Munich Cancer Registry

- Survival
- Selection Matrix
- Homepage
- *Deutsch*

ICD-10 C61: Prostate cancer

Incidence and Mortality

Year of diagnosis	1998-2014
Patients	46,512
Diseases	46,513
Creation date	04/13/2016
Export date	12/23/2015
Population (males)	2.28 m

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

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

http://www.tumorregister-muenchen.de/en/facts/base/bC61__E-ICD-10-C61-Prostate-cancer-incidence-and-mortality.pdf

Global Statements about the statistics on the Internet −
Baseline Statistics (grey button), **Survival** (red button)

In these analyses, the clinics and physicians of Upper Bavaria and the city and county of Landshut[#], with a total of 4.64 million inhabitants, account for the frequency of cancer diseases[##] and the achieved long term results. Additionally, the long term survival evaluated by the Munich Cancer Registry (MCR) is compared with the results of the population-based registry in the USA (SEER), which is useful for checking the consistency of the data on an international level.

In comparing several tables, inconsistent figures may be detected. This is based on the fact that different patient cohorts are included in the base calculation, for example when proportions of multiple tumors or DCO-cases[###] are concerned. In other cases the individual tumor diagnosis is the basis for calculation, for example with incidence.

The foot notes describe the currentness of the data. The baseline statistics and survival data are updated annually. This yearly analysis comprises the Annual Report of the MCR.

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 2016

[#] 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).

[##] 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.

ICD-10 codes (ICD-10 2015) used for specifying cancer site

Code	Description
C61	Malignant neoplasm of prostate

INCIDENCE

Table 1

All patients with invasive cancer by year of diagnosis, proportions of DCO, multiple primaries, deaths, and active follow-up (incl. DCO)

Year of diagnosis	Cases n	DCO cases n	Prop. DCO %	Prop. mult. primaries %	Prop. deaths %	Prop. actively followed %
1998	1552	145	9.3	27.0	66.5	98.1
1999	1509	109	7.2	26.6	61.6	98.3
2000	1695	138	8.1	24.7	57.8	98.0
2001	1772	109	6.2	26.5	51.5	97.4
2002	3351	310	9.3	25.8	50.9	96.4 #
2003	3297	228	6.9	26.5	46.4	96.1
2004	3231	223	6.9	24.8	42.3	95.8
2005	3160	195	6.2	23.4	38.6	94.1
2006	3064	180	5.9	24.6	36.4	88.5
2007	3614	239	6.6	23.4	34.1	66.3 #
2008	3294	196	6.0	23.2	31.6	60.5
2009	3039	169	5.6	24.3	29.8	60.5
2010	2935	191	6.5	21.9	26.5	59.9
2011	3163	189	6.0	20.3	21.8	57.8
2012	3238	159	4.9	19.1	16.1	61.7
2013	2645	149	5.6	17.8	14.4	99.2
2014	1954	150	7.7	16.6	10.6	97.0 ##
1998–2014	46513	3079	6.6	23.2	35.6	81.5

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

Please be aware that data of recent annual patient cohorts may not yet be fully processed. The years under evaluation can be found in the respective headings.

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002,
and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Cases n	Incidence raw	Incidence WS	Incidence ES	Incidence BRD-S
1998	1552	140.1	83.1	128.0	173.7
1999	1509	134.8	78.7	120.0	158.1
2000	1695	148.8	85.5	130.9	173.8
2001	1772	152.9	87.1	133.1	175.2
2002	3351	179.9	98.3	149.9	196.1
2003	3297	175.9	95.0	143.6	186.4
2004	3231	171.7	90.9	136.3	176.0
2005	3160	166.8	86.4	129.8	168.1
2006	3064	160.0	81.6	122.5	158.0
2007	3614	163.2	83.5	124.7	159.6
2008	3294	148.0	73.1	109.6	141.8
2009	3039	136.2	67.1	99.9	127.6
2010	2935	130.2	63.8	95.2	121.4
2011	3163	138.4	66.3	99.1	127.8
2012	3238	141.7	68.2	101.9	131.4
2013	2645	115.8	55.1	83.0	107.9
2014	1954	85.5	42.2	62.9	79.4
1998-2014	46513	145.3	74.3	111.5	143.9

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

Table 3

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

Year of diagnosis	Cases n	Mean	Std. dev.	Min.	Max.	10%	25%	Median 50%	75%	90%
1998	1552	70.7	9.7	47.0	99.8	58.3	63.3	70.2	77.7	84.1
1999	1509	70.1	9.5	43.0	99.5	58.2	62.9	69.9	76.3	83.7
2000	1695	70.3	9.3	40.6	97.8	58.8	63.4	69.8	76.6	83.2
2001	1772	70.0	9.2	43.6	100	58.6	63.1	69.8	76.3	82.0
2002	3351	70.6	9.5	42.6	102	59.1	63.7	70.0	76.7	83.4
2003	3297	70.1	9.2	35.2	101	58.9	63.7	69.3	75.9	82.2
2004	3231	70.0	9.2	40.0	100	59.2	63.8	69.0	76.0	82.3
2005	3160	70.1	9.1	38.4	101	58.9	64.2	69.3	76.1	82.4
2006	3064	70.4	8.9	41.6	98.6	59.5	64.7	69.5	76.1	82.8
2007	3614	70.3	9.2	37.6	99.9	59.1	64.5	69.5	76.0	82.4
2008	3294	70.6	9.0	25.1	101	59.5	65.4	70.3	76.0	82.5
2009	3039	70.4	9.0	43.2	105	59.3	65.1	70.1	75.7	82.3
2010	2935	70.8	9.2	38.4	102	59.4	65.0	70.6	76.2	83.0
2011	3163	71.1	9.3	40.0	109	59.5	65.7	71.2	76.4	83.0
2012	3238	71.0	8.8	2.7	100	59.6	65.5	71.3	76.2	82.2
2013	2645	71.0	9.3	42.4	103	58.6	65.1	71.6	76.6	82.5
2014	1954	70.5	9.6	44.0	104	57.9	64.4	70.8	76.3	83.0
1998-2014	46513	70.5	9.2	2.7	109	59.1	64.4	70.2	76.3	82.7

