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

C64-C66, C68: Urinary tract cancer

Year of diagnosis	1998-2011
Patients	9123
Diseases	9358
Creation date	04/02/2013
Export date	01/03/2013
Population	4.5 m

http://www.tumorregister-muenchen.de/en/facts/base/base_C6466E.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.

ICD-10 codes used for specifying cancer site

ICD-10	Description
C64	Kidney, except renal pelvis
C65	Renal pelvis
C66	Ureter
C68	Other and unspecified urinary organs

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	453	38	8.4	33.6	58.5	97.6
1999	442	33	7.5	31.9	60.2	97.5
2000	412	40	9.7	33.3	55.1	97.3
2001	417	45	10.8	31.4	57.8	97.8
2002	715	103	14.4	36.2	60.7	98.2
2003	700	75	10.7	32.0	55.4	96.7
2004	705	81	11.5	35.2	47.9	96.5
2005	771	45	5.8	36.3	43.2	96.1
2006	744	50	6.7	33.2	43.8	92.1
2007	852	79	9.3	30.2	42.5	77.0 ##
2008	879	73	8.3	34.1	37.2	62.0
2009	852	75	8.8	35.6	36.3	63.8
2010	785	65	8.3	31.6	31.0	95.0
2011	631	57	9.0	28.7	25.2	79.7 ###
1998-2011	9358	859	9.2	33.2	45.1	87.2

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	453	280	173	61.8
1999	442	271	171	61.3
2000	412	266	146	64.6
2001	417	245	172	58.8
2002	715	431	284	60.3
2003	700	435	265	62.1
2004	705	438	267	62.1
2005	771	491	280	63.7
2006	744	460	284	61.8
2007	852	552	300	64.8
2008	879	558	321	63.5
2009	852	529	323	62.1
2010	785	499	286	63.6
2011	631	401	230	63.5
1998-2011	9358	5856	3502	62.6

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	280	173	25.3	14.7	16.1	7.1	22.9	10.2	28.3	12.7
1999	271	171	24.2	14.4	15.1	7.3	21.7	10.2	26.8	12.5
2000	266	146	23.4	12.2	14.7	5.6	20.9	8.3	25.6	10.4
2001	245	172	21.1	14.1	12.6	6.5	18.3	9.6	23.1	12.1
2002	431	284	23.1	14.5	13.3	6.7	19.6	9.6	25.0	12.2
2003	435	265	23.2	13.5	13.7	5.9	19.4	8.6	24.0	11.0
2004	438	267	23.3	13.5	13.6	6.1	19.3	8.8	23.9	11.2
2005	491	280	25.9	14.1	14.6	6.4	21.1	9.1	25.7	11.7
2006	460	284	24.0	14.1	13.6	6.7	19.2	9.4	23.7	11.6
2007	552	300	24.9	13.0	13.8	5.7	19.7	8.1	24.5	10.4
2008	558	321	25.1	13.8	13.6	6.3	19.5	9.0	24.1	11.5
2009	529	323	23.7	13.9	12.8	6.1	18.3	8.7	22.8	11.3
2010	499	286	22.1	12.2	11.5	4.9	16.6	7.3	20.8	9.4
2011	401	230	17.8	9.8	9.5	4.8	13.5	6.4	16.8	7.9
1998-2011	5856	3502	23.3	13.3	13.2	6.1	18.9	8.7	23.4	11.0

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	453	66.0	13.5	2.8	99.7	50.0	59.0	66.9	75.5	80.9
1999	442	65.7	13.4	1.1	94.3	49.7	57.8	65.9	75.7	81.8
2000	412	66.3	13.1	0.3	93.5	49.5	58.9	66.9	75.3	81.3
2001	417	67.3	12.2	1.9	96.4	52.3	60.7	67.5	76.7	81.2
2002	715	68.4	12.8	2.4	99.5	51.0	61.3	69.6	77.2	82.7
2003	700	67.8	13.6	0.4	99.6	51.6	60.7	68.6	76.8	83.4
2004	705	67.2	13.6	0.0	94.6	49.4	60.8	68.5	76.4	82.0
2005	771	67.4	13.0	0.7	95.1	51.6	60.3	68.2	76.6	82.1
2006	744	67.3	14.0	0.2	95.5	49.7	60.3	68.8	76.3	83.3
2007	852	67.9	14.2	1.2	99.1	50.0	61.6	69.8	76.9	83.6
2008	879	68.0	13.1	0.6	98.1	51.3	60.7	69.0	77.1	83.2
2009	852	68.0	14.0	0.5	96.9	50.5	60.3	70.1	77.8	83.1
2010	785	68.6	13.4	5.4	100	49.4	60.5	70.7	77.6	83.7
2011	631	68.2	15.0	0.5	96.9	50.8	61.3	70.2	77.6	84.6
1998-2011	9358	67.6	13.6	0.0	100	50.7	60.4	69.0	76.8	82.9

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	280	64.6	13.5	5.0	91.9	48.8	57.9	65.8	73.6	79.4
1999	271	64.5	12.8	2.3	89.5	49.5	57.4	65.5	73.0	80.2
2000	266	64.6	13.2	0.3	93.5	48.0	56.7	65.6	73.1	79.9
2001	245	65.8	11.1	1.9	89.9	51.8	59.3	65.3	74.7	80.0
2002	431	66.9	12.4	32.7	96.2	49.0	59.1	68.5	75.7	81.3
2003	435	65.5	13.5	0.4	99.6	48.6	59.8	65.7	74.4	80.7
2004	438	65.5	13.6	0.0	93.6	49.0	58.8	67.3	74.7	80.1
2005	491	66.0	11.8	0.7	93.3	51.5	59.2	66.7	73.7	79.7
2006	460	65.9	12.9	0.8	95.4	49.3	59.9	67.1	74.3	80.3
2007	552	66.4	13.0	2.6	93.1	49.6	59.3	68.2	74.9	80.5
2008	558	66.7	12.4	1.8	98.1	50.1	59.1	68.1	74.6	81.8
2009	529	66.4	13.6	0.5	96.1	49.6	58.8	68.9	75.6	81.8
2010	499	66.6	12.9	5.4	93.5	47.9	59.0	69.2	75.8	81.1
2011	401	67.7	13.2	1.5	96.9	51.0	60.8	69.3	76.1	83.0
1998-2011	5856	66.1	12.9	0.0	99.6	49.6	59.0	67.5	74.7	80.7

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	173	68.4	13.4	2.8	99.7	56.2	61.3	70.3	76.8	83.4
1999	171	67.6	14.1	1.1	94.3	51.8	58.7	68.8	77.8	84.9
2000	146	69.3	12.2	37.2	91.4	54.5	60.8	70.9	78.2	85.7
2001	172	69.4	13.3	30.6	96.4	53.1	61.7	70.9	78.9	85.1
2002	284	70.6	13.2	2.4	99.5	54.7	63.7	72.4	79.9	85.0
2003	265	71.4	13.0	2.5	96.5	56.3	64.5	72.5	80.8	85.8
2004	267	69.9	13.2	18.5	94.6	53.6	63.6	71.8	79.3	84.7
2005	280	69.9	14.6	4.2	95.1	52.6	63.1	72.7	80.2	84.2
2006	284	69.4	15.4	0.2	95.5	52.1	62.2	71.9	79.2	85.9
2007	300	70.8	15.9	1.2	99.1	52.1	66.2	73.1	80.4	86.0
2008	321	70.2	14.0	0.6	96.1	54.6	63.6	71.6	80.0	84.9
2009	323	70.4	14.3	2.5	96.9	51.8	65.4	72.6	79.9	84.7
2010	286	72.3	13.4	5.4	100	55.2	66.2	73.3	81.0	88.2
2011	230	69.1	17.7	0.5	96.5	50.4	64.3	72.5	79.9	86.5
1998-2011	3502	70.1	14.3	0.2	100	53.1	63.4	72.2	79.7	85.6

