Munich Cancer Registry

- Survival
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- *Deutsch*

Munich Cancer Registry at Munich Cancer Center
Marchioninistr. 15
Munich, 81377
Germany

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

Cancer statistics: Baseline statistics

C88,C90: Immunoprolif. disease

Year of diagnosis	1998-2013
Patients	3,642
Diseases	3,646
Creation date	05/19/2015
Export date	12/30/2014
Population	4.64 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C8890E.pdf

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 4.64 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. The time-delayed acquisition of data and the occasionally high DCO-rates indicate optimizing reserves, among others, because of current financial and legal conditions that hinder the analyses.

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, May 2015

[#] 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 2.51 million to 3.96 in 2002, and to 4.52 million in 2007). Death certificates from 2014 are incorporated into these analyses.

[##] 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. A high proportion of DCO cases (≥5%) in particular cancer types indicate insufficient participation of specific cancer specializations.

Some remarks regarding this cancer type

The results for immunoproliferative and plasma cell neosplasms 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
C88.-	Malignant immunoproliferative diseases
C88.0	Waldenström macroglobulinaemia
C88.2	Other heavy chain disease
C88.3	Immunoproliferative small intestinal disease
C88.4	Extranodal marginal zone B-cell lymphoma of mucosa-associated lymphoid tissue [MALT-lyphoma]
C88.7	Other malignant immunoproliferative diseases
C88.9	Malignant immunoproliferative disease, unspecified
C90.-	Multiple myeloma and malignant plasma cell neoplasms
C90.0	Multiple myeloma
C90.1	Plasma cell leukaemia
C90.2	Extramedullary plasmacytoma
C90.3	Solitary plasmacytoma

INCIDENCE

Table 1

Patient cohorts by year of diagnosis including DCO cases and multiple primaries, and with proportion of deaths and active follow-up

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %	
1998	128	30	23.4	18.8	89.8	98.4	
1999	129	27	20.9	22.5	91.5	99.2	
2000	135	40	29.6	13.3	94.8	98.5	
2001	117	33	28.2	30.8	91.5	99.1	
2002	239	76	31.8	23.4	85.4	98.3	#
2003	242	58	24.0	24.4	83.9	97.5	
2004	245	65	26.5	24.9	84.1	98.8	
2005	242	46	19.0	28.1	78.9	97.9	
2006	251	43	17.1	25.5	76.1	98.8	
2007	318	66	20.8	24.2	76.7	92.8	# ##
2008	330	57	17.3	23.0	67.6	80.0	
2009	278	42	15.1	23.4	66.9	84.9	
2010	286	53	18.5	28.7	61.2	78.7	
2011	303	62	20.5	25.4	52.8	82.2	
2012	240	42	17.5	32.1	42.5	80.4	
2013	163	47	28.8	28.8	49.1	100.0	###
1998-2013	3646	787	21.6	25.1	72.2	91.2	

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

Since 2007 the percentage of actively followed patients sharply declined compared to the previous years. This is a consequence of ambiguous data protection rules that currently forbid cancer registries in Bavaria to obtain the essential life status informations from competent registration offices.

Please be aware that data of recent annual patient cohorts may not yet be fully processed. Therefore, the presented figures and tables are potentially related to different time periods as pointed out in the respective headlines or legends.

Table 1a

Patient cohorts by year of diagnosis and gender
including DCO cases

Year of diagnosis	All n	Males n	Females n	Prop. males %
1998	128	75	53	58.6
1999	129	66	63	51.2
2000	135	80	55	59.3
2001	117	59	58	50.4
2002	239	126	113	52.7
2003	242	146	96	60.3
2004	245	127	118	51.8
2005	242	125	117	51.7
2006	251	123	128	49.0
2007	318	172	146	54.1
2008	330	187	143	56.7
2009	278	143	135	51.4
2010	286	170	116	59.4
2011	303	161	142	53.1
2012	240	132	108	55.0
2013	163	92	71	56.4
1998-2013	3646	1984	1662	54.4

Table 2

Incidence measures by year of diagnosis and gender including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 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	75	53	6.8	4.5	4.2	2.0	6.1	3.0	7.4	3.7
1999	66	63	5.9	5.3	3.7	2.2	5.4	3.3	7.1	4.4
2000	80	55	7.0	4.6	3.9	1.9	6.3	2.9	8.7	3.9
2001	59	58	5.1	4.8	3.0	2.2	4.6	3.2	6.2	4.2
2002	126	113	6.8	5.8	3.8	2.3	5.7	3.6	7.5	4.7
2003	146	96	7.8	4.9	4.3	2.1	6.3	3.1	8.2	4.0
2004	127	118	6.8	6.0	3.7	2.4	5.6	3.6	7.2	4.8
2005	125	117	6.6	5.9	3.3	2.4	5.1	3.6	6.9	4.8
2006	123	128	6.4	6.4	3.3	2.5	5.0	3.8	6.5	5.1
2007	172	146	7.8	6.3	3.9	2.5	5.9	3.8	8.0	4.9
2008	187	143	8.4	6.2	4.2	2.5	6.3	3.8	8.1	5.0
2009	143	135	6.4	5.8	3.0	2.2	4.6	3.3	5.9	4.4
2010	170	116	7.5	5.0	3.6	1.9	5.4	2.9	7.2	3.8
2011	161	142	7.0	6.0	3.2	2.4	4.9	3.6	6.5	4.7
2012	132	108	5.8	4.6	2.6	1.7	4.0	2.7	5.3	3.6
2013	92	71	4.0	3.0	1.7	1.1	2.7	1.7	3.9	2.3
1998-2013	1984	1662	6.7	5.4	3.4	2.1	5.2	3.2	6.8	4.3

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	128	67.4	13.0	26.1	94.0	52.7	58.5	67.7	76.0	85.3
1999	129	69.4	13.0	23.9	92.8	53.2	60.1	70.8	78.6	85.6
2000	135	71.8	11.6	38.2	94.4	55.7	64.6	72.7	79.5	85.8
2001	117	68.8	11.0	36.1	93.7	50.9	60.8	69.7	77.3	81.4
2002	239	70.8	12.1	32.7	93.5	55.6	62.4	71.8	79.8	86.3
2003	242	69.4	11.2	31.4	99.0	55.6	62.2	68.9	78.0	83.3
2004	245	70.6	11.7	37.1	93.4	55.7	63.4	70.8	79.0	84.5
2005	242	71.5	11.0	38.9	102	56.6	65.2	72.5	79.4	84.5
2006	251	71.0	12.1	22.7	94.9	56.0	64.7	71.5	79.7	85.1
2007	318	71.3	10.8	30.9	93.2	58.6	65.0	71.6	79.8	84.5
2008	330	71.2	11.6	33.8	97.9	56.4	64.9	71.7	79.4	85.3
2009	278	71.8	11.3	34.7	94.6	56.2	65.9	72.0	80.0	85.8
2010	286	71.3	12.3	5.0	97.2	54.0	65.0	72.6	79.9	86.1
2011	303	71.8	12.2	33.3	97.5	53.6	66.4	73.2	79.9	86.0
2012	240	72.0	11.8	31.8	97.5	54.3	65.4	72.9	80.4	85.8
2013	163	74.6	10.9	43.3	93.1	59.4	68.3	76.6	82.4	87.0
1998-2013	3646	71.1	11.7	5.0	102	55.4	63.9	72.1	79.6	85.2

