Munich Cancer Registry

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ICD-10 C57: Female genitale cancer NOS

Incidence and Mortality

Year of diagnosis	1998-2016
Patients	651
Diseases	651
Creation date	08/21/2018
Export date	08/09/2018
Population (females)	2.43 m

Munich Cancer Registry
Cancer Registry Bavaria - Upper Bavaria Regional Center
at Klinikum Grosshadern/IBE
Marchioninistr. 15
Munich, 81377
Germany

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

https://www.tumorregister-muenchen.de/en/facts/base/bC57__E-ICD-10-C57-Female-genitale-cancer-NOS-incidence-and-mortality.pdf

Index of figures and tables

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 4.69 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, August 2018

[#] 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 2.65 million to 4.10 in 2002, and to 4.69 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
C57.-	Malignant neoplasm of other and unspecified female genital organs
C57.0	Fallopian tube
C57.1	Broad ligament
C57.2	Round ligament
C57.3	Parametrium
C57.4	Uterine adnexa, unspecified
C57.7	Other specified female genital organs
C57.8	Overlapping lesion of female genital organs
C57.9	Female genital organ, unspecified

INCIDENCE

Table 1

Cases with invasive cancer by year of diagnosis, proportions of DCO, further malignancies, deaths, and active follow-up (incl. DCO)

Year of diagnosis	All cases n	DCO cases n	Prop. DCO %	Prop. at least 1 further malign. prior + synchron. %	Prop. at least 1 further malign. after %	Prop. deaths %	Prop. actively followed %
1998	20	5	25.0	10.0	6.1	65.0	95.0
1999	21	5	23.8	17.1	5.9	90.5	90.5
2000	26	6	23.1	17.9	5.6	92.3	100.0
2001	15	3	20.0	18.3	5.1	80.0	93.3
2002	54	29	53.7	19.1	5.2	85.2	98.1 #
2003	24	3	12.5	18.1	5.0	75.0	95.8
2004	32	8	25.0	18.8	4.2	81.3	100.0
2005	28	10	35.7	17.3	4.0	60.7	96.4
2006	33	8	24.2	18.2	4.1	66.7	93.9
2007	39	10	25.6	17.8	3.6	79.5	92.3 #
2008	28	4	14.3	19.1	3.4	71.4	89.3
2009	29	9	31.0	18.6	3.4	72.4	82.8
2010	41	7	17.1	18.7	2.7	68.3	90.2
2011	43	6	14.0	18.9	2.8	58.1	86.0
2012	42	6	14.3	18.9	1.4	52.4	78.6
2013	41	4	9.8	18.8	1.2	51.2	78.0
2014	53	8	15.1	19.2	1.5	60.4	90.6
2015	49	6	12.2	18.8	0.0	36.7	98.0
2016	33	9	27.3	18.4	0.0	48.5	75.8 ##
1998-2016	651	146	22.4	18.4	6.1	66.2	90.5

651 cases diagnosed 1998-2016 are related to a total of 651 patients. Currently, in 161 (24.7 %) of these 651 patients more than one malignancy of any cancer type has been registered. Hereby, groups of 116 / 38 / 7 (17.8 % / 5.8 % / 1.1 %) patients exist having 2 / 3 / 4+ malignancies.

\# 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 retreived from the respective headings.

How to interpret:
In 2014, a subgroup of 53 cases has been diagnosed, of which 19.2 % previously and/or concurrently (synchronously) had at least one other malignancy of any cancer type. In 1.5 % of cases, at least one new malignancy has occurred during the follow-up period (all numbers refer to the date of the database export, see cover sheet).

Table 2

Incidence measures by year of diagnosis including DCO cases
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002,
and from 4.10 to 4.81 m as of 2007, respectively)

Year of diagnosis	Cases n	Incidence raw	Incidence WS	Incidence ES	Incidence BRD-S
1998	20	1.7	0.7	1.1	1.3
1999	21	1.8	0.8	1.1	1.4
2000	26	2.2	0.9	1.3	1.8
2001	15	1.2	0.5	0.7	1.0
2002	54	2.8	1.0	1.6	2.0
2003	24	1.2	0.5	0.8	1.0
2004	32	1.6	0.6	0.9	1.1
2005	28	1.4	0.7	0.9	1.2
2006	33	1.6	0.7	1.0	1.2
2007	39	1.7	0.7	1.0	1.3
2008	28	1.2	0.5	0.7	0.9
2009	29	1.2	0.5	0.7	1.0
2010	41	1.8	0.8	1.1	1.4
2011	43	1.8	0.7	1.1	1.4
2012	42	1.8	0.7	1.1	1.3
2013	41	1.7	0.8	1.2	1.4
2014	53	2.2	0.9	1.3	1.6
2015	49	2.0	1.0	1.4	1.6
2016	33	1.3	0.5	0.7	1.0
1998-2016	651	1.7	0.7	1.0	1.3

