Munich Cancer Registry

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

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

Cancer statistics: Baseline statistics

C33, C34: Non-small cell LC

Year of diagnosis	1998-2011
Patients	15778
Diseases	15910
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C34n_E.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 4.5 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, April 2013

[#] 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 2011 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.

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	620			15.5	90.6	99.2
1999	681	2	0.3	19.7	89.6	99.0
2000	662			19.9	88.1	98.6
2001	690	2	0.3	20.7	90.0	98.6
2002	1076			21.1	87.8	98.6
2003	1157	1	0.1	22.6	87.5	99.0
2004	1148	1	0.1	21.9	87.0	98.9
2005	1162			23.0	86.7	97.8
2006	1211			24.1	82.2	97.9
2007	1475			22.4	80.1	92.9 ##
2008	1564			25.3	78.3	88.3
2009	1563			24.6	74.2	88.0
2010	1539			25.0	67.8	93.4
2011	1362			24.9	52.4	83.8 ###
1998-2011	15910	6	0.0	22.9	79.6	94.2

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	620	426	194	68.7
1999	681	472	209	69.3
2000	662	463	199	69.9
2001	690	486	204	70.4
2002	1076	734	342	68.2
2003	1157	764	393	66.0
2004	1148	767	381	66.8
2005	1162	780	382	67.1
2006	1211	813	398	67.1
2007	1475	971	504	65.8
2008	1564	1024	540	65.5
2009	1563	1002	561	64.1
2010	1539	969	570	63.0
2011	1362	849	513	62.3
1998-2011	15910	10520	5390	66.1

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 4.52 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	426	194	38.4	16.5	23.6	8.7	34.3	12.4	42.1	14.9
1999	472	209	42.2	17.6	26.1	9.1	37.5	13.1	45.8	16.3
2000	463	199	40.7	16.6	24.8	9.2	35.6	12.9	43.0	15.2
2001	486	204	41.9	16.8	25.7	9.2	36.8	12.9	44.4	15.3
2002	734	342	39.4	17.5	22.9	9.3	33.3	13.3	41.8	15.8
2003	764	393	40.8	20.0	23.3	10.6	34.1	15.0	41.9	17.8
2004	767	381	40.8	19.3	22.6	10.2	33.3	14.3	41.8	17.0
2005	780	382	41.2	19.2	22.8	10.3	33.0	14.5	41.0	16.8
2006	813	398	42.5	19.8	23.0	10.1	33.5	14.4	41.9	17.1
2007	971	504	43.8	21.8	23.2	11.5	34.0	16.2	44.0	19.2
2008	1024	540	46.0	23.3	24.0	12.1	35.2	17.2	44.7	20.3
2009	1002	561	44.9	24.1	23.8	12.1	34.6	17.1	42.7	20.5
2010	969	570	43.0	24.4	22.3	12.4	32.4	17.5	40.3	20.8
2011	849	513	37.7	21.9	19.6	10.9	28.4	15.5	35.3	18.3
1998-2011	10520	5390	41.9	20.5	23.1	10.6	33.6	15.0	41.8	17.8

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	620	65.3	10.4	28.1	91.7	51.7	57.8	65.5	73.3	77.9
1999	681	65.6	10.3	32.0	93.0	51.8	58.4	66.6	73.0	78.5
2000	662	64.7	10.7	15.8	88.6	51.1	57.8	65.1	72.7	78.3
2001	690	65.0	10.9	17.0	93.6	50.3	58.5	65.5	72.4	78.2
2002	1076	66.1	10.8	14.1	91.7	52.0	59.2	66.5	74.3	79.4
2003	1157	66.4	10.4	17.5	95.0	52.8	59.4	66.9	73.9	79.5
2004	1148	66.6	10.6	24.4	92.2	53.1	59.7	66.6	74.8	80.2
2005	1162	66.2	10.8	18.1	92.7	52.6	59.5	66.6	74.2	79.5
2006	1211	67.0	10.4	28.7	92.7	53.4	60.3	67.1	74.7	80.3
2007	1475	67.1	11.0	7.5	97.2	53.2	60.5	67.8	75.4	80.5
2008	1564	67.5	10.6	22.3	95.7	53.9	60.9	68.3	75.1	80.3
2009	1563	67.3	10.6	20.3	95.2	53.6	60.5	68.2	74.6	80.9
2010	1539	67.4	10.5	3.5	97.8	53.8	61.1	68.3	74.9	80.2
2011	1362	67.3	10.8	22.2	93.9	52.3	60.4	68.1	74.8	81.4
1998-2011	15910	66.7	10.7	3.5	97.8	52.7	59.8	67.3	74.4	80.0

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	426	64.9	9.8	28.1	91.7	52.6	58.1	65.0	72.4	77.0
1999	472	65.0	9.9	32.0	90.6	52.1	58.2	65.7	72.2	77.7
2000	463	64.7	10.0	28.1	88.6	52.1	58.3	64.9	71.7	77.9
2001	486	65.0	10.2	17.0	93.6	52.0	59.0	65.4	71.6	77.6
2002	734	66.3	10.4	14.1	91.7	52.5	60.1	66.4	73.9	79.4
2003	764	66.7	9.7	36.8	93.5	53.8	60.2	66.8	73.6	78.9
2004	767	67.1	10.1	35.7	92.2	54.0	60.5	67.0	74.6	80.2
2005	780	66.9	10.3	18.1	92.7	54.4	61.0	67.3	74.3	79.3
2006	813	67.2	9.9	28.7	92.1	54.1	61.2	67.3	74.6	79.5
2007	971	68.0	10.4	7.5	94.1	54.7	61.9	68.4	75.8	80.5
2008	1024	68.2	10.1	22.3	93.9	55.0	61.8	68.9	75.3	80.4
2009	1002	67.7	10.1	25.6	93.1	55.1	60.9	68.2	74.5	80.4
2010	969	67.8	10.3	3.5	93.2	54.3	61.7	69.1	74.9	80.2
2011	849	67.4	10.5	28.1	91.1	53.1	60.9	68.8	74.6	81.0
1998-2011	10520	67.0	10.2	3.5	94.1	53.8	60.5	67.5	74.2	79.7

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	194	66.0	11.6	35.8	89.6	50.3	57.1	66.8	75.3	80.6
1999	209	67.1	11.1	36.6	93.0	51.5	58.8	68.6	76.1	79.6
2000	199	64.7	12.3	15.8	87.6	49.2	55.9	66.6	74.1	78.7
2001	204	65.1	12.4	24.4	92.6	48.0	56.7	66.6	74.5	80.4
2002	342	65.6	11.8	27.5	89.7	50.7	57.6	67.2	75.1	79.5
2003	393	66.0	11.6	17.5	95.0	51.3	57.6	67.2	74.3	80.3
2004	381	65.7	11.4	24.4	92.1	50.8	57.9	65.3	74.9	80.2
2005	382	64.8	11.6	21.6	89.3	50.5	56.7	65.3	73.6	79.8
2006	398	66.5	11.5	30.4	92.7	51.7	59.1	66.1	75.3	81.7
2007	504	65.4	11.9	22.0	97.2	50.1	57.3	65.9	74.4	80.5
2008	540	66.0	11.4	29.4	95.7	51.8	58.7	66.3	74.3	80.1
2009	561	66.7	11.5	20.3	95.2	51.8	59.6	68.0	74.9	81.4
2010	570	66.7	10.7	33.2	97.8	52.6	60.0	67.0	74.8	80.2
2011	513	67.1	11.3	22.2	93.9	51.5	59.5	67.4	75.0	82.0
1998-2011	5390	66.1	11.5	15.8	97.8	51.1	58.2	66.6	74.8	80.5