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	75	64.6	13.2	26.1	92.3	49.5	56.2	64.4	73.6	83.9
1999	66	66.5	13.4	23.9	91.7	48.5	58.5	68.0	76.8	83.7
2000	80	71.0	11.4	38.2	92.3	56.1	62.3	71.9	79.5	85.9
2001	59	67.5	10.7	44.4	85.3	49.1	59.2	69.6	76.3	79.5
2002	126	68.9	12.0	32.7	93.5	52.9	62.1	68.8	77.4	83.6
2003	146	68.0	10.1	36.7	99.0	55.2	61.3	67.4	75.5	81.4
2004	127	68.8	12.1	37.1	93.4	52.6	60.7	69.8	76.5	84.0
2005	125	70.6	10.9	38.9	102	56.6	64.8	69.8	78.0	83.8
2006	123	69.3	11.9	27.5	94.8	55.8	63.8	69.6	76.7	83.7
2007	172	70.0	11.4	30.9	93.2	55.9	63.5	70.5	79.1	82.7
2008	187	69.8	12.1	33.8	97.9	51.6	64.2	70.3	78.4	85.1
2009	143	70.3	10.8	34.7	94.1	54.9	65.5	71.1	77.7	83.8
2010	170	70.2	12.3	5.0	93.0	53.3	64.2	71.7	78.5	84.6
2011	161	71.2	11.7	33.3	97.4	51.7	67.9	73.0	78.7	84.2
2012	132	71.3	11.5	41.0	93.0	54.2	65.3	72.2	78.8	84.6
2013	92	74.4	10.8	46.0	93.1	58.5	70.2	75.9	82.3	87.0
1998-2013	1984	69.8	11.7	5.0	102	53.5	63.1	70.9	78.0	84.1

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	53	71.3	11.7	37.6	94.0	57.6	62.4	70.9	78.9	88.1
1999	63	72.4	11.9	49.2	92.8	56.1	62.1	74.6	80.1	87.9
2000	55	72.8	12.0	40.6	94.4	55.7	66.9	75.9	80.1	85.8
2001	58	70.1	11.3	36.1	93.7	57.3	63.3	70.7	79.1	83.2
2002	113	72.9	11.9	38.9	93.2	56.3	63.7	74.3	82.2	87.8
2003	96	71.5	12.4	31.4	94.2	55.8	63.5	72.6	80.5	85.6
2004	118	72.5	10.9	38.8	92.1	57.8	66.4	73.4	81.3	84.5
2005	117	72.5	11.1	42.1	96.8	55.9	65.3	74.7	80.6	84.7
2006	128	72.7	12.1	22.7	94.9	56.7	65.9	74.4	81.6	85.7
2007	146	72.9	9.9	44.4	92.3	61.4	66.6	73.0	80.9	86.1
2008	143	73.0	10.7	37.5	94.3	59.1	66.4	74.2	81.1	85.9
2009	135	73.5	11.7	36.3	94.6	58.8	67.4	73.3	83.8	87.1
2010	116	72.8	12.2	40.5	97.2	55.4	66.2	74.0	82.2	87.1
2011	142	72.5	12.7	41.9	97.5	54.5	65.3	73.9	81.7	87.9
2012	108	72.7	12.2	31.8	97.5	54.8	65.7	75.1	82.4	86.3
2013	71	74.7	11.0	43.3	92.2	61.5	68.2	76.9	82.4	86.4
1998-2013	1662	72.7	11.6	22.7	97.5	56.8	65.4	73.8	81.4	86.3

Table 4

Age distribution by 5-year age group and gender for period 1998-2013 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.0	0.0	1	0.1	0.1			0.0
5-9	0	0.0	0.0			0.1			0.0
10-14	0	0.0	0.0			0.1			0.0
15-19	0	0.0	0.0			0.1			0.0
20-24	2	0.1	0.1	1	0.1	0.1	1	0.1	0.1
25-29	2	0.1	0.1	2	0.1	0.2			0.1
30-34	8	0.2	0.4	6	0.3	0.5	2	0.1	0.2
35-39	21	0.6	0.9	14	0.7	1.2	7	0.4	0.6
40-44	50	1.4	2.3	33	1.7	2.9	17	1.0	1.6
45-49	126	3.5	5.8	87	4.4	7.3	39	2.3	4.0
50-54	138	3.8	9.5	79	4.0	11.2	59	3.5	7.5
55-59	257	7.0	16.6	143	7.2	18.4	114	6.9	14.4
60-64	384	10.5	27.1	228	11.5	29.9	156	9.4	23.8
65-69	577	15.8	43.0	329	16.6	46.5	248	14.9	38.7
70-74	610	16.7	59.7	372	18.8	65.3	238	14.3	53.0
75-79	611	16.8	76.4	319	16.1	81.4	292	17.6	70.6
80-84	473	13.0	89.4	208	10.5	91.8	265	15.9	86.5
85+	386	10.6	100.0	162	8.2	100.0	224	13.5	100.0
All ages	3646	100.0		1984	100.0		1662	100.0	

Included in the statistics are 34.3% multiple primaries in males and 26.4% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2013

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=389 %	Females DCO rate n=397 %	Males Prop.all cancers n=158258 %	Females Prop.all cancers n=153136 %
0- 4	1		0.1	0.0			0.3	
5- 9			0.0	0.0				
10-14			0.0	0.0				
15-19			0.0	0.0				
20-24	1	1	0.1	0.1			0.2	0.2
25-29	2		0.1	0.0			0.2	
30-34	6	2	0.3	0.1			0.4	0.1
35-39	14	7	0.6	0.3	7.1	14.3	0.6	0.2
40-44	33	17	1.3	0.7			1.0	0.3
45-49	87	39	3.7	1.7	4.6		1.6	0.4
50-54	79	59	3.9	2.9	5.1	5.1	0.9	0.5
55-59	143	114	7.8	5.9	3.5	1.8	1.0	0.8
60-64	228	156	12.9	8.3	8.3	8.3	1.0	0.9
65-69	329	248	20.8	14.4	11.6	12.5	1.2	1.3
70-74	372	238	29.0	15.7	16.4	16.0	1.4	1.3
75-79	319	292	38.6	24.6	23.8	22.3	1.5	1.7
80-84	208	265	41.6	28.4	40.4	36.2	1.5	1.7
85+	162	223	47.5	25.0	59.9	66.4	1.6	1.3
All ages	1984	1661			19.6	23.9	1.3	1.1
Incidence								
Raw			6.7	5.3				
WS			3.4	2.1				
ES			5.2	3.2				
BRD-S			6.8	4.3				

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).

Table 6a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2013
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C15	Oesophagus	5	1.2	4.3	1.4	9.9	#	10.0	20.0
C16	Stomach	5	2.7	1.9	0.6	4.4		6.1	
C18	Colon	9	6.4	1.4	0.6	2.7		6.8	
C19-C20	Rectum	6	3.7	1.6	0.6	3.5		6.0	
C22	Liver	2	1.8	1.1	0.1	4.0		0.5	50.0
C25	Pancreas	3	2.3	1.3	0.3	3.8		1.8	33.3
C33-C34	Lung	13	7.8	1.7	0.9	2.9		13.6	7.7
C40-C41	Bone	3	0.1	58.8	12.1	171.8	#	7.7	
C43	Malign. melanoma	6	2.6	2.3	0.8	5.0		8.8	
C46,C49	Soft tissue	2	0.3	5.9	0.7	21.3		4.3	
C61	Prostate	39	19.9	2.0	1.4	2.7	#	49.8	2.6
C64	Kidney	5	2.3	2.2	0.7	5.0		7.0	
C67	Bladder	3	2.8	1.1	0.2	3.1		0.5	
C70-C72	CNS cancer	2	0.9	2.3	0.3	8.4		3.0	
C73	Thyroid	2	0.4	4.7	0.6	16.9		4.1	
C76-C79	CUP	3	1.1	2.8	0.6	8.1		5.0	
C82-C85	NHL	19	2.6	7.4	4.4	11.5	#	42.7	5.3
C90	Mult. myeloma	2	0.8	2.4	0.3	8.6		3.0	50.0
C91-C96	Leukaemia	7	1.0	6.9	2.8	14.1	#	15.6	
Other primaries		6	3.0	2.0	0.7	4.3		7.7	
Not observed		0	2.8	0.0	0.0	1.3		-7.2	
All mult. primaries		142	66.4	2.1	1.8	2.5	#	196.6	4.9

Patients	1145
Median age at second malignancy (years)	72.6
Person-years	3843
Mean observation time (years)	3.4
Median observation time (years)	2.4

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category "Other primaries".

