Munich Cancer Registry

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

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

Cancer statistics: Baseline statistics

C15: Oesophagus cancer

Year of diagnosis	1998-2011
Patients	3177
Diseases	3178
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m

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.

ICD-10 codes used for specifying cancer site

ICD-10   Description

Note

Two subclassifications are available:

.0 - .2 according to the anatomical segment

.3 - .5 according to the division into three parts

The deviation from the principle of mutual exclusiveness of particular categories is intentional, because both classifications are in use and although the associated anatomical structures do not match.

C15.-	Malignant neoplasm of oesophagus
C15.0	Cervical part of oesophagus
C15.1	Thoracic part of oesophagus
C15.2	Abdominal part of oesophagus
C15.3	Upper third of oesophagus
C15.4	Middle third of oesophagus
C15.5	Lower third of oesophagus
C15.8	Overlapping lesion of oesophagus
C15.9	Oesophagus, unspecified

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	138	15	10.9	18.1	97.8	99.3	
1999	131	9	6.9	18.3	90.1	100.0	
2000	130	11	8.5	22.3	89.2	99.2	
2001	144	6	4.2	25.0	89.6	100.0	
2002	268	31	11.6	25.0	89.6	100.0	
2003	218	24	11.0	23.9	88.5	99.1	
2004	218	19	8.7	25.2	88.1	99.1	
2005	265	21	7.9	29.8	86.8	98.9	
2006	232	8	3.4	28.4	80.2	97.4	
2007	292	9	3.1	25.7	82.2	93.2	##
2008	283	11	3.9	26.5	75.3	85.5	
2009	294	14	4.8	25.5	73.8	91.8	
2010	287	17	5.9	19.5	63.8	93.0	
2011	278	22	7.9	30.2	50.7	78.8	###
1998-2011	3178	217	6.8	25.1	79.7	94.4	

\#   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	138	107	31	77.5
1999	131	110	21	84.0
2000	130	101	29	77.7
2001	144	112	32	77.8
2002	268	212	56	79.1
2003	218	176	42	80.7
2004	218	174	44	79.8
2005	265	218	47	82.3
2006	232	179	53	77.2
2007	292	237	55	81.2
2008	283	229	54	80.9
2009	294	232	62	78.9
2010	287	210	77	73.2
2011	278	230	48	82.7
1998-2011	3178	2527	651	79.5

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	107	31	9.7	2.6	6.0	1.2	8.7	1.7	10.4	2.3
1999	110	21	9.8	1.8	6.0	1.0	8.6	1.4	10.1	1.6
2000	101	29	8.9	2.4	5.4	1.3	7.8	1.9	9.6	2.1
2001	112	32	9.7	2.6	5.9	1.2	8.6	1.8	10.4	2.2
2002	212	56	11.4	2.9	7.0	1.3	9.8	1.9	11.5	2.4
2003	176	42	9.4	2.1	5.6	1.1	7.9	1.6	9.4	1.8
2004	174	44	9.2	2.2	5.4	1.1	7.7	1.6	9.1	1.8
2005	218	47	11.5	2.4	6.4	1.0	9.3	1.5	11.4	1.9
2006	179	53	9.3	2.6	5.2	1.3	7.5	1.9	9.0	2.2
2007	237	55	10.7	2.4	6.0	1.2	8.7	1.7	10.4	2.0
2008	229	54	10.3	2.3	5.7	1.1	8.3	1.6	10.0	2.0
2009	232	62	10.4	2.7	5.5	1.3	8.0	1.9	9.8	2.2
2010	210	77	9.3	3.3	5.2	1.5	7.4	2.1	8.9	2.6
2011	230	48	10.2	2.1	5.4	0.9	7.8	1.3	9.5	1.7
1998-2011	2527	651	10.1	2.5	5.8	1.2	8.3	1.7	9.9	2.1

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	138	64.3	12.5	35.7	93.8	49.5	56.1	63.0	74.9	80.4
1999	131	63.6	10.4	37.6	89.6	52.6	56.7	61.7	71.7	77.2
2000	130	64.0	11.7	39.6	92.2	49.7	56.0	61.8	72.6	79.7
2001	144	65.4	11.2	38.9	97.2	52.6	57.1	63.7	73.4	82.1
2002	268	65.2	11.7	33.5	95.5	50.1	57.9	64.1	73.5	80.8
2003	218	65.5	11.1	39.0	92.5	50.5	57.8	64.8	73.1	81.3
2004	218	65.8	11.0	36.5	97.2	52.4	59.1	64.9	71.9	80.3
2005	265	66.7	10.7	34.8	96.0	54.1	58.8	66.1	74.8	80.6
2006	232	66.2	9.8	38.4	94.3	54.1	59.6	65.8	72.6	80.3
2007	292	66.1	10.6	33.4	89.9	52.8	59.6	65.9	73.3	80.2
2008	283	67.4	10.6	32.2	96.2	54.1	60.2	66.8	74.4	82.0
2009	294	66.8	10.8	35.6	94.4	51.7	58.9	67.9	73.8	80.6
2010	287	66.8	11.9	32.0	96.3	51.6	59.1	66.9	75.3	83.2
2011	278	68.1	10.4	44.0	94.6	54.5	60.7	68.7	74.8	81.8
1998-2011	3178	66.1	11.0	32.0	97.2	52.4	58.5	65.7	73.7	81.0