Table 4

Age distribution by 5-year age group and gender for period 1998-2011 (incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	1	0.0	0.0	1	0.0	0.0			0.0
10-14	1	0.0	0.0	1	0.0	0.0			0.0
15-19	7	0.0	0.1	5	0.0	0.1	2	0.0	0.0
20-24	10	0.1	0.1	3	0.0	0.1	7	0.1	0.2
25-29	20	0.1	0.3	11	0.1	0.2	9	0.2	0.3
30-34	38	0.2	0.5	16	0.2	0.4	22	0.4	0.7
35-39	108	0.7	1.2	58	0.6	0.9	50	0.9	1.7
40-44	271	1.7	2.9	146	1.4	2.3	125	2.3	4.0
45-49	581	3.7	6.5	333	3.2	5.5	248	4.6	8.6
50-54	1135	7.1	13.7	678	6.4	11.9	457	8.5	17.1
55-59	1888	11.9	25.5	1233	11.7	23.6	655	12.2	29.2
60-64	2557	16.1	41.6	1741	16.5	40.2	816	15.1	44.4
65-69	2977	18.7	60.3	2071	19.7	59.9	906	16.8	61.2
70-74	2628	16.5	76.8	1849	17.6	77.4	779	14.5	75.6
75-79	2114	13.3	90.1	1396	13.3	90.7	718	13.3	88.9
80-84	1162	7.3	97.4	733	7.0	97.7	429	8.0	96.9
85+	411	2.6	100.0	244	2.3	100.0	167	3.1	100.0
All ages	15910	100.0		10520	100.0		5390	100.0	

Included in the statistics are 27.9% multiple primaries in males and 26.7% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2011

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=5 %	Females DCO rate n=1 %	Males Prop.all cancers n=132509 %	Females Prop.all cancers n=129521 %
0- 4	1		0.1	0.0			0.4	
5- 9	1		0.1	0.0			0.6	
10-14	1		0.1	0.0			0.8	
15-19	5	2	0.4	0.2			1.7	0.8
20-24	3	7	0.2	0.5			0.6	1.6
25-29	11	9	0.7	0.5			1.4	1.0
30-34	16	22	0.8	1.2			1.2	1.3
35-39	58	50	2.7	2.4			2.9	1.5
40-44	146	124	6.5	5.8			5.3	2.3
45-49	331	248	17.0	13.0			7.4	3.4
50-54	675	456	40.4	26.6			9.3	4.9
55-59	1231	650	78.9	39.7	0.1		9.9	5.5
60-64	1730	809	113.7	50.5	0.1		9.2	5.4
65-69	2059	905	151.1	60.8			8.8	5.6
70-74	1841	774	178.5	62.7	0.1	0.1	8.5	5.1
75-79	1387	716	205.3	72.0	0.1		8.2	4.9
80-84	730	429	179.7	54.0			6.6	3.2
85+	244	167	88.0	22.5			2.9	1.1
All ages	10470	5368			0.0	0.0	7.9	4.1
Incidence								
Raw			41.7	20.4				
WS			23.0	10.6				
ES			33.4	14.9				
BRD-S			41.6	17.8				

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 1998-2011
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C00	Lip	2	0.2	9.2	1.1	33.1	#	1.4	50.0
C03-C06	Oral cavity	12	1.8	6.5	3.4	11.3	#	8.1	25.0
C09-C10	Oropharynx	21	2.4	8.8	5.5	13.5	#	14.9	9.5
C12-C13	Hypopharynx	11	1.3	8.2	4.1	14.6	#	7.7	9.1
C15	Oesophagus	20	3.8	5.3	3.3	8.2	#	13.0	
C16	Stomach	30	8.7	3.5	2.3	4.9	#	17.0	13.3
C17	Small intestine	3	0.9	3.2	0.7	9.3		1.6	
C18	Colon	38	20.8	1.8	1.3	2.5	#	13.7	18.4
C19-C20	Rectum	22	12.2	1.8	1.1	2.7	#	7.8	9.1
C22	Liver	21	5.8	3.6	2.3	5.6	#	12.1	23.8
C23-C24	Bile	3	1.9	1.5	0.3	4.5		0.8	33.3
C25	Pancreas	20	7.1	2.8	1.7	4.3	#	10.3	30.0
C32	Larynx	24	2.4	10.2	6.5	15.1	#	17.3	16.7
C33-C34	Lung	100	25.8	3.9	3.2	4.7	#	59.2	2.0
C43	Malign. melanoma	11	7.8	1.4	0.7	2.5		2.5	
C46,C49	Soft tissue	5	1.1	4.7	1.5	11.0	#	3.1	
C61	Prostate	73	62.9	1.2	0.9	1.5		8.0	16.4
C64	Kidney	23	7.5	3.1	1.9	4.6	#	12.3	26.1
C65	Renal pelvis	7	0.8	8.7	3.5	17.9	#	4.9	
C67	Bladder	30	8.5	3.5	2.4	5.0	#	17.1	13.3
C70-C72	CNS cancer	3	2.8	1.1	0.2	3.1		0.1	33.3
C73	Thyroid	4	1.4	2.9	0.8	7.4		2.1	
C76-C79	CUP	3	3.4	0.9	0.2	2.6		-0.3	33.3
C82-C85	NHL	18	8.0	2.3	1.3	3.6	#	8.0	22.2
C90	Mult. myeloma	2	2.6	0.8	0.1	2.8		-0.5	50.0
C91-C96	Leukaemia	10	3.0	3.3	1.6	6.1	#	5.6	40.0
Other primaries		10	3.5	2.9	1.4	5.3	#	5.2	40.0
Not observed		0	3.3	0.0	0.0	1.1		-2.6	
All mult. primaries		526	211.7	2.5	2.3	2.7	#	250.7	14.3

Patients	7994
Mean age at second malignancy (years)	70.2
Person-years	12537
Mean observation time (years)	1.6
Median observation time (years)	0.7