Table 6b

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2013
FEMALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C09-C10 Oropharynx	2	0.1	14.4	1.7	51.9	#	6.5	
C16 Stomach	3	1.2	2.4	0.5	7.2		6.2	
C18 Colon	5	3.4	1.5	0.5	3.4		5.5	
C25 Pancreas	2	1.5	1.3	0.2	4.9		1.8	50.0
C33-C34 Lung	4	2.5	1.6	0.4	4.2		5.4	
C43 Malign. melanoma	4	1.2	3.4	0.9	8.6		9.8	
C50 Breast	15	10.3	1.5	0.8	2.4		16.2	6.7
C56 Ovary	2	1.4	1.4	0.2	5.0		2.0	50.0
C73 Thyroid	2	0.6	3.4	0.4	12.2		4.9	
C76-C79 CUP	2	0.6	3.4	0.4	12.4		4.9	
C82-C85 NHL	13	1.3	9.8	5.2	16.7	#	40.6	15.4
C91-C96 Leukaemia	3	0.5	5.6	1.2	16.3	#	8.6	
Other primaries	14	6.4	2.2	1.2	3.7	#	26.6	14.3
Not observed	0	3.2	0.0	0.0	1.1		-11.3	
All mult. primaries	71	34.3	2.1	1.6	2.6	#	127.5	9.9

Patients	915
Median age at second malignancy (years)	71.1
Person-years	2877
Mean observation time (years)	3.1
Median observation time (years)	2.0

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 are pooled in category "Other primaries".

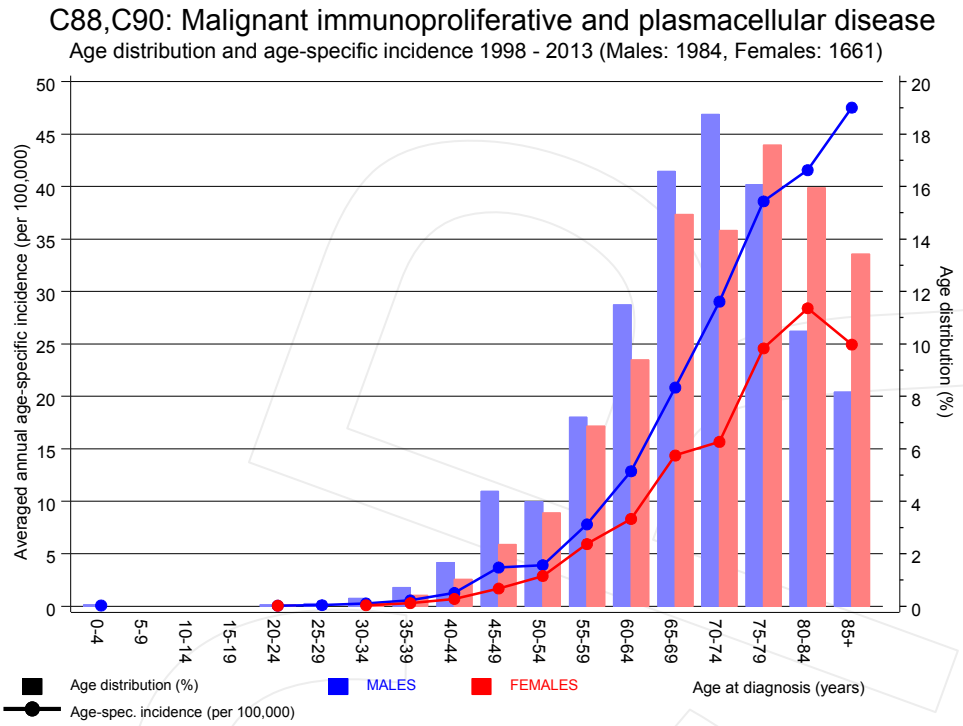


Figure 7. Age distribution and age-specific incidence

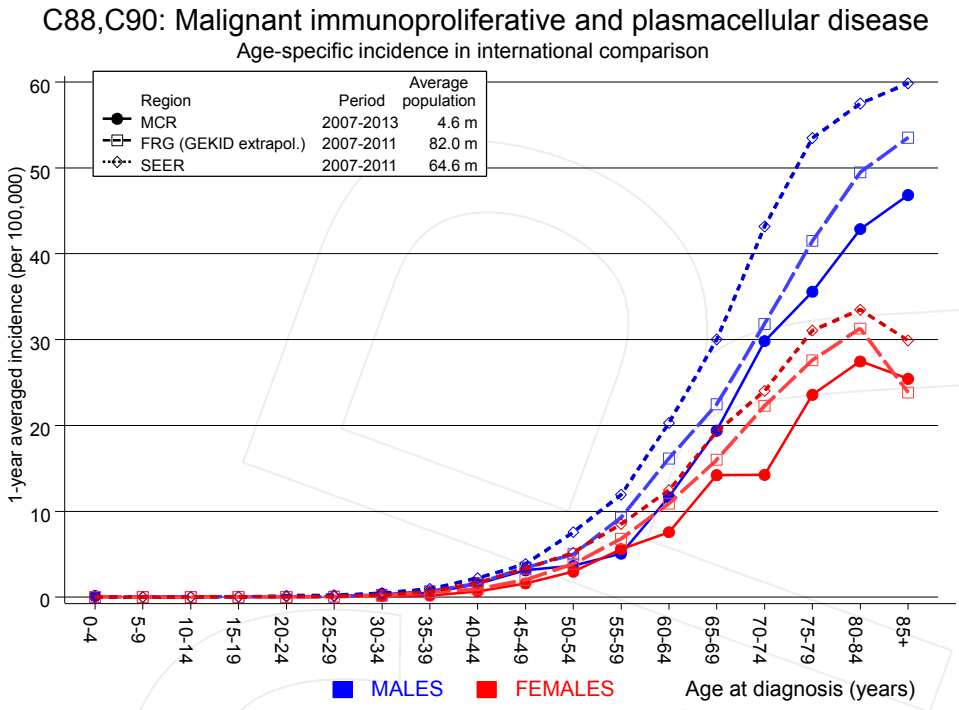


Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Extrapolated age-specific patient population of Germany, data status middle of 2010. Association of Population-based Cancer Registries in Germany (GEKID e.V.). Berlin, 2014. http://www.gekid.de. Last access: 02/11/2015

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.