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	107	62.4	12.1	35.7	93.8	47.9	53.2	60.4	70.9	78.1
1999	110	63.5	10.8	37.6	89.6	51.7	56.2	61.9	71.7	77.4
2000	101	64.1	10.9	39.6	92.2	49.8	56.8	62.5	72.3	78.1
2001	112	64.2	10.7	38.9	97.2	51.5	56.7	62.6	70.3	79.8
2002	212	63.8	11.0	33.5	92.4	50.1	57.3	63.4	71.4	77.5
2003	176	65.1	10.4	39.0	92.5	50.4	57.9	64.9	71.8	78.7
2004	174	64.9	10.6	36.5	94.7	52.3	58.4	64.1	71.5	79.7
2005	218	65.8	10.4	34.8	96.0	53.6	58.2	65.6	74.2	79.6
2006	179	66.1	9.2	38.4	94.3	54.4	59.7	66.0	71.8	78.4
2007	237	65.8	10.4	38.7	89.9	52.6	59.2	66.0	73.2	79.8
2008	229	66.9	10.4	32.2	91.6	53.3	60.1	65.9	73.7	81.9
2009	232	66.5	10.3	35.6	89.0	52.7	58.8	67.9	73.7	79.2
2010	210	65.6	11.6	32.0	91.0	50.6	57.5	65.4	73.7	81.5
2011	230	67.6	10.1	44.0	94.6	54.6	60.6	68.4	73.8	81.5
1998-2011	2527	65.5	10.6	32.0	97.2	51.9	58.0	65.3	72.8	79.6

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	31	71.0	11.7	48.1	91.6	56.4	61.4	72.4	81.0	87.2
1999	21	63.9	8.4	52.6	80.1	54.0	58.7	61.5	70.5	74.8
2000	29	63.7	14.1	40.6	89.8	46.8	54.8	58.7	78.1	85.2
2001	32	69.9	12.1	52.6	91.4	54.3	60.4	68.5	81.0	86.3
2002	56	70.6	13.0	44.7	95.5	49.8	61.2	72.2	80.5	87.7
2003	42	67.2	13.5	42.8	92.4	52.6	56.9	63.7	78.8	84.4
2004	44	69.1	11.8	46.4	97.2	56.5	61.9	66.8	75.7	87.2
2005	47	70.8	11.4	40.6	91.4	55.9	62.2	71.3	79.2	85.9
2006	53	66.8	11.8	44.7	92.5	51.6	59.4	65.4	75.9	82.7
2007	55	67.4	11.1	33.4	85.5	52.9	61.6	65.8	78.2	83.6
2008	54	69.5	10.9	46.3	96.2	57.9	61.5	68.1	79.5	83.2
2009	62	68.1	12.4	44.1	94.4	51.4	59.2	67.5	76.4	85.2
2010	77	70.2	12.0	33.3	96.3	53.1	63.7	70.3	78.1	85.8
2011	48	70.6	11.2	48.5	91.5	53.8	61.6	72.0	79.8	83.9
1998-2011	651	68.8	12.0	33.3	97.2	53.1	60.2	67.9	78.2	84.8

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.%
30–34	6	0.2	0.2	4	0.2	0.2	2	0.3	0.3
35–39	22	0.7	0.9	22	0.9	1.0			0.3
40–44	49	1.5	2.4	39	1.5	2.6	10	1.5	1.8
45–49	141	4.4	6.9	119	4.7	7.3	22	3.4	5.2
50–54	275	8.7	15.5	221	8.7	16.0	54	8.3	13.5
55–59	436	13.7	29.2	369	14.6	30.6	67	10.3	23.8
60–64	572	18.0	47.2	454	18.0	48.6	118	18.1	41.9
65–69	546	17.2	64.4	458	18.1	66.7	88	13.5	55.5
70–74	428	13.5	77.9	350	13.9	80.6	78	12.0	67.4
75–79	331	10.4	88.3	259	10.2	90.8	72	11.1	78.5
80–84	221	7.0	95.2	143	5.7	96.5	78	12.0	90.5
85+	151	4.8	100.0	89	3.5	100.0	62	9.5	100.0
All ages	3178	100.0		2527	100.0		651	100.0	