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 1998-2011
FEMALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C09-C10	Oropharynx	3	0.4	8.4	1.7	24.4	#	3.7	
C15	Oesophagus	2	0.4	4.6	0.6	16.8		2.2	
C16	Stomach	12	2.7	4.5	2.3	7.9	#	13.0	33.3
C17	Small intestine	2	0.4	5.6	0.7	20.2		2.3	
C18	Colon	20	7.5	2.7	1.6	4.1	#	17.4	10.0
C19-C20	Rectum	3	3.4	0.9	0.2	2.6		-0.6	33.3
C22	Liver	2	0.8	2.4	0.3	8.7		1.6	
C23-C24	Bile	2	1.1	1.9	0.2	6.8		1.3	100.0
C25	Pancreas	8	3.2	2.5	1.1	5.0	#	6.7	25.0
C32	Larynx	2	0.2	12.6	1.5	45.6	#	2.6	
C33-C34	Lung	38	5.7	6.7	4.7	9.1	#	44.8	2.6
C43	Malign. melanoma	6	2.7	2.2	0.8	4.9		4.6	16.7
C50	Breast	45	24.6	1.8	1.3	2.5	#	28.4	17.8
C51	Vulva	4	0.7	5.9	1.6	15.1	#	4.6	
C53	Cervix uteri	4	1.1	3.8	1.0	9.7	#	4.1	50.0
C54	Corpus uteri	6	4.6	1.3	0.5	2.9		2.0	16.7
C55,C57	Fem. genitals un	2	0.1	14.0	1.7	50.7	#	2.6	100.0
C56	Ovary	7	3.4	2.1	0.8	4.3		5.0	28.6
C57.9	Fem. urogen.	2	0.0	248.0	30.0	896.0	#	2.8	
C64	Kidney	7	2.0	3.5	1.4	7.3	#	7.0	42.9
C65	Renal pelvis	2	0.2	9.3	1.1	33.6	#	2.5	
C67	Bladder	3	1.3	2.4	0.5	6.9		2.4	33.3
C70-C72	CNS cancer	3	1.2	2.6	0.5	7.6		2.6	66.7
C73	Thyroid	5	1.5	3.2	1.0	7.5	#	4.8	20.0
C76-C79	CUP	2	1.2	1.6	0.2	5.9		1.1	
C82-C85	NHL	4	2.9	1.4	0.4	3.5		1.5	25.0
C90	Mult. myeloma	2	0.9	2.1	0.3	7.7		1.5	50.0
C91-C96	Leukaemia	3	1.1	2.7	0.5	7.8		2.6	66.7
Other primaries		7	1.0	6.7	2.7	13.9	#	8.3	14.3
Not observed		0	2.2	0.0	0.0	1.7		-3.0	
All mult. primaries		208	78.3	2.7	2.3	3.0	#	180.2	19.2

Patients	4046
Mean age at second malignancy (years)	68.2
Person-years	7202
Mean observation time (years)	1.8
Median observation time (years)	0.9

The occurrence of second malignancy is statistically significant.

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

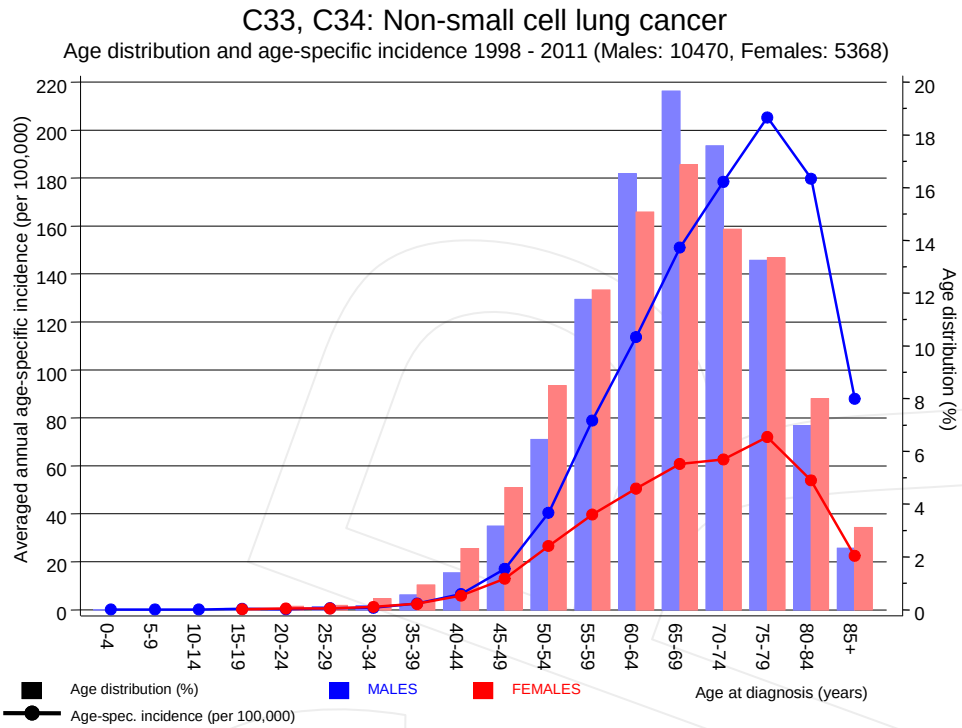


Figure 7. Age distribution and age-specific incidence

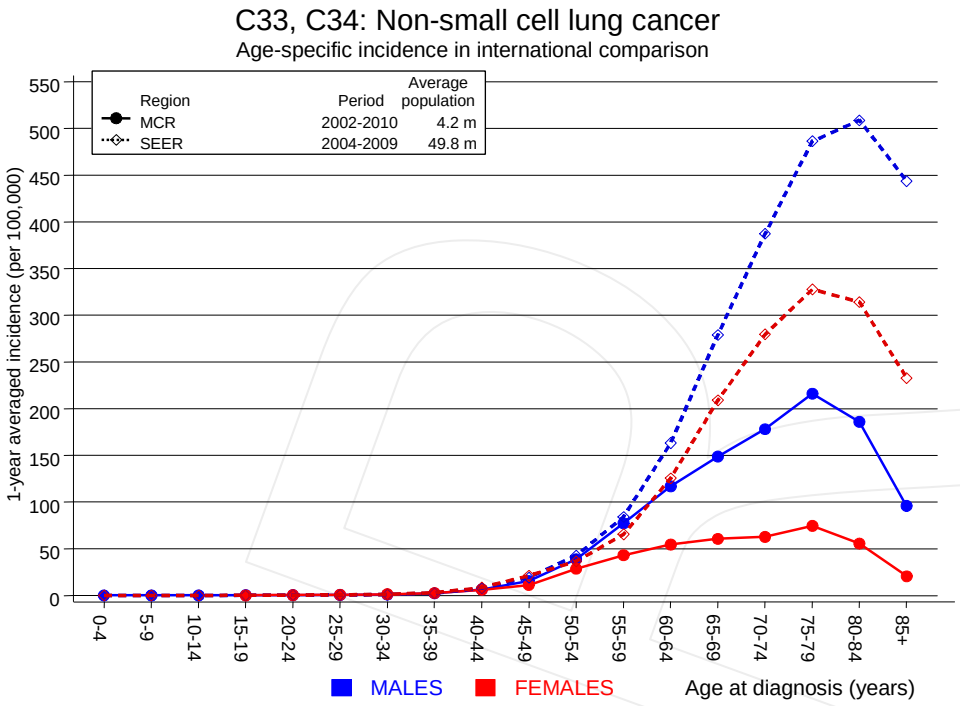


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2012, based on the November 2011 submission. http://www.seer.cancer.gov.

