Munich Cancer Registry

- Survival
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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

C02-C06: Oral cavity cancer

Year of diagnosis	1998-2012
Patients	2,679
Diseases	2,698
Creation date	03/20/2014
Export date	02/12/2014
Population	4.5 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C0206E.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, March 2014

[#] 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 2013 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

As a general rule, these few results from the TRM form the basis of sophisticated analyses. For head and neck tumors this is not the case. Therefore the results for head and neck tumors should be interpreted with caution. In part this is due to problems of classification because of limited specific details of locality. Additionally, with advanced tumors in a close topographic location it is often not possible to determine the exact ICD localization of a tumor.

ICD-10 codes used for specifying cancer site

ICD-10	Description
C02	Other and unspecified parts of tongue
	excl. topography code C02.4 Lingual tonsil
C03	Gum
C04	Floor of mouth
C05	Palate
	excl. topography code C05.1 Soft palate
	C05.2 Uvula
C06	Other and unspecified parts of mouth

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	123	5	4.1	32.5	79.7	99.2	
1999	129	2	1.6	41.1	77.5	96.1	
2000	131	4	3.1	31.3	73.3	99.2	
2001	137	6	4.4	31.4	73.0	99.3	
2002	191	12	6.3	34.0	69.1	98.4	#
2003	187	8	4.3	34.2	67.4	99.5	#
2004	193	6	3.1	34.7	66.8	97.9	#
2005	161	6	3.7	27.3	65.8	96.9	#
2006	195	3	1.5	31.3	59.5	95.9	#
2007	220	9	4.1	29.1	61.8	88.6	# ##
2008	214	3	1.4	29.0	48.1	72.4	
2009	227	4	1.8	27.8	49.3	78.9	
2010	240	12	5.0	25.4	44.6	78.8	
2011	177	5	2.8	27.1	33.3	78.5	
2012	173	9	5.2	27.7	26.0	96.5	###
1998-2012	2698	94	3.5	30.5	58.0	90.5	

\# 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	123	87	36	70.7
1999	129	80	49	62.0
2000	131	104	27	79.4
2001	137	94	43	68.6
2002	191	127	64	66.5
2003	187	132	55	70.6
2004	193	139	54	72.0
2005	161	104	57	64.6
2006	195	128	67	65.6
2007	220	149	71	67.7
2008	214	140	74	65.4
2009	227	150	77	66.1
2010	240	164	76	68.3
2011	177	108	69	61.0
2012	173	107	66	61.8
1998-2012	2698	1813	885	67.2

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	87	36	7.9	3.1	5.3	1.6	7.2	2.3	8.0	2.8
1999	80	49	7.1	4.1	4.7	2.4	6.5	3.3	7.1	3.7
2000	104	27	9.1	2.2	6.2	1.3	8.3	1.8	9.1	2.0
2001	94	43	8.1	3.5	5.2	1.9	7.2	2.7	8.1	3.0
2002	127	64	6.8	3.3	4.4	1.7	6.0	2.5	6.5	2.8
2003	132	55	7.0	2.8	4.6	1.6	6.4	2.1	6.9	2.5
2004	139	54	7.4	2.7	4.8	1.3	6.5	1.9	7.2	2.3
2005	104	57	5.5	2.9	3.4	1.6	4.6	2.2	5.2	2.5
2006	128	67	6.7	3.3	4.2	1.8	5.9	2.5	6.8	3.0
2007	149	71	6.7	3.1	4.3	1.6	5.8	2.3	6.4	2.7
2008	140	74	6.3	3.2	3.9	1.8	5.4	2.5	6.0	2.8
2009	150	77	6.7	3.3	4.0	1.7	5.6	2.4	6.3	2.8
2010	164	76	7.3	3.2	4.5	1.6	6.1	2.2	6.7	2.6
2011	108	69	4.7	2.9	2.9	1.5	4.0	2.1	4.4	2.4
2012	107	66	4.7	2.8	2.9	1.5	3.9	2.1	4.4	2.4
1998-2012	1813	885	6.6	3.1	4.2	1.6	5.7	2.3	6.3	2.7

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	123	59.1	12.2	0.9	91.4	46.4	51.8	57.6	66.3	76.3
1999	129	60.8	12.7	25.6	91.9	47.1	52.8	59.1	66.9	77.7
2000	131	58.7	11.4	33.5	85.8	45.0	50.1	58.1	66.6	73.1
2001	137	61.9	12.1	33.7	96.4	45.7	53.8	60.7	69.3	78.0
2002	191	61.2	12.4	26.4	99.0	45.5	53.0	60.9	68.3	78.6
2003	187	60.1	12.8	10.7	98.2	45.7	52.4	59.4	66.7	79.8
2004	193	61.8	12.8	29.5	97.9	45.5	53.4	61.5	70.3	79.7
2005	161	61.0	12.9	22.8	98.7	45.5	52.3	60.8	67.7	80.8
2006	195	62.6	13.0	22.6	96.2	47.5	54.9	61.4	71.6	81.2
2007	220	62.0	12.8	26.0	101	46.0	53.7	61.7	70.2	78.5
2008	214	62.4	11.7	21.8	100	48.8	53.8	62.4	69.5	77.6
2009	227	62.9	12.5	29.6	98.4	47.6	53.9	62.8	71.3	80.3
2010	240	62.5	13.3	21.9	92.8	46.4	52.4	62.2	70.7	82.3
2011	177	62.3	13.8	27.0	96.9	43.5	53.1	63.0	71.8	79.5
2012	173	62.6	12.9	21.5	100	48.0	55.1	64.8	71.1	76.9
1998-2012	2698	61.6	12.7	0.9	101	46.3	53.2	61.0	69.6	78.7

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	87	57.0	11.5	0.9	81.3	45.5	51.1	56.2	62.3	72.0
1999	80	59.2	12.1	33.3	90.8	46.8	51.2	57.4	64.2	80.2
2000	104	58.0	10.1	35.8	85.5	45.1	50.0	58.1	65.3	72.0
2001	94	59.9	12.0	33.7	94.3	44.5	51.2	59.8	64.3	77.4
2002	127	59.1	10.7	26.4	92.2	45.2	52.3	60.2	64.7	72.1
2003	132	58.8	10.5	28.1	86.1	46.4	53.1	57.8	64.6	71.9
2004	139	59.3	11.5	29.7	88.7	44.9	51.9	59.6	65.4	75.0
2005	104	59.1	11.5	36.8	85.0	43.3	49.7	58.3	66.7	77.2
2006	128	61.4	12.2	23.9	92.0	46.9	53.6	59.6	69.3	78.2
2007	149	60.3	11.6	26.0	101	46.0	52.5	59.8	67.5	75.4
2008	140	61.4	11.2	21.8	100	48.4	53.5	61.8	68.6	75.2
2009	150	62.1	10.7	30.2	88.1	48.1	54.5	62.3	69.7	75.6
2010	164	60.3	12.4	24.5	92.8	45.4	51.8	59.9	69.1	75.3
2011	108	60.1	13.0	27.0	93.0	43.5	52.6	58.7	69.1	78.1
2012	107	61.6	11.7	21.6	85.9	48.0	53.0	63.7	69.8	75.1
1998-2012	1813	60.0	11.6	0.9	101	45.9	52.3	59.5	67.4	75.1