Included in the statistics are 30.3% multiple primaries in males and 33.5% 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=160 %	Females DCO rate n=57 %	Males Prop.all cancers n=132509 %	Females Prop.all cancers n=129521 %
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			0.0	0.0				
30-34	4	2	0.2	0.1			0.3	0.1
35-39	22		1.0	0.0			1.1	
40-44	39	10	1.7	0.5			1.4	0.2
45-49	119	22	6.1	1.1	5.0	4.5	2.7	0.3
50-54	221	54	13.2	3.1	5.9	1.9	3.0	0.6
55-59	369	67	23.7	4.1	2.4	3.0	3.0	0.6
60-64	454	118	29.8	7.4	4.8	0.8	2.4	0.8
65-69	457	88	33.5	5.9	5.9	4.5	2.0	0.5
70-74	350	78	33.9	6.3	5.7	3.8	1.6	0.5
75-79	259	72	38.3	7.2	8.1	9.7	1.5	0.5
80-84	143	78	35.2	9.8	14.7	21.8	1.3	0.6
85+	89	62	32.1	8.3	23.6	33.9	1.1	0.4
All ages	2526	651			6.3	8.8	1.9	0.5
Incidence								
Raw			10.1	2.5				
WS			5.8	1.2				
ES			8.3	1.7				
BRD-S			9.9	2.1				

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 %
C03-C06	Oral cavity	12	0.5	26.2	13.5	45.7	#	37.8	8.3
C09-C10	Oropharynx	15	0.6	25.3	14.2	41.7	#	47.2	
C12-C13	Hypopharynx	6	0.3	17.7	6.5	38.5	#	18.5	
C16	Stomach	7	1.9	3.8	1.5	7.8	#	16.8	14.3
C17	Small intestine	3	0.2	14.2	2.9	41.4	#	9.1	
C18	Colon	10	4.4	2.3	1.1	4.2	#	18.4	10.0
C19-C20	Rectum	4	2.7	1.5	0.4	3.8		4.2	
C21	Anus/canal	2	0.1	21.0	2.5	75.8	#	6.2	
C22	Liver	9	1.3	7.2	3.3	13.6	#	25.4	33.3
C25	Pancreas	3	1.6	1.9	0.4	5.6		4.7	
C32	Larynx	5	0.5	9.2	3.0	21.4	#	14.6	
C33-C34	Lung	30	5.6	5.4	3.6	7.6	#	79.9	6.7
C50	Breast	3	0.1	26.3	5.4	76.7	#	9.4	66.7
C61	Prostate	21	13.6	1.5	1.0	2.4		24.4	19.0
C64	Kidney	6	1.7	3.6	1.3	7.9	#	14.2	
C67	Bladder	5	1.8	2.8	0.9	6.5		10.5	20.0
C76-C79	CUP	2	0.8	2.6	0.3	9.5		4.1	
C82-C85	NHL	4	1.7	2.3	0.6	5.9		7.4	25.0
Other primaries		3	1.0	3.0	0.6	8.9		6.6	
Not observed		0	6.0	0.0	0.0	0.6	#	-19.7	
All mult. primaries		150	46.3	3.2	2.7	3.8	#	339.7	10.7

Patients	1817
Mean age at second malignancy (years)	65.8
Person-years	3054
Mean observation time (years)	1.7
Median observation time (years)	0.8

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 %
C03-C06 Oral cavity	2	0.1	37.9	4.6	137.0	#	25.8	
C09-C10 Oropharynx	5	0.0	126.0	40.9	294.0	#	65.6	
C16 Stomach	2	0.3	7.5	0.9	27.1		22.9	
C18 Colon	5	0.8	6.5	2.1	15.2	#	56.0	20.0
C32 Larynx	2	0.0	115.4	14.0	416.8	#	26.2	
C33-C34 Lung	6	0.6	10.2	3.8	22.3	#	71.6	
C50 Breast	8	2.7	3.0	1.3	5.9	#	70.5	12.5
C76-C79 CUP	2	0.1	15.8	1.9	57.1	#	24.8	
Other primaries	7	1.3	5.5	2.2	11.4	#	75.8	14.3
Not observed	0	2.4	0.0	0.0	1.5		-32.1	
All mult. primaries	39	8.2	4.7	3.4	6.5	#	407.0	7.7

Patients	493
Mean age at second malignancy (years)	66.6
Person-years	756
Mean observation time (years)	1.5
Median observation time (years)	0.8

The occurrence of second malignancy is statistically significant.

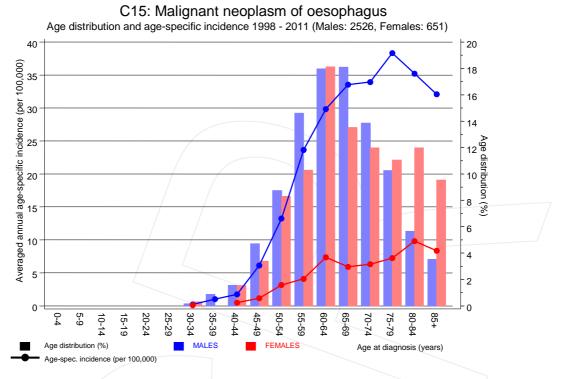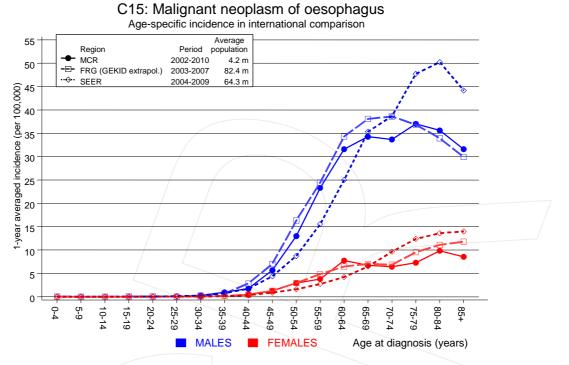Observed second malignancy with count 1 are pooled in category "Other primaries".