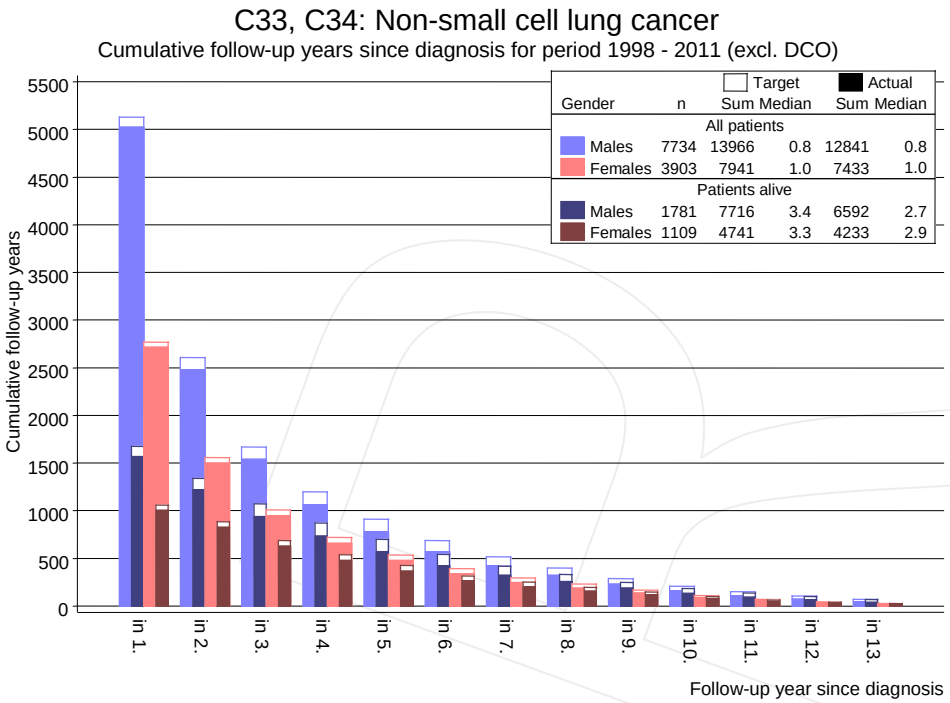
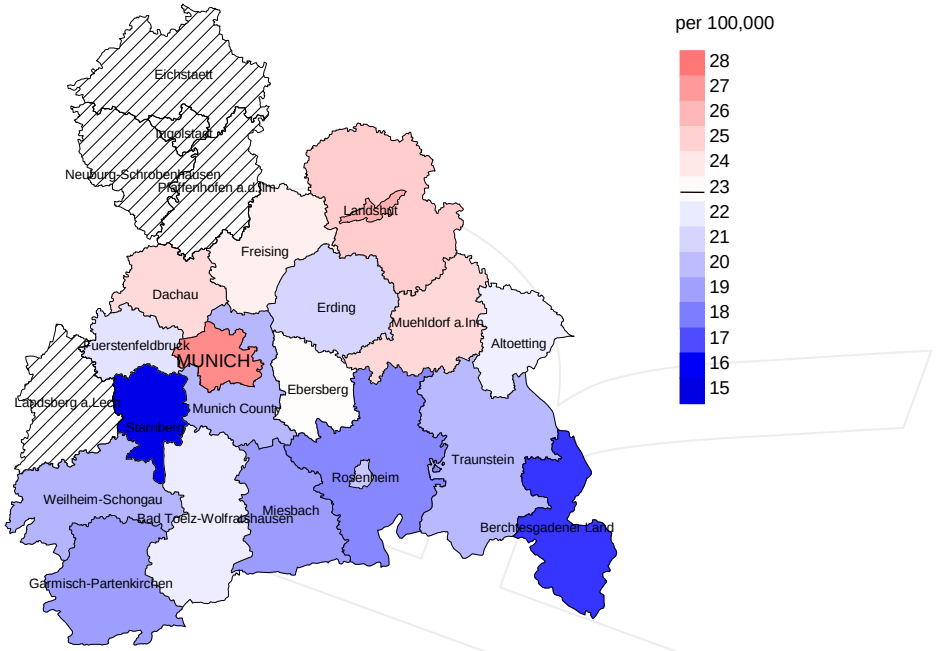


Figure 8. Cumulative follow-up years depending on time since diagnosis

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) 2003 - 2008: Males



Average incidence (world standard population) 2003 - 2008: Females

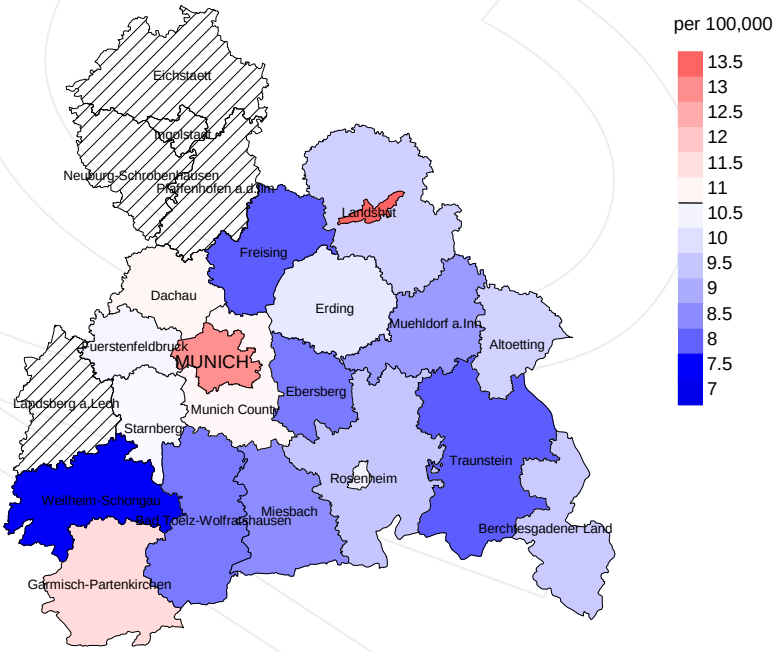
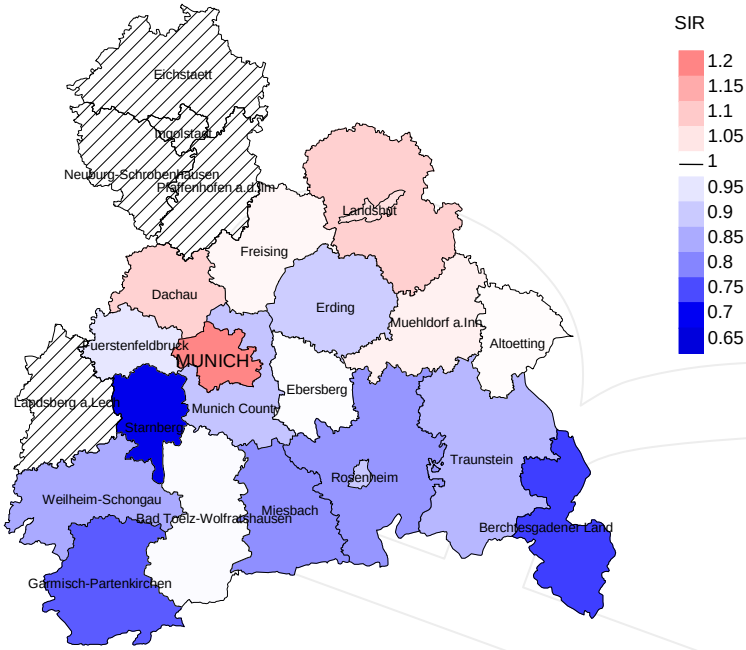


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 22.9/100,000 WS N=4,838, females 10.8/100,000 WS N=2,480). Since cancer data are not available in some counties until 2007, the local incidence rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 58 women were identified with newly diagnosed non-small cell LC. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 8.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 5.6 and 11.8/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