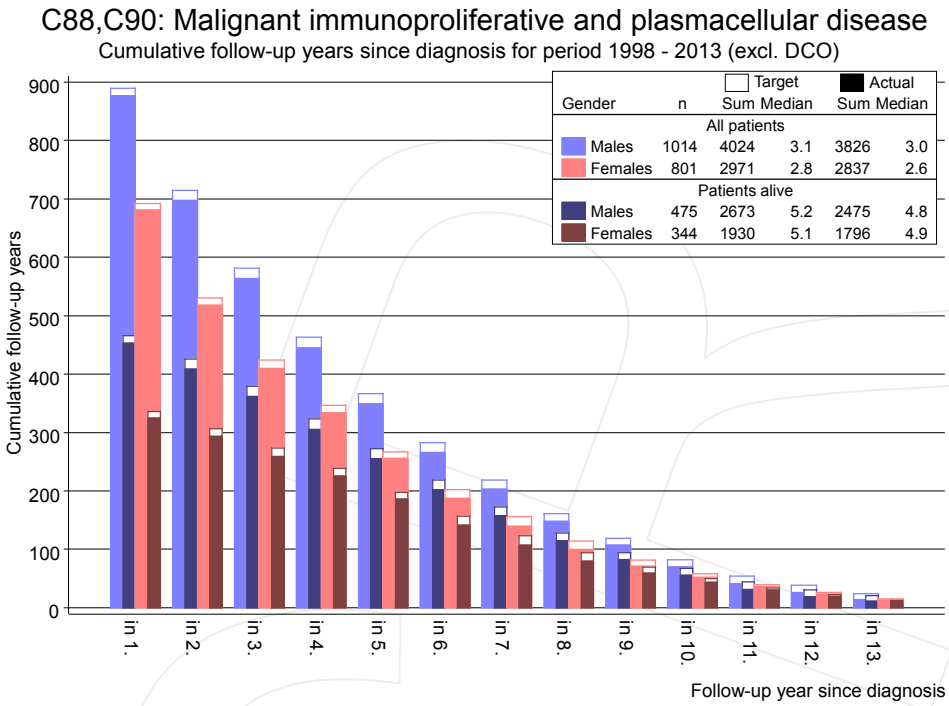
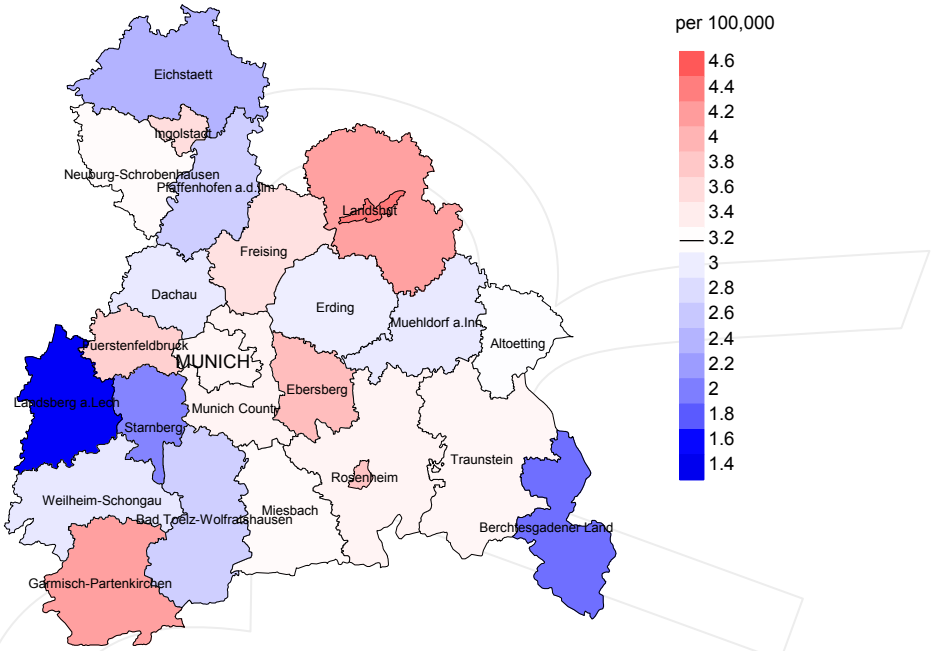


Figure 8. Cumulative follow-up years depending on time since diagnosis

The increase of the lost to follow-up rate can be interpreted as a consequence of a declining number of survivors over time.

Average incidence (world standard population) 2007 - 2013: Males



Average incidence (world standard population) 2007 - 2013: Females

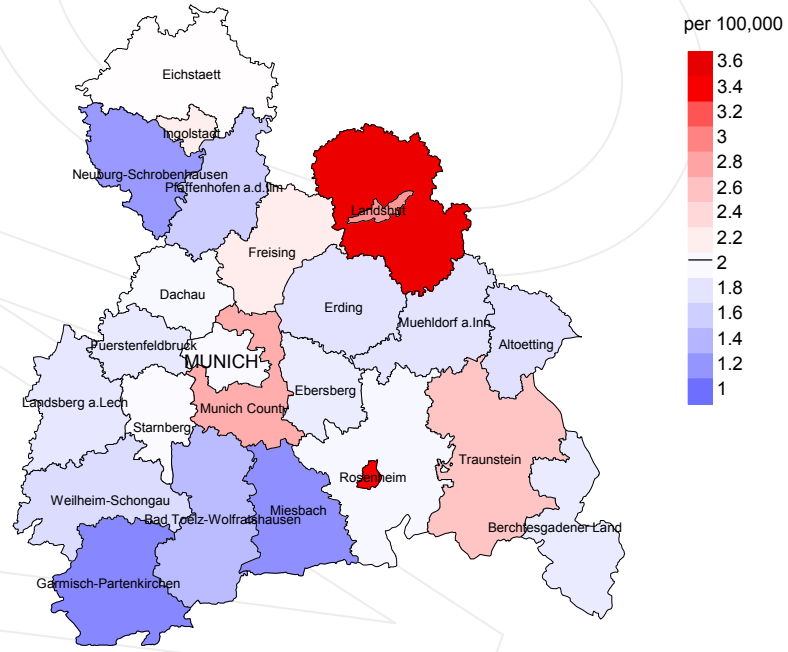
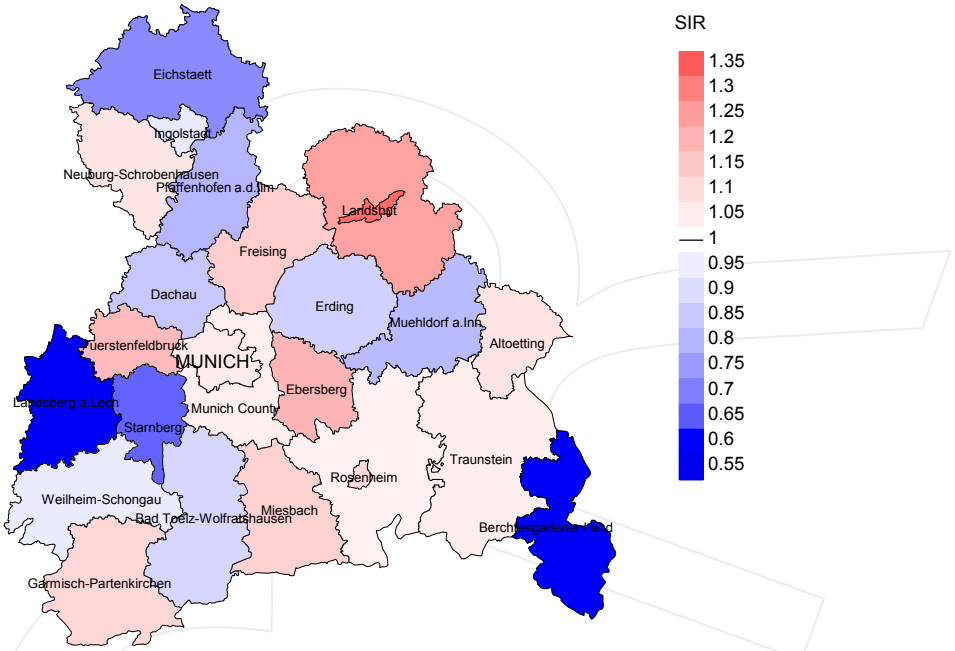


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 3.2/100,000 WS N=1,057, females 2.0/100,000 WS N=860).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 19 women were identified with newly diagnosed immunoprolif. disease. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.9 and 3.6/100,000.