The computation of the incidence measures includes all cancers, 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	20	71.2	17.0	41.9	97.0	51.7	55.7	71.4	86.3	91.1
1999	21	72.6	19.8	2.4	91.1	59.9	61.6	79.1	85.4	88.6
2000	26	74.6	10.4	53.7	98.0	61.5	65.5	75.1	81.6	86.5
2001	15	74.2	10.6	54.5	91.2	60.1	63.4	74.9	82.1	86.5
2002	54	76.7	13.1	45.2	99.4	60.3	64.4	77.2	88.7	91.5
2003	24	72.5	12.8	49.4	98.6	56.9	62.3	73.7	81.0	88.3
2004	32	77.7	11.5	50.0	93.9	65.3	67.8	78.2	89.3	92.0
2005	28	71.5	19.1	1.7	103	46.9	62.1	75.2	80.3	90.4
2006	33	73.1	14.0	44.8	95.4	54.5	62.8	71.6	85.8	90.9
2007	39	73.6	11.7	45.3	100	59.8	64.2	73.5	82.0	87.0
2008	28	73.6	12.6	47.6	92.5	55.1	63.5	75.3	83.1	89.3
2009	29	73.4	13.0	46.5	96.2	53.4	65.4	76.5	84.1	88.2
2010	41	70.7	11.7	50.3	93.9	55.0	62.2	70.1	79.9	84.0
2011	43	73.2	10.0	46.4	95.0	59.4	67.2	73.9	79.3	86.1
2012	42	71.3	13.6	42.7	97.1	53.9	59.1	72.6	82.0	88.6
2013	41	68.9	12.6	47.1	105	53.3	62.4	65.3	78.5	85.3
2014	53	72.6	13.9	42.4	100	53.2	61.8	73.3	84.8	88.9
2015	49	67.1	12.3	37.3	92.9	54.4	58.7	65.9	76.3	86.5
2016	33	75.7	10.4	55.4	93.6	64.4	67.6	76.9	83.0	90.0
1998-2016	651	72.7	13.2	1.7	105	56.0	63.3	73.5	82.5	89.0

Table 4

Age distribution by 5-year age group for period 2007-2016
(incl. DCO)

Age at diagnosis Years	Cases n	%	Cum.%
0-4			
5-9			
10-14			
15-19			
20-24			
25-29			
30-34			
35-39	2	0.5	0.5
40-44	3	0.8	1.3
45-49	10	2.5	3.8
50-54	24	6.0	9.8
55-59	35	8.8	18.6
60-64	46	11.6	30.2
65-69	56	14.1	44.2
70-74	52	13.1	57.3
75-79	64	16.1	73.4
80-84	38	9.5	82.9
85+	68	17.1	100.0
All ages	398	100.0	

Table 5

Age-specific incidence, DCO rate and proportion of all cancers for period 2007-2016

Age at diagnosis Years	Cases n	Age-spec. incidence	DCO rate n=69 %	Prop. all cancers n=112253 %
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	2	0.1		0.1
40-44	3	0.2		0.1
45-49	10	0.5	20.0	0.1
50-54	24	1.4		0.3
55-59	35	2.4	2.9	0.4
60-64	46	3.5		0.4
65-69	56	4.3		0.4
70-74	52	4.1	5.8	0.4
75-79	64	6.4	12.5	0.5
80-84	38	5.4	26.3	0.3
85+	68	9.3	66.2	0.5
All ages	398		17.3	0.4
Incidence				
Raw		1.7		
WS		0.7		
ES		1.0		
BRD-S		1.3		

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).