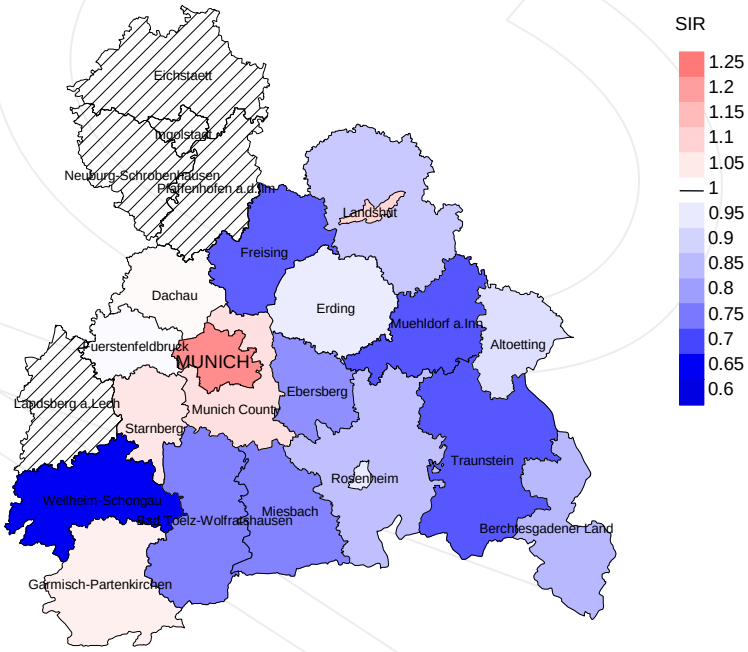


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=4,838, females N=2,480). Since cancer data are not available in some counties until 2007, the local SIR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 58 women were identified with newly diagnosed non-small cell LC. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.78. Though, the value of this parameter may vary with an underlying probability of 99% between 0.54 and 1.08, 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 4.52 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	620	99.2		562	90.6	90.7
1999	681	99.0	0.3	610	89.6	93.4
2000	662	98.6		583	88.1	94.5
2001	690	98.6	0.3	621	90.0	93.6
2002	1076	98.6		945	87.8	97.1
2003	1157	99.0	0.1	1012	87.5	96.7
2004	1148	98.9	0.1	999	87.0	97.8
2005	1162	97.8		1008	86.7	98.2
2006	1211	97.9		996	82.2	98.6
2007	1475	92.9		1182	80.1	98.7
2008	1564	88.3		1224	78.3	99.3
2009	1563	88.0		1160	74.2	99.1
2010	1539	93.4		1044	67.8	97.8
2011	1362	83.8		714	52.4	97.1
1998-2011	15910	94.2	0.0	12660	79.6	97.2

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 4.52 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	620	498	89.6	202	32.6
1999	681	520	92.9	205	30.1
2000	662	553	92.8	210	31.7
2001	690	566	92.2	213	30.9
2002	1076	854	97.2	348	32.3
2003	1157	975	97.0	399	34.5
2004	1148	1006	97.3	374	32.6
2005	1162	1001	97.6	403	34.7
2006	1211	1060	97.5	387	32.0
2007	1475	1176	98.4	460	31.2
2008	1564	1236	98.9	480	30.7
2009	1563	1297	99.2	475	30.4
2010	1539	1377	99.0	503	32.7
2011	1362	1261	99.2	416	30.5
1998-2011	15910	13380	97.2	5075	31.9

Table 10c

Annual cohorts of deaths, proportion of cancer-related and not 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 4.52 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. not cancer-related %	Prop. cancer recorded on death certificate %
1998	498	84.7	15.3	95.7
1999	520	89.2	10.8	96.1
2000	553	90.6	9.4	97.7
2001	566	88.3	11.7	96.0
2002	854	91.7	8.3	95.7
2003	975	92.4	7.6	96.6
2004	1006	94.1	5.9	97.1
2005	1001	92.3	7.7	95.9
2006	1060	92.0	8.0	96.6
2007	1176	93.2	6.8	96.7
2008	1236	93.7	6.3	96.5
2009	1297	93.1	6.9	96.7
2010	1377	92.7	7.3	96.6
2011	1261	92.8	7.2	95.7
1998-2011	13380	92.1	7.9	96.4

Table 11a

Means 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 (not cancer-related) Years	Age at death (according to death certificate) Years
1998	348	66.9	66.5	69.4	67.1
1999	366	67.4	67.2	69.2	67.6
2000	385	66.6	66.4	68.7	66.7
2001	400	67.1	66.7	70.0	67.5
2002	608	67.6	67.1	72.3	67.4
2003	692	67.8	67.5	71.3	67.7
2004	697	68.4	68.3	70.5	68.4
2005	682	69.1	68.7	73.3	69.0
2006	741	69.7	69.6	70.8	69.6
2007	801	69.4	69.0	74.1	69.2
2008	843	69.2	68.7	76.1	68.9
2009	892	70.1	69.7	74.3	69.7
2010	895	70.1	69.6	75.5	69.9
2011	826	70.0	69.6	75.0	69.7
1998-2011	9176	68.9	68.5	72.5	68.8

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 11b

Means 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 (not cancer-related) Years	Age at death (according to death certificate) Years
1998	150	66.2	66.4	64.8	67.2
1999	154	68.5	68.3	69.9	68.7
2000	168	67.0	66.5	74.8	67.1
2001	166	68.5	67.8	74.4	68.1
2002	246	66.9	66.6	71.4	66.7
2003	283	67.7	67.5	70.8	67.4
2004	309	68.6	67.9	77.4	68.2
2005	319	67.2	66.7	76.9	67.1
2006	319	68.7	68.4	73.5	68.3
2007	375	68.6	68.1	76.9	68.2
2008	393	68.9	68.3	78.7	68.4
2009	405	67.7	67.1	79.8	67.4
2010	482	69.1	68.9	75.3	68.9
2011	435	69.6	69.2	76.4	69.6
1998-2011	4204	68.3	67.9	74.5	68.1

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	292	26.4	0.69	16.1	0.68	23.6	0.69	29.9	0.71
1999	328	29.3	0.70	17.5	0.67	26.1	0.70	34.1	0.75
2000	344	30.2	0.75	18.1	0.73	26.6	0.75	33.4	0.78
2001	352	30.4	0.73	18.0	0.70	26.5	0.72	33.4	0.76
2002	551	29.6	0.75	16.9	0.74	24.8	0.75	31.6	0.76
2003	636	33.9	0.83	19.1	0.82	28.0	0.83	35.3	0.84
2004	659	35.0	0.86	19.1	0.85	28.5	0.86	36.5	0.88
2005	619	32.7	0.80	17.2	0.76	25.6	0.78	33.1	0.81
2006	677	35.4	0.84	18.2	0.79	27.3	0.82	35.7	0.86
2007	741	33.5	0.77	17.2	0.75	25.6	0.76	33.6	0.77
2008	787	35.4	0.77	18.2	0.77	27.0	0.77	35.0	0.79
2009	822	36.8	0.82	18.4	0.77	27.4	0.80	35.6	0.84
2010	816	36.2	0.85	17.9	0.81	26.6	0.83	34.4	0.86
2011	759	33.7	0.90	16.6	0.85	24.8	0.88	32.1	0.91
1998-2011	8383	33.4	0.80	17.8	0.77	26.4	0.79	34.0	0.82