Standardized incidence ratio (SIR) 2007 - 2013: Males



Standardized incidence ratio (SIR) 2007 - 2013: Females

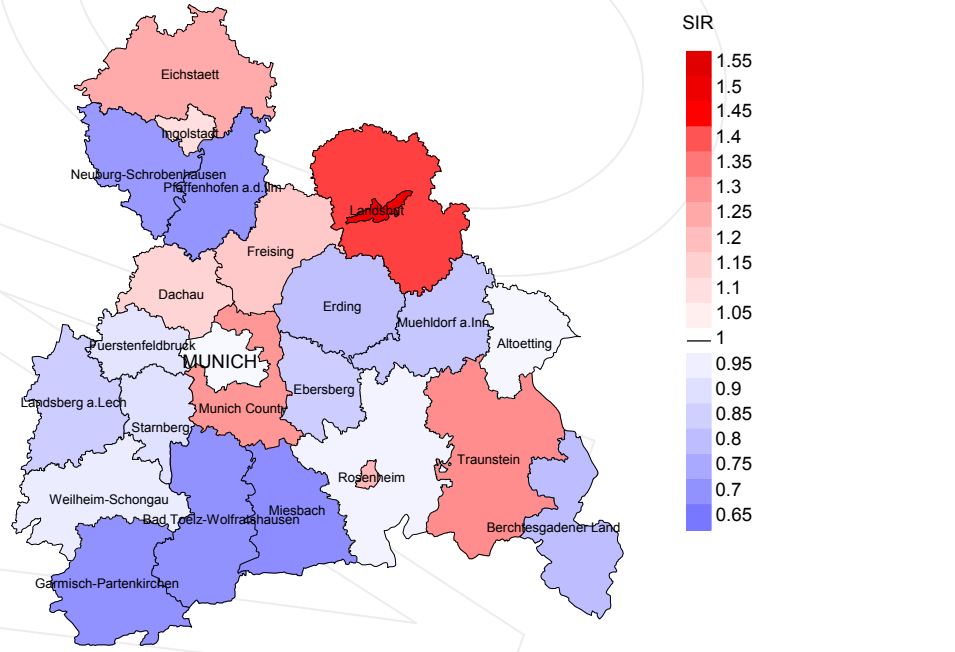


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,057, females N=860).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 19 women were identified with newly diagnosed immunoprolif. disease. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.84. Though, the value of this parameter may vary with an underlying probability of 99% between 0.43 and 1.48, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts, and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	128	98.4	23.4	115	89.8	93.9
1999	129	99.2	20.9	118	91.5	94.1
2000	135	98.5	29.6	128	94.8	95.3
2001	117	99.1	28.2	107	91.5	95.3
2002	239	98.3	31.8	204	85.4	97.1
2003	242	97.5	24.0	203	83.9	98.0
2004	245	98.8	26.5	206	84.1	96.6
2005	242	97.9	19.0	191	78.9	98.4
2006	251	98.8	17.1	191	76.1	97.4
2007	318	92.8	20.8	244	76.7	97.5
2008	330	80.0	17.3	223	67.6	98.7
2009	278	84.9	15.1	186	66.9	96.2
2010	286	78.7	18.5	175	61.2	97.7
2011	303	82.2	20.5	160	52.8	96.3
2012	240	80.4	17.5	102	42.5	100.0
2013	163	100.0	28.8	80	49.1	93.8
1998-2013	3646	91.2	21.6	2633	72.2	96.9

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 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	128	84	92.9	35	27.3
1999	129	99	96.0	41	31.8
2000	135	112	92.0	45	33.3
2001	117	102	95.1	36	30.8
2002	239	147	95.9	87	36.4
2003	242	167	99.4	80	33.1
2004	245	196	98.5	92	37.6
2005	242	150	98.0	66	27.3
2006	251	157	97.5	69	27.5
2007	318	191	99.0	91	28.6
2008	330	223	97.3	84	25.5
2009	278	219	97.3	72	25.9
2010	286	233	99.1	80	28.0
2011	303	245	98.0	86	28.4
2012	240	222	97.7	65	27.1
2013	163	217	99.5	67	41.1
1998-2013	3646	2764	97.5	1096	30.1

Table 10c

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 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	84	53.6	46.4	94.9
1999	99	75.8	24.2	96.8
2000	112	65.2	34.8	96.1
2001	102	60.8	39.2	99.0
2002	147	81.0	19.0	96.5
2003	167	80.8	19.2	97.0
2004	196	83.7	16.3	96.9
2005	150	83.3	16.7	95.2
2006	157	84.7	15.3	96.7
2007	191	84.8	15.2	94.7
2008	223	85.2	14.8	92.2
2009	219	81.7	18.3	96.7
2010	233	82.4	17.6	89.6
2011	245	82.4	17.6	92.9
2012	222	84.7	15.3	93.5
2013	217	84.8	15.2	93.1
1998-2013	2764	80.6	19.4	94.7

Table 11a

Medians of age at death according to the grouping in Table 10
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	35	68.9	66.1	78.5	71.7
1999	52	72.0	71.5	76.4	71.9
2000	62	75.4	72.1	77.0	77.8
2001	47	75.5	75.5	76.1	75.5
2002	74	71.3	71.8	70.1	71.7
2003	87	72.9	72.0	74.9	72.9
2004	105	73.4	73.1	77.2	73.5
2005	77	74.2	74.0	75.6	74.0
2006	80	73.6	73.3	79.5	73.3
2007	97	74.2	73.8	79.4	74.3
2008	126	72.6	70.6	81.6	71.7
2009	118	72.6	72.0	78.3	73.1
2010	121	74.1	73.8	76.7	73.8
2011	137	75.8	75.5	80.7	75.8
2012	117	75.4	75.0	80.3	76.4
2013	135	76.5	75.3	81.4	76.1
1998-2013	1470	74.1	73.5	78.0	74.1

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 11b

Medians of age at death according to the grouping in Table 10
FEMALES

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	49	78.3	70.4	80.6	78.2
1999	47	78.4	76.8	82.5	78.4
2000	50	77.3	76.9	78.8	76.6
2001	55	76.9	73.9	78.2	76.6
2002	73	77.5	74.1	83.1	77.5
2003	80	75.1	73.3	81.1	75.1
2004	91	75.4	73.7	82.5	75.0
2005	73	76.3	74.6	85.0	75.5
2006	77	77.2	76.4	79.3	78.1
2007	94	78.0	77.3	81.5	78.2
2008	97	77.4	75.5	81.4	77.4
2009	101	73.5	71.9	81.1	73.2
2010	112	76.7	76.0	81.8	76.4
2011	108	76.0	73.9	84.5	75.5
2012	105	77.8	76.6	81.4	76.4
2013	82	78.9	78.5	79.8	78.8
1998-2013	1294	76.8	75.2	81.4	76.4

By 2010, life expectancy for a newborn male in Germany is 77.5 years compared with 82.6 years for his female counterpart.