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	59	0.6	0.6	31	0.5	0.5	28	0.8	0.8
5-9	16	0.2	0.8	9	0.2	0.7	7	0.2	1.0
10-14	3	0.0	0.8	2	0.0	0.7	1	0.0	1.0
15-19	3	0.0	0.9			0.7	3	0.1	1.1
20-24	10	0.1	1.0	3	0.1	0.8	7	0.2	1.3
25-29	15	0.2	1.1	9	0.2	0.9	6	0.2	1.5
30-34	44	0.5	1.6	24	0.4	1.3	20	0.6	2.1
35-39	145	1.5	3.2	99	1.7	3.0	46	1.3	3.4
40-44	208	2.2	5.4	153	2.6	5.6	55	1.6	4.9
45-49	375	4.0	9.4	283	4.8	10.5	92	2.6	7.6
50-54	527	5.6	15.0	388	6.6	17.1	139	4.0	11.5
55-59	842	9.0	24.0	595	10.2	27.3	247	7.1	18.6
60-64	1204	12.9	36.9	824	14.1	41.3	380	10.9	29.4
65-69	1538	16.4	53.3	1033	17.6	59.0	505	14.4	43.9
70-74	1520	16.2	69.6	979	16.7	75.7	541	15.4	59.3
75-79	1331	14.2	83.8	738	12.6	88.3	593	16.9	76.2
80-84	887	9.5	93.3	445	7.6	95.9	442	12.6	88.9
85+	631	6.7	100.0	241	4.1	100.0	390	11.1	100.0
All ages	9358	100.0		5856	100.0		3502	100.0	

Included in the statistics are 44.7% multiple primaries in males and 34.7% 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=432 %	Females DCO rate n=422 %	Males Prop.all cancers n=132509 %	Females Prop.all cancers n=129521 %
0- 4	30	27	2.4	2.3			10.6	13.0
5- 9	9	6	0.7	0.5			5.8	5.8
10-14	2	1	0.2	0.1			1.5	0.7
15-19		3	0.0	0.2				1.3
20-24	3	7	0.2	0.5			0.6	1.6
25-29	9	6	0.5	0.3			1.1	0.7
30-34	24	20	1.2	1.1	4.2		1.8	1.2
35-39	99	44	4.5	2.1			5.0	1.3
40-44	150	55	6.7	2.6	0.7		5.4	1.0
45-49	277	91	14.3	4.8	0.4	1.1	6.2	1.3
50-54	377	138	22.6	8.0	1.6		5.2	1.5
55-59	580	245	37.2	15.0	2.4	2.4	4.6	2.1
60-64	809	375	53.2	23.4	3.7	0.5	4.3	2.5
65-69	1006	495	73.8	33.3	5.1	4.0	4.3	3.0
70-74	954	533	92.5	43.2	5.3	7.1	4.4	3.5
75-79	731	584	108.2	58.7	11.8	9.1	4.3	4.0
80-84	440	438	108.3	55.1	18.6	20.8	4.0	3.2
85+	240	389	86.5	52.4	45.4	54.2	2.9	2.7
All ages	5740	3457			7.5	12.2	4.3	2.7
Incidence								
Raw			22.8	13.1				
WS			12.9	6.0				
ES			18.5	8.5				
BRD-S			23.0	10.8				

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 %
C03-C06 Oral cavity	2	2.2	0.9	0.1	3.3		-0.1	
C09-C10 Oropharynx	6	2.7	2.2	0.8	4.8		2.1	
C12-C13 Hypopharynx	2	1.5	1.3	0.2	4.7		0.3	
C15 Oesophagus	10	4.5	2.2	1.1	4.1	#	3.6	20.0
C16 Stomach	17	11.0	1.5	0.9	2.5		3.9	17.6
C17 Small intestine	5	1.1	4.3	1.4	10.1	#	2.5	
C18 Colon	55	26.1	2.1	1.6	2.7	#	18.7	9.1
C19-C20 Rectum	20	14.8	1.4	0.8	2.1		3.4	
C22 Liver	19	7.1	2.7	1.6	4.2	#	7.7	21.1
C23-C24 Bile	4	2.4	1.6	0.4	4.2		1.0	25.0
C25 Pancreas	15	9.0	1.7	0.9	2.8		3.9	26.7
C32 Larynx	6	2.7	2.2	0.8	4.8		2.1	
C33-C34 Lung	76	31.2	2.4	1.9	3.1	#	29.0	15.8
C38,C45 Mesothelioma	2	1.7	1.2	0.1	4.3		0.2	50.0
C43 Malign. melanoma	32	9.6	3.3	2.3	4.7	#	14.5	3.1
C46,C49 Soft tissue	4	1.3	3.0	0.8	7.7		1.7	
C48 Peritoneal	2	0.2	11.5	1.4	41.7	#	1.2	
C60 Penis	2	0.6	3.6	0.4	13.0		0.9	
C61 Prostate	219	76.3	2.9	2.5	3.3	#	92.3	4.1
C62 Testis	5	0.7	7.4	2.4	17.3	#	2.8	
C64 Kidney	94	9.1	10.3	8.4	12.6	#	55.0	5.3
C65 Renal pelvis	20	1.0	19.6	12.0	30.2	#	12.3	
C66 Ureter	21	0.6	37.6	23.3	57.5	#	13.2	
C67 Bladder	88	10.9	8.0	6.4	9.9	#	49.9	5.7
C68 Urethra	2	0.1	19.8	2.4	71.4	#	1.2	
C70-C72 CNS cancer	5	3.5	1.4	0.5	3.4		1.0	
C73 Thyroid	7	1.7	4.2	1.7	8.7	#	3.5	
C76-C79 CUP	4	4.3	0.9	0.3	2.4		-0.2	25.0
C82-C85 NHL	32	10.0	3.2	2.2	4.5	#	14.2	9.4
C90 Mult. myeloma	6	3.2	1.9	0.7	4.0		1.8	
C91-C96 Leukaemia	8	3.9	2.0	0.9	4.0		2.6	25.0
Other primaries	10	3.7	2.7	1.3	5.0	#	4.1	30.0
Not observed	0	1.4	0.0	0.0	2.6		-0.9	
All mult. primaries	800	260.1	3.1	2.9	3.3	#	349.5	7.6

Patients	4062
Mean age at second malignancy (years)	70.0
Person-years	15449
Mean observation time (years)	3.8
Median observation time (years)	2.8

