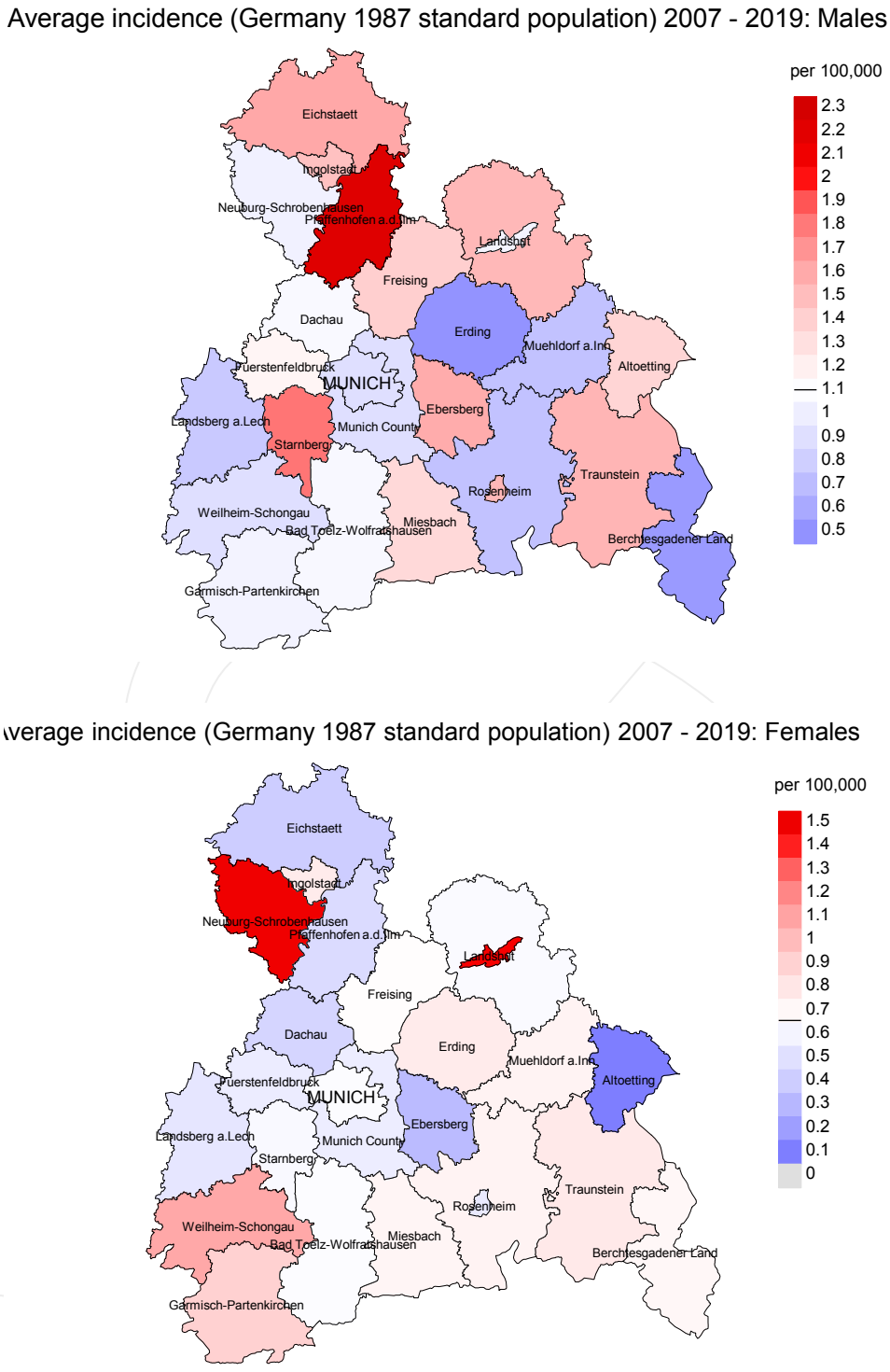
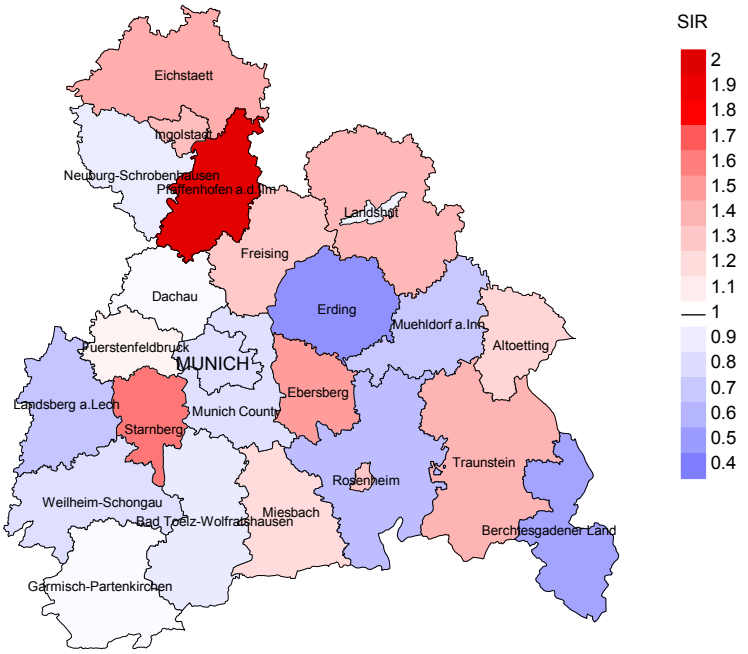