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 12a

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	22	2.0	0.29	1.2	0.29	1.7	0.29	2.0	0.27
1999	40	3.6	0.61	2.2	0.59	3.3	0.61	4.5	0.64
2000	39	3.4	0.49	1.9	0.48	3.0	0.48	4.5	0.51
2001	31	2.7	0.53	1.4	0.47	2.3	0.51	3.5	0.57
2002	58	3.1	0.46	1.7	0.44	2.6	0.46	3.6	0.48
2003	72	3.8	0.49	2.0	0.46	3.1	0.49	4.3	0.52
2004	86	4.6	0.68	2.3	0.63	3.6	0.65	5.0	0.69
2005	64	3.4	0.51	1.7	0.50	2.7	0.52	3.7	0.54
2006	68	3.6	0.55	1.7	0.51	2.6	0.53	3.7	0.57
2007	86	3.9	0.50	1.9	0.47	2.9	0.49	4.1	0.51
2008	110	4.9	0.59	2.4	0.57	3.7	0.59	4.9	0.60
2009	96	4.3	0.67	2.0	0.66	3.1	0.68	4.1	0.69
2010	97	4.3	0.57	1.8	0.50	2.9	0.53	4.1	0.57
2011	121	5.3	0.75	2.3	0.72	3.7	0.75	5.1	0.78
2012	98	4.3	0.74	1.8	0.69	2.9	0.72	4.1	0.77
2013	111	4.9	1.21	2.0	1.17	3.2	1.18	4.6	1.19
1998-2013	1199	4.0	0.60	1.9	0.56	3.0	0.59	4.2	0.62

Table 12b

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

Year of death	Deaths n	Mort. raw	MI-Index raw	Mort. WS	MI-Index WS	Mort. ES	MI-Index ES	Mort. BRD-S	MI-Index BRD-S
1998	23	2.0	0.43	0.9	0.45	1.3	0.44	1.7	0.45
1999	35	2.9	0.56	1.1	0.49	1.7	0.51	2.4	0.54
2000	34	2.8	0.62	1.1	0.55	1.7	0.57	2.3	0.60
2001	31	2.5	0.53	1.1	0.49	1.7	0.52	2.3	0.54
2002	61	3.1	0.54	1.2	0.52	1.9	0.52	2.5	0.53
2003	63	3.2	0.66	1.3	0.62	1.9	0.63	2.6	0.65
2004	78	3.9	0.66	1.5	0.63	2.3	0.65	3.2	0.66
2005	61	3.1	0.52	1.2	0.50	1.8	0.51	2.5	0.51
2006	65	3.2	0.51	1.1	0.43	1.8	0.46	2.6	0.51
2007	76	3.3	0.52	1.1	0.44	1.8	0.48	2.5	0.52
2008	80	3.4	0.56	1.3	0.52	2.0	0.52	2.7	0.54
2009	83	3.6	0.61	1.4	0.62	2.1	0.62	2.7	0.62
2010	95	4.1	0.82	1.4	0.71	2.1	0.74	3.0	0.79
2011	81	3.4	0.57	1.3	0.53	2.0	0.54	2.6	0.56
2012	90	3.8	0.83	1.3	0.76	2.1	0.78	2.8	0.77
2013	73	3.1	1.03	1.0	0.90	1.6	0.94	2.3	0.99
1998-2013	1029	3.3	0.62	1.2	0.57	1.9	0.58	2.6	0.60

Table 13

Age distribution of age at death (cancer-related) for period 1998-2013
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
25-29	1	0.0	0.0	1	0.1	0.1			0.0
30-34	2	0.1	0.1	2	0.2	0.3			0.0
35-39	6	0.3	0.4	5	0.4	0.7	1	0.1	0.1
40-44	16	0.7	1.1	11	0.9	1.6	5	0.5	0.6
45-49	26	1.2	2.3	20	1.7	3.3	6	0.6	1.2
50-54	56	2.5	4.8	31	2.6	5.8	25	2.4	3.6
55-59	98	4.4	9.2	51	4.3	10.1	47	4.6	8.2
60-64	200	9.0	18.2	122	10.2	20.3	78	7.6	15.7
65-69	339	15.2	33.4	191	15.9	36.2	148	14.4	30.1
70-74	446	20.0	53.4	248	20.7	56.8	198	19.2	49.4
75-79	405	18.2	71.6	225	18.8	75.6	180	17.5	66.9
80-84	357	16.0	87.6	167	13.9	89.5	190	18.5	85.3
85+	277	12.4	100.0	126	10.5	100.0	151	14.7	100.0
All ages	2229	100.0		1200	100.0		1029	100.0	

Included in the statistics are 34.3% multiple primaries in males and 26.4% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**incl. multiple primaries**)

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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29	1		0.0	0.50	0.0		0.9	
30-34	2		0.1	0.33	0.0		1.1	
35-39	5	1	0.2	0.36	0.0	0.14	1.3	0.2
40-44	11	5	0.4	0.33	0.2	0.29	1.3	0.4
45-49	20	6	0.8	0.23	0.3	0.15	1.1	0.3
50-54	31	25	1.5	0.39	1.2	0.42	0.9	0.8
55-59	51	47	2.8	0.36	2.4	0.41	0.9	1.0
60-64	122	78	6.9	0.54	4.2	0.50	1.4	1.2
65-69	191	148	12.1	0.58	8.6	0.60	1.6	1.8
70-74	248	198	19.4	0.67	13.0	0.83	1.8	2.0
75-79	225	180	27.2	0.71	15.2	0.62	1.7	1.7
80-84	167	190	33.4	0.80	20.4	0.72	1.5	1.7
85+	126	151	36.9	0.78	16.9	0.67	1.4	1.1
All ages	1200	1029					1.5	1.4
Mortality								
Raw			4.0	0.60	3.3	0.62		
WS			1.9	0.56	1.2	0.57		
ES			3.0	0.59	1.9	0.58		
BRD-S			4.2	0.62	2.6	0.60		
PYLL-70								
per 100,000			13.5		8.6			
ES			11.5		7.1			
AYLL-70			8.3		7.4			

The rates underestimate the prognosis if other synchronous cancers are prognostic unfavorable.

Table 15a

Multiple primaries in deaths in period 1998-2013
MALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	5	1.2	1	20.0	2	40.0	2	40.0
C16	Stomach	10	2.4	5	50.0	2	20.0	3	30.0
C18	Colon	22	5.2	10	45.5	3	13.6	9	40.9
C19-C20	Rectum	19	4.5	10	52.6	3	15.8	6	31.6
C22	Liver	7	1.7	1	14.3	1	14.3	5	71.4
C25	Pancreas	7	1.7			1	14.3	6	85.7
C32	Larynx	5	1.2	3	60.0			2	40.0
C33-C34	Lung	21	5.0	4	19.0	3	14.3	14	66.7
C40-C41	Bone	5	1.2			1	20.0	4	80.0
C43	Malign. melanoma	25	5.9	19	76.0	1	4.0	5	20.0
C44	Skin others	36	8.5	17	47.2	1	2.8	18	50.0
C61	Prostate	105	24.9	75	71.4	6	5.7	24	22.9
C64	Kidney	21	5.0	11	52.4	4	19.0	6	28.6
C67	Bladder	13	3.1	7	53.8			6	46.2
C70-C72	CNS cancer	12	2.8	2	16.7	3	25.0	7	58.3
C76-C79	CUP	6	1.4					6	100.0
C82-C85	NHL	21	5.0			5	23.8	16	76.2
C90	Mult. myeloma	36	8.5			6	16.7	30	83.3
C91-C96	Leukaemia	18	4.3	3	16.7	2	11.1	13	72.2
Other primaries		28	6.6	13	46.4	1	3.6	14	50.0
All mult. primaries		422	100.0	181	42.9	45	10.7	196	46.4

Multiple primaries with number of cases 1 to 4 are pooled in category "Other primaries".