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	36	64.1	12.8	32.0	91.4	49.6	56.4	63.2	75.8	79.5
1999	49	63.3	13.4	25.6	91.9	47.1	56.1	65.4	72.2	77.7
2000	27	61.3	15.4	33.5	85.8	39.8	50.6	59.6	76.3	84.8
2001	43	66.4	11.3	44.0	96.4	53.2	59.8	63.7	71.3	84.0
2002	64	65.3	14.3	35.8	99.0	47.0	54.5	62.5	76.2	82.9
2003	55	63.2	16.8	10.7	98.2	44.8	51.0	61.5	78.5	83.7
2004	54	68.1	13.8	29.5	97.9	48.9	58.2	68.7	78.4	83.1
2005	57	64.5	14.4	22.8	98.7	50.2	54.9	62.3	76.0	83.7
2006	67	64.9	14.1	22.6	96.2	47.6	55.9	63.0	77.0	84.2
2007	71	65.6	14.5	31.0	98.2	46.1	55.7	65.9	75.7	83.6
2008	74	64.3	12.4	26.7	91.5	49.7	55.4	64.1	72.5	79.4
2009	77	64.3	15.3	29.6	98.4	43.1	53.7	65.2	75.4	83.5
2010	76	67.1	14.1	21.9	91.8	49.9	56.3	67.2	76.5	87.1
2011	69	65.9	14.3	31.2	96.9	43.4	58.1	67.4	75.1	85.9
2012	66	64.3	14.6	21.5	100	46.5	58.1	65.0	72.7	80.9
1998-2012	885	65.0	14.2	10.7	100	47.6	55.7	64.8	75.2	83.5

Table 4

Age distribution by 5-year age group and gender for period 1998-2012 (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	1	0.0	0.1			0.1	1	0.1	0.1
15-19	0	0.0	0.1			0.1			0.1
20-24	8	0.3	0.4	4	0.2	0.3	4	0.5	0.6
25-29	14	0.5	0.9	9	0.5	0.8	5	0.6	1.1
30-34	29	1.1	2.0	13	0.7	1.5	16	1.8	2.9
35-39	40	1.5	3.4	29	1.6	3.1	11	1.2	4.2
40-44	111	4.1	7.6	85	4.7	7.8	26	2.9	7.1
45-49	250	9.3	16.8	195	10.8	18.5	55	6.2	13.3
50-54	367	13.6	30.4	281	15.5	34.0	86	9.7	23.1
55-59	438	16.2	46.7	328	18.1	52.1	110	12.4	35.5
60-64	445	16.5	63.2	309	17.0	69.2	136	15.4	50.8
65-69	342	12.7	75.8	225	12.4	81.6	117	13.2	64.1
70-74	240	8.9	84.7	150	8.3	89.9	90	10.2	74.2
75-79	178	6.6	91.3	91	5.0	94.9	87	9.8	84.1
80-84	127	4.7	96.0	53	2.9	97.8	74	8.4	92.4
85+	107	4.0	100.0	40	2.2	100.0	67	7.6	100.0
All ages	2698	100.0		1813	100.0		885	100.0	

Included in the statistics are 40.6% multiple primaries in males and 33.3% in females.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers
for period 1998-2012

Age at diagnosis Years	Males n	Females n	Males Age-spec. incid.	Females Age-spec. incid.	Males DCO rate n=64 %	Females DCO rate n=30 %	Males Prop.all cancers n=146755 %	Females Prop.all cancers n=142297 %
0- 4	1		0.1	0.0	100.0		0.3	
5- 9			0.0	0.0				
10-14		1	0.0	0.1				0.6
15-19			0.0	0.0				
20-24	4	4	0.2	0.2			0.7	0.8
25-29	9	5	0.5	0.3			1.0	0.5
30-34	13	16	0.6	0.8			0.9	0.8
35-39	29	11	1.2	0.5			1.4	0.3
40-44	85	26	3.5	1.1	1.2		2.8	0.4
45-49	195	55	9.0	2.6	1.0		4.0	0.7
50-54	280	86	15.1	4.6	1.4	1.2	3.5	0.8
55-59	327	110	19.2	6.2	2.8	2.7	2.4	0.9
60-64	309	136	18.8	7.8	3.9	2.2	1.5	0.8
65-69	225	117	15.3	7.3	3.6	1.7	0.9	0.7
70-74	149	89	12.9	6.5	6.0		0.6	0.5
75-79	91	87	12.1	8.0	6.6	2.3	0.5	0.5
80-84	52	73	11.5	8.5	9.6	5.5	0.4	0.5
85+	39	67	12.6	8.2	17.9	22.4	0.4	0.4
All ages	1808	883			3.5	3.4	1.2	0.6
Incidence								
Raw			6.6	3.1				
WS			4.2	1.6				
ES			5.7	2.3				
BRD-S			6.3	2.7				

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).

Table 6a

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2012
MALES

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06	Oral cavity	6	0.7	8.6	3.1	18.6	#	11.3	
C09-C10	Oropharynx	30	0.9	33.2	22.4	47.4	#	62.3	3.3
C12-C13	Hypopharynx	29	0.5	56.2	37.7	80.8	#	61.0	13.8
C15	Oesophagus	30	1.2	26.1	17.6	37.2	#	61.8	6.7
C16	Stomach	6	2.1	2.9	1.1	6.3	#	8.4	16.7
C17	Small intestine	2	0.3	7.1	0.9	25.7		3.7	50.0
C18	Colon	14	4.9	2.9	1.6	4.8	#	19.5	7.1
C19-C20	Rectum	10	3.3	3.0	1.5	5.6	#	14.4	
C21	Anus/canal	3	0.1	22.5	4.6	65.9	#	6.1	
C22	Liver	11	1.5	7.3	3.7	13.1	#	20.3	18.2
C25	Pancreas	3	1.8	1.6	0.3	4.8		2.5	
C30-C31	Sinuses	2	0.1	20.5	2.5	74.0	#	4.1	
C32	Larynx	17	0.7	23.4	13.6	37.5	#	34.8	11.8
C33-C34	Lung	64	6.7	9.6	7.4	12.2	#	122.7	15.6
C43	Malign. melanoma	5	2.4	2.1	0.7	4.9		5.6	
C61	Prostate	17	16.1	1.1	0.6	1.7		2.0	5.9
C64	Kidney	10	2.1	4.8	2.3	8.9	#	17.0	
C67	Bladder	4	2.0	2.0	0.5	5.1		4.2	25.0
C76-C79	CUP	4	0.9	4.4	1.2	11.2	#	6.6	
C82-C85	NHL	8	2.1	3.8	1.6	7.5	#	12.6	25.0
C91-C96	Leukaemia	4	0.8	5.2	1.4	13.4	#	6.9	
Other primaries		13	3.5	3.7	2.0	6.4	#	20.4	7.7
Not observed		0	1.3	0.0	0.0	2.9		-2.8	
All mult. primaries		292	55.9	5.2	4.6	5.9	#	505.5	9.9

Patients	1339
Mean age at second malignancy (years)	63.4
Person-years	4670
Mean observation time (years)	3.5
Median observation time (years)	2.3