Figure 8a. Map of cancer incidence (german standard population, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 1.1/100,000 WS N=353, females 0.7/100,000 WS N=290).

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 4 women were identified with newly diagnosed other leukaemias. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.1/100,000.

Standardized incidence ratio (SIR) 2007 - 2019: Males



Standardized incidence ratio (SIR) 2007 - 2019: Females

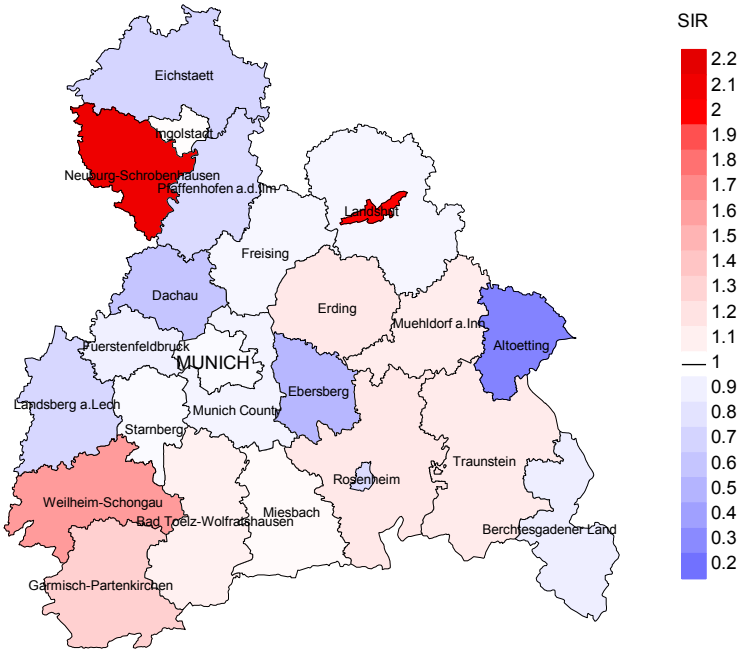


Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=353, females N=290).

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 4 women were identified with newly diagnosed other leukaemias. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.52. Though, the value of this parameter may vary with an underlying probability of 99% between 0.09 and 1.63, 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	41	100.0	63.4	40	97.6	97.5
1999	43	100.0	69.8	40	93.0	97.5
2000	43	97.7	76.7	39	90.7	100.0
2001	34	100.0	70.6	34	100.0	97.1
2002	65	100.0	83.1	64	98.5	98.4
2003	44	100.0	63.6	42	95.5	95.2
2004	53	100.0	73.6	51	96.2	100.0
2005	53	100.0	56.6	48	90.6	97.9
2006	38	97.4	60.5	35	92.1	97.1
2007	43	90.7	44.2	35	81.4	100.0
2008	50	100.0	60.0	45	90.0	97.8
2009	59	98.3	59.3	55	93.2	100.0
2010	48	100.0	43.8	41	85.4	100.0
2011	60	98.3	41.7	54	90.0	100.0
2012	70	95.7	51.4	62	88.6	98.4
2013	52	100.0	46.2	48	92.3	93.8
2014	66	98.5	37.9	53	80.3	96.2
2015	64	96.9	39.1	54	84.4	90.7
2016	60	96.7	43.3	44	73.3	93.2
2017	48	100.0	50.0	39	81.3	84.6
2018	19	100.0	26.3	12	63.2	75.0
2019	4	100.0	50.0	3	75.0	100.0
1998–2019	1057	98.5	55.3	938	88.7	96.6