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	130	11.1	0.67	5.8	0.66	8.2	0.66	9.8	0.66
1999	136	11.5	0.66	5.6	0.61	8.2	0.63	10.4	0.65
2000	157	13.1	0.79	6.8	0.74	9.7	0.76	11.8	0.78
2001	149	12.2	0.73	6.2	0.67	9.0	0.70	11.0	0.72
2002	232	11.8	0.68	6.0	0.65	8.6	0.65	10.5	0.67
2003	265	13.5	0.67	6.7	0.63	9.8	0.65	11.9	0.67
2004	288	14.6	0.76	7.1	0.70	10.3	0.72	12.9	0.76
2005	305	15.3	0.80	7.8	0.76	11.1	0.77	13.3	0.79
2006	298	14.8	0.75	7.1	0.70	10.3	0.71	12.6	0.74
2007	355	15.4	0.71	7.5	0.66	10.9	0.68	13.2	0.70
2008	371	16.0	0.69	7.6	0.63	11.1	0.65	13.5	0.67
2009	386	16.6	0.69	8.2	0.68	11.7	0.69	13.9	0.68
2010	461	19.7	0.82	9.2	0.75	13.2	0.76	16.3	0.79
2011	411	17.6	0.80	8.1	0.74	11.7	0.76	14.4	0.79
1998-2011	3944	15.0	0.73	7.3	0.69	10.5	0.70	12.8	0.72

Table 13

Age distribution of age at death (cancer-related) for period 1998-2011
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
15-19	1	0.0	0.0	1	0.0	0.0			0.0
20-24	4	0.0	0.0	4	0.0	0.1			0.0
25-29	6	0.0	0.1	3	0.0	0.1	3	0.1	0.1
30-34	5	0.0	0.1	3	0.0	0.1	2	0.1	0.1
35-39	55	0.4	0.6	30	0.4	0.5	25	0.6	0.8
40-44	166	1.3	1.9	80	0.9	1.4	86	2.2	2.9
45-49	362	2.9	4.8	215	2.5	4.0	147	3.7	6.6
50-54	742	6.0	10.8	454	5.4	9.3	288	7.2	13.9
55-59	1287	10.3	21.1	849	10.0	19.3	438	11.0	24.9
60-64	1867	15.0	36.1	1320	15.6	34.9	547	13.8	38.6
65-69	2245	18.0	54.1	1616	19.0	53.9	629	15.8	54.5
70-74	2165	17.4	71.5	1541	18.2	72.1	624	15.7	70.1
75-79	1886	15.1	86.6	1295	15.3	87.3	591	14.9	85.0
80-84	1180	9.5	96.1	777	9.2	96.5	403	10.1	95.1
85+	490	3.9	100.0	297	3.5	100.0	193	4.9	100.0
All ages	12461	100.0		8485	100.0		3976	100.0	

Included in the statistics are 27.9% multiple primaries in males and 26.7% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2011
(**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	1		0.1	0.20	0.0		2.6	
20-24	4		0.3	1.33	0.0		5.0	
25-29	3	3	0.2	0.27	0.2	0.33	3.4	2.9
30-34	3	2	0.2	0.19	0.1	0.09	1.8	1.0
35-39	30	25	1.4	0.52	1.2	0.50	8.2	5.5
40-44	80	86	3.6	0.55	4.1	0.69	10.5	8.6
45-49	215	147	11.1	0.65	7.7	0.59	14.0	8.5
50-54	454	288	27.2	0.67	16.8	0.63	16.0	11.0
55-59	849	438	54.4	0.69	26.7	0.67	16.5	10.8
60-64	1320	547	86.7	0.76	34.1	0.67	17.1	9.8
65-69	1616	629	118.6	0.78	42.3	0.69	15.6	8.9
70-74	1541	624	149.4	0.83	50.6	0.80	13.9	7.8
75-79	1295	591	191.6	0.93	59.4	0.82	11.9	6.6
80-84	777	403	191.3	1.06	50.7	0.94	8.9	4.2
85+	297	193	107.1	1.22	26.0	1.16	4.2	1.7
All ages	8485	3976					12.7	6.5
Mortality								
Raw			33.8	0.81	15.1	0.74		
WS			18.0	0.78	7.3	0.69		
ES			26.7	0.80	10.6	0.71		
BRD-S			34.5	0.82	12.9	0.72		
PYLL-70								
per 100,000			180.2		101.4			
ES			159.2		87.2			
AYLL-70			9.0		10.6			

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

Table 15a

Multiple primaries in deaths in period 1998-2011
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	89	3.9	74	83.1	4	4.5	11	12.4
C09-C10 Oropharynx	69	3.0	46	66.7	7	10.1	16	23.2
C12-C13 Hypopharynx	42	1.8	27	64.3	8	19.0	7	16.7
C15 Oesophagus	56	2.4	19	33.9	20	35.7	17	30.4
C16 Stomach	90	3.9	41	45.6	19	21.1	30	33.3
C18 Colon	190	8.2	120	63.2	25	13.2	45	23.7
C19-C20 Rectum	106	4.6	73	68.9	18	17.0	15	14.2
C22 Liver	33	1.4	10	30.3	8	24.2	15	45.5
C25 Pancreas	31	1.3	5	16.1	5	16.1	21	67.7
C32 Larynx	111	4.8	77	69.4	12	10.8	22	19.8
C33-C34 Lung	167	7.2			51	30.5	116	69.5
C43 Malign. melanoma	64	2.8	52	81.3	7	10.9	5	7.8
C44 Skin others	128	5.6	84	65.6	22	17.2	22	17.2
C61 Prostate	420	18.2	334	79.5	23	5.5	63	15.0
C62 Testis	23	1.0	20	87.0	1	4.3	2	8.7
C64 Kidney	84	3.6	48	57.1	16	19.0	20	23.8
C67 Bladder	267	11.6	209	78.3	17	6.4	41	15.4
C70-C72 CNS cancer	30	1.3	17	56.7	5	16.7	8	26.7
C76-C79 CUP	25	1.1	16	64.0	5	20.0	4	16.0
C81 Hodgkin lymphoma	25	1.1	25	100.0				
C82-C85 NHL	80	3.5	54	67.5	12	15.0	14	17.5
C91-C96 Leukaemia	28	1.2	12	42.9	5	17.9	11	39.3
Other primaries	148	6.4	92	62.2	18	12.2	38	25.7
All mult. primaries	2306	100.0	1455	63.1	308	13.4	543	23.5

Multiple primaries with number of cases n<20 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 1998-2011
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	22	2.2	21	95.5	1	4.5		
C09-C10 Oropharynx	11	1.1	8	72.7	1	9.1	2	18.2
C16 Stomach	27	2.6	11	40.7	4	14.8	12	44.4
C18 Colon	77	7.5	54	70.1	7	9.1	16	20.8
C19-C20 Rectum	18	1.8	14	77.8	1	5.6	3	16.7
C25 Pancreas	19	1.9	6	31.6	3	15.8	10	52.6
C33-C34 Lung	54	5.3			15	27.8	39	72.2
C43 Malign. melanoma	24	2.3	22	91.7			2	8.3
C44 Skin others	29	2.8	16	55.2	3	10.3	10	34.5
C50 Breast	283	27.7	230	81.3	20	7.1	33	11.7
C51 Vulva	11	1.1	9	81.8	1	9.1	1	9.1
C53 Cervix uteri	57	5.6	49	86.0	4	7.0	4	7.0
C54 Corpus uteri	57	5.6	49	86.0	2	3.5	6	10.5
C56 Ovary	24	2.3	14	58.3	3	12.5	7	29.2
C64 Kidney	26	2.5	16	61.5	3	11.5	7	26.9
C67 Bladder	42	4.1	32	76.2	2	4.8	8	19.0
C70-C72 CNS cancer	39	3.8	16	41.0	9	23.1	14	35.9
C73 Thyroid	20	2.0	13	65.0	4	20.0	3	15.0
C76-C79 CUP	16	1.6	7	43.8	3	18.8	6	37.5
C82-C85 NHL	38	3.7	32	84.2	2	5.3	4	10.5
C90 Mult. myeloma	11	1.1	2	18.2	3	27.3	6	54.5
C91-C96 Leukaemia	17	1.7	7	41.2	3	17.6	7	41.2
Other primaries	101	9.9	59	58.4	14	13.9	28	27.7
All mult. primaries	1023	100.0	687	67.2	108	10.6	228	22.3