C15: Malignant neoplasm of oesophagus
Age distribution and age-specific incidence 1998 - 2011 (Males: 2526, Females: 651)

Figure 7. Age distribution and age-specific incidence

C15: Malignant neoplasm of oesophagus
Age-specific incidence in international comparison

Region	Period	Average population
MCR	2002-2010	4.2 m
FRG (GEKID extrapol.)	2003-2007	82.4 m
SEER	2004-2009	64.3 m

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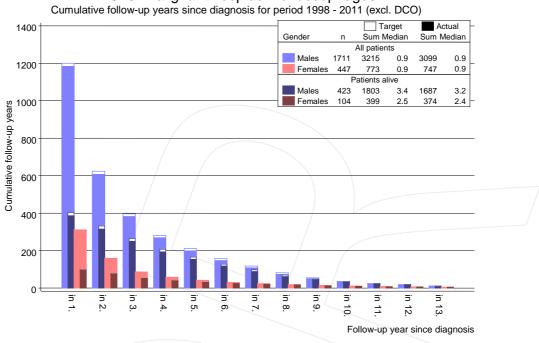
Figure 7a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

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, 2011. http://www.gekid.de. Last access: 05/12/2011

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.
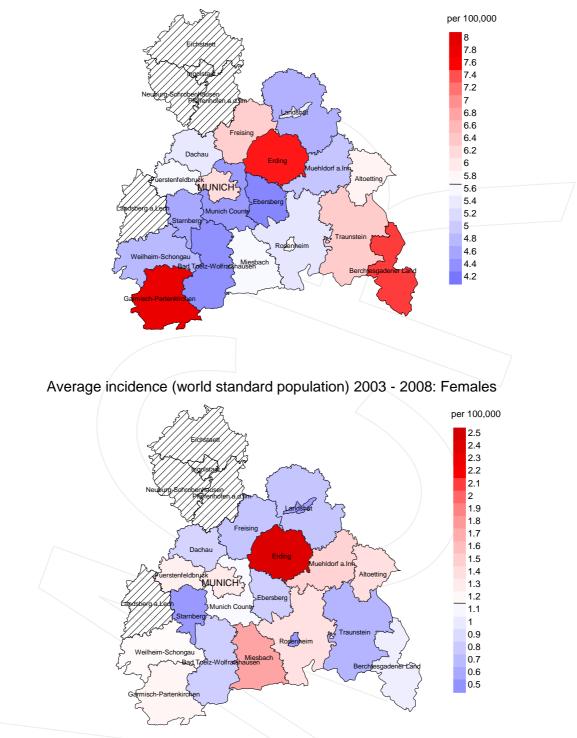
C15: Malignant neoplasm of oesophagus
Cumulative follow-up years since diagnosis for period 1998 - 2011 (excl. DCO)

Gender	n	Target Sum	Target Median	Actual Sum	Actual Median
All patients					
Males	1711	3215	0.9	3099	0.9
Females	447	773	0.9	747	0.9
Patients alive					
Males	423	1803	3.4	1687	3.2
Females	104	399	2.5	374	2.4

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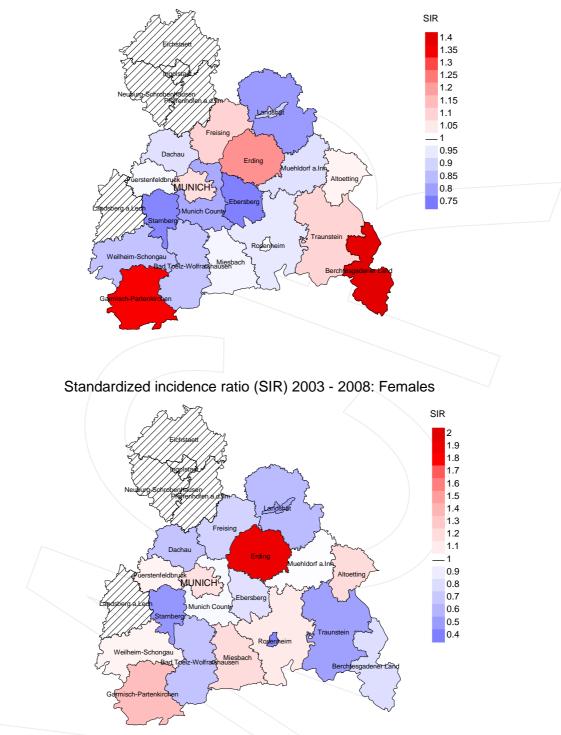
Average incidence (world standard population) 2003 - 2008: Females

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 5.7/100,000 WS N=1,151, females 1.2/100,000 WS N=285). 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 7 women were identified with newly diagnosed oesophagus cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.8/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.2 and 2.4/100,000.