Table 4

Age distribution by 5-year age group for period 2007-2014
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%
0-4	1	0.0	0.0
5-9	0	0.0	0.0
10-14	0	0.0	0.0
15-19	0	0.0	0.0
20-24	0	0.0	0.0
25-29	1	0.0	0.0
30-34	0	0.0	0.0
35-39	7	0.0	0.0
40-44	50	0.2	0.2
45-49	279	1.2	1.4
50-54	741	3.1	4.5
55-59	1686	7.1	11.6
60-64	3113	13.0	24.6
65-69	5327	22.3	46.9
70-74	5653	23.7	70.6
75-79	3478	14.6	85.2
80-84	1975	8.3	93.4
85+	1571	6.6	100.0
All ages	23882	100.0	

Included in the statistics are 26.6% multiple primaries.

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 2007-2014

Age at diagnosis Years	Cases n	Age-spec. incidence	DCO rate n=1441 %	Prop. all cancers n=91183 %
0- 4	1	0.1	100.0	0.6
5- 9		0.0		
10-14		0.0		
15-19		0.0		
20-24		0.0		
25-29	1	0.1		0.2
30-34		0.0		
35-39	7	0.5		0.6
40-44	50	3.1		2.7
45-49	279	17.6	0.4	8.7
50-54	741	57.2		15.2
55-59	1686	158.8	0.3	23.0
60-64	3113	316.9	0.6	28.9
65-69	5327	553.7	0.7	34.1
70-74	5653	621.3	1.6	33.3
75-79	3478	631.6	4.6	27.9
80-84	1975	565.4	15.7	23.0
85+	1570	678.1	51.9	25.8
All ages	23881		6.0	26.2
Incidence				
Raw		132.2		
WS		64.8		
ES		96.7		
BRD-S		124.1		

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).