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 1998-2012
FEMALES

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C03-C06 Oral cavity	6	0.2	36.0	13.2	78.4	#	23.4	
C07-C08 Salivary gland	2	0.0	48.0	5.8	173.3	#	7.8	
C09-C10 Oropharynx	12	0.1	100.1	51.7	174.8	#	47.6	
C12-C13 Hypopharynx	5	0.0	154.1	50.0	359.7	#	19.9	40.0
C15 Oesophagus	9	0.2	59.7	27.3	113.3	#	35.4	
C18 Colon	2	2.6	0.8	0.1	2.8		-2.3	
C22 Liver	6	0.3	21.0	7.7	45.6	#	22.9	16.7
C23-C24 Bile	2	0.4	5.5	0.7	19.7		6.5	
C25 Pancreas	2	1.1	1.8	0.2	6.7		3.7	
C30-C31 Sinuses	3	0.0	94.9	19.6	277.4	#	11.9	33.3
C32 Larynx	4	0.1	77.6	21.1	198.6	#	15.8	25.0
C33-C34 Lung	26	1.9	13.8	9.0	20.2	#	96.5	15.4
C43 Malign. melanoma	2	0.9	2.1	0.3	7.7		4.3	
C50 Breast	12	8.3	1.4	0.7	2.5		14.8	
C56 Ovary	2	1.1	1.8	0.2	6.5		3.5	
C67 Bladder	2	0.5	4.3	0.5	15.7		6.2	100.0
C73 Thyroid	3	0.5	5.7	1.2	16.7	#	9.9	
C82-C85 NHL	3	1.0	3.0	0.6	8.9		8.1	
Other primaries	5	2.3	2.1	0.7	5.0		10.7	60.0
Not observed	0	5.1	0.0	0.0	0.7	#	-20.6	
All mult. primaries	108	26.6	4.1	3.3	4.9	#	325.9	13.0

Patients	629
Mean age at second malignancy (years)	65.7
Person-years	2498
Mean observation time (years)	4.0
Median observation time (years)	2.8

The occurrence of second malignancy is statistically significant.