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	41	35	97.1	31	75.6
1999	43	39	100.0	32	74.4
2000	43	45	97.8	33	76.7
2001	34	29	100.0	22	64.7
2002	65	55	98.2	54	83.1
2003	44	27	96.3	31	70.5
2004	53	34	100.0	42	79.2
2005	53	27	100.0	33	62.3
2006	38	27	100.0	22	57.9
2007	43	29	100.0	22	51.2
2008	50	23	95.7	27	54.0
2009	59	44	97.7	42	71.2
2010	48	29	93.1	24	50.0
2011	60	40	100.0	38	63.3
2012	70	40	97.5	39	55.7
2013	52	43	100.0	31	59.6
2014	66	37	100.0	32	48.5
2015	64	39	100.0	37	57.8
2016	60	37	100.0	32	53.3
2017	48	34	97.1	30	62.5
2018	19	27	44.4	8	42.1
2019	4	15	53.3	3	75.0
1998–2019	1057	755	95.8	665	62.9

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	35	54.3	45.7	97.1
1999	39	61.5	38.5	100.0
2000	45	68.9	31.1	97.7
2001	29	62.1	37.9	100.0
2002	55	69.1	30.9	98.1
2003	27	66.7	33.3	96.2
2004	34	76.5	23.5	97.1
2005	27	70.4	29.6	96.3
2006	27	85.2	14.8	100.0
2007	29	89.7	10.3	100.0
2008	23	78.3	21.7	95.5
2009	44	81.8	18.2	88.4
2010	29	72.4	27.6	96.3
2011	40	90.0	10.0	97.5
2012	40	75.0	25.0	87.2
2013	43	79.1	20.9	86.0
2014	37	81.1	18.9	91.9
2015	39	71.8	28.2	92.3
2016	37	81.1	18.9	91.9
2017	34	76.5	23.5	87.9
2018	27	55.6	44.4	91.7
2019	15	53.3	46.7	75.0
1998-2019	755	73.4	26.6	94.3

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	18	78.6	69.7	78.9	78.9
1999	23	72.5	71.8	74.2	72.5
2000	23	76.8	75.6	82.3	77.5
2001	18	74.2	68.5	81.6	74.2
2002	27	75.7	75.4	76.2	75.7
2003	13	75.1	74.9	85.1	75.1
2004	17	83.1	82.9	92.2	83.1
2005	15	78.8	78.6	80.2	79.1
2006	13	79.3	79.3	76.0	79.3
2007	19	78.2	77.9	82.5	78.2
2008	17	74.2	73.8	78.5	76.2
2009	20	78.9	78.9	81.0	80.1
2010	19	78.7	73.2	81.3	78.7
2011	24	74.4	74.4		74.4
2012	27	79.8	77.9	82.0	77.9
2013	22	79.2	78.6	81.7	79.2
2014	14	78.1	79.1	74.9	79.1
2015	21	79.0	79.2	77.1	79.0
2016	19	76.5	76.5	76.2	75.8
2017	14	84.0	84.3	67.4	79.1
2018	16	75.7	73.6	80.3	72.9
2019	11	72.8	69.4	75.1	69.4
1998–2019	410	77.7	76.5	79.2	77.8

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

Table 10b

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	17	82.9	76.8	85.0	82.9
1999	16	85.1	80.6	88.6	85.1
2000	22	76.7	75.6	86.1	77.1
2001	11	85.9	82.1	88.7	85.9
2002	28	80.9	80.6	81.5	80.7
2003	14	87.5	75.8	89.3	87.5
2004	17	84.3	84.9	82.4	84.9
2005	12	85.8	86.7	84.5	85.8
2006	14	84.6	86.3	82.3	84.6
2007	10	75.2	73.3	79.6	75.2
2008	6	75.8	73.0	78.7	78.7
2009	24	83.2	82.2	91.7	83.1
2010	10	80.4	80.4	79.2	81.8
2011	16	74.9	74.9	78.4	73.9
2012	13	82.0	82.8	76.3	84.4
2013	21	83.1	83.1	83.3	83.1
2014	23	79.1	79.2	79.1	79.4
2015	18	77.5	75.6	84.5	83.9
2016	18	79.2	74.6	87.6	75.5
2017	20	80.1	77.9	83.4	82.5
2018	11	81.5	80.9	83.8	80.2
2019	4	76.9	77.7	76.2	77.7
1998–2019	345	81.3	79.8	83.8	81.6