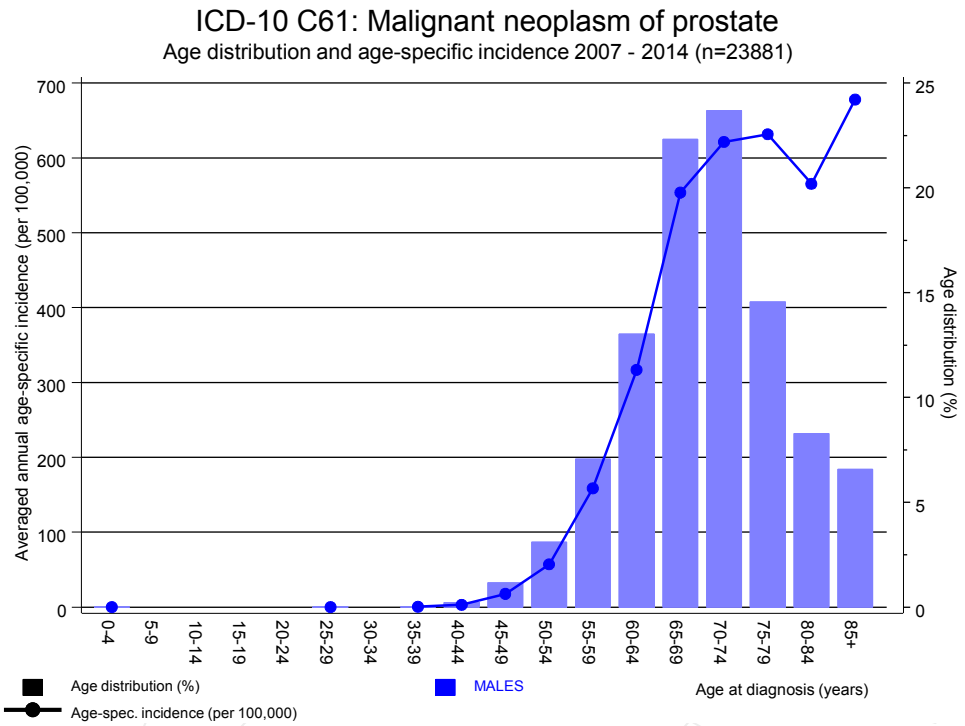

Figure 6. Age distribution and age-specific incidence

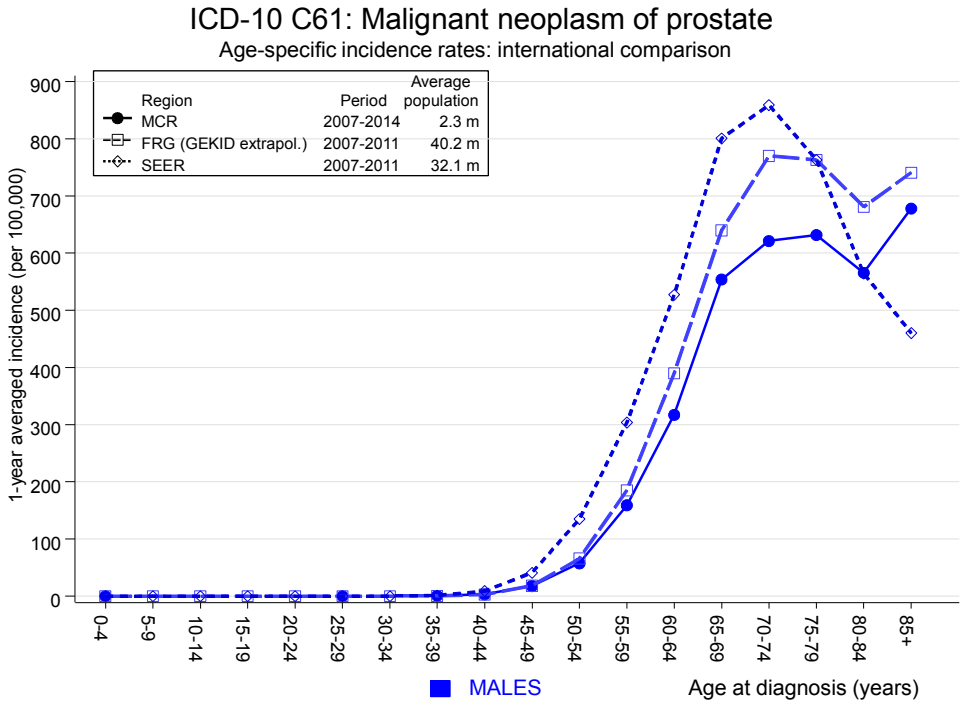

Figure 6a. Age-specific incidence in MCR registry areas compared to Germany (FRG, GEKID extrapolation) and SEER (Surveillance, Epidemiology, and End Results, USA).

Reference:

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

Surveillance, Epidemiology, and End Results (SEER) Program SEER*Stat Database: Incidence - SEER 18 Regs Research Data, released April 2014, based on the November 2013 submission. http://www.seer.cancer.gov.