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=1,151, females N=285). 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 7 women were identified with newly diagnosed oesophagus cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.83. Though, the value of this parameter may vary with an underlying probability of 99% between 0.24 and 2.03, 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	138	99.3	10.9	135	97.8	91.9
1999	131	100.0	6.9	118	90.1	94.9
2000	130	99.2	8.5	116	89.2	95.7
2001	144	100.0	4.2	129	89.6	96.9
2002	268	100.0	11.6	240	89.6	97.9
2003	218	99.1	11.0	193	88.5	97.9
2004	218	99.1	8.7	192	88.1	97.9
2005	265	98.9	7.9	230	86.8	98.3
2006	232	97.4	3.4	186	80.2	98.4
2007	292	93.2	3.1	240	82.2	97.5
2008	283	85.5	3.9	213	75.3	99.1
2009	294	91.8	4.8	217	73.8	99.1
2010	287	93.0	5.9	183	63.8	98.4
2011	278	78.8	7.9	141	50.7	97.2
1998-2011	3178	94.4	6.8	2533	79.7	97.5

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	138	110	91.8	60	43.5
1999	131	106	91.5	38	29.0
2000	130	99	97.0	30	23.1
2001	144	136	94.9	56	38.9
2002	268	219	98.6	111	41.4
2003	218	186	98.4	83	38.1
2004	218	189	97.4	71	32.6
2005	265	214	98.1	94	35.5
2006	232	198	97.0	77	33.2
2007	292	228	97.8	85	29.1
2008	283	218	98.6	78	27.6
2009	294	238	99.2	83	28.2
2010	287	240	99.2	77	26.8
2011	278	250	98.8	94	33.8
1998-2011	3178	2631	97.6	1037	32.6

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	110	82.7	17.3	94.1
1999	106	90.6	9.4	97.9
2000	99	87.9	12.1	95.8
2001	136	80.1	19.9	96.9
2002	219	92.2	7.8	97.2
2003	186	90.3	9.7	95.6
2004	189	92.1	7.9	97.3
2005	214	95.8	4.2	98.6
2006	198	93.9	6.1	98.4
2007	228	88.2	11.8	94.2
2008	218	91.3	8.7	96.3
2009	238	88.2	11.8	93.2
2010	240	90.0	10.0	95.4
2011	250	84.8	15.2	93.5
1998-2011	2631	89.5	10.5	95.9

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	79	64.1	62.7	70.3	64.4
1999	86	65.4	65.0	69.6	65.6
2000	83	64.3	62.6	75.4	63.5
2001	102	65.4	65.5	65.2	65.1
2002	169	66.4	66.0	71.6	66.2
2003	158	65.5	65.5	66.0	65.6
2004	148	65.0	65.1	63.3	65.0
2005	170	66.6	66.2	75.3	66.7
2006	158	67.1	67.1	66.9	67.2
2007	186	67.3	66.6	72.9	66.8
2008	167	68.8	68.4	72.4	68.7
2009	191	68.3	67.9	71.4	68.1
2010	183	68.0	67.7	70.8	67.6
2011	199	68.7	67.6	74.6	68.1
1998-2011	2079	66.8	66.4	70.7	66.7

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	31	71.2	70.2	76.4	71.4
1999	20	71.5	70.3	82.6	70.3
2000	16	67.7	68.4	58.0	67.7
2001	34	71.2	70.2	73.5	72.0
2002	50	71.9	70.8	84.1	71.9
2003	28	69.0	68.2	78.5	68.2
2004	41	68.2	68.1	69.2	68.0
2005	44	69.6	69.6	70.2	69.9
2006	40	72.7	73.3	66.2	73.2
2007	42	69.2	68.1	80.1	68.6
2008	51	68.5	68.5	68.2	68.7
2009	47	69.4	68.8	71.9	69.2
2010	57	72.8	72.3	76.0	72.8
2011	51	71.1	71.2	70.8	71.1
1998-2011	552	70.4	70.0	73.8	70.4

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	65	5.9	0.61	3.6	0.60	5.2	0.60	6.3	0.60
1999	78	7.0	0.71	4.2	0.70	6.1	0.71	7.4	0.73
2000	72	6.3	0.71	3.9	0.73	5.6	0.73	6.6	0.69
2001	85	7.3	0.76	4.4	0.75	6.5	0.75	7.9	0.75
2002	156	8.4	0.74	5.0	0.71	7.1	0.72	8.5	0.74
2003	142	7.6	0.81	4.4	0.79	6.4	0.81	7.8	0.82
2004	136	7.2	0.78	4.2	0.77	6.0	0.78	7.3	0.80
2005	162	8.6	0.74	4.8	0.75	7.0	0.75	8.5	0.75
2006	149	7.8	0.83	4.3	0.82	6.2	0.82	7.5	0.83
2007	163	7.4	0.69	4.1	0.68	5.9	0.68	7.2	0.69
2008	152	6.8	0.66	3.6	0.63	5.4	0.65	6.6	0.66
2009	171	7.7	0.74	4.0	0.72	5.8	0.72	7.2	0.73
2010	167	7.4	0.80	3.9	0.76	5.7	0.78	7.0	0.79
2011	169	7.5	0.74	4.0	0.74	5.8	0.75	7.0	0.74
1998-2011	1867	7.4	0.74	4.2	0.73	6.1	0.73	7.4	0.74