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 multiple malignancy.

Table 15b

Multiple primaries in deaths in period 1998-2013
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C16	Stomach	6	2.2	1	16.7	2	33.3	3	50.0
C18	Colon	20	7.3	12	60.0			8	40.0
C19-C20	Rectum	14	5.1	10	71.4	1	7.1	3	21.4
C21	Anus/canal	4	1.5	3	75.0			1	25.0
C25	Pancreas	5	1.8			1	20.0	4	80.0
C33-C34	Lung	9	3.3	3	33.3	1	11.1	5	55.6
C43	Malign. melanoma	12	4.4	8	66.7			4	33.3
C44	Skin others	11	4.0	5	45.5	1	9.1	5	45.5
C48	Peritoneal	3	1.1	1	33.3	1	33.3	1	33.3
C50	Breast	81	29.6	64	79.0	5	6.2	12	14.8
C53	Cervix uteri	4	1.5	4	100.0				
C54	Corpus uteri	7	2.6	6	85.7			1	14.3
C56	Ovary	6	2.2	3	50.0	1	16.7	2	33.3
C64	Kidney	4	1.5	4	100.0				
C67	Bladder	5	1.8	1	20.0	2	40.0	2	40.0
C70-C72	CNS cancer	7	2.6	6	85.7			1	14.3
C73	Thyroid	4	1.5	2	50.0			2	50.0
C76-C79	CUP	5	1.8	1	20.0	2	40.0	2	40.0
C82-C85	NHL	15	5.5			4	26.7	11	73.3
C90	Mult. myeloma	29	10.6			3	10.3	26	89.7
C91-C96	Leukaemia	11	4.0	3	27.3	3	27.3	5	45.5
Other primaries		12	4.4	7	58.3			5	41.7
All mult. primaries		274	100.0	144	52.6	27	9.9	103	37.6

Multiple primaries with number of cases 1 to 2 are pooled in category "Other primaries".

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 multiple malignancy.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**Singular 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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29	1		0.0	0.50	0.0		1.0	
30-34	2		0.1	0.40	0.0		1.1	
35-39	4	1	0.2	0.31	0.0	0.14	1.1	0.2
40-44	10	5	0.4	0.31	0.2	0.29	1.3	0.5
45-49	18	5	0.8	0.22	0.2	0.14	1.1	0.3
50-54	30	22	1.5	0.42	1.1	0.42	1.0	0.8
55-59	49	41	2.7	0.40	2.1	0.41	1.0	1.0
60-64	110	67	6.2	0.56	3.6	0.52	1.5	1.3
65-69	163	122	10.3	0.59	7.1	0.63	1.7	1.8
70-74	211	164	16.5	0.71	10.8	0.85	2.0	2.1
75-79	172	150	20.8	0.76	12.6	0.64	1.7	1.8
80-84	123	153	24.6	0.90	16.4	0.71	1.5	1.7
85+	90	123	26.4	0.71	13.8	0.67	1.3	1.1
All ages	983	853					1.5	1.5
Mortality								
Raw			3.3	0.62	2.7	0.62		
WS			1.6	0.57	1.0	0.57		
ES			2.5	0.60	1.6	0.59		
BRD-S			3.4	0.64	2.1	0.61		
PYLL-70								
per 100,000			12.3		7.5			
ES			10.6		6.2			
AYLL-70			8.5		7.6			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2013
(**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			0.0		0.0			
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24			0.0		0.0			
25-29	1		0.0	0.50	0.0		1.1	
30-34	2		0.1	0.40	0.0		1.1	
35-39	4	1	0.2	0.31	0.0	0.14	1.1	0.2
40-44	9	5	0.3	0.28	0.2	0.33	1.2	0.5
45-49	18	5	0.8	0.24	0.2	0.17	1.2	0.3
50-54	29	20	1.4	0.45	1.0	0.41	1.1	0.9
55-59	41	40	2.2	0.37	2.1	0.44	0.9	1.1
60-64	96	61	5.4	0.55	3.3	0.52	1.5	1.3
65-69	140	112	8.9	0.58	6.5	0.61	1.7	2.0
70-74	189	152	14.8	0.70	10.0	0.83	2.1	2.3
75-79	152	134	18.4	0.75	11.3	0.61	1.9	1.9
80-84	103	144	20.6	0.82	15.4	0.69	1.6	1.9
85+	79	117	23.2	0.65	13.1	0.64	1.5	1.2
All ages	863	791					1.6	1.6
Mortality								
Raw			2.9	0.60	2.5	0.61		
WS			1.4	0.56	0.9	0.57		
ES			2.2	0.58	1.5	0.58		
BRD-S			3.0	0.61	2.0	0.60		
PYLL-70								
per 100,000			11.2		7.0			
ES			9.6		5.9			
AYLL-70			8.8		7.7			

* See corresponding tables with multiple primaries.

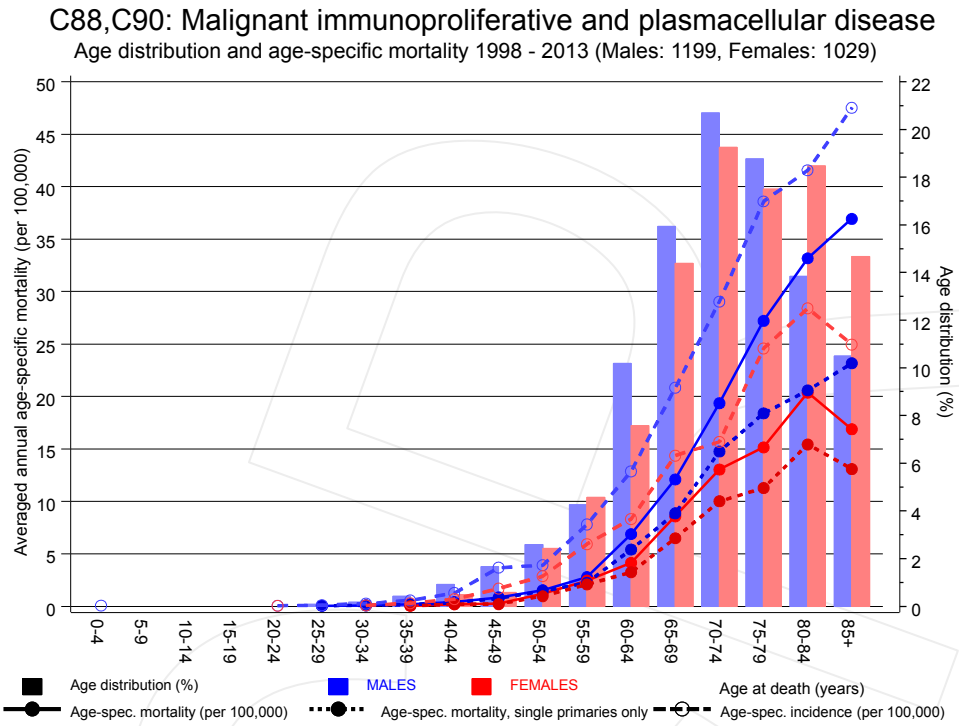
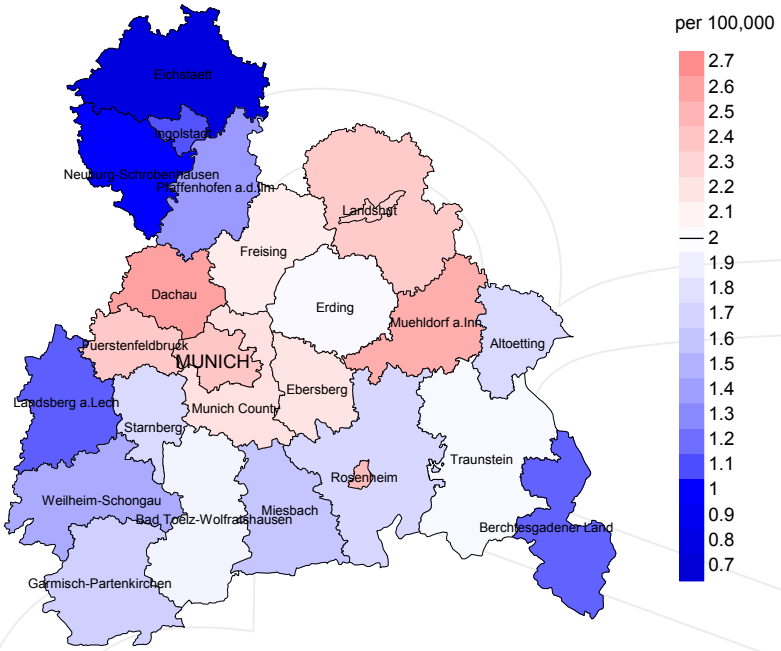