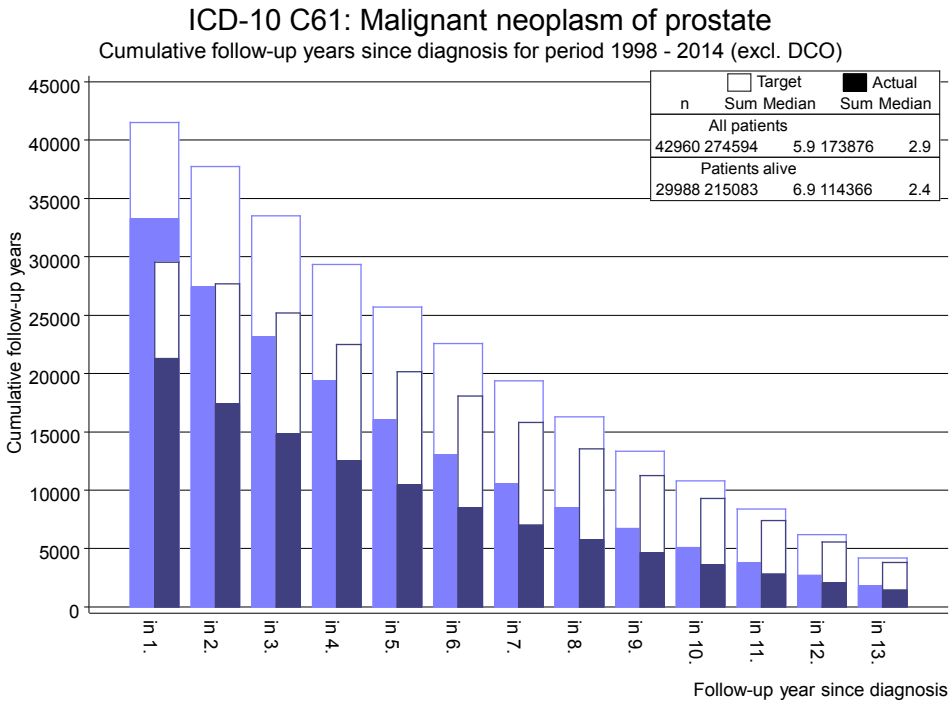

Figure 7. Cumulative follow-up years depending on time since diagnosis

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

Table 8

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998-2014

Diagnosis		Observed n	Expected n	SIR	LCL 95%	UCL 95%		EAR	DCO %
C00	Lip	9	4.3	2.1	1.0	3.9		0.3	11.1
C03-C06	Oral cavity	26	24.8	1.0	0.7	1.5		0.1	
C07-C08	Salivary gland	15	7.8	1.9	1.1	3.2	#	0.4	20.0
C09-C10	Oropharynx	39	30.0	1.3	0.9	1.8		0.5	
C12-C13	Hypopharynx	22	16.7	1.3	0.8	2.0		0.3	4.5
C15	Oesophagus	109	60.3	1.8	1.5	2.2	#	2.8	8.3
C16	Stomach	249	150.0	1.7	1.5	1.9	#	5.7	6.8
C17	Small intestine	58	17.3	3.3	2.5	4.3	#	2.3	3.4
C18	Colon	659	361.4	1.8	1.7	2.0	#	17.1	5.2
C19-C20	Rectum	324	191.8	1.7	1.5	1.9	#	7.6	4.3
C21	Anus/canal	17	6.9	2.5	1.4	3.9	#	0.6	
C22	Liver	112	97.9	1.1	0.9	1.4		0.8	17.0
C23-C24	Bile	46	35.4	1.3	1.0	1.7		0.6	15.2
C25	Pancreas	271	131.0	2.1	1.8	2.3	#	8.0	28.0
C30-C31	Sinuses	12	5.7	2.1	1.1	3.7	#	0.4	8.3
C32	Larynx	54	33.4	1.6	1.2	2.1	#	1.2	11.1
C33-C34	Lung	657	417.7	1.6	1.5	1.7	#	13.7	7.8
C38,C45	Mesothelioma	48	24.2	2.0	1.5	2.6	#	1.4	6.3
C40-C41	Bone	11	2.5	4.4	2.2	7.9	#	0.5	
C43	Malign. melanoma	350	141.3	2.5	2.2	2.7	#	12.0	1.1
C46,C49	Soft tissue	33	18.5	1.8	1.2	2.5	#	0.8	
C50	Breast	18	9.3	1.9	1.1	3.1	#	0.5	5.6
C60	Penis	20	8.1	2.5	1.5	3.8	#	0.7	
C62	Testis	10	4.7	2.1	1.0	3.9	#	0.3	10.0
C64	Kidney	343	121.5	2.8	2.5	3.1	#	12.7	5.0
C65	Renal pelvis	46	15.5	3.0	2.2	3.9	#	1.7	
C66	Ureter	28	8.9	3.2	2.1	4.6	#	1.1	
C67	Bladder	518	167.5	3.1	2.8	3.4	#	20.1	5.2
C68	Urethra	17	2.6	6.5	3.8	10.4	#	0.8	
C69	Eye melanoma	11	3.7	3.0	1.5	5.3	#	0.4	
C70-C72	CNS cancer	100	44.2	2.3	1.8	2.7	#	3.2	9.0
C73	Thyroid	46	19.2	2.4	1.8	3.2	#	1.5	
C76-C79	CUP	103	60.6	1.7	1.4	2.1	#	2.4	1.9
C81	Hodgkin lymphoma	11	6.7	1.6	0.8	2.9		0.2	
C82-C85	NHL	287	143.5	2.0	1.8	2.2	#	8.2	6.3
C90	Mult. myeloma	104	46.7	2.2	1.8	2.7	#	3.3	9.6
C91-C96	Leukaemia	126	60.3	2.1	1.7	2.5	#	3.8	37.3
Other primaries		47	1101.8	0.0	0.0	0.1	#	-60.5	25.5
Not observed		0	1.2	0.0	0.0	3.0		-0.1	
All mult. primaries		4956	3605.3	1.4	1.3	1.4	#	77.5	7.9

Table 8

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of second primaries for period 1998–2014

Diagnosis	Observed n	Expected n	SIR	LCL 95%	UCL 95%	EAR	DCO %
Patients			43247				
Median age at second malignancy (years)			75.0				
Person-years			174219				
Mean observation time (years)			4.0				
Median observation time (years)			2.9				

The occurrence of second malignancy is statistically significant.

Observed second primaries with count 1 to 8 are pooled in category “Other primaries”

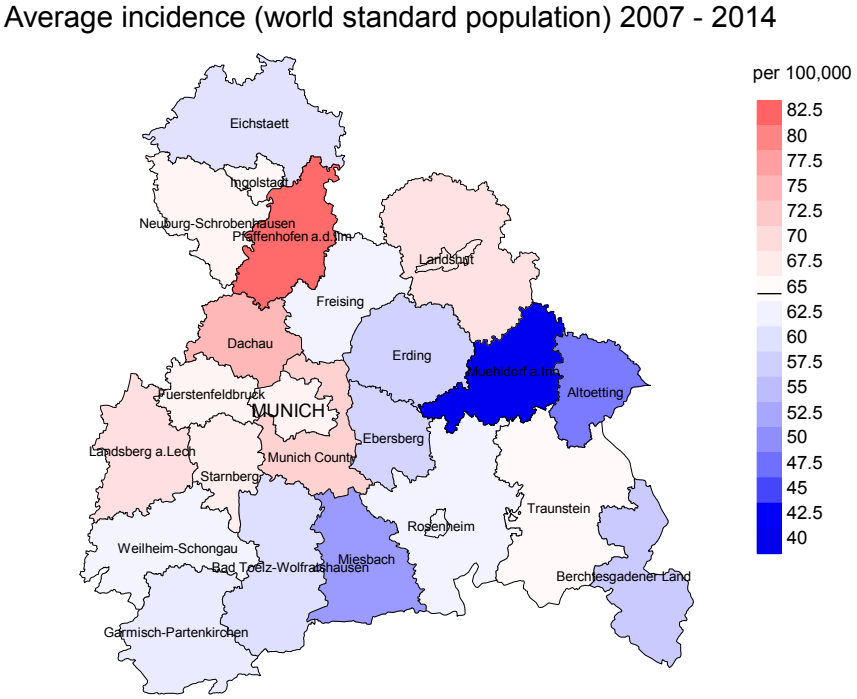

Figure 9a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual incidence rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (64.6/100,000 WS N=23,881).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,886 male residents (averaged) in the period from 2007 to 2014 a total of 643 men were identified with newly diagnosed prostate cancer. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 58.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 52.1 and 64.8/100,000.