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 %
C16	Stomach	8	4.4	1.8	0.8	3.6		3.9	
C18	Colon	21	12.1	1.7	1.1	2.7	#	9.7	4.8
C19-C20	Rectum	10	5.2	1.9	0.9	3.5		5.2	10.0
C22	Liver	2	1.3	1.5	0.2	5.6		0.8	50.0
C23-C24	Bile	8	1.8	4.5	2.0	8.9	#	6.8	25.0
C25	Pancreas	11	5.1	2.2	1.1	3.9	#	6.4	27.3
C33-C34	Lung	25	7.7	3.3	2.1	4.8	#	18.8	8.0
C43	Malign. melanoma	3	3.6	0.8	0.2	2.4		-0.6	
C46,C49	Soft tissue	2	0.6	3.2	0.4	11.6		1.5	
C50	Breast	64	32.3	2.0	1.5	2.5	#	34.4	7.8
C53	Cervix uteri	4	1.4	2.9	0.8	7.4		2.8	
C54	Corpus uteri	10	6.3	1.6	0.8	2.9		4.1	
C56	Ovary	3	4.8	0.6	0.1	1.8		-2.0	
C64	Kidney	44	2.9	15.0	10.9	20.1	#	44.7	9.1
C65	Renal pelvis	4	0.3	11.6	3.2	29.8	#	4.0	
C66	Ureter	10	0.2	61.6	29.5	113.3	#	10.7	
C67	Bladder	36	2.1	16.8	11.7	23.2	#	36.8	2.8
C73	Thyroid	13	1.8	7.3	3.9	12.5	#	12.2	
C76-C79	CUP	4	2.0	2.0	0.5	5.0		2.1	25.0
C82-C85	NHL	10	4.4	2.3	1.1	4.2	#	6.1	10.0
C91-C96	Leukaemia	4	1.8	2.2	0.6	5.8		2.4	25.0
Other primaries		7	5.0	1.4	0.6	2.9		2.2	14.3
Not observed		0	5.1	0.0	0.0	0.7	#	-5.6	
All mult. primaries		303	112.2	2.7	2.4	3.0	#	207.4	7.9

Patients	2363
Mean age at second malignancy (years)	71.8
Person-years	9197
Mean observation time (years)	3.9
Median observation time (years)	2.9

The occurrence of second malignancy is statistically significant.

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

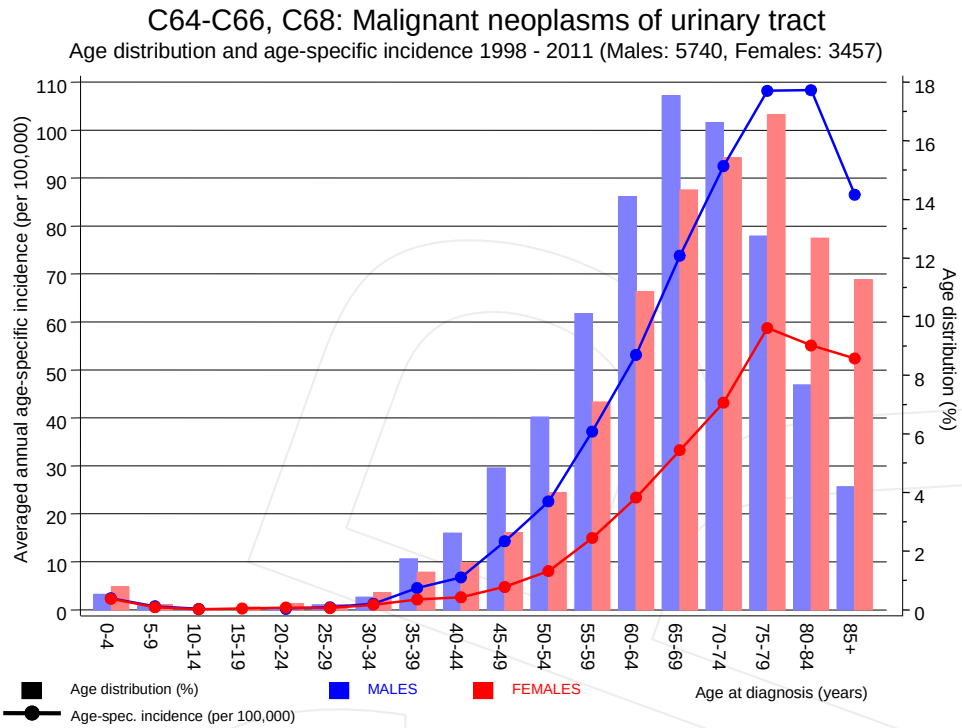


Figure 7. Age distribution and age-specific incidence

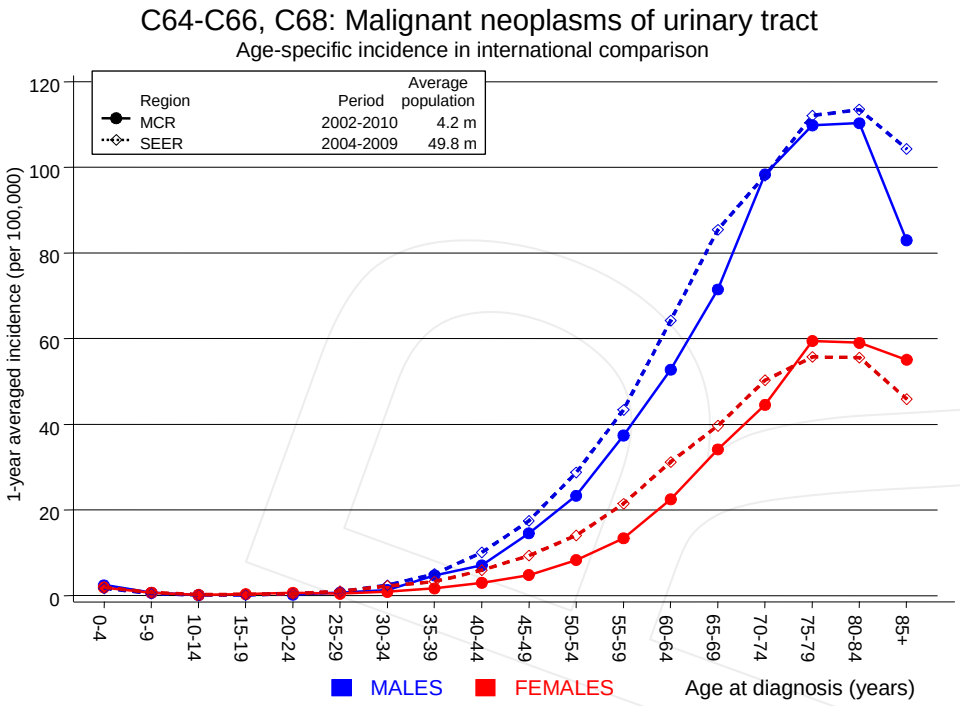


Figure 7a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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.