Multiple primaries with number of cases n<10 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 1998-2011
(**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	1		0.1	0.25	0.0		2.9	
20-24	4		0.3	1.33	0.0		5.3	
25-29	2	3	0.1	0.20	0.2	0.33	2.5	3.1
30-34	3	2	0.2	0.19	0.1	0.10	1.8	1.1
35-39	29	22	1.3	0.54	1.1	0.46	8.5	5.3
40-44	75	79	3.4	0.56	3.7	0.71	10.7	9.1
45-49	199	134	10.2	0.66	7.0	0.59	14.2	8.9
50-54	401	258	24.0	0.66	15.0	0.65	16.1	11.6
55-59	749	383	48.0	0.70	23.4	0.69	16.7	11.1
60-64	1105	449	72.6	0.76	28.0	0.70	17.0	9.8
65-69	1319	502	96.8	0.79	33.7	0.71	15.7	8.8
70-74	1246	483	120.8	0.87	39.1	0.80	14.1	7.5
75-79	975	485	144.3	0.95	48.8	0.84	11.6	6.7
80-84	572	311	140.8	1.12	39.1	0.95	8.6	4.1
85+	211	152	76.1	1.22	20.5	1.13	3.8	1.6
All ages	6891	3263					12.7	6.6
Mortality								
Raw			27.4	0.81	12.4	0.75		
WS			14.8	0.78	6.1	0.70		
ES			21.8	0.80	8.8	0.72		
BRD-S			27.7	0.83	10.7	0.74		
PYLL-70								
per 100,000			157.8		88.8			
ES			139.7		76.6			
AYLL-70			9.2		10.9			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2011
(**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	1		0.1	0.25	0.0		2.9	
20-24	3		0.2	1.50	0.0		4.3	
25-29	2	3	0.1	0.20	0.2	0.33	2.7	3.3
30-34	3	2	0.2	0.19	0.1	0.11	1.9	1.2
35-39	28	22	1.3	0.53	1.1	0.48	8.6	5.8
40-44	75	78	3.4	0.57	3.7	0.72	11.3	9.8
45-49	197	130	10.1	0.66	6.8	0.59	15.0	9.6
50-54	392	255	23.5	0.66	14.9	0.67	17.3	12.8
55-59	736	368	47.2	0.71	22.5	0.70	18.0	11.9
60-64	1055	430	69.3	0.76	26.8	0.70	18.3	10.7
65-69	1241	468	91.1	0.79	31.4	0.70	17.0	9.6
70-74	1172	454	113.6	0.86	36.8	0.78	15.8	8.3
75-79	892	458	132.0	0.92	46.1	0.83	13.1	7.5
80-84	528	289	130.0	1.07	36.3	0.92	9.9	4.5
85+	197	146	71.0	1.17	19.7	1.10	4.4	1.8
All ages	6522	3103					14.1	7.2
Mortality								
Raw			25.9	0.81	11.8	0.74		
WS			14.1	0.78	5.8	0.70		
ES			20.7	0.79	8.4	0.71		
BRD-S			26.2	0.82	10.2	0.73		
PYLL-70								
per 100,000			153.3		86.2			
ES			135.8		74.5			
AYLL-70			9.3		11.1			

* See corresponding tables with multiple primaries.

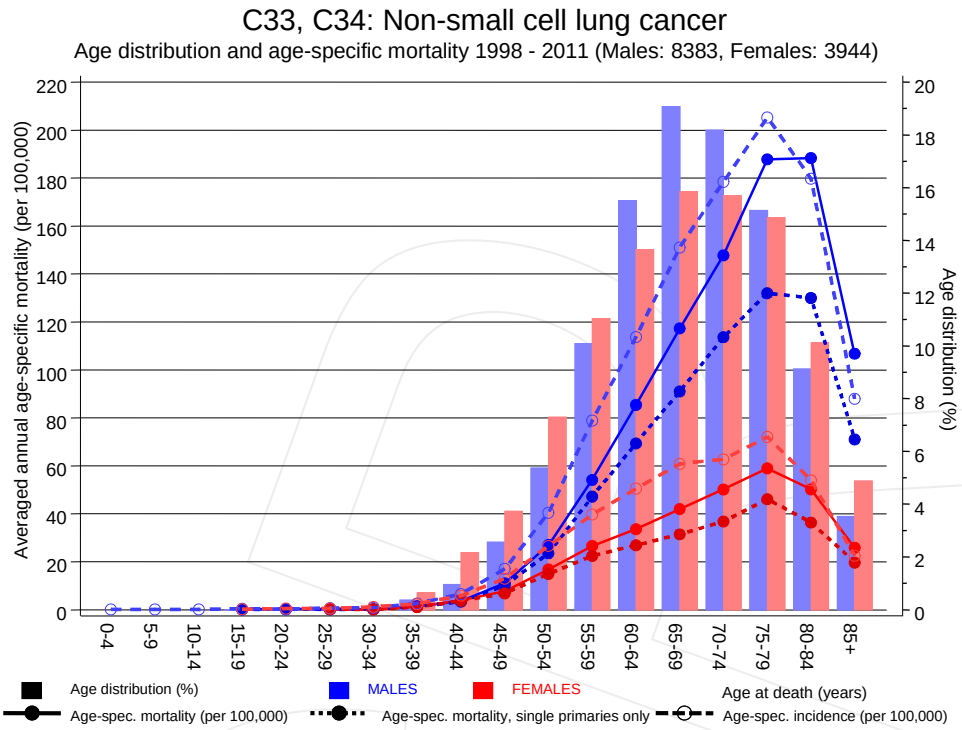
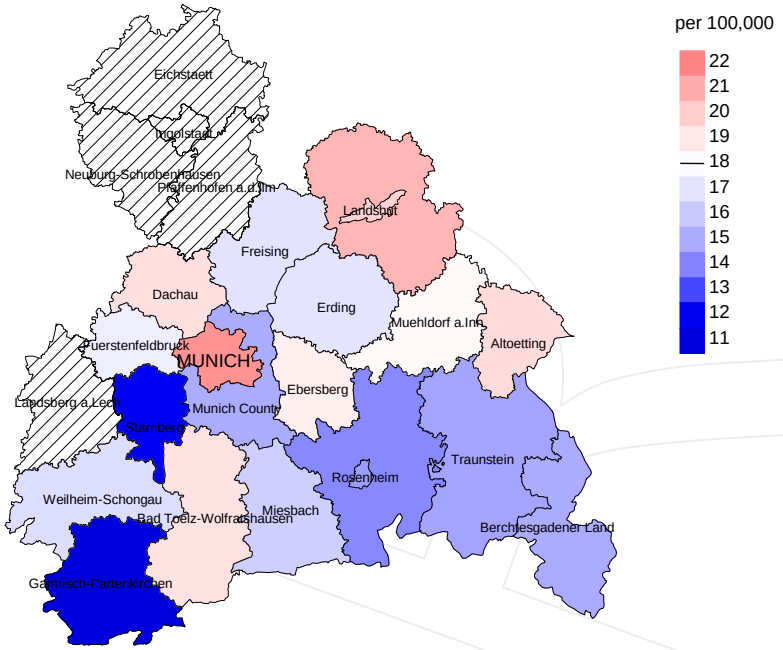