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

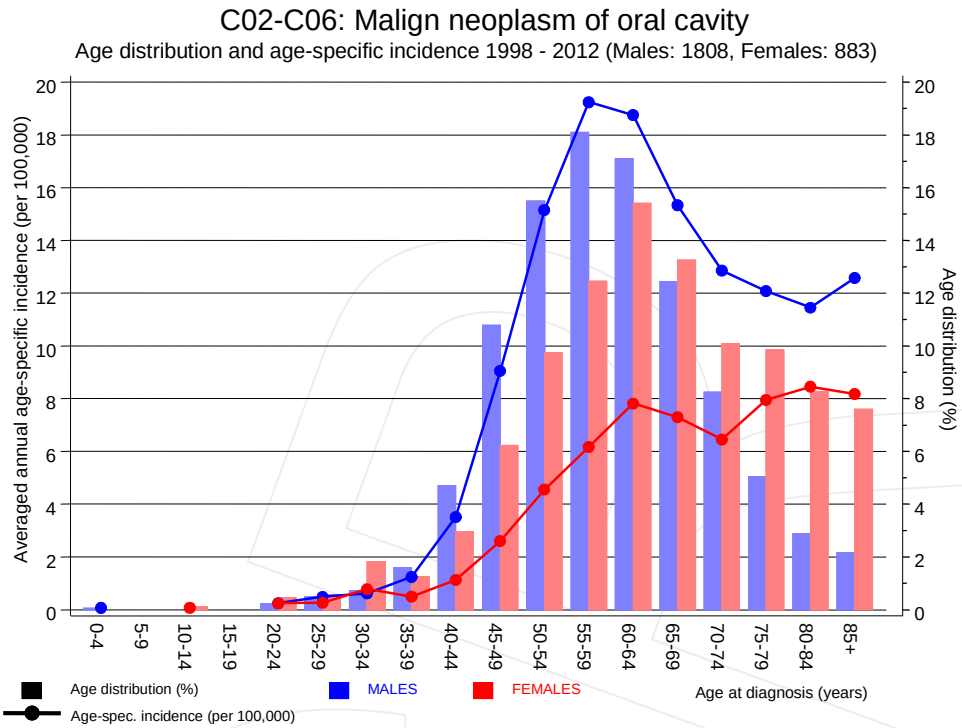


Figure 7. Age distribution and age-specific incidence

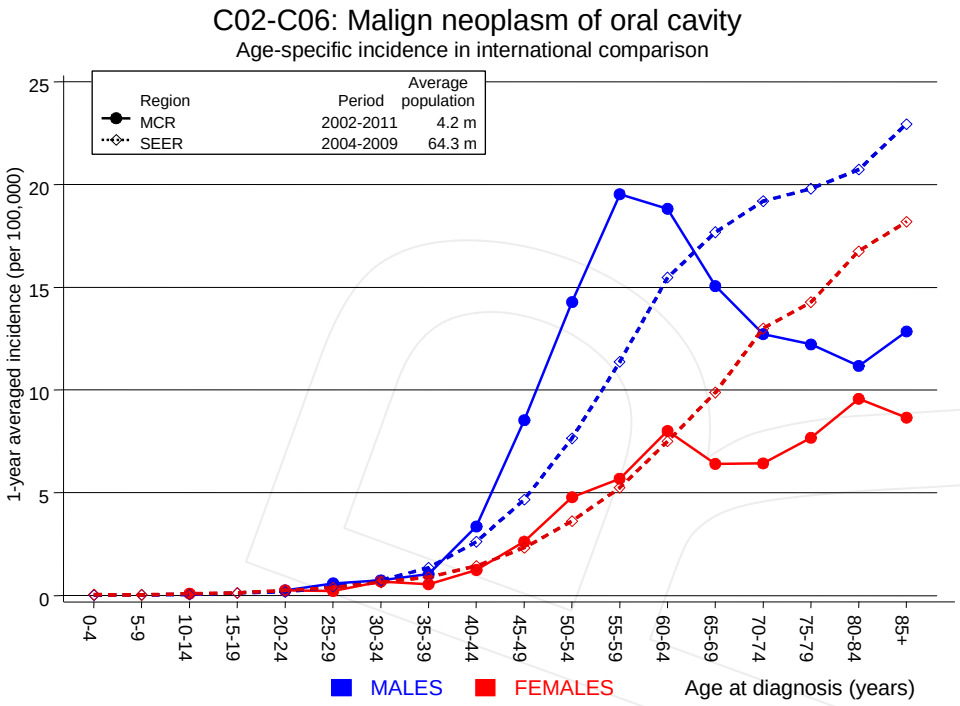


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

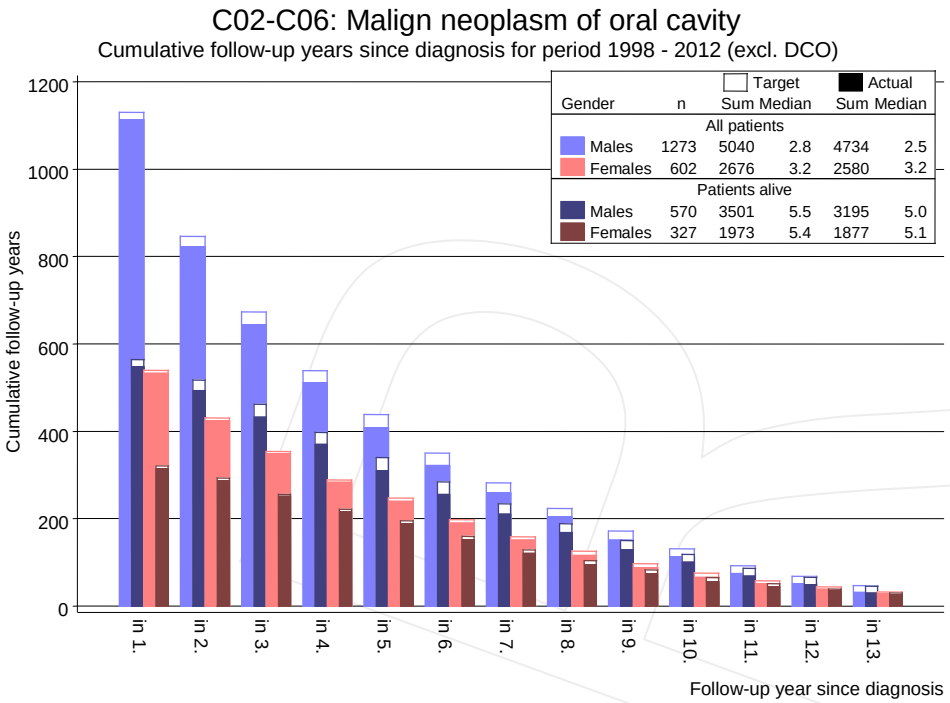
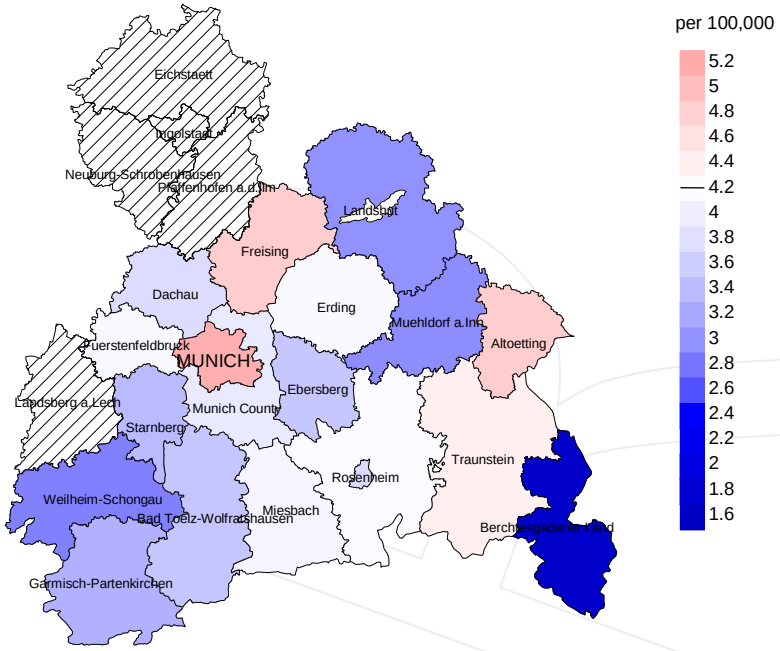


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

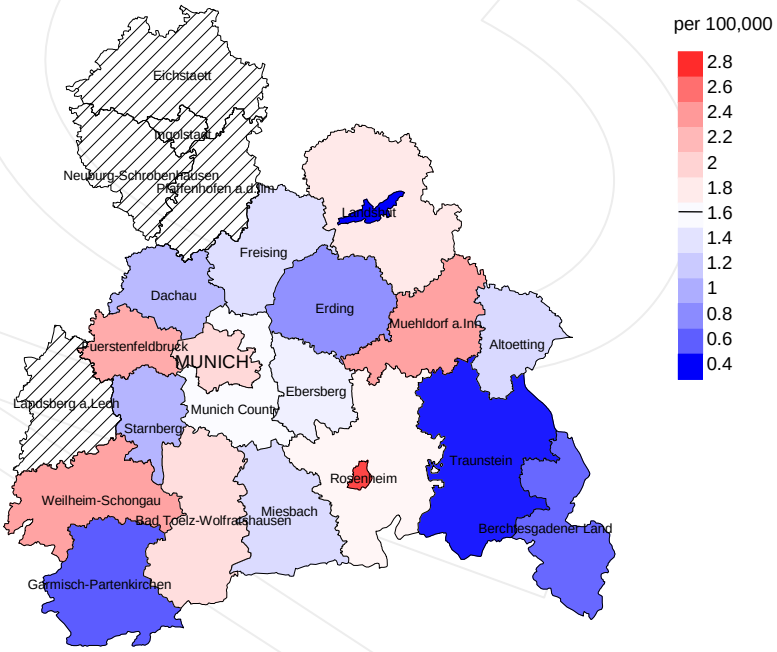
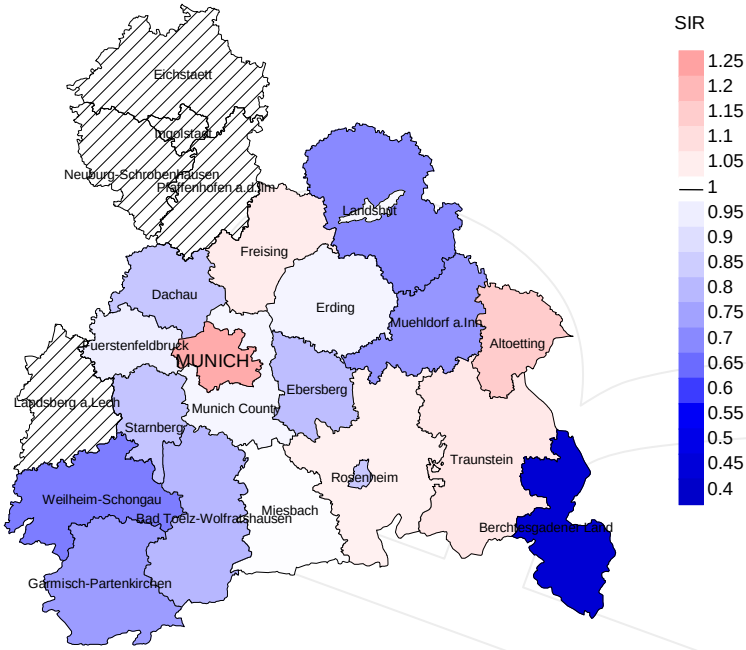


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 4.2/100,000 WS N=760, females 1.6/100,000 WS N=367). 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 10 women were identified with newly diagnosed oral cavity cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 1.5/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.5 and 3.5/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