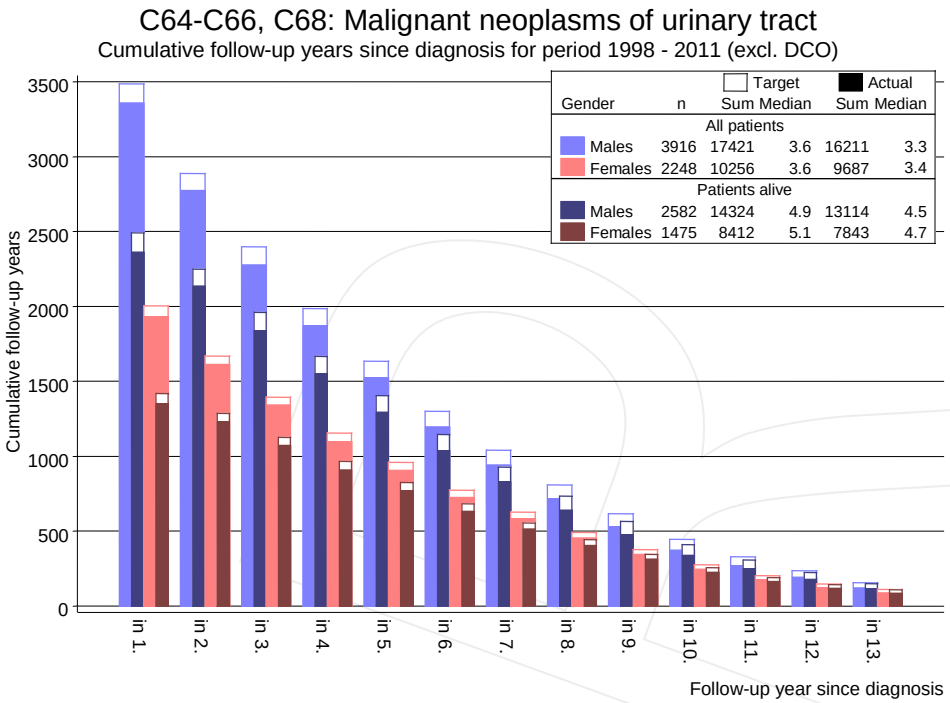
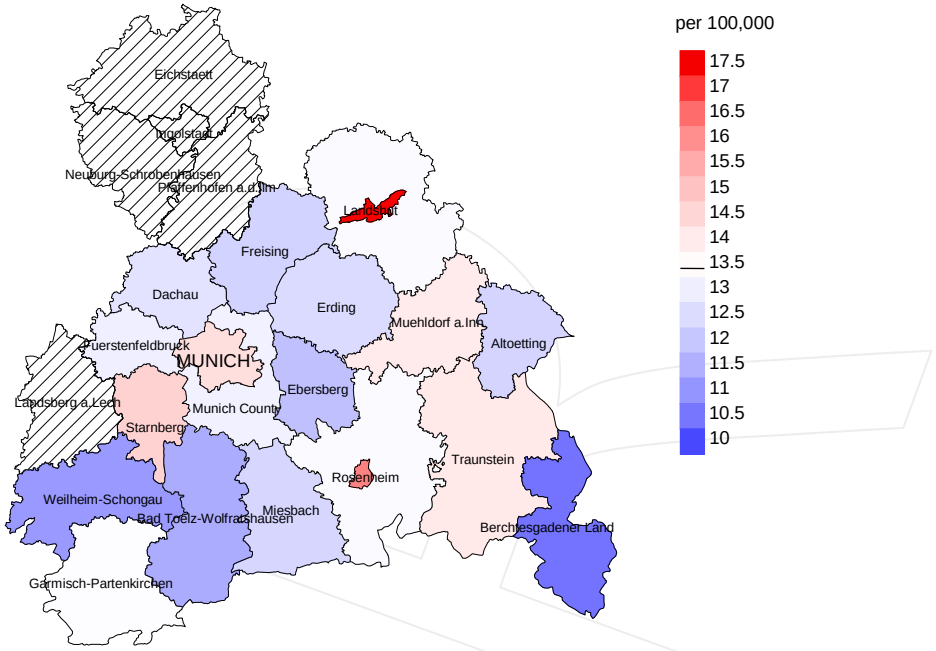


Figure 8. Cumulative follow-up years depending on time since diagnosis

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

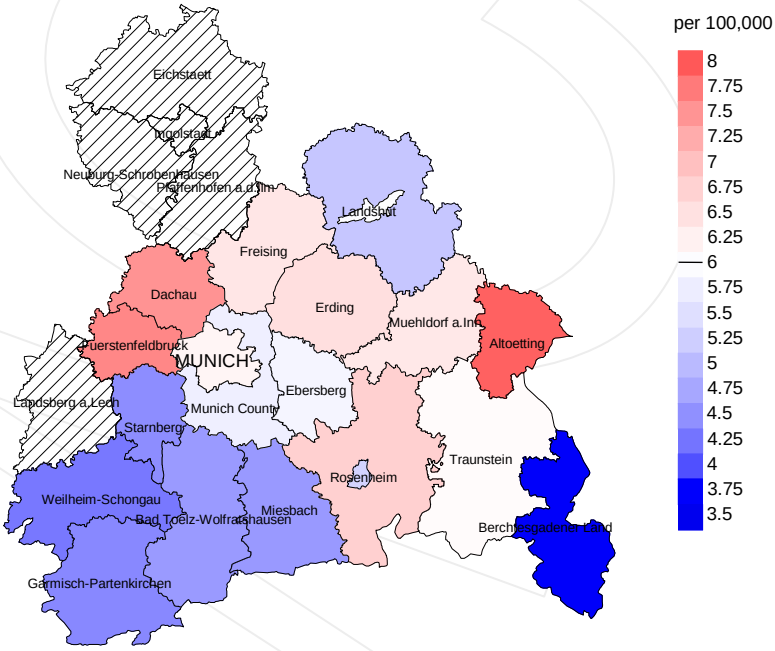
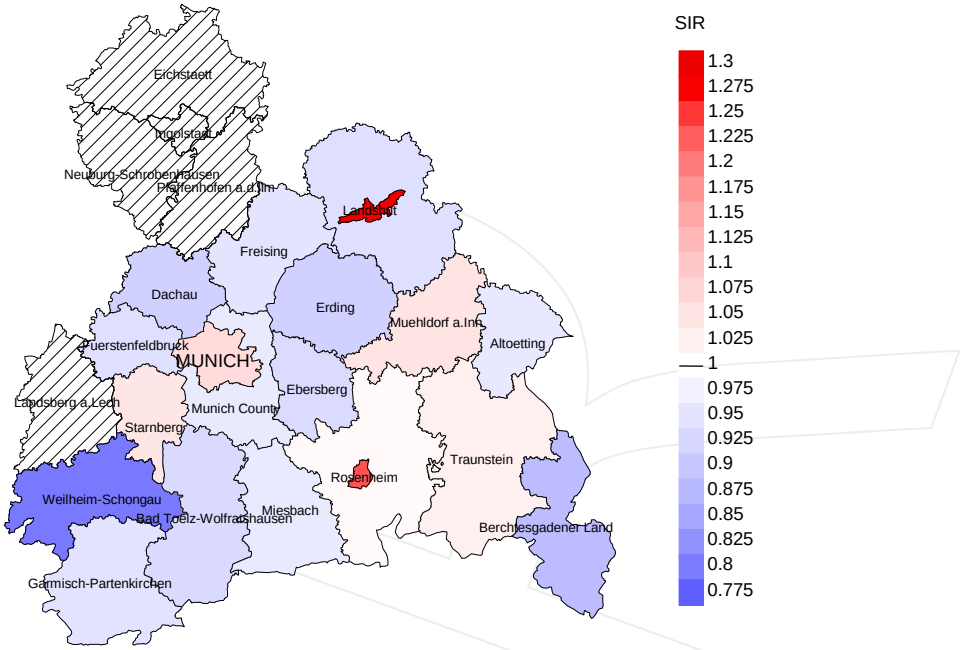


Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 13.4/100,000 WS N=2,742, females 6.0/100,000 WS N=1,608). 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 45 women were identified with newly diagnosed urinary tract cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 5.9/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 3.4 and 10.2/100,000.