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

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

Table 11a

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	11	1.0	0.48	0.6	0.50	0.9	0.48	1.2	0.46
1999	14	1.3	0.56	0.7	0.56	1.2	0.57	1.7	0.55
2000	16	1.4	0.73	0.7	0.62	1.3	0.71	1.9	0.71
2001	11	0.9	0.55	0.6	0.56	0.9	0.55	1.1	0.54
2002	20	1.1	0.63	0.5	0.63	0.9	0.65	1.3	0.63
2003	10	0.5	0.40	0.3	0.45	0.5	0.44	0.6	0.38
2004	14	0.7	0.56	0.3	0.50	0.6	0.52	1.0	0.57
2005	9	0.5	0.26	0.2	0.25	0.4	0.27	0.5	0.26
2006	12	0.6	0.57	0.3	0.40	0.5	0.52	0.7	0.60
2007	18	0.8	0.64	0.4	0.65	0.6	0.65	0.9	0.69
2008	15	0.7	0.48	0.3	0.41	0.5	0.44	0.7	0.44
2009	14	0.6	0.47	0.3	0.50	0.4	0.48	0.7	0.48
2010	13	0.6	0.59	0.3	0.72	0.4	0.60	0.5	0.57
2011	24	1.1	0.75	0.6	0.82	0.8	0.76	1.1	0.75
2012	22	1.0	0.56	0.4	0.56	0.6	0.56	0.9	0.55
2013	15	0.7	0.58	0.3	0.48	0.4	0.51	0.7	0.59
2014	12	0.5	0.30	0.2	0.29	0.3	0.29	0.5	0.30
2015	17	0.7	0.49	0.3	0.38	0.4	0.43	0.7	0.49
2016	17	0.7	0.47	0.3	0.46	0.5	0.47	0.6	0.47
2017	13	0.5	0.59	0.2	0.47	0.3	0.52	0.4	0.58
2018	7	0.3	0.64	0.1	0.75	0.2	0.71	0.3	0.66
2019	5	0.2	5.00	0.1	8.99	0.2	6.23	0.2	6.06
1998-2019	309	0.7	0.53	0.3	0.52	0.5	0.53	0.7	0.53

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	8	0.7	0.44	0.2	0.35	0.4	0.39	0.6	0.43
1999	10	0.8	0.56	0.3	0.62	0.5	0.59	0.6	0.56
2000	15	1.2	0.71	0.5	0.78	0.8	0.76	1.0	0.75
2001	7	0.6	0.50	0.1	0.48	0.2	0.50	0.4	0.55
2002	18	0.9	0.56	0.3	0.52	0.5	0.55	0.7	0.57
2003	8	0.4	0.42	0.2	0.53	0.2	0.50	0.3	0.47
2004	12	0.6	0.43	0.1	0.25	0.3	0.33	0.4	0.38
2005	10	0.5	0.53	0.1	0.46	0.2	0.48	0.3	0.44
2006	11	0.5	0.65	0.1	0.44	0.2	0.56	0.3	0.58
2007	8	0.3	0.53	0.1	0.47	0.2	0.49	0.3	0.49
2008	3	0.1	0.16	0.1	0.17	0.1	0.17	0.1	0.15
2009	22	0.9	0.76	0.3	0.65	0.5	0.68	0.7	0.75
2010	8	0.3	0.31	0.1	0.19	0.2	0.25	0.2	0.27
2011	12	0.5	0.43	0.2	0.58	0.3	0.56	0.4	0.53
2012	8	0.3	0.26	0.1	0.19	0.1	0.21	0.2	0.24
2013	19	0.8	0.73	0.2	0.49	0.4	0.61	0.6	0.70
2014	18	0.7	0.69	0.2	0.70	0.4	0.70	0.5	0.76
2015	11	0.5	0.38	0.1	0.40	0.2	0.40	0.3	0.37
2016	13	0.5	0.54	0.2	0.38	0.3	0.47	0.4	0.52
2017	13	0.5	0.50	0.2	0.49	0.3	0.50	0.4	0.49
2018	8	0.3	1.00	0.1	0.86	0.1	0.89	0.2	1.18
2019	3	0.1	1.00	0.1	3.34	0.1	1.82	0.1	1.42
1998-2019	245	0.5	0.51	0.2	0.46	0.3	0.49	0.4	0.51