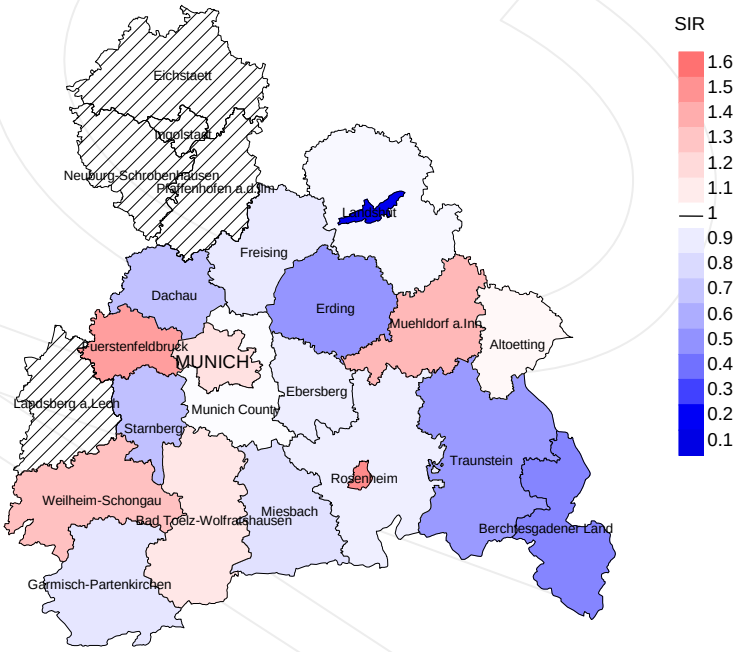


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=760, females N=367). 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 10 women were identified with newly diagnosed oral cavity cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.91. Though, the value of this parameter may vary with an underlying probability of 99% between 0.34 and 1.95, 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	123	99.2	4.1	98	79.7	94.9
1999	129	96.1	1.6	100	77.5	86.0
2000	131	99.2	3.1	96	73.3	95.8
2001	137	99.3	4.4	100	73.0	92.0
2002	191	98.4	6.3	132	69.1	97.7
2003	187	99.5	4.3	126	67.4	97.6
2004	193	97.9	3.1	129	66.8	96.1
2005	161	96.9	3.7	106	65.8	100.0
2006	195	95.9	1.5	116	59.5	98.3
2007	220	88.6	4.1	136	61.8	100.0
2008	214	72.4	1.4	103	48.1	96.1
2009	227	78.9	1.8	112	49.3	99.1
2010	240	78.8	5.0	107	44.6	98.1
2011	177	78.5	2.8	59	33.3	98.3
2012	173	96.5	5.2	45	26.0	97.8
1998-2012	2698	90.5	3.5	1565	58.0	96.6

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	123	74	93.2	16	13.0
1999	129	70	87.1	12	9.3
2000	131	87	89.7	17	13.0
2001	137	117	88.9	23	16.8
2002	191	149	98.0	33	17.3
2003	187	151	98.0	28	15.0
2004	193	147	98.0	37	19.2
2005	161	133	98.5	18	11.2
2006	195	150	94.7	24	12.3
2007	220	157	98.1	33	15.0
2008	214	147	97.3	21	9.8
2009	227	187	97.3	28	12.3
2010	240	173	99.4	32	13.3
2011	177	169	98.2	23	13.0
2012	173	173	100.0	28	16.2
1998-2012	2698	2084	96.6	373	13.8

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	74	71.6	28.4	88.4
1999	70	61.4	38.6	85.2
2000	87	64.4	35.6	88.5
2001	117	76.9	23.1	91.3
2002	149	75.2	24.8	89.7
2003	151	78.8	21.2	87.8
2004	147	76.9	23.1	88.9
2005	133	86.5	13.5	93.1
2006	150	71.3	28.7	85.2
2007	157	77.7	22.3	89.0
2008	147	77.6	22.4	90.2
2009	187	78.6	21.4	87.4
2010	173	79.2	20.8	92.4
2011	169	74.0	26.0	84.3
2012	173	79.2	20.8	89.0
1998-2012	2084	76.3	23.7	88.8

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	56	61.9	61.1	64.0	62.2
1999	54	58.4	58.2	58.8	57.0
2000	69	64.7	64.6	65.0	65.7
2001	89	62.1	61.9	63.1	62.7
2002	107	63.9	63.2	66.0	62.5
2003	107	64.9	63.9	69.0	64.4
2004	104	62.8	61.3	68.0	62.3
2005	83	66.3	65.2	72.9	65.7
2006	109	63.6	62.1	67.6	63.1
2007	118	63.6	62.1	69.2	62.8
2008	104	65.0	64.2	68.7	64.4
2009	126	66.3	64.9	72.4	65.6
2010	125	65.7	64.5	70.0	65.2
2011	121	66.8	65.6	70.0	65.3
2012	125	65.2	64.6	67.3	64.6
1998-2012	1497	64.4	63.5	67.6	63.9

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

Table 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	18	65.6	66.7	63.6	65.6
1999	16	72.7	68.3	77.2	69.4
2000	18	70.8	66.4	77.7	70.9
2001	28	69.6	70.0	67.9	69.1
2002	42	71.0	69.2	76.7	70.2
2003	44	70.2	67.5	77.6	68.9
2004	43	71.4	71.8	70.2	71.4
2005	50	71.0	69.4	82.4	70.3
2006	41	75.9	74.4	78.9	73.7
2007	39	74.1	72.8	77.6	73.4
2008	43	69.8	67.7	74.2	68.6
2009	61	72.4	69.6	80.2	70.7
2010	48	71.9	69.7	84.9	70.5
2011	48	72.6	71.8	75.2	71.4
2012	48	73.5	71.1	82.9	71.8
1998-2012	587	71.8	70.1	76.8	70.7

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	41	3.7	0.47	2.4	0.44	3.3	0.46	3.9	0.49
1999	35	3.1	0.44	2.0	0.43	2.8	0.44	3.1	0.44
2000	45	4.0	0.43	2.4	0.39	3.6	0.43	4.3	0.47
2001	68	5.9	0.73	3.8	0.73	5.3	0.75	6.1	0.77
2002	80	4.3	0.63	2.6	0.59	3.7	0.62	4.3	0.65
2003	87	4.6	0.66	2.8	0.61	4.0	0.62	4.6	0.66
2004	81	4.3	0.58	2.7	0.57	3.8	0.58	4.2	0.58
2005	71	3.7	0.68	2.1	0.62	3.1	0.67	3.8	0.72
2006	80	4.2	0.63	2.6	0.63	3.6	0.61	4.1	0.60
2007	93	4.2	0.62	2.6	0.60	3.6	0.61	4.0	0.62
2008	85	3.8	0.62	2.3	0.58	3.2	0.60	3.7	0.63
2009	102	4.6	0.68	2.6	0.66	3.7	0.66	4.3	0.68
2010	96	4.3	0.59	2.5	0.55	3.5	0.57	4.0	0.59
2011	88	3.9	0.81	2.2	0.74	3.1	0.77	3.6	0.83
2012	99	4.3	0.93	2.4	0.85	3.4	0.89	4.0	0.92
1998-2012	1151	4.2	0.64	2.5	0.60	3.5	0.62	4.1	0.64