Standardized incidence ratio (SIR) 2003 - 2008: Males



Standardized incidence ratio (SIR) 2003 - 2008: Females

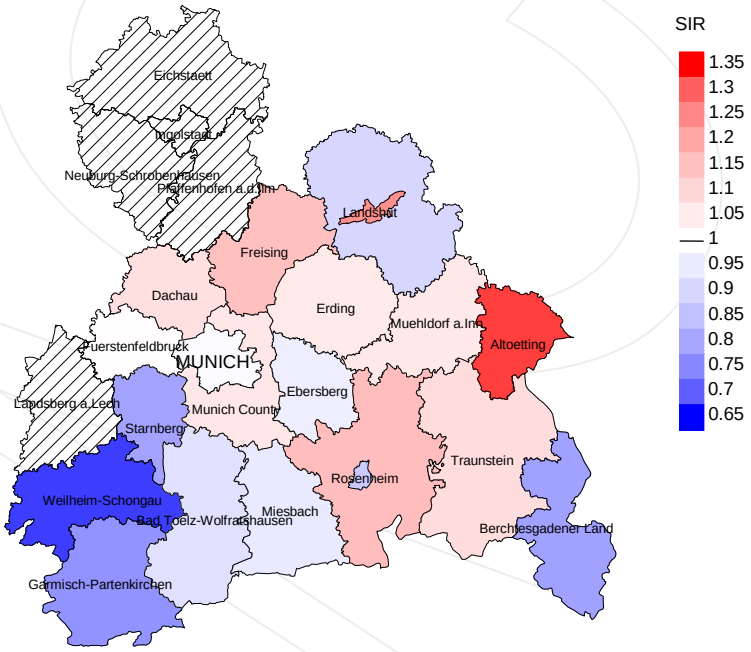


Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=2,742, females N=1,608). 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 45 women were identified with newly diagnosed urinary tract cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.96. Though, the value of this parameter may vary with an underlying probability of 99% between 0.63 and 1.39, 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	453	97.6	8.4	265	58.5	94.3
1999	442	97.5	7.5	266	60.2	94.7
2000	412	97.3	9.7	227	55.1	96.0
2001	417	97.8	10.8	241	57.8	98.8
2002	715	98.2	14.4	434	60.7	96.5
2003	700	96.7	10.7	388	55.4	98.2
2004	705	96.5	11.5	338	47.9	97.6
2005	771	96.1	5.8	333	43.2	97.3
2006	744	92.1	6.7	326	43.8	98.5
2007	852	77.0	9.3	362	42.5	98.1
2008	879	62.0	8.3	327	37.2	99.7
2009	852	63.8	8.8	309	36.3	99.0
2010	785	95.0	8.3	243	31.0	98.8
2011	631	79.7	9.0	159	25.2	96.9
1998-2011	9358	87.2	9.2	4218	45.1	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	453	251	93.6	66	14.6
1999	442	251	96.0	76	17.2
2000	412	258	95.3	66	16.0
2001	417	258	95.7	72	17.3
2002	715	377	97.3	149	20.8
2003	700	410	96.3	141	20.1
2004	705	399	96.5	129	18.3
2005	771	375	95.7	102	13.2
2006	744	418	97.6	104	14.0
2007	852	465	97.6	139	16.3
2008	879	493	99.4	136	15.5
2009	852	508	99.2	153	18.0
2010	785	543	98.3	141	18.0
2011	631	497	98.6	119	18.9
1998-2011	9358	5503	97.3	1593	17.0

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	251	65.3	34.7	80.0
1999	251	74.5	25.5	85.1
2000	258	72.1	27.9	83.7
2001	258	72.5	27.5	85.8
2002	377	71.4	28.6	85.8
2003	410	74.1	25.9	86.3
2004	399	69.9	30.1	82.1
2005	375	74.1	25.9	83.3
2006	418	71.3	28.7	78.7
2007	465	72.7	27.3	81.3
2008	493	71.6	28.4	81.6
2009	508	73.2	26.8	80.8
2010	543	68.3	31.7	78.1
2011	497	66.8	33.2	80.2
1998-2011	5503	71.2	28.8	82.0

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	163	71.3	69.6	75.5	70.4
1999	157	72.9	71.1	78.3	71.7
2000	161	72.0	69.5	78.5	71.3
2001	169	71.2	69.7	75.3	70.4
2002	218	73.5	72.9	75.1	73.4
2003	249	73.9	72.4	78.9	73.3
2004	231	73.3	72.2	76.4	73.0
2005	221	73.1	71.7	76.8	72.6
2006	259	72.4	71.1	76.1	71.8
2007	289	73.7	72.0	79.0	72.8
2008	311	74.5	73.1	78.0	73.8
2009	321	73.7	72.1	78.3	72.5
2010	326	74.3	72.9	77.4	73.3
2011	326	75.1	72.5	80.7	73.9
1998-2011	3401	73.4	71.9	77.7	72.7

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	88	79.4	76.8	82.6	78.8
1999	94	76.7	74.8	82.1	76.4
2000	97	76.2	75.3	78.4	76.3
2001	89	77.9	75.5	83.6	76.7
2002	159	76.8	75.0	80.7	75.9
2003	161	76.6	75.5	79.4	76.4
2004	168	79.2	77.8	81.9	78.8
2005	154	77.0	74.9	83.9	75.4
2006	159	77.6	76.4	80.0	76.5
2007	176	79.2	77.9	81.7	79.0
2008	182	78.1	76.4	82.7	77.1
2009	187	78.3	75.7	84.7	76.6
2010	217	79.1	76.8	84.0	77.8
2011	171	79.9	76.4	85.8	78.0
1998-2011	2102	78.1	76.2	82.4	77.1

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	115	10.4	0.41	6.1	0.38	9.4	0.41	12.5	0.45
1999	118	10.5	0.44	6.0	0.40	9.5	0.44	13.3	0.50
2000	116	10.2	0.44	5.8	0.40	9.1	0.44	12.5	0.50
2001	125	10.8	0.52	6.1	0.50	9.4	0.52	12.3	0.54
2002	160	8.6	0.38	4.5	0.34	7.3	0.38	10.2	0.41
2003	190	10.1	0.44	5.2	0.39	8.3	0.44	11.7	0.50
2004	167	8.9	0.39	4.5	0.33	7.1	0.37	9.9	0.42
2005	161	8.5	0.34	4.3	0.30	6.6	0.33	9.0	0.36
2006	191	10.0	0.43	5.0	0.38	7.6	0.41	10.3	0.45
2007	220	9.9	0.41	4.9	0.37	7.6	0.40	10.4	0.43
2008	220	9.9	0.40	4.6	0.34	7.2	0.38	10.2	0.43
2009	238	10.7	0.46	5.0	0.40	7.7	0.43	10.5	0.47
2010	223	9.9	0.46	4.4	0.39	6.9	0.43	9.8	0.48
2011	225	10.0	0.57	4.5	0.48	7.0	0.53	9.6	0.58
1998-2011	2469	9.8	0.43	4.9	0.38	7.7	0.41	10.5	0.46