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2013: Males



Average mortality (world standard population) 2007 - 2013: Females

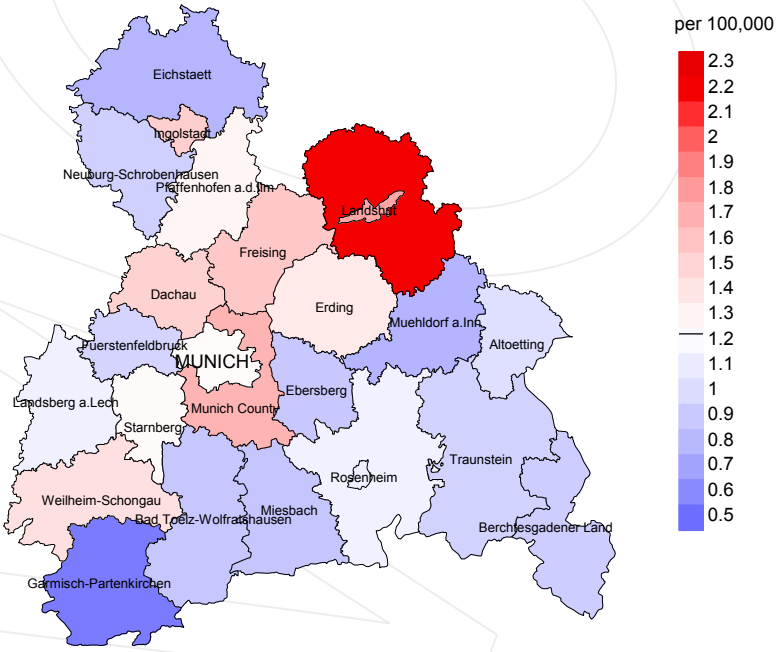
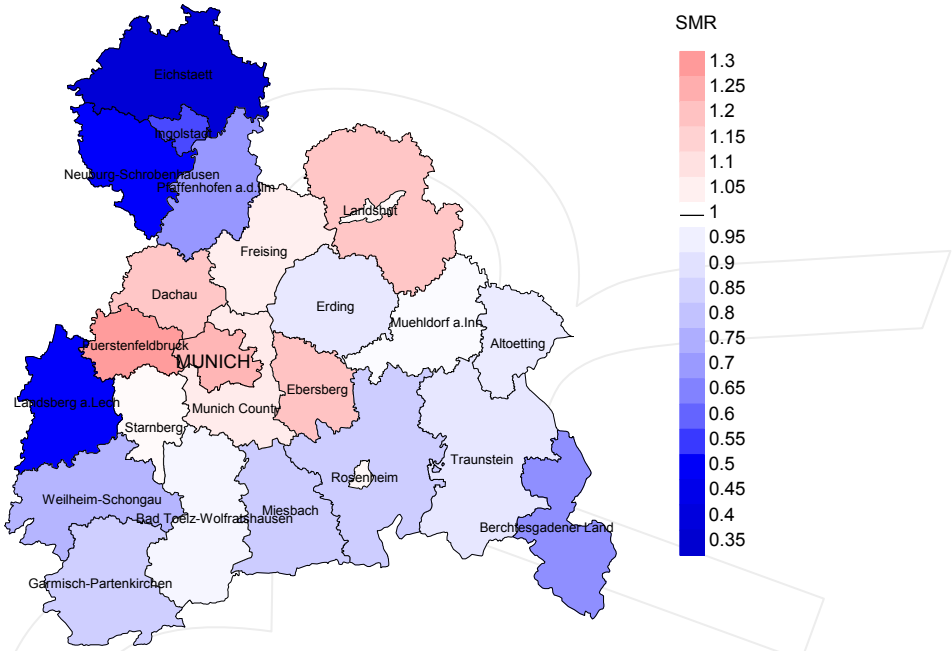


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2013. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 2.0/100,000 WS N=709, females 1.2/100,000 WS N=572).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,928 female residents (averaged) in the period from 2007 to 2013 a total of 13 women died from immunoprolif. disease. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.3 and 2.0/100,000.

Standardized mortality ratio (SMR) 2007 - 2013: Males



Standardized mortality ratio (SMR) 2007 - 2013: Females

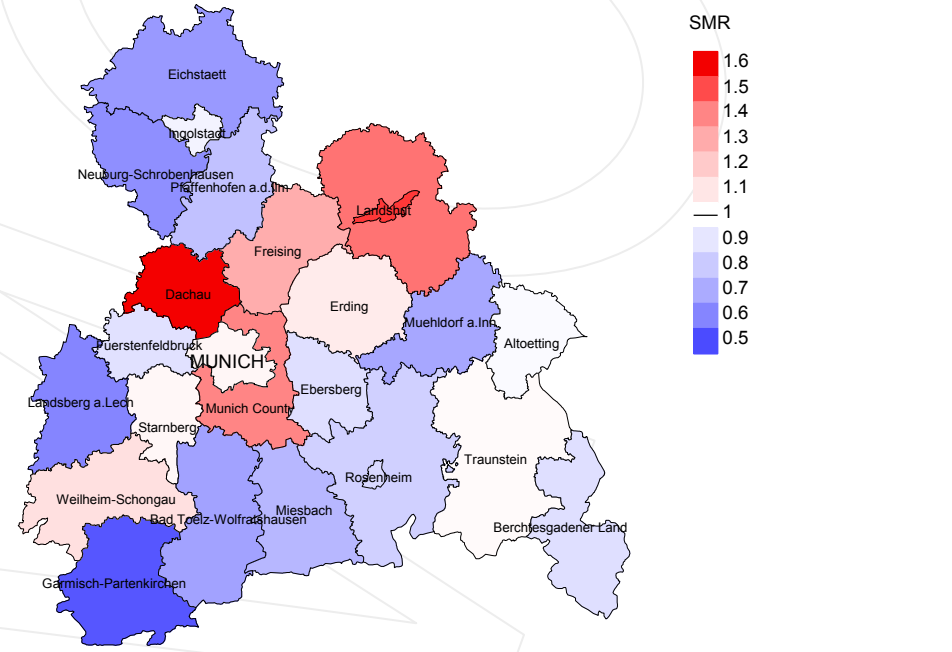


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2013. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=709, females N=572).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 64,642 female residents (averaged) in the period from 2007 to 2013 a total of 13 women died from immunoprolif. disease. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.87. Though, the value of this parameter may vary with an underlying probability of 99% between 0.37 and 1.71, 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. 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

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

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