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	26	2.2	0.84	1.0	0.85	1.5	0.86	2.0	0.87
1999	18	1.5	0.86	0.7	0.72	1.0	0.72	1.3	0.82
2000	15	1.2	0.52	0.6	0.45	0.9	0.47	1.1	0.53
2001	24	2.0	0.75	0.9	0.72	1.3	0.72	1.6	0.73
2002	46	2.3	0.82	1.1	0.79	1.6	0.83	2.0	0.83
2003	26	1.3	0.62	0.6	0.58	0.9	0.58	1.1	0.61
2004	38	1.9	0.86	0.9	0.85	1.3	0.86	1.6	0.89
2005	43	2.2	0.91	1.0	0.98	1.5	0.98	1.8	0.90
2006	37	1.8	0.70	0.7	0.53	1.1	0.58	1.5	0.66
2007	38	1.6	0.69	0.8	0.65	1.1	0.68	1.4	0.70
2008	47	2.0	0.87	1.0	0.88	1.4	0.86	1.7	0.85
2009	39	1.7	0.63	0.8	0.65	1.2	0.62	1.4	0.64
2010	49	2.1	0.64	0.9	0.60	1.3	0.61	1.6	0.61
2011	43	1.8	0.90	0.8	0.90	1.2	0.88	1.4	0.84
1998-2011	489	1.9	0.75	0.9	0.72	1.2	0.73	1.5	0.74

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.%
30-34	3	0.1	0.1	2	0.1	0.1	1	0.2	0.2
35-39	5	0.2	0.3	5	0.3	0.4			0.2
40-44	29	1.2	1.6	27	1.4	1.8	2	0.4	0.6
45-49	101	4.3	5.9	86	4.6	6.4	15	3.1	3.7
50-54	162	6.9	12.7	129	6.9	13.3	33	6.7	10.4
55-59	309	13.1	25.8	264	14.1	27.5	45	9.2	19.6
60-64	419	17.8	43.6	331	17.7	45.2	88	18.0	37.6
65-69	423	17.9	61.6	355	19.0	64.2	68	13.9	51.5
70-74	343	14.6	76.1	280	15.0	79.2	63	12.9	64.4
75-79	252	10.7	86.8	192	10.3	89.5	60	12.3	76.7
80-84	183	7.8	94.6	119	6.4	95.8	64	13.1	89.8
85+	128	5.4	100.0	78	4.2	100.0	50	10.2	100.0
All ages	2357	100.0		1868	100.0		489	100.0	

Included in the statistics are 30.3% multiple primaries in males and 33.5% 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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	2	1	0.1	0.50	0.1	0.50	1.2	0.5
35-39	5		0.2	0.23	0.0		1.4	
40-44	27	2	1.2	0.69	0.1	0.20	3.6	0.2
45-49	86	15	4.4	0.72	0.8	0.68	5.6	0.9
50-54	129	33	7.7	0.58	1.9	0.61	4.6	1.3
55-59	264	45	16.9	0.72	2.7	0.67	5.1	1.1
60-64	331	88	21.7	0.73	5.5	0.75	4.3	1.6
65-69	355	68	26.0	0.78	4.6	0.77	3.4	1.0
70-74	280	63	27.1	0.80	5.1	0.81	2.5	0.8
75-79	192	60	28.4	0.74	6.0	0.83	1.8	0.7
80-84	119	64	29.3	0.83	8.0	0.82	1.4	0.7
85+	78	50	28.1	0.88	6.7	0.81	1.1	0.4
All ages	1868	489					2.8	0.8
Mortality								
Raw			7.4	0.74	1.9	0.75		
WS			4.2	0.73	0.9	0.72		
ES			6.1	0.73	1.2	0.73		
BRD-S			7.4	0.74	1.5	0.74		
PYLL-70								
per 100,000			52.1		10.6			
ES			46.2		9.1			
AYLL-70			9.9		9.5			

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	52	8.4	35	67.3	9	17.3	8	15.4
C09-C10 Oropharynx	70	11.3	44	62.9	9	12.9	17	24.3
C12-C13 Hypopharynx	45	7.2	30	66.7	7	15.6	8	17.8
C16 Stomach	21	3.4	7	33.3	11	52.4	3	14.3
C18 Colon	30	4.8	19	63.3	5	16.7	6	20.0
C19-C20 Rectum	24	3.9	16	66.7	4	16.7	4	16.7
C22 Liver	13	2.1	2	15.4	6	46.2	5	38.5
C25 Pancreas	8	1.3	2	25.0	3	37.5	3	37.5
C32 Larynx	35	5.6	27	77.1	5	14.3	3	8.6
C33-C34 Lung	78	12.6	24	30.8	26	33.3	28	35.9
C43 Malign. melanoma	9	1.4	8	88.9	1	11.1		
C44 Skin others	25	4.0	16	64.0	2	8.0	7	28.0
C61 Prostate	85	13.7	63	74.1	6	7.1	16	18.8
C64 Kidney	18	2.9	12	66.7	1	5.6	5	27.8
C67 Bladder	31	5.0	22	71.0	1	3.2	8	25.8
C73 Thyroid	6	1.0	4	66.7			2	33.3
C76-C79 CUP	10	1.6	6	60.0	3	30.0	1	10.0
C82-C85 NHL	10	1.6	7	70.0	1	10.0	2	20.0
C91-C96 Leukaemia	9	1.4	3	33.3	3	33.3	3	33.3
Other primaries	42	6.8	25	59.5	3	7.1	14	33.3
All mult. primaries	621	100.0	372	59.9	106	17.1	143	23.0