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	49	4.2	0.29	1.5	0.21	2.3	0.23	3.2	0.26
1999	69	5.8	0.41	2.2	0.30	3.5	0.35	4.8	0.39
2000	70	5.8	0.48	2.2	0.39	3.4	0.42	4.8	0.46
2001	62	5.1	0.37	1.9	0.30	3.0	0.32	4.2	0.36
2002	109	5.6	0.39	2.1	0.31	3.3	0.34	4.5	0.37
2003	114	5.8	0.44	2.1	0.35	3.2	0.38	4.5	0.42
2004	112	5.7	0.43	1.8	0.31	2.9	0.34	4.2	0.39
2005	118	5.9	0.43	2.2	0.37	3.4	0.38	4.5	0.40
2006	107	5.3	0.38	1.8	0.27	2.9	0.31	4.0	0.35
2007	119	5.2	0.40	1.6	0.28	2.6	0.33	4.0	0.38
2008	133	5.7	0.42	1.9	0.31	3.0	0.34	4.2	0.38
2009	134	5.8	0.42	2.0	0.33	3.1	0.36	4.3	0.39
2010	148	6.3	0.52	2.0	0.41	3.2	0.45	4.8	0.51
2011	107	4.6	0.47	1.5	0.31	2.4	0.38	3.4	0.43
1998-2011	1451	5.5	0.42	1.9	0.32	3.0	0.35	4.2	0.39

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.%
0-4	1	0.0	0.0	1	0.0	0.0			0.0
5-9	5	0.1	0.1	2	0.1	0.1	3	0.2	0.2
10-14	0	0.0	0.1			0.1			0.2
15-19	0	0.0	0.1			0.1			0.2
20-24	3	0.1	0.2	2	0.1	0.2	1	0.1	0.3
25-29	3	0.1	0.3	1	0.0	0.2	2	0.1	0.4
30-34	2	0.0	0.3	1	0.0	0.3	1	0.1	0.5
35-39	9	0.2	0.6	7	0.3	0.5	2	0.1	0.6
40-44	26	0.6	1.2	17	0.7	1.2	9	0.6	1.2
45-49	53	1.3	2.5	41	1.6	2.8	12	0.8	2.0
50-54	114	2.8	5.3	83	3.2	6.0	31	2.1	4.1
55-59	256	6.3	11.6	200	7.7	13.7	56	3.8	7.8
60-64	378	9.3	20.8	275	10.6	24.3	103	6.9	14.7
65-69	567	13.9	34.7	402	15.5	39.9	165	11.1	25.8
70-74	715	17.5	52.2	492	19.0	58.9	223	14.9	40.7
75-79	735	18.0	70.3	456	17.6	76.5	279	18.7	59.4
80-84	667	16.3	86.6	359	13.9	90.4	308	20.6	80.0
85+	547	13.4	100.0	249	9.6	100.0	298	20.0	100.0
All ages	4081	100.0		2588	100.0		1493	100.0	

Included in the statistics are 44.7% multiple primaries in males and 34.7% 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	1		0.1	0.03	0.0		3.4	
5- 9	2	3	0.2	0.22	0.2	0.43	6.5	8.3
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24	2	1	0.1	0.67	0.1	0.14	2.5	2.3
25-29	1	2	0.1	0.11	0.1	0.33	1.1	2.0
30-34	1	1	0.1	0.04	0.1	0.05	0.6	0.5
35-39	7	2	0.3	0.07	0.1	0.04	1.9	0.4
40-44	17	9	0.8	0.11	0.4	0.16	2.2	0.9
45-49	41	12	2.1	0.14	0.6	0.13	2.7	0.7
50-54	83	31	5.0	0.21	1.8	0.22	2.9	1.2
55-59	200	56	12.8	0.34	3.4	0.23	3.9	1.4
60-64	275	103	18.1	0.33	6.4	0.27	3.6	1.8
65-69	402	165	29.5	0.39	11.1	0.33	3.9	2.3
70-74	492	223	47.7	0.50	18.1	0.41	4.4	2.8
75-79	456	279	67.5	0.62	28.1	0.47	4.2	3.1
80-84	359	308	88.4	0.81	38.7	0.70	4.1	3.2
85+	249	298	89.8	1.03	40.1	0.76	3.5	2.6
All ages	2588	1493					3.9	2.5
Mortality								
Raw			10.3	0.44	5.7	0.43		
WS			5.1	0.39	2.0	0.32		
ES			8.0	0.43	3.1	0.36		
BRD-S			11.0	0.47	4.4	0.40		
PYLL-70								
per 100,000			39.6		14.9			
ES			35.3		13.0			
AYLL-70			8.7		8.7			

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 ←%
C09-C10 Oropharynx	17	1.1	9	52.9	2	11.8	6	35.3
C15 Oesophagus	19	1.2	4	21.1	1	5.3	14	73.7
C16 Stomach	50	3.2	16	32.0	3	6.0	31	62.0
C18 Colon	116	7.5	51	44.0	18	15.5	47	40.5
C19-C20 Rectum	52	3.4	16	30.8	14	26.9	22	42.3
C22 Liver	30	1.9	4	13.3	7	23.3	19	63.3
C23-C24 Bile	12	0.8	2	16.7	2	16.7	8	66.7
C25 Pancreas	31	2.0	1	3.2	6	19.4	24	77.4
C32 Larynx	15	1.0	10	66.7	1	6.7	4	26.7
C33-C34 Lung	159	10.3	35	22.0	24	15.1	100	62.9
C43 Malign. melanoma	31	2.0	18	58.1	2	6.5	11	35.5
C44 Skin others	37	2.4	19	51.4	2	5.4	16	43.2
C46,C49 Soft tissue	11	0.7	4	36.4	2	18.2	5	45.5
C61 Prostate	287	18.5	129	44.9	43	15.0	115	40.1
C64 Kidney	82	5.3			22	26.8	60	73.2
C65 Renal pelvis	35	2.3			10	28.6	25	71.4
C66 Ureter	35	2.3			21	60.0	14	40.0
C67 Bladder	302	19.5	146	48.3	49	16.2	107	35.4
C70-C72 CNS cancer	25	1.6	7	28.0	4	16.0	14	56.0
C73 Thyroid	10	0.6	2	20.0			8	80.0
C76-C79 CUP	19	1.2	12	63.2	2	10.5	5	26.3
C82-C85 NHL	47	3.0	13	27.7	8	17.0	26	55.3
C90 Mult. myeloma	27	1.7	8	29.6	5	18.5	14	51.9
C91-C96 Leukaemia	25	1.6	5	20.0	2	8.0	18	72.0
Other primaries	75	4.8	29	38.7	8	10.7	38	50.7
All mult. primaries	1549	100.0	540	34.9	258	16.7	751	48.5

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 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 ←%
C16	Stomach	24	3.4	6	25.0	7	29.2	11	45.8
C18	Colon	50	7.1	17	34.0	11	22.0	22	44.0
C19-C20	Rectum	19	2.7	6	31.6	3	15.8	10	52.6
C22	Liver	9	1.3	2	22.2	3	33.3	4	44.4
C23-C24	Bile	11	1.6			3	27.3	8	72.7
C25	Pancreas	31	4.4	2	6.5	5	16.1	24	77.4
C33-C34	Lung	55	7.8	8	14.5	7	12.7	40	72.7
C43	Malign. melanoma	13	1.8	7	53.8	1	7.7	5	38.5
C44	Skin others	11	1.6	6	54.5	1	9.1	4	36.4
C50	Breast	130	18.4	71	54.6	11	8.5	48	36.9
C53	Cervix uteri	22	3.1	16	72.7	1	4.5	5	22.7
C54	Corpus uteri	21	3.0	13	61.9	4	19.0	4	19.0
C56	Ovary	21	3.0	12	57.1	5	23.8	4	19.0
C64	Kidney	34	4.8			10	29.4	24	70.6
C65	Renal pelvis	11	1.6			2	18.2	9	81.8
C66	Ureter	16	2.3			11	68.8	5	31.3
C67	Bladder	108	15.3	35	32.4	17	15.7	56	51.9
C70-C72	CNS cancer	15	2.1	2	13.3	3	20.0	10	66.7
C73	Thyroid	20	2.8	10	50.0	1	5.0	9	45.0
C76-C79	CUP	13	1.8	3	23.1	1	7.7	9	69.2
C82-C85	NHL	18	2.5	6	33.3	5	27.8	7	38.9
C91-C96	Leukaemia	15	2.1	2	13.3	3	20.0	10	66.7
Other primaries		40	5.7	13	32.5	8	20.0	19	47.5
All mult. primaries		707	100.0	237	33.5	123	17.4	347	49.1