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	12	1.0	0.33	0.5	0.33	0.8	0.33	0.9	0.33
1999	8	0.7	0.16	0.3	0.14	0.5	0.15	0.6	0.16
2000	11	0.9	0.41	0.5	0.40	0.7	0.41	0.8	0.39
2001	22	1.8	0.51	0.9	0.45	1.2	0.46	1.6	0.52
2002	32	1.6	0.50	0.8	0.45	1.2	0.47	1.4	0.48
2003	33	1.7	0.60	0.8	0.53	1.2	0.56	1.5	0.60
2004	32	1.6	0.59	0.7	0.52	1.0	0.54	1.3	0.56
2005	44	2.2	0.77	1.1	0.66	1.5	0.70	1.8	0.74
2006	27	1.3	0.40	0.5	0.26	0.8	0.30	1.0	0.34
2007	29	1.3	0.41	0.5	0.32	0.8	0.34	1.0	0.37
2008	29	1.2	0.39	0.6	0.34	0.9	0.34	1.0	0.37
2009	45	1.9	0.59	0.9	0.52	1.3	0.55	1.5	0.55
2010	41	1.8	0.55	0.8	0.50	1.1	0.52	1.4	0.54
2011	37	1.6	0.54	0.7	0.45	1.0	0.46	1.1	0.47
2012	38	1.6	0.58	0.7	0.47	1.0	0.50	1.3	0.52
1998-2012	440	1.5	0.50	0.7	0.42	1.0	0.45	1.2	0.47

Table 13

Age distribution of age at death (cancer-related) for period 1998-2012
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%	Males n	%	Cum.%	Females n	%	Cum.%
0-4	1	0.1	0.1	1	0.1	0.1			0.0
5-9	0	0.0	0.1			0.1			0.0
10-14	0	0.0	0.1			0.1			0.0
15-19	0	0.0	0.1			0.1			0.0
20-24	2	0.1	0.2	2	0.2	0.3			0.0
25-29	2	0.1	0.3	1	0.1	0.3	1	0.2	0.2
30-34	0	0.0	0.3			0.3			0.2
35-39	11	0.7	1.0	8	0.7	1.0	3	0.7	0.9
40-44	32	2.0	3.0	24	2.1	3.1	8	1.8	2.6
45-49	86	5.3	8.3	72	6.2	9.2	14	3.1	5.7
50-54	179	11.0	19.3	145	12.4	21.6	34	7.5	13.2
55-59	250	15.4	34.7	203	17.4	39.0	47	10.4	23.6
60-64	277	17.1	51.8	213	18.2	57.2	64	14.1	37.7
65-69	251	15.5	67.2	189	16.2	73.4	62	13.7	51.3
70-74	196	12.1	79.3	143	12.2	85.6	53	11.7	63.0
75-79	139	8.6	87.9	92	7.9	93.5	47	10.4	73.3
80-84	102	6.3	94.1	47	4.0	97.5	55	12.1	85.5
85+	95	5.9	100.0	29	2.5	100.0	66	14.5	100.0
All ages	1623	100.0		1169	100.0		454	100.0	

Included in the statistics are 40.6% multiple primaries in males and 33.3% in females.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**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	1		0.1	1.00	0.0		3.2	
5- 9			0.0		0.0			
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24	2		0.1	0.50	0.0		2.4	
25-29	1	1	0.1	0.11	0.1	0.20	1.0	0.9
30-34			0.0		0.0			
35-39	8	3	0.3	0.28	0.1	0.27	2.1	0.6
40-44	24	8	1.0	0.28	0.3	0.31	3.0	0.7
45-49	72	14	3.3	0.37	0.7	0.25	4.2	0.7
50-54	145	34	7.8	0.52	1.8	0.40	4.7	1.2
55-59	203	47	11.9	0.62	2.6	0.43	3.7	1.1
60-64	213	64	12.9	0.69	3.7	0.47	2.6	1.1
65-69	189	62	12.9	0.84	3.9	0.53	1.7	0.8
70-74	143	53	12.3	0.95	3.8	0.59	1.2	0.6
75-79	92	47	12.2	1.01	4.3	0.54	0.8	0.5
80-84	47	55	10.4	0.89	6.4	0.74	0.5	0.5
85+	29	66	9.4	0.73	8.1	0.99	0.4	0.5
All ages	1169	454					1.6	0.7
Mortality								
Raw			4.3	0.64	1.6	0.51		
WS			2.5	0.61	0.7	0.44		
ES			3.6	0.63	1.1	0.46		
BRD-S			4.1	0.65	1.3	0.48		
PYLL-70								
per 100,000			39.9		10.2			
ES			36.1		8.7			
AYLL-70			11.5		10.7			

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

Table 15a

Multiple primaries in deaths in period 1998-2012
MALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	50	7.6			3	6.0	47	94.0
C09-C10 Oropharynx	46	7.0			11	23.9	35	76.1
C12-C13 Hypopharynx	50	7.6	18	36.0	5	10.0	27	54.0
C15 Oesophagus	55	8.3	7	12.7	8	14.5	40	72.7
C16 Stomach	13	2.0	2	15.4			11	84.6
C18 Colon	22	3.3	7	31.8	2	9.1	13	59.1
C19-C20 Rectum	27	4.1	4	14.8	1	3.7	22	81.5
C22 Liver	21	3.2	2	9.5	2	9.5	17	81.0
C25 Pancreas	7	1.1	1	14.3			6	85.7
C30-C31 Sinuses	7	1.1	2	28.6	1	14.3	4	57.1
C32 Larynx	41	6.2	23	56.1	6	14.6	12	29.3
C33-C34 Lung	152	23.0	16	10.5	10	6.6	126	82.9
C43 Malign. melanoma	13	2.0	7	53.8			6	46.2
C44 Skin others	31	4.7	13	41.9	3	9.7	15	48.4
C61 Prostate	31	4.7	18	58.1	1	3.2	12	38.7
C64 Kidney	10	1.5	2	20.0	1	10.0	7	70.0
C67 Bladder	21	3.2	13	61.9	1	4.8	7	33.3
C76-C79 CUP	11	1.7	5	45.5			6	54.5
C82-C85 NHL	13	2.0	7	53.8	2	15.4	4	30.8
C91-C96 Leukaemia	6	0.9	1	16.7	1	16.7	4	66.7
Other primaries	33	5.0	20	60.6	1	3.0	12	36.4
All mult. primaries	660	100.0	168	25.5	59	8.9	433	65.6

Multiple primaries with number of cases n<6 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 1998-2012
FEMALES

Diagnosis	Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C03-C06 Oral cavity	20	8.7			1	5.0	19	95.0
C09-C10 Oropharynx	20	8.7			3	15.0	17	85.0
C12-C13 Hypopharynx	6	2.6					6	100.0
C14 ENT cancer	3	1.3			1	33.3	2	66.7
C15 Oesophagus	14	6.1					14	100.0
C16 Stomach	4	1.7	1	25.0	1	25.0	2	50.0
C18 Colon	12	5.2	7	58.3			5	41.7
C21 Anus/canal	3	1.3					3	100.0
C22 Liver	5	2.2			1	20.0	4	80.0
C23-C24 Bile	3	1.3					3	100.0
C25 Pancreas	2	0.9	1	50.0			1	50.0
C30-C31 Sinuses	3	1.3					3	100.0
C32 Larynx	7	3.0	3	42.9			4	57.1
C33-C34 Lung	39	17.0	1	2.6	1	2.6	37	94.9
C43 Malign. melanoma	2	0.9					2	100.0
C44 Skin others	9	3.9	3	33.3	1	11.1	5	55.6
C50 Breast	37	16.1	24	64.9			13	35.1
C51 Vulva	2	0.9	1	50.0			1	50.0
C53 Cervix uteri	7	3.0	5	71.4			2	28.6
C54 Corpus uteri	3	1.3	2	66.7			1	33.3
C56 Ovary	4	1.7	2	50.0			2	50.0
C67 Bladder	5	2.2	3	60.0			2	40.0
C70-C72 CNS cancer	6	2.6	1	16.7			5	83.3
C82-C85 NHL	4	1.7	1	25.0	1	25.0	2	50.0
C90 Mult. myeloma	2	0.9	1	50.0			1	50.0
Other primaries	8	3.5	5	62.5			3	37.5
All mult. primaries	230	100.0	61	26.5	10	4.3	159	69.1