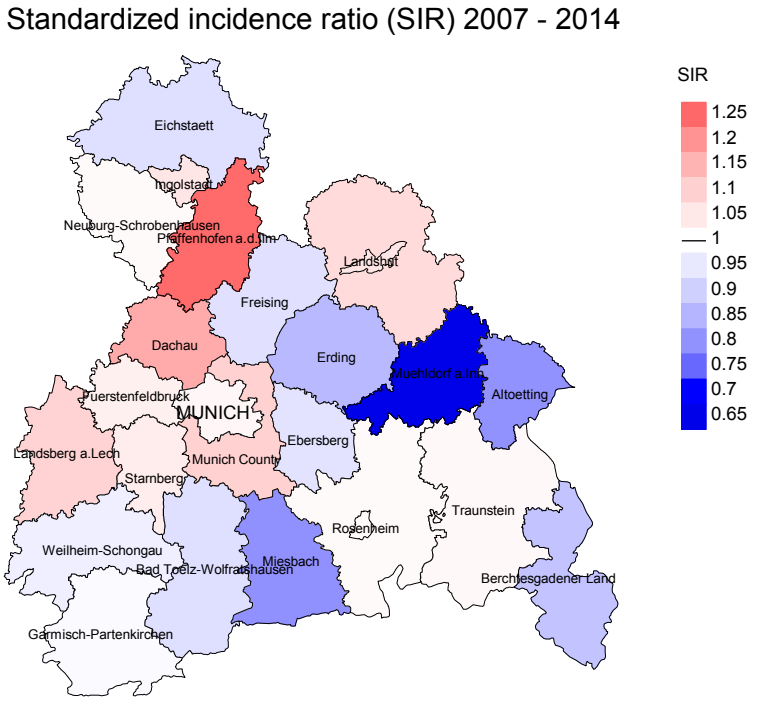

Figure 9b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SIR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (N=23,881).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,358 male residents (averaged) in the period from 2007 to 2014 a total of 643 men were identified with newly diagnosed prostate cancer. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.94. Though, the value of this parameter may vary with an underlying probability of 99% between 0.85 and 1.04, and is therefore not statistically striking.

MORTALITY

Table 10a

Patient cohorts of incident cancers by year of diagnosis, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis	Incident cases n	Prop. actively followed %	Prop. DCO %	Deaths n	Prop. deaths %	Prop. deaths with death certific. %
1998	1552	98.1	9.3	1032	66.5	96.2
1999	1509	98.3	7.2	929	61.6	96.2
2000	1695	98.0	8.1	980	57.8	95.4
2001	1772	97.4	6.2	912	51.5	96.6
2002	3351	96.4	9.3	1704	50.9	97.8
2003	3297	96.1	6.9	1530	46.4	98.0
2004	3231	95.8	6.9	1366	42.3	98.0
2005	3160	94.1	6.2	1221	38.6	98.1
2006	3064	88.5	5.9	1115	36.4	98.5
2007	3614	66.3	6.6	1232	34.1	98.2
2008	3294	60.5	6.0	1040	31.6	98.6
2009	3039	60.5	5.6	907	29.8	98.5
2010	2935	59.9	6.5	779	26.5	98.7
2011	3163	57.8	6.0	689	21.8	97.8
2012	3238	61.7	4.9	521	16.1	98.3
2013	2645	99.2	5.6	381	14.4	96.9
2014	1954	97.0	7.7	207	10.6	98.1
1998-2014	46513	81.5	6.6	16545	35.6	97.7

Table 10b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased the same year of cancer diagnosis
(incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of diagnosis/ death	Incident cases n	Deaths n	Prop. deaths with death certific. %	Deaths in same year n	Prop. deaths in same year %
1998	1552	658	94.5	196	12.6
1999	1509	614	94.0	143	9.5
2000	1695	634	95.0	161	9.5
2001	1772	666	92.3	151	8.5
2002	3351	990	95.5	372	11.1
2003	3297	1050	97.4	274	8.3
2004	3231	1045	97.3	258	8.0
2005	3160	1148	96.6	235	7.4
2006	3064	1212	97.1	233	7.6
2007	3614	1386	97.3	299	8.3
2008	3294	1502	98.7	265	8.0
2009	3039	1534	98.3	232	7.6
2010	2935	1654	98.3	255	8.7
2011	3163	1759	98.8	261	8.3
2012	3238	1814	98.3	233	7.2
2013	2645	1845	98.3	217	8.2
2014	1954	1832	98.5	201	10.3
1998–2014	46513	21343	97.4	3986	8.6

Table 10c

Annual cohorts of deaths, proportion of cancer-related and non-cancer-related deaths, and cancer recorded on death certificates (incl. DCO)
(with respect to registry area expansion from 2.51 to 3.96 m as of 2002, and from 3.96 to 4.64 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	658	55.9	44.1	80.4
1999	614	58.1	41.9	77.8
2000	634	58.7	41.3	77.9
2001	666	53.9	46.1	75.9
2002	990	60.1	39.9	77.7
2003	1050	63.4	36.6	76.2
2004	1045	59.8	40.2	74.9
2005	1148	61.3	38.7	73.5
2006	1212	61.4	38.6	75.7
2007	1386	63.2	36.8	73.9
2008	1502	59.3	40.7	70.1
2009	1534	57.5	42.5	69.8
2010	1654	59.9	40.1	71.8
2011	1759	58.9	41.1	69.6
2012	1814	59.3	40.7	70.2
2013	1845	54.6	45.4	66.8
2014	1832	53.9	46.1	66.5
1998-2014	21343	58.7	41.3	72.1

Table 11

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

Year of death	Deaths n	Age at death (all causes) Years	Age at death (cancer-related) Years	Age at death (non-cancer-related) Years	Age at death (according to death certificate) Years
1998	658	80.7	78.9	82.8	80.1
1999	614	80.4	78.0	83.1	79.7
2000	634	80.7	80.1	82.7	80.8
2001	666	80.5	78.7	82.6	80.9
2002	990	79.7	78.3	81.7	79.5
2003	1050	79.0	77.1	82.2	78.3
2004	1045	80.3	78.2	83.0	79.5
2005	1148	80.3	78.3	83.5	79.1
2006	1212	79.6	78.1	82.0	78.8
2007	1386	79.8	78.4	82.2	79.0
2008	1502	80.0	77.8	83.0	78.7
2009	1534	80.5	78.3	83.2	79.6
2010	1654	80.4	78.8	82.9	79.6
2011	1759	81.1	79.2	83.4	80.0
2012	1814	81.1	78.9	83.5	79.8
2013	1845	81.7	79.7	83.8	80.6
2014	1832	82.0	79.3	84.4	80.7
1998–2014	21343	80.6	78.6	83.2	79.6

By 2010, life expectancy at birth was 77.5 years for boys and 82.6 years for girls.