Table 12

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

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4									
5-9									
10-14									
15-19	2	0.6	0.6	2	1.0	1.0			0.0
20-24	3	0.9	1.5	2	1.0	2.1	1	0.7	0.7
25-29	1	0.3	1.8	1	0.5	2.6			0.7
30-34	1	0.3	2.1	1	0.5	3.1			0.7
35-39	3	0.9	3.0	2	1.0	4.2	1	0.7	1.4
40-44	3	0.9	3.8	3	1.6	5.7			1.4
45-49	4	1.2	5.0	1	0.5	6.3	3	2.1	3.4
50-54	5	1.5	6.5	3	1.6	7.8	2	1.4	4.8
55-59	10	3.0	9.5	2	1.0	8.9	8	5.5	10.3
60-64	19	5.6	15.1	13	6.8	15.6	6	4.1	14.4
65-69	34	10.1	25.1	19	9.9	25.5	15	10.3	24.7
70-74	45	13.3	38.5	30	15.6	41.1	15	10.3	34.9
75-79	64	18.9	57.4	36	18.8	59.9	28	19.2	54.1
80-84	75	22.2	79.6	44	22.9	82.8	31	21.2	75.3
85+	69	20.4	100.0	33	17.2	100.0	36	24.7	100.0
All ages	338	100.0		192	100.0		146	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	2		0.1	1.00			4.3	
20-24	2	1	0.1	1.00	0.1	0.50	3.0	2.6
25-29	1		0.0	1.00			1.2	
30-34	1		0.0	0.50			0.8	
35-39	2	1	0.1	0.50	0.0	0.20	0.8	0.3
40-44	3		0.1	0.75			0.5	
45-49	1	3	0.0	0.20	0.1	0.38	0.1	0.2
50-54	3	2	0.1	0.38	0.1	0.40	0.1	0.1
55-59	2	8	0.1	0.18	0.4	0.62	0.0	0.2
60-64	13	6	0.8	0.72	0.3	0.35	0.2	0.1
65-69	19	15	1.2	0.51	0.9	0.63	0.2	0.2
70-74	30	15	2.1	0.65	0.9	0.58	0.3	0.2
75-79	36	28	3.3	0.52	2.0	0.61	0.3	0.3
80-84	44	31	6.7	0.60	3.2	0.62	0.5	0.4
85+	33	36	7.7	0.48	3.7	0.42	0.4	0.3
All ages	192	146					0.3	0.3
Mortality								
Raw			0.6	0.54	0.5	0.50		
WS			0.3	0.54	0.1	0.44		
ES			0.4	0.54	0.2	0.48		
BRD-S			0.6	0.55	0.3	0.50		
PYLL-70								
per 100,000			2.5		1.4			
ES			2.4		1.2			
AYLL-70			13.7		10.1			

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	2	1.7	1	50.0			1	50.0
C07–C08	Salivary gland	1	0.8	1	100.0				
C09–C10	Oropharynx	1	0.8					1	100.0
C16	Stomach	3	2.5	3	100.0				
C18	Colon	10	8.3	8	80.0	1	10.0	1	10.0
C19–C20	Rectum	5	4.2	2	40.0			3	60.0
C25	Pancreas	1	0.8					1	100.0
C32	Larynx	1	0.8	1	100.0				
C33–C34	Lung	6	5.0	4	66.7	1	16.7	1	16.7
C43	Malign. melanoma	4	3.3	3	75.0	1	25.0		
C44	Skin others	13	10.8	7	53.8	2	15.4	4	30.8
C46,C49	Soft tissue	2	1.7	2	100.0				
C61	Prostate	21	17.5	16	76.2	3	14.3	2	9.5
C64	Kidney	7	5.8	4	57.1	1	14.3	2	28.6
C67	Bladder	1	0.8	1	100.0				
C76–C79	CUP	2	1.7			1	50.0	1	50.0
C82–C85	NHL	5	4.2	1	20.0	2	40.0	2	40.0
C90	Mult. myeloma	1	0.8	1	100.0				
C91–C96	Leukaemia	33	27.5			11	33.3	22	66.7
C96	Systemic	1	0.8					1	100.0
All further malignancies		120	100.0	55	45.8	23	19.2	42	35.0

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

Table 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 ←%
C00	Lip	1	1.1					1	100.0
C17	Small intestine	1	1.1					1	100.0
C18	Colon	13	14.1	8	61.5	2	15.4	3	23.1
C19–C20	Rectum	3	3.3	2	66.7			1	33.3
C21	Anus/canal	1	1.1	1	100.0				
C22	Liver	1	1.1					1	100.0
C25	Pancreas	2	2.2	1	50.0	1	50.0		
C33–C34	Lung	3	3.3			1	33.3	2	66.7
C43	Malign. melanoma	5	5.4	5	100.0				
C44	Skin others	1	1.1	1	100.0				
C50	Breast	20	21.7	13	65.0	2	10.0	5	25.0
C52	Vagina	2	2.2	2	100.0				
C54	Corpus uteri	6	6.5	4	66.7			2	33.3
C55,C57	Fem. genitals un	1	1.1			1	100.0		
C56	Ovary	1	1.1			1	100.0		
C64	Kidney	1	1.1					1	100.0
C67	Bladder	2	2.2	1	50.0			1	50.0
C70–C72	CNS cancer	1	1.1	1	100.0				
C73	Thyroid	3	3.3	3	100.0				
C82–C85	NHL	5	5.4	3	60.0			2	40.0
C91–C96	Leukaemia	19	20.7			4	21.1	15	78.9
All further malignancies		92	100.0	45	48.9	12	13.0	35	38.0