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 1998-2011
FEMALES

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn- chron ±30d n	Syn- chron ±30d ←%	Post n	Post ←%
C03-C06	Oral cavity	10	5.8	10	100.0				
C09-C10	Oropharynx	22	12.7	14	63.6	4	18.2	4	18.2
C12-C13	Hypopharynx	7	4.0	3	42.9	4	57.1		
C15	Oesophagus	1	0.6					1	100.0
C16	Stomach	3	1.7					3	100.0
C17	Small intestine	2	1.2	1	50.0	1	50.0		
C18	Colon	11	6.4	7	63.6	2	18.2	2	18.2
C19-C20	Rectum	4	2.3	3	75.0	1	25.0		
C21	Anus/canal	2	1.2	1	50.0	1	50.0		
C23-C24	Bile	2	1.2			2	100.0		
C25	Pancreas	2	1.2					2	100.0
C32	Larynx	3	1.7	1	33.3			2	66.7
C33-C34	Lung	10	5.8	3	30.0	1	10.0	6	60.0
C43	Malign. melanoma	5	2.9	4	80.0			1	20.0
C44	Skin others	2	1.2	2	100.0				
C50	Breast	53	30.6	49	92.5	2	3.8	2	3.8
C51	Vulva	1	0.6	1	100.0				
C53	Cervix uteri	4	2.3	3	75.0			1	25.0
C54	Corpus uteri	3	1.7	3	100.0				
C56	Ovary	1	0.6	1	100.0				
C64	Kidney	1	0.6	1	100.0				
C65	Renal pelvis	1	0.6	1	100.0				
C66	Ureter	1	0.6	1	100.0				
C67	Bladder	7	4.0	6	85.7	1	14.3		
C70-C72	CNS cancer	3	1.7	3	100.0				
C73	Thyroid	4	2.3	4	100.0				
C76-C79	CUP	2	1.2	1	50.0	1	50.0		
C82-C85	NHL	3	1.7	2	66.7	1	33.3		
C90	Mult. myeloma	1	0.6					1	100.0
C91-C96	Leukaemia	2	1.2	2	100.0				
All mult. primaries		173	100.0	127	73.4	21	12.1	25	14.5

Multiple primaries with number of cases n<1 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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	2	1	0.1	0.50	0.1	0.50	1.2	0.6
35-39	4		0.2	0.22	0.0		1.2	
40-44	24	2	1.1	0.63	0.1	0.25	3.4	0.2
45-49	75	9	3.9	0.69	0.5	0.53	5.4	0.6
50-54	106	28	6.3	0.57	1.6	0.65	4.3	1.3
55-59	215	35	13.8	0.70	2.1	0.69	4.8	1.0
60-64	262	67	17.2	0.72	4.2	0.74	4.0	1.5
65-69	276	50	20.3	0.76	3.4	0.85	3.3	0.9
70-74	220	41	21.3	0.81	3.3	0.72	2.5	0.6
75-79	149	44	22.0	0.75	4.4	0.80	1.8	0.6
80-84	87	47	21.4	0.90	5.9	0.73	1.3	0.6
85+	56	42	20.2	0.86	5.7	0.79	1.0	0.5
All ages	1476	366					2.7	0.7
Mortality								
Raw			5.9	0.73	1.4	0.73		
WS			3.3	0.71	0.6	0.71		
ES			4.8	0.72	0.9	0.72		
BRD-S			5.8	0.73	1.1	0.73		
PYLL-70								
per 100,000			42.9		8.2			
ES			38.1		7.1			
AYLL-70			10.1		9.6			
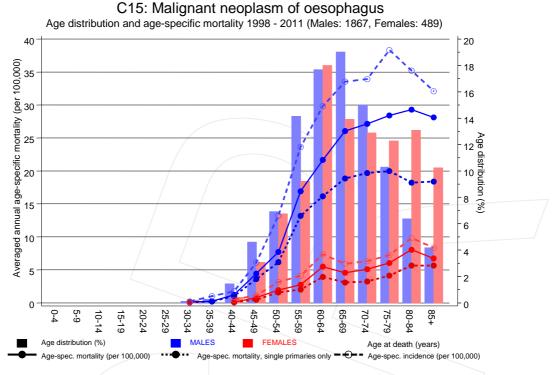
* See corresponding tables with multiple primaries.