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 12

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

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	368	33.2	0.24	18.1	0.22	31.4	0.25	48.0	0.28
1999	357	31.9	0.24	17.0	0.22	29.5	0.25	44.7	0.28
2000	372	32.7	0.22	17.0	0.20	30.1	0.23	45.9	0.26
2001	359	31.0	0.20	16.0	0.18	28.4	0.21	43.0	0.25
2002	595	31.9	0.18	15.7	0.16	27.1	0.18	40.0	0.20
2003	666	35.5	0.20	17.0	0.18	29.2	0.20	43.8	0.24
2004	625	33.2	0.19	15.2	0.17	26.3	0.19	40.0	0.23
2005	704	37.2	0.22	16.3	0.19	28.4	0.22	43.8	0.26
2006	744	38.9	0.24	16.9	0.21	29.2	0.24	43.9	0.28
2007	876	39.5	0.24	16.9	0.20	29.1	0.23	43.8	0.27
2008	891	40.0	0.27	16.4	0.23	28.2	0.26	42.6	0.30
2009	882	39.5	0.29	15.9	0.24	27.1	0.27	40.5	0.32
2010	991	44.0	0.34	17.0	0.27	29.3	0.31	43.9	0.36
2011	1036	45.3	0.33	16.9	0.25	29.4	0.30	44.4	0.35
2012	1075	47.1	0.33	17.4	0.26	30.3	0.30	46.0	0.35
2013	1008	44.1	0.38	16.3	0.30	28.6	0.34	43.2	0.40
2014	987	43.2	0.51	16.2	0.38	28.2	0.45	42.2	0.53
1998-2014	12536	39.2	0.27	16.5	0.22	28.7	0.26	43.3	0.30

Table 13

Age distribution of age at death (cancer-related) for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	%	Cum.%
25-29	1	0.0	0.0
30-34	0	0.0	0.0
35-39	0	0.0	0.0
40-44	3	0.0	0.1
45-49	16	0.2	0.3
50-54	33	0.4	0.7
55-59	117	1.5	2.2
60-64	329	4.2	6.4
65-69	786	10.1	16.6
70-74	1356	17.5	34.1
75-79	1634	21.1	55.2
80-84	1671	21.6	76.7
85+	1802	23.3	100.0
All ages	7748	100.0	

Included in the statistics are 26.6% multiple primaries.

Table 14

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**incl. multiple primaries**)

Age at death Years	Cases n	Age-spec. mortality	MI-index	Prop. all cancers %
0- 4		0.0		
5- 9		0.0		
10-14		0.0		
15-19		0.0		
20-24		0.0		
25-29	1	0.1	1.00	1.6
30-34		0.0		
35-39		0.0		
40-44	3	0.2	0.06	0.7
45-49	16	1.0	0.06	1.6
50-54	33	2.5	0.04	1.8
55-59	117	11.0	0.07	3.8
60-64	329	33.5	0.11	6.9
65-69	786	81.7	0.15	11.0
70-74	1356	149.0	0.24	14.8
75-79	1634	296.7	0.47	19.2
80-84	1671	478.4	0.85	22.6
85+	1802	778.3	1.15	29.8
All ages	7748			15.5
Mortality				
Raw		42.9	0.32	
WS		16.7	0.26	
ES		28.8	0.30	
BRD-S		43.4	0.35	
PYLL-70				
per 100,000		43.4		
ES		36.9		
AYLL-70		5.4		

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

Table 15

Multiple primaries in deaths in period 1998–2014

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C15	Oesophagus	120	1.8	20	16.7	7	5.8	93	77.5
C16	Stomach	300	4.4	64	21.3	24	8.0	212	70.7
C18	Colon	708	10.4	257	36.3	46	6.5	405	57.2
C19–C20	Rectum	395	5.8	145	36.7	35	8.9	215	54.4
C22	Liver	158	2.3	13	8.2	5	3.2	140	88.6
C23–C24	Bile	68	1.0	9	13.2	4	5.9	55	80.9
C25	Pancreas	348	5.1	24	6.9	16	4.6	308	88.5
C32	Larynx	79	1.2	40	50.6	5	6.3	34	43.0
C33–C34	Lung	878	12.9	97	11.0	56	6.4	725	82.6
C43	Malign. melanoma	306	4.5	151	49.3	12	3.9	143	46.7
C44	Skin others	384	5.6	111	28.9	16	4.2	257	66.9
C64	Kidney	303	4.4	149	49.2	40	13.2	114	37.6
C67	Bladder	1200	17.6	492	41.0	308	25.7	400	33.3
C70–C72	CNS cancer	160	2.3	24	15.0	5	3.1	131	81.9
C76–C79	CUP	143	2.1	17	11.9	16	11.2	110	76.9
C82–C85	NHL	279	4.1	88	31.5	39	14.0	152	54.5
C90	Mult. myeloma	129	1.9	27	20.9	7	5.4	95	73.6
C91–C96	Leukaemia	237	3.5	17	7.2	16	6.8	204	86.1
Other primaries		635	9.3	201	31.7	58	9.1	376	59.2
All mult. primaries		6830	100.0	1946	28.5	715	10.5	4169	61.0

Multiple primaries with number of cases 1 to 59 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 2007-2014
(**First primaries only** *)

Age at death Years	Cases n	Age-spec. mortality	MI-index	Prop. all cancers %
0- 4		0.0		
5- 9		0.0		
10-14		0.0		
15-19		0.0		
20-24		0.0		
25-29		0.0		
30-34		0.0		
35-39		0.0		
40-44	2	0.1	0.04	0.5
45-49	10	0.6	0.04	1.1
50-54	26	2.0	0.04	1.6
55-59	91	8.6	0.06	3.5
60-64	266	27.1	0.10	6.8
65-69	623	64.8	0.13	11.0
70-74	1108	121.8	0.23	15.9
75-79	1337	242.8	0.47	21.4
80-84	1384	396.2	0.90	25.9
85+	1503	649.2	1.21	34.1
All ages	6350			16.5
Mortality				
Raw		35.2	0.31	
WS		13.6	0.24	
ES		23.6	0.28	
BRD-S		35.6	0.34	
PYLL-70				
per 100,000		33.9		
ES		28.8		
AYLL-70		5.3		

* See corresponding tables with multiple primaries.