Multiple primaries with number of cases n<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 1998-2012
(**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	2		0.1	0.50	0.0		2.6	
25-29	1	1	0.1	0.11	0.1	0.20	1.1	1.0
30-34			0.0		0.0			
35-39	8	3	0.3	0.31	0.1	0.27	2.2	0.7
40-44	22	8	0.9	0.27	0.3	0.32	2.9	0.9
45-49	66	12	3.1	0.37	0.6	0.24	4.3	0.7
50-54	119	30	6.4	0.53	1.6	0.41	4.4	1.2
55-59	157	38	9.2	0.60	2.1	0.41	3.3	1.0
60-64	171	51	10.4	0.66	2.9	0.45	2.4	1.0
65-69	152	48	10.4	0.87	3.0	0.51	1.7	0.8
70-74	113	42	9.8	1.02	3.0	0.63	1.2	0.6
75-79	65	43	8.6	0.98	3.9	0.59	0.7	0.5
80-84	33	41	7.3	0.89	4.7	0.71	0.4	0.5
85+	25	55	8.1	0.89	6.7	1.00	0.4	0.5
All ages	934	372					1.6	0.7
Mortality								
Raw			3.4	0.63	1.3	0.50		
WS			2.0	0.60	0.6	0.43		
ES			2.9	0.62	0.9	0.45		
BRD-S			3.3	0.64	1.1	0.47		
PYLL-70								
per 100,000			33.1		8.7			
ES			29.7		7.5			
AYLL-70			11.7		11.2			

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 1998-2012
(**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	2		0.1	0.50	0.0		2.7	
25-29	1	1	0.1	0.11	0.1	0.33	1.2	1.0
30-34			0.0		0.0			
35-39	8	1	0.3	0.33	0.0	0.11	2.3	0.2
40-44	21	7	0.9	0.29	0.3	0.30	3.0	0.8
45-49	58	10	2.7	0.38	0.5	0.23	4.0	0.7
50-54	92	27	5.0	0.48	1.4	0.39	3.8	1.2
55-59	109	29	6.4	0.53	1.6	0.38	2.5	0.9
60-64	99	31	6.0	0.48	1.8	0.33	1.6	0.7
65-69	95	25	6.5	0.64	1.6	0.36	1.2	0.5
70-74	73	25	6.3	0.78	1.8	0.42	0.9	0.4
75-79	45	30	6.0	0.71	2.7	0.48	0.6	0.5
80-84	23	28	5.1	0.66	3.2	0.55	0.4	0.4
85+	20	42	6.4	0.83	5.1	0.84	0.4	0.5
All ages	646	256					1.3	0.5
Mortality								
Raw			2.4	0.52	0.9	0.41		
WS			1.4	0.49	0.4	0.35		
ES			2.0	0.51	0.6	0.37		
BRD-S			2.3	0.53	0.7	0.38		
PYLL-70								
per 100,000			25.2		6.6			
ES			22.6		5.8			
AYLL-70			12.9		12.4			

* See corresponding tables with multiple primaries.

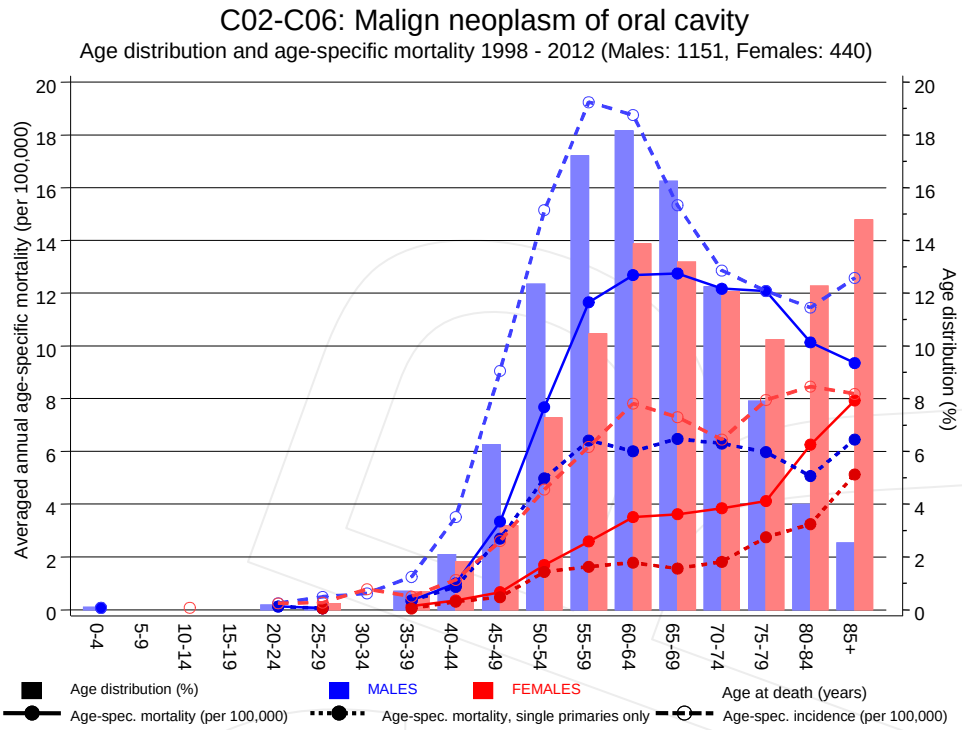
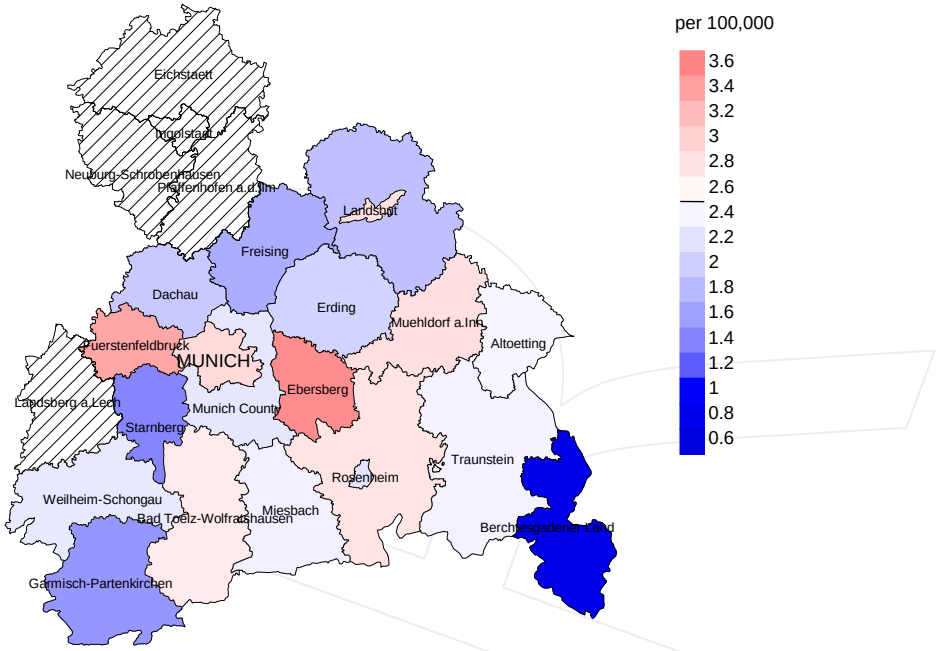