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			0.0		0.0			
20-24			0.0		0.0			
25-29			0.0		0.0			
30-34	2	1	0.1	0.50	0.1	1.00	1.3	0.6
35-39	4		0.2	0.22	0.0		1.2	
40-44	23	2	1.0	0.66	0.1	0.25	3.5	0.3
45-49	70	9	3.6	0.67	0.5	0.53	5.3	0.7
50-54	103	27	6.2	0.59	1.6	0.66	4.5	1.4
55-59	206	33	13.2	0.71	2.0	0.70	5.0	1.1
60-64	246	63	16.2	0.72	3.9	0.78	4.3	1.6
65-69	257	46	18.9	0.75	3.1	0.79	3.5	0.9
70-74	203	40	19.7	0.79	3.2	0.74	2.7	0.7
75-79	135	41	20.0	0.72	4.1	0.76	2.0	0.7
80-84	74	45	18.2	0.82	5.7	0.73	1.4	0.7
85+	51	42	18.4	0.81	5.7	0.82	1.1	0.5
All ages	1374	349					3.0	0.8
Mortality								
Raw			5.5	0.72	1.3	0.74		
WS			3.1	0.71	0.6	0.72		
ES			4.5	0.71	0.9	0.72		
BRD-S			5.4	0.72	1.1	0.73		
PYLL-70								
per 100,000			40.8		7.8			
ES			36.3		6.8			
AYLL-70			10.2		9.8			

* See corresponding tables with multiple primaries.

C15: Malignant neoplasm of oesophagus
Age distribution and age-specific mortality 1998 - 2011 (Males: 1867, Females: 489)
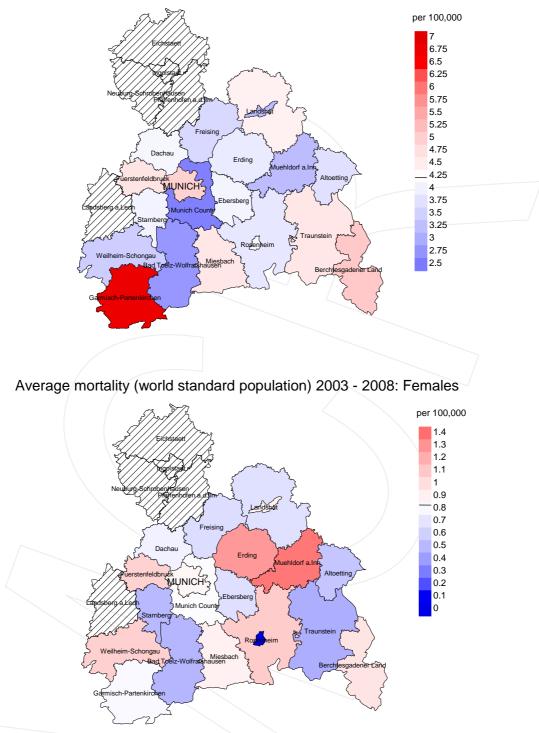
Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).
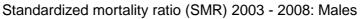
The difference between age at diagnosis (Table 3) and age at oesophagus cancer-related death (see Table 10) should be considered.

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

Average mortality (world standard population) 2003 - 2008: Females
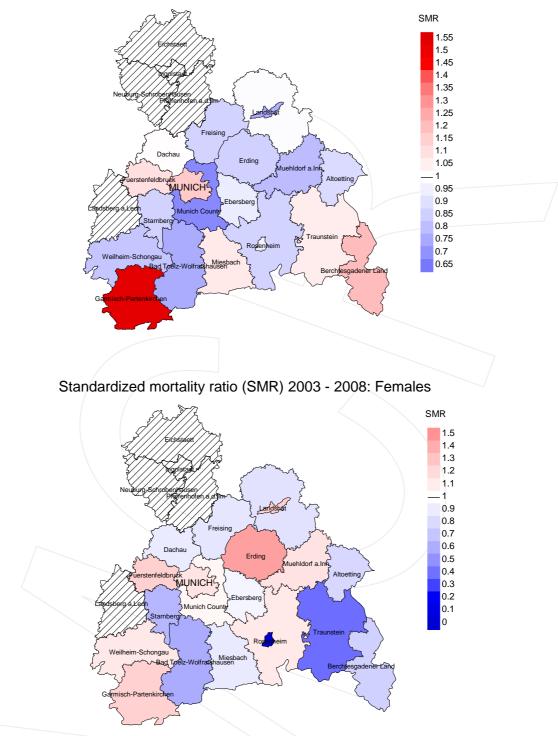
Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 4.2/100,000 WS N=864, females 0.8/100,000 WS N=215). 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 6 women died from oesophagus cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.7/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 2.0/100,000.

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=864, females N=215). 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 6 women died from oesophagus cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.95. Though, the value of this parameter may vary with an underlying probability of 99% between 0.24 and 2.47, 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

Recommended Citation

Munich Cancer Registry. Baseline statistics C15: Oesophagus cancer [Internet]. 2013 [updated 2013 Apr 2; cited 2013 Jun 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/base_C15__E.pdf

Copyright

Disclaimer

Index of figures and tables