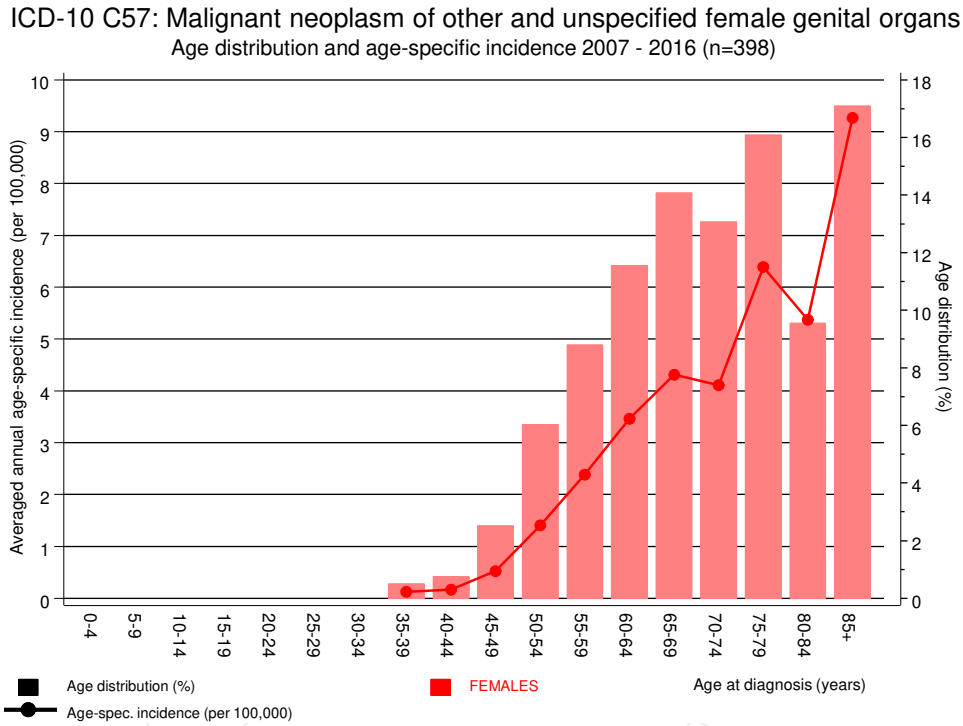

Figure 6. Age distribution (mean=71.8 yrs, median=72.3 yrs) and age-specific incidence.

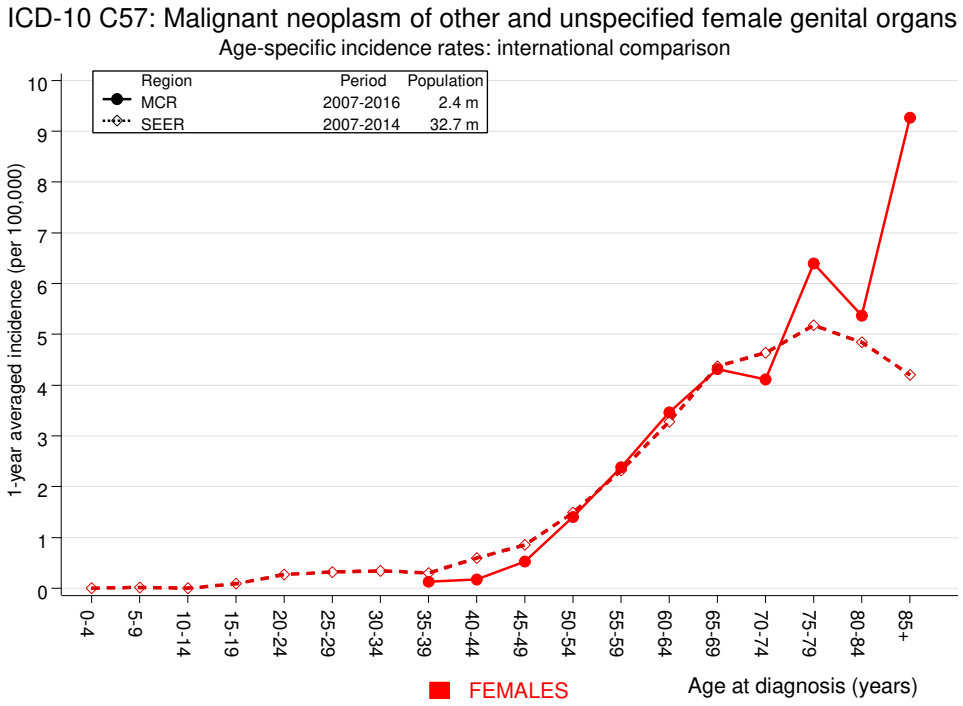

Figure 6a. Age-specific incidence in MCR registry areas compared to SEER (Surveillance, Epidemiology, and End Results, USA).

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

Table 7

Standardized incidence ratio (SIR, with 95% confidence limits), excess absolute risk (EAR) and DCO rate of further malignancies for period 1998–2016

Diagnosis		Observed n	Expected n	SIR	CI 95%	CI 95%		EAR	DCO %
C17	Small intestine	2	0.1	20.3	2.5	73.2	#	11.8	50.0
C18	Colon	5	1.9	2.6	0.8	6.1		19.1	
C19–C20	Rectum	4	0.8	5.0	1.4	12.9	#	19.8	
C33–C34	Lung	6	1.5	4.1	1.5	8.9	#	28.0	
C50	Breast	12	5.8	2.1	1.1	3.6	#	38.7	16.7
C51	Vulva	2	0.2	10.0	1.2	36.3	#	11.2	
C54	Corpus uteri	13	1.1	11.9	6.4	20.4	#	73.8	7.7
C56	Ovary	5	0.8	6.3	2.0	14.7	#	26.0	
C67	Bladder	2	0.4	5.3	0.6	19.3		10.1	
C82–C85	NHL	2	0.8	2.6	0.3	9.5		7.7	
Others, specified		8	1.8	4.4	1.9	8.7	#	38.4	50.0
Not observed		0	4.4	0.0	0.0	0.8	#	-27.1	
All further malignancies		61	19.4	3.1	2.4	4.0	#	257.6	13.1

Patients	508
Median age at next malignancy (years)	73.0
Person-years	1614
Mean observation time (years)	3.2
Median observation time (years)	1.9

The occurrence of further malignancy listed is statistically significant.

Observed further malignancies with count 1 are pooled in category “Others, specified”.