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

Table 15

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

Age at death Years	Males n	Females n	Males Age-spec. mortal.	Males MI-index	Females Age-spec. mortal.	Females MI-index	Males Prop.all cancers %	Females Prop.all cancers %
0- 4								
5- 9								
10-14								
15-19	2		0.1	1.00			4.4	
20-24	2	1	0.1	1.00	0.1	0.50	3.3	2.7
25-29	1		0.0	1.00			1.3	
30-34	1		0.0	0.50			0.8	
35-39	2	1	0.1	0.50	0.0	0.25	0.9	0.3
40-44	3		0.1	0.75			0.6	
45-49	1	2	0.0	0.20	0.1	0.33	0.1	0.1
50-54	3	2	0.1	0.50	0.1	0.40	0.1	0.1
55-59	1	7	0.1	0.11	0.4	0.58	0.0	0.2
60-64	9	4	0.6	0.69	0.2	0.31	0.2	0.1
65-69	18	11	1.2	0.51	0.7	0.69	0.3	0.2
70-74	25	12	1.8	0.74	0.7	0.63	0.3	0.2
75-79	24	20	2.2	0.62	1.5	0.61	0.3	0.3
80-84	31	22	4.7	0.69	2.3	0.61	0.5	0.3
85+	22	31	5.2	0.51	3.2	0.46	0.4	0.4
All ages	145	113					0.3	0.2
Mortality								
Raw			0.5	0.59	0.4	0.51		
WS			0.2	0.57	0.1	0.43		
ES			0.3	0.57	0.2	0.47		
BRD-S			0.5	0.59	0.3	0.50		
PYLL-70								
per 100,000			2.4		1.2			
ES			2.3		1.0			
AYLL-70			14.6		10.9			

* 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.	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	2		0.1	1.00			4.4	
20-24	2		0.1	1.00			3.3	
25-29	1		0.0	1.00			1.3	
30-34	1		0.0	0.50			0.8	
35-39	1	1	0.0	0.25	0.0	0.25	0.4	0.3
40-44	3		0.1	0.75			0.6	
45-49	1	1	0.0	0.20	0.0	0.20	0.1	0.1
50-54	3		0.1	0.50			0.1	
55-59	1	5	0.1	0.14	0.3	0.50	0.0	0.2
60-64	7	4	0.4	0.88	0.2	0.33	0.1	0.1
65-69	11	9	0.7	0.46	0.5	0.60	0.2	0.2
70-74	16	11	1.1	0.55	0.7	0.69	0.2	0.2
75-79	19	15	1.7	0.56	1.1	0.54	0.2	0.2
80-84	29	17	4.4	0.67	1.7	0.53	0.5	0.3
85+	21	29	4.9	0.50	3.0	0.44	0.4	0.3
All ages	118	92					0.2	0.2
Mortality								
Raw			0.4	0.55	0.3	0.46		
WS			0.2	0.53	0.1	0.37		
ES			0.3	0.54	0.1	0.41		
BRD-S			0.4	0.56	0.2	0.44		
PYLL-70								
per 100,000			2.1		0.6			
ES			2.1		0.5			
AYLL-70			17.0		8.5			

* See corresponding tables with multiple malignancies.