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

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



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

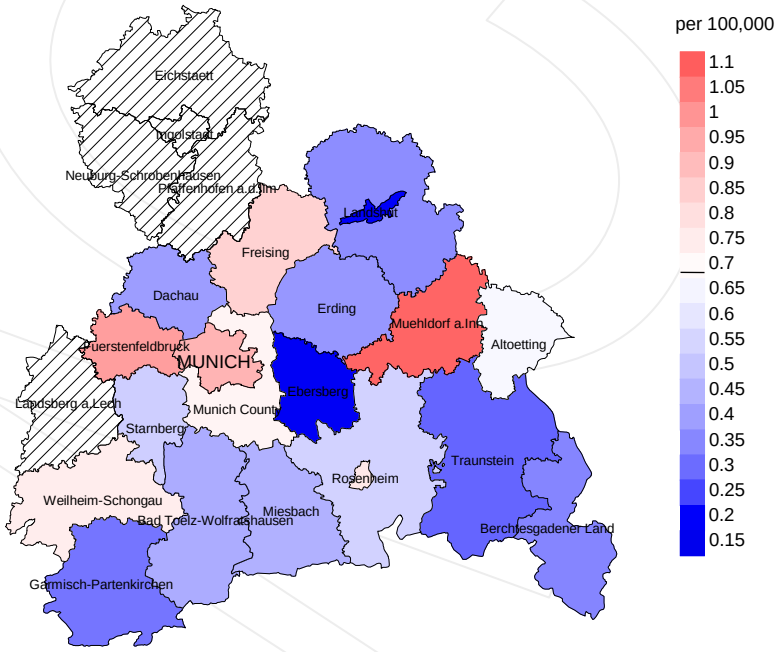
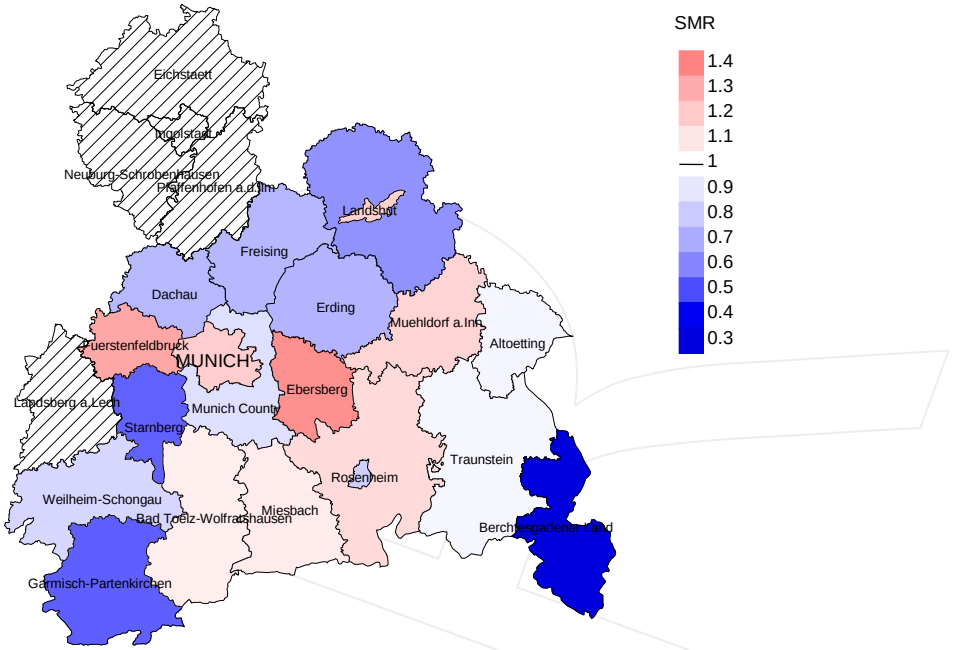


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 2.5/100,000 WS N=474, females 0.7/100,000 WS N=187). 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 1 women died from oral cavity cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.3/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

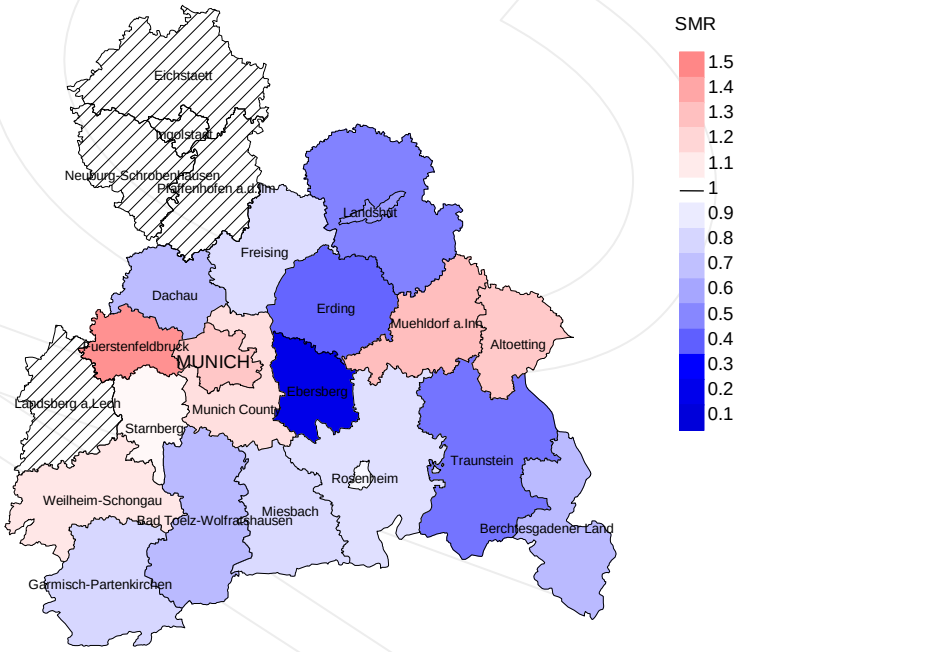


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=474, females N=187). 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 1 women died from oral cavity cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.18. Though, the value of this parameter may vary with an underlying probability of 99% between 0.00 and 1.37, 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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