Multiple primaries with number of cases n<7 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	2	1	0.2	0.22	0.1	0.20	6.9	3.0
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24	2	1	0.1	0.67	0.1	0.14	2.7	2.6
25-29	1	2	0.1	0.11	0.1	0.33	1.2	2.1
30-34	1	1	0.1	0.05	0.1	0.06	0.6	0.6
35-39	7	2	0.3	0.07	0.1	0.05	2.1	0.5
40-44	14	7	0.6	0.10	0.3	0.15	2.0	0.8
45-49	38	8	2.0	0.15	0.4	0.10	2.7	0.5
50-54	57	25	3.4	0.18	1.5	0.22	2.3	1.1
55-59	150	44	9.6	0.31	2.7	0.22	3.4	1.3
60-64	219	71	14.4	0.34	4.4	0.24	3.4	1.5
65-69	299	138	21.9	0.40	9.3	0.35	3.5	2.4
70-74	332	155	32.2	0.51	12.6	0.38	3.8	2.4
75-79	305	214	45.1	0.63	21.5	0.45	3.6	3.0
80-84	224	241	55.1	0.81	30.3	0.75	3.4	3.1
85+	169	238	60.9	1.08	32.0	0.77	3.1	2.6
All ages	1820	1148					3.4	2.3
Mortality								
Raw			7.2	0.42	4.4	0.42		
WS			3.7	0.37	1.5	0.31		
ES			5.7	0.40	2.4	0.34		
BRD-S			7.7	0.45	3.3	0.39		
PYLL-70								
per 100,000			30.9		11.2			
ES			27.4		9.6			
AYLL-70			8.9		8.5			

* 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	2	1	0.2	0.22	0.1	0.20	7.1	3.1
10-14			0.0		0.0			
15-19			0.0		0.0			
20-24	1	1	0.1	0.33	0.1	0.14	1.4	2.8
25-29	1	2	0.1	0.11	0.1	0.33	1.3	2.2
30-34	1		0.1	0.05	0.0		0.6	
35-39	7		0.3	0.08	0.0		2.1	
40-44	11	5	0.5	0.09	0.2	0.11	1.7	0.6
45-49	35	6	1.8	0.15	0.3	0.08	2.7	0.4
50-54	49	23	2.9	0.17	1.3	0.21	2.2	1.2
55-59	129	36	8.3	0.30	2.2	0.20	3.2	1.2
60-64	179	56	11.8	0.32	3.5	0.22	3.1	1.4
65-69	228	115	16.7	0.36	7.7	0.34	3.1	2.3
70-74	246	113	23.9	0.46	9.2	0.31	3.3	2.1
75-79	210	172	31.1	0.52	17.3	0.40	3.1	2.8
80-84	145	187	35.7	0.60	23.5	0.65	2.7	2.9
85+	111	187	40.0	0.76	25.2	0.64	2.5	2.3
All ages	1355	904					2.9	2.1
Mortality								
Raw			5.4	0.36	3.4	0.36		
WS			2.8	0.32	1.2	0.27		
ES			4.3	0.34	1.9	0.30		
BRD-S			5.6	0.38	2.6	0.34		
PYLL-70								
per 100,000			26.2		9.0			
ES			23.2		7.8			
AYLL-70			9.3		8.3			

* See corresponding tables with multiple primaries.

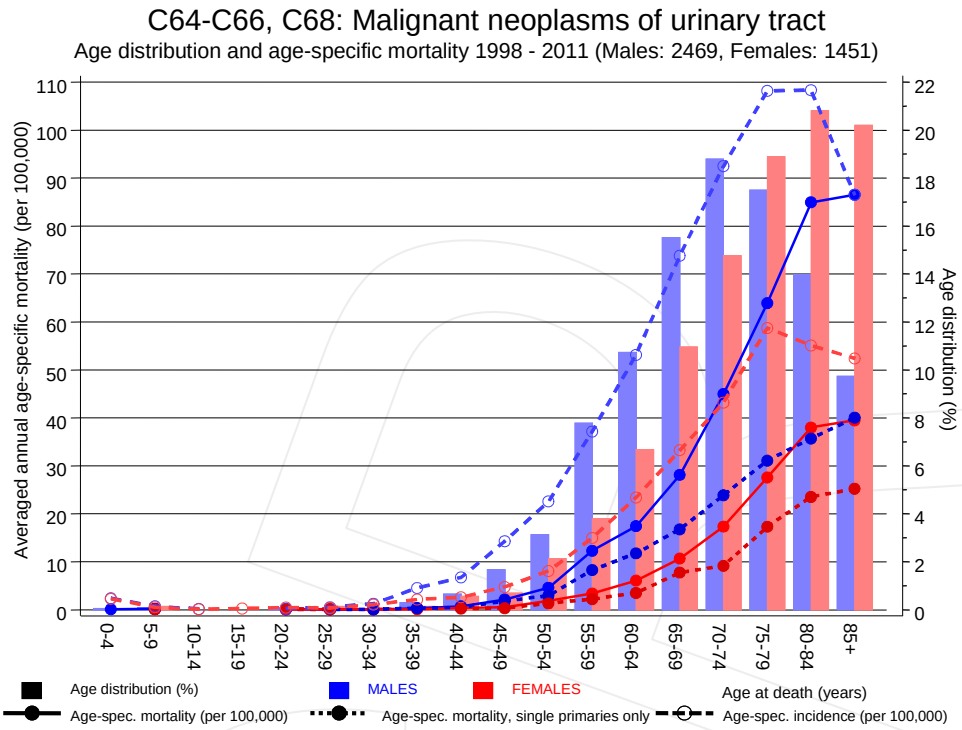
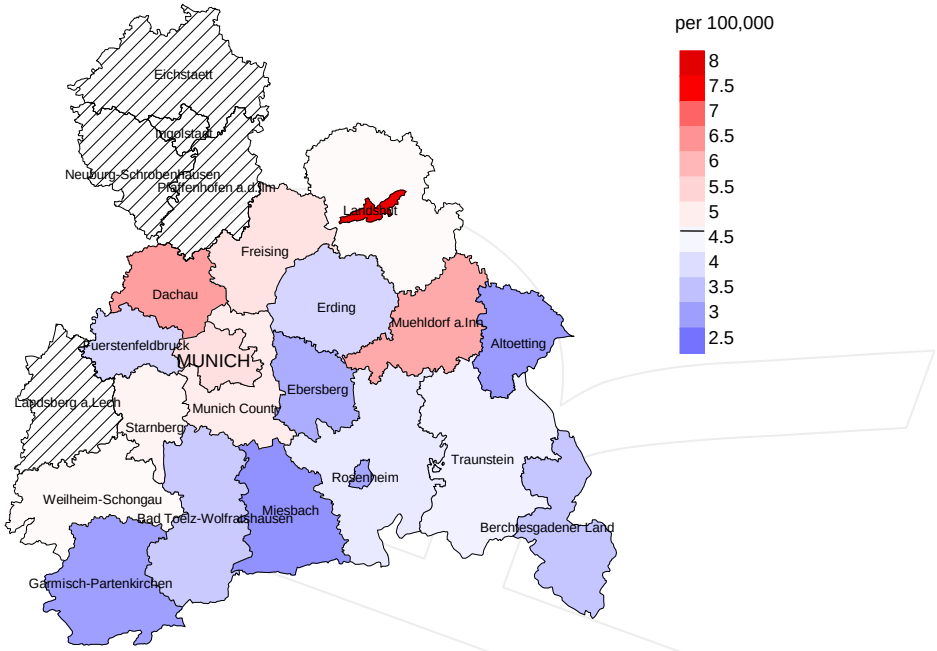


Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

The difference between age at diagnosis (Table 3) and age at urinary tract 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

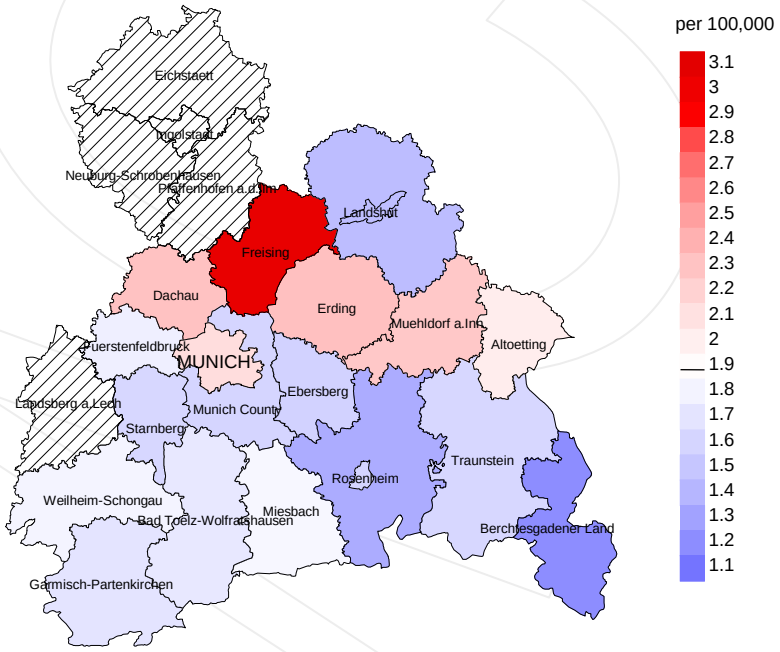
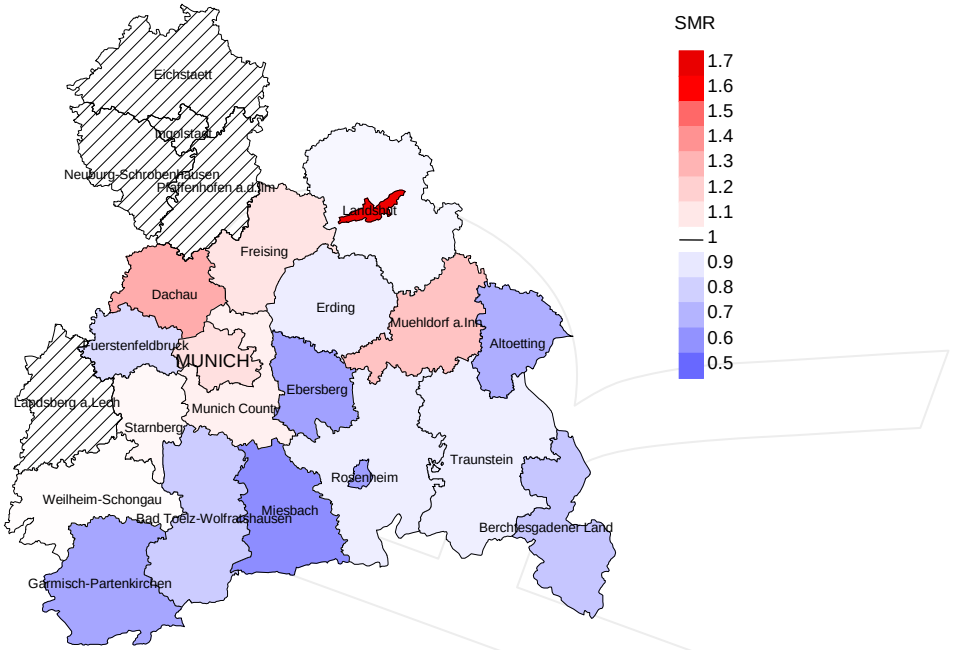


Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2003 to 2008. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (males 4.7/100,000 WS N=1,091, females 1.9/100,000 WS N=674). 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 17 women died from urinary tract cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 1.6/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.7 and 3.2/100,000.

Standardized mortality ratio (SMR) 2003 - 2008: Males



Standardized mortality ratio (SMR) 2003 - 2008: Females

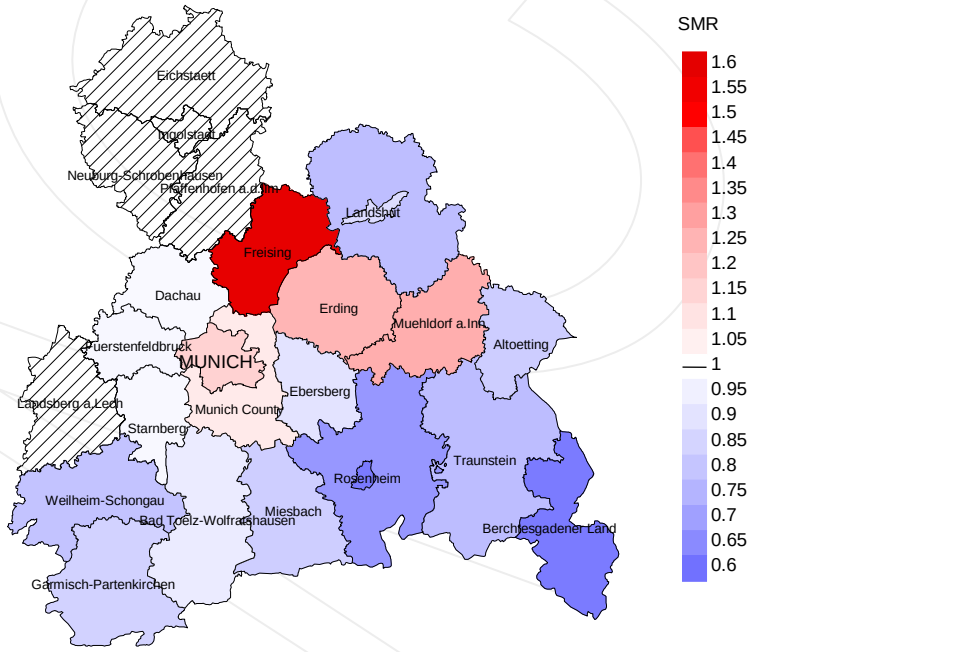


Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2003 to 2008. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (males N=1,091, females N=674). 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 17 women died from urinary tract cancer. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.90. Though, the value of this parameter may vary with an underlying probability of 99% between 0.44 and 1.63, 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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