Table 17

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2014
(**Single primaries only** *)

Age at death Years	Cases n	Age-spec. mortality	MI-index	Prop. all cancers %
0- 4		0.0		
5- 9		0.0		
10-14		0.0		
15-19		0.0		
20-24		0.0		
25-29		0.0		
30-34		0.0		
35-39		0.0		
40-44	1	0.1	0.02	0.3
45-49	10	0.6	0.04	1.2
50-54	24	1.9	0.04	1.7
55-59	79	7.4	0.05	3.4
60-64	204	20.8	0.08	6.0
65-69	421	43.8	0.10	8.9
70-74	726	79.8	0.17	12.8
75-79	833	151.3	0.33	17.2
80-84	896	256.5	0.64	22.0
85+	1083	467.8	0.92	31.7
All ages	4277			13.6
Mortality				
Raw		23.7	0.23	
WS		9.3	0.18	
ES		16.1	0.21	
BRD-S		23.9	0.25	
PYLL-70				
per 100,000		26.5		
ES		22.7		
AYLL-70		5.7		

* See corresponding tables with multiple primaries.

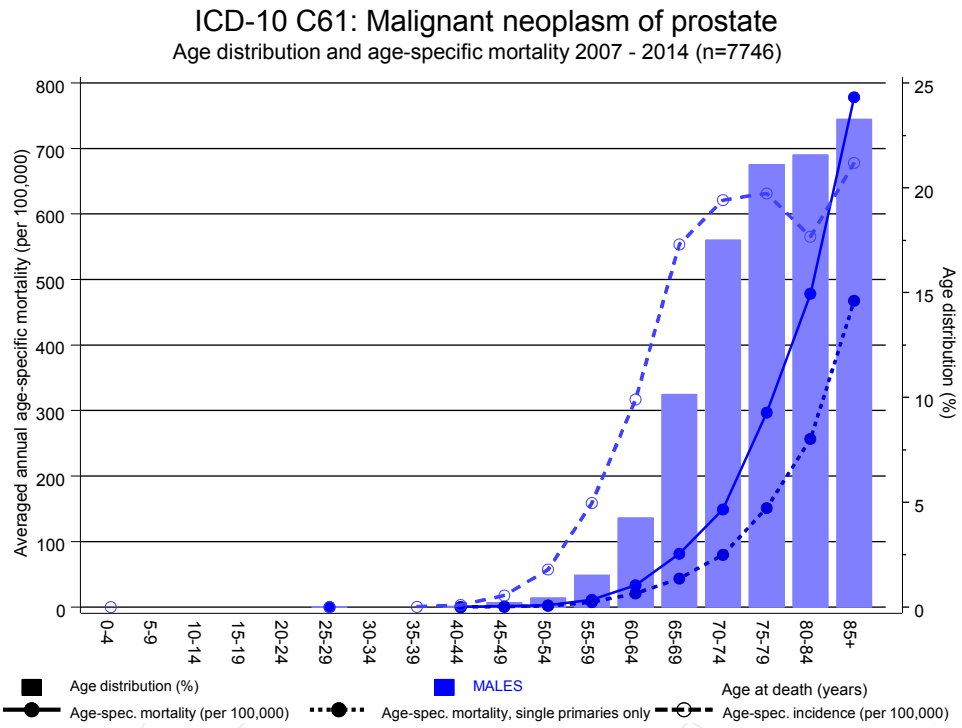

Figure 18. Distribution of age at death (bars) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

Average mortality (world standard population) 2007 - 2014

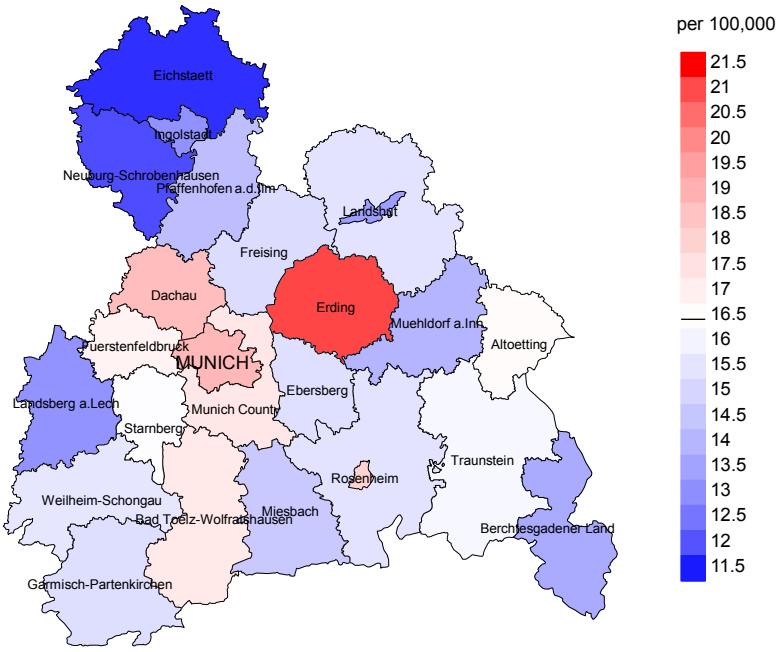

Figure 19a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2014. According to their individual mortality rates, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population mean (16.4/100,000 WS N=7,707).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,886 male residents (averaged) in the period from 2007 to 2014 a total of 205 men died from prostate cancer. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 15.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 12.6 and 18.5/100,000.