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2003 - 2008: Males



Average mortality (world standard population) 2003 - 2008: Females

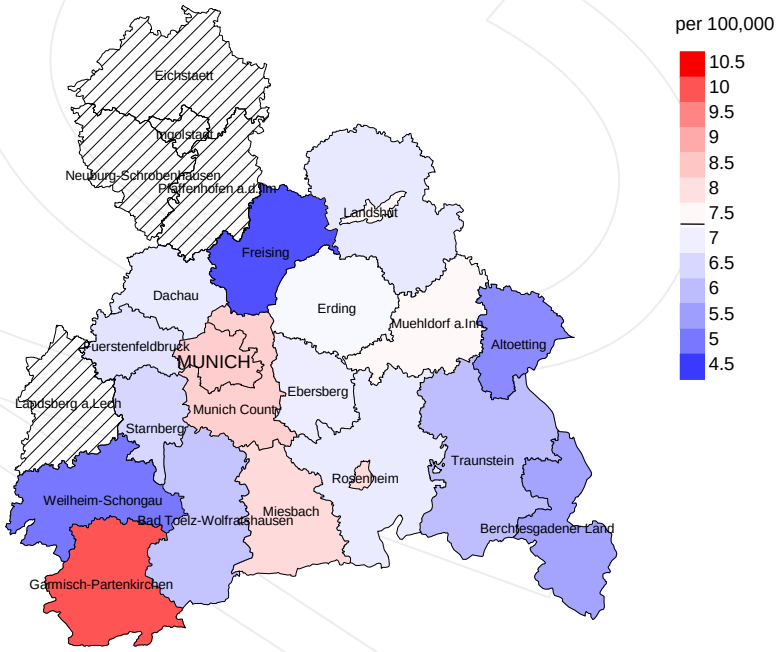
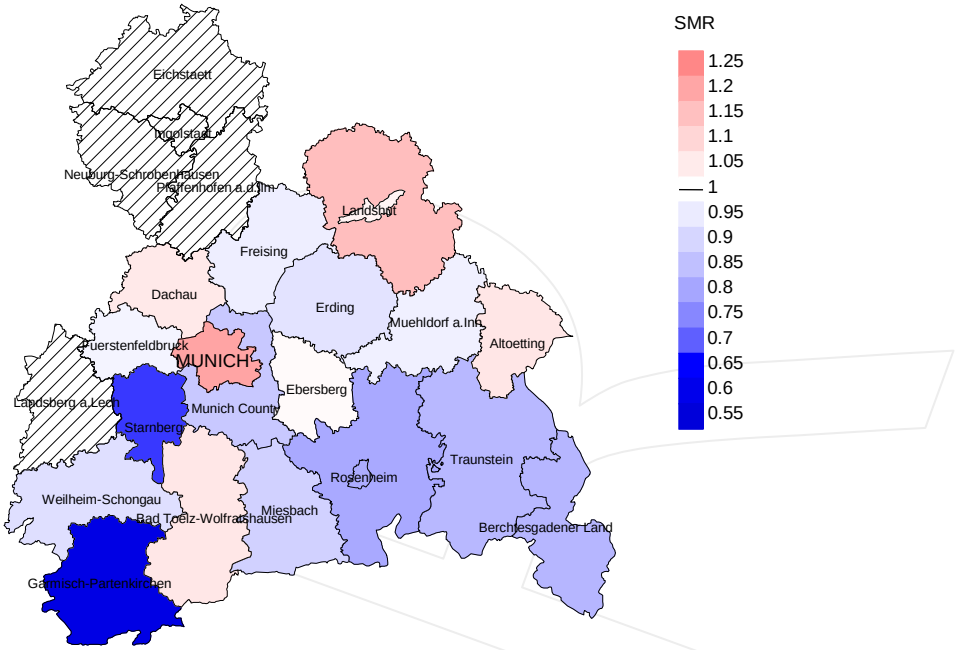


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 18.0/100,000 WS N=3,930, females 7.3/100,000 WS N=1,812). Since cancer data are not available in some counties until 2007, the local mortality rates were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 50 women died from non-small cell LC. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 7.0/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 4.5 and 10.3/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

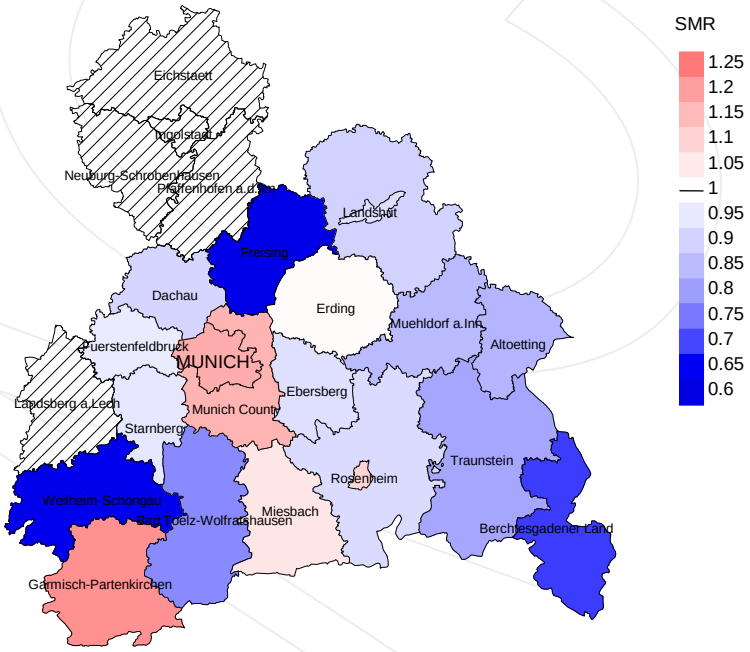


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=3,930, females N=1,812). Since cancer data are not available in some counties until 2007, the local SMR values were not calculated, and the map tiles show as shaded.

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,131 female residents (averaged) in the period from 2003 to 2008 a total of 50 women died from non-small cell LC. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.93. Though, the value of this parameter may vary with an underlying probability of 99% between 0.62 and 1.32, 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 tumor-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

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)
FRG	Federal Republic of Germany
GEKID	Association of Population-based Cancer Registries in Germany (Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V.)
LCL	Lower confidence limit
MI-index	Ratio between mortality and incidence
MCR	Munich Cancer Registry (Tumorregister München)
PYLL-70	Potential years of life lost prior to age 70 given a person dies before that age
SEER	Surveillance, Epidemiology, and End Results (USA)
SIR	Standardized incidence ratio
SMR	Standardized mortality ratio
UCL	Upper confidence limit
WS	World standard population

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