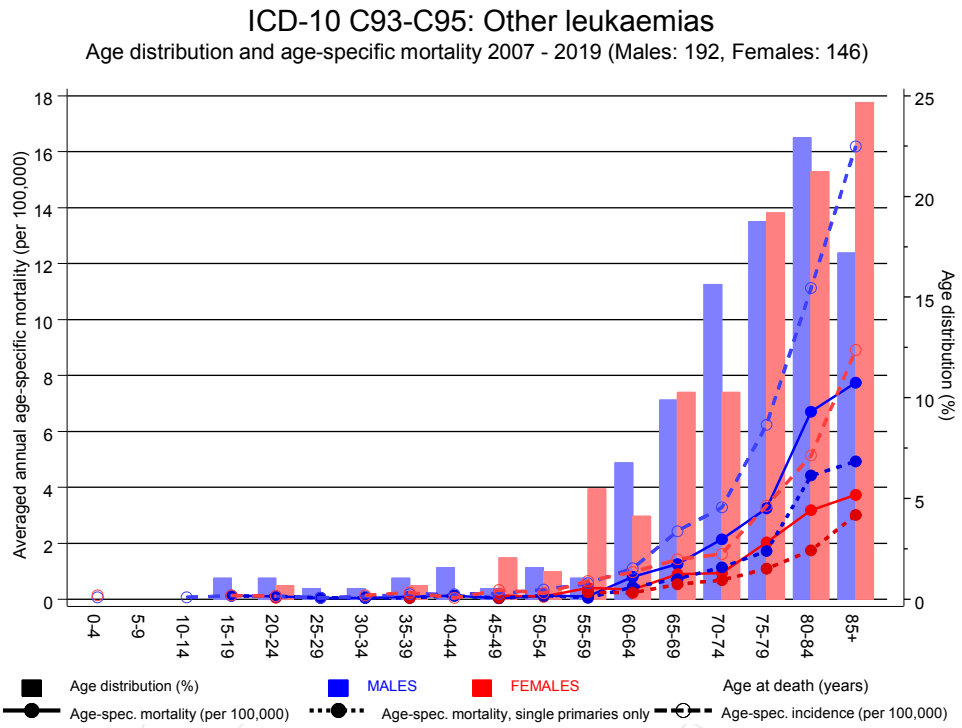


Figure 17. Distribution of age at death (bars; males: mean=72.8 yrs, median=75.3 yrs; females: mean=74.2 yrs, median=77.6 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

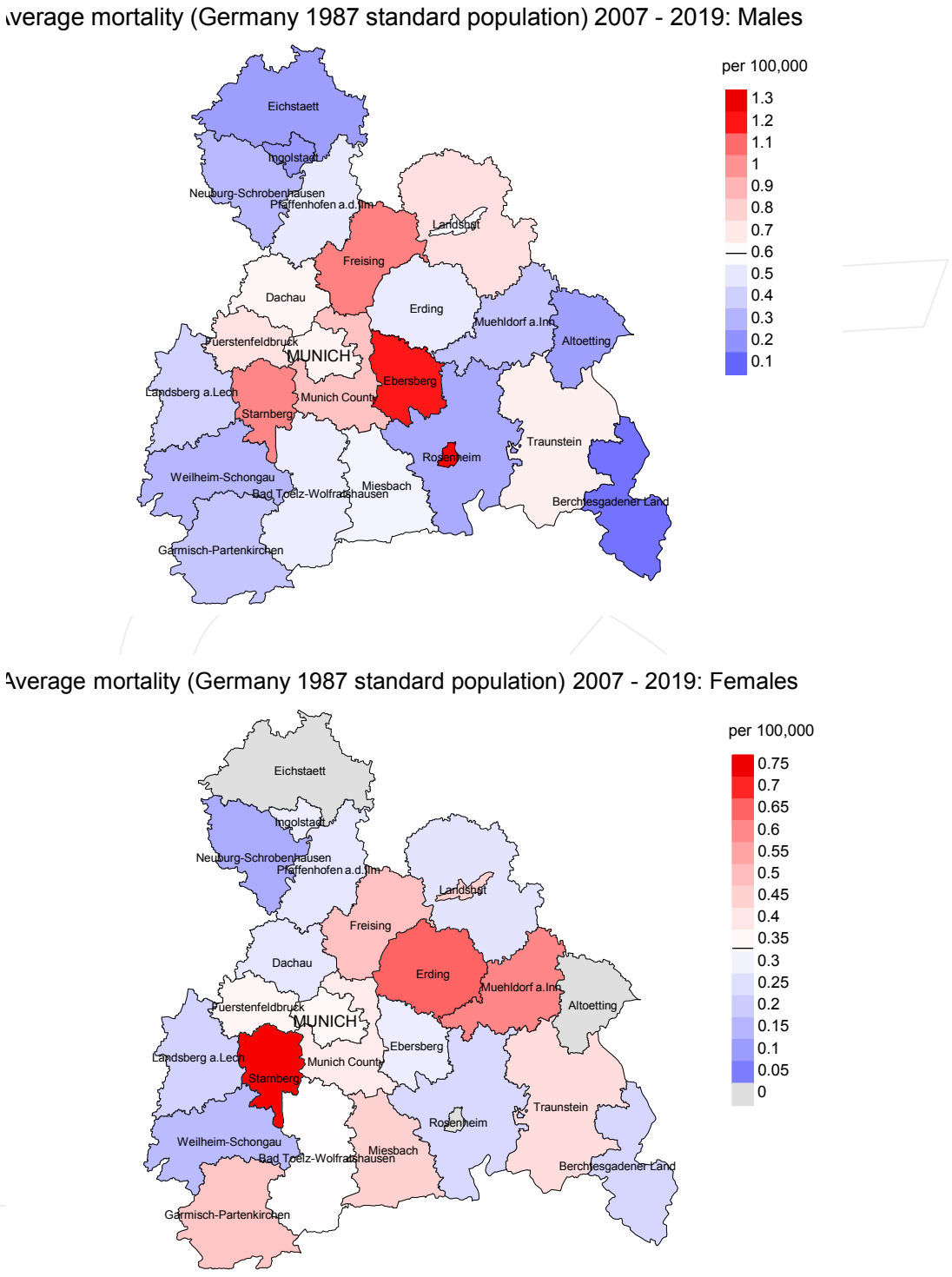
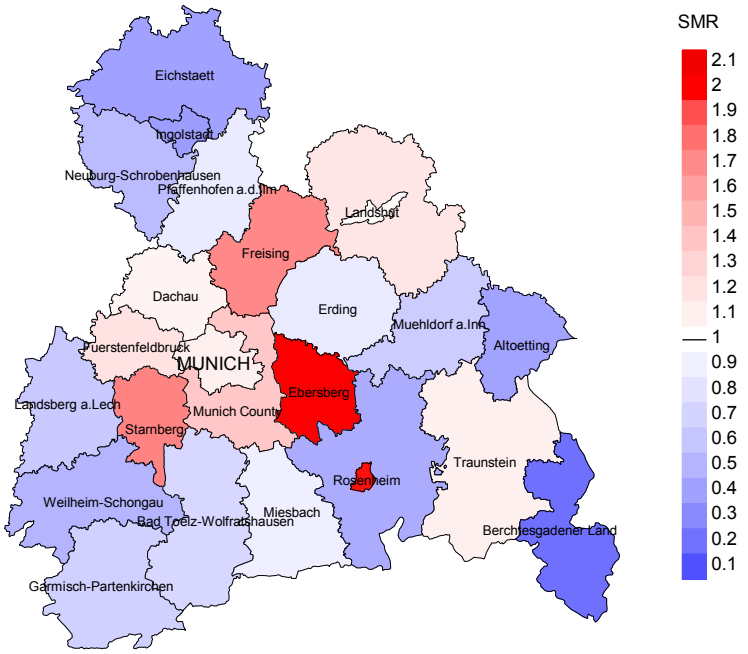