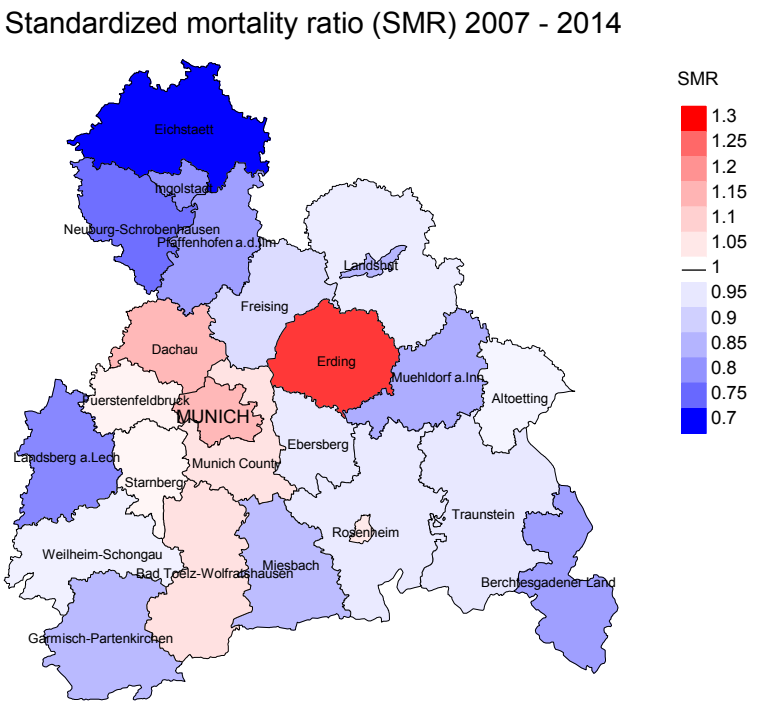

Figure 19b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2014. According to their individual SMR values, the counties are displayed in different red and blue color temperatures where the fine white color indicates the population overall of 1.0 (N=7,707).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 63,358 male residents (averaged) in the period from 2007 to 2014 a total of 205 men died from prostate 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 0.79 and 1.14, 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, where applicable. For mortality statistics patients, diagnoses and progressive course of disease are presented. In the calculations, all courses of disease are considered whereby progressions occurred and/or death certificate identified progressive cancers were ascertained. Additionally there are three groups of disease course to consider:

1. **All multiple primaries included**

   The mortality statistic describes the tumor-specific death, independent of any malignancy. The patient perspective, induced secondary malignancies, and the problem of multiple malignancies from the same primary tumor all have reasons for their inclusion.

2. **First singular primary** (no information about other prior or synchronous malignancy)

   The mortality statistic describes the cancer-related death for patients who have no therapeutic restrictions due to a previous or synchronous cancer. These statistics are comparable to studies that have exclusion criteria based on a second malignancy.

3. **Single primary** (no information about other prior, syn- or metachronous malignancy)

   The mortality statistic describes the tumor-specific death that occurs without any impact through secondary primaries, earlier, synchronous, later or induced. Precisely the difference between disease group 1 and 2 highlight the magnitude of the problem of secondary malignancies.

For this reason differences appear concerning official mono-causal mortality statistics. To judge the maximum deviation, 2 further tables are presented. In the first table the distribution of secondary malignancies before, at or after the described cancer are shown, that could be an alternative cause of death. In the second table, the age-specific mortality rates for all courses of disease, without designation of secondary malignancies are shown.

A previously minimally acknowledged statistic is the **age at death**, which allows for a good assessment of the quality of classification of the apparent tumor-specific death. For assumed tumor-independent deaths, the age of death should be estimated from the age of diagnosis and the normal life expectancy, whereas tumor-dependent deaths can be estimated from the age of diagnosis plus the average tumor-specific life expectancy. The comparison of different tumors demonstrates this association, if the causes of cancer and the competing cause of death are independent of each other (e.g. breast and colon versus head/neck and lung).

The index from mortality and incidence (Mortality-Incidence ratio, **MI-index**) is a statistic that allows for the evaluation of the quality of data. For diseases with poor prognoses, comparable values are obtained from all age groups, because to a large extent, the numerator and denominator contain the same cases. For tumors with a good prognosis, increasing and decreasing incidence and age-specific differences in prognosis can more strongly alter the MI- index. Additionally, attention should be paid to the confidence intervals where fewer cases are reported.

The complexity of problems identified here emphasizes the importance of relative survival data for the appropriate analysis of long term results.

As a measurement of the burden of disease, the number of potential life years loss due to premature deaths in a cohort can be calculated (**PYLL**, potential years of life lost, standardized per 100,000 persons or per European standard) as well as the average loss of life years per individual (**AYLL**, average years of life lost). Depending upon the analytic aim (health economy, prevention, health care research) different methods exist for the generation of these measurements. In the results presented here, the age for a premature death is considered to be before 70 years, according to the guidelines of the OECD and the WHO (as seen in the abbreviation PYLL-70 or AYLL-70).

Shortcuts

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

Recommended Citation

Munich Cancer Registry. ICD-10 C61: Prostate cancer - Incidence and Mortality [Internet]. 2016 [updated 2016 Apr 13; cited 2016 Jun 1]. Available from: http://www.tumorregister-muenchen.de/en/facts/base/bC61__E-ICD-10-C61-Prostate-cancer-incidence-and-mortality.pdf

Copyright

Disclaimer

Index of figures and tables