Figure 18a. Map of cancer mortality (german standard population) by county averaged for period 2007 to 2019. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (males 0.6/100,000 WS N=192, females 0.3/100,000 WS N=146).

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 3 women died from other leukaemias. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.3/100,000 (german standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.1/100,000.

Standardized mortality ratio (SMR) 2007 - 2019: Males



Standardized mortality ratio (SMR) 2007 - 2019: Females

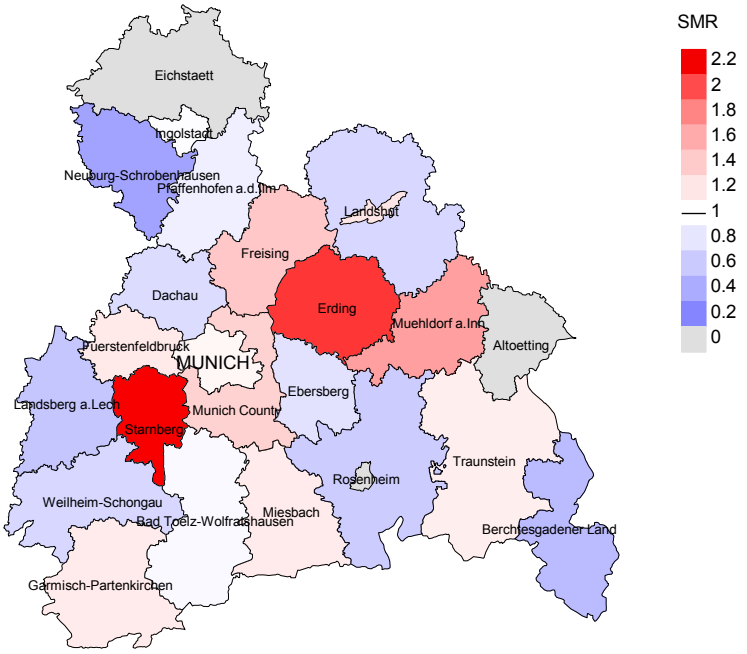


Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2019. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (males N=192, females N=146).

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 3 women died from other leukaemias. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.77. Though, the value of this parameter may vary with an underlying probability of 99% between 0.09 and 2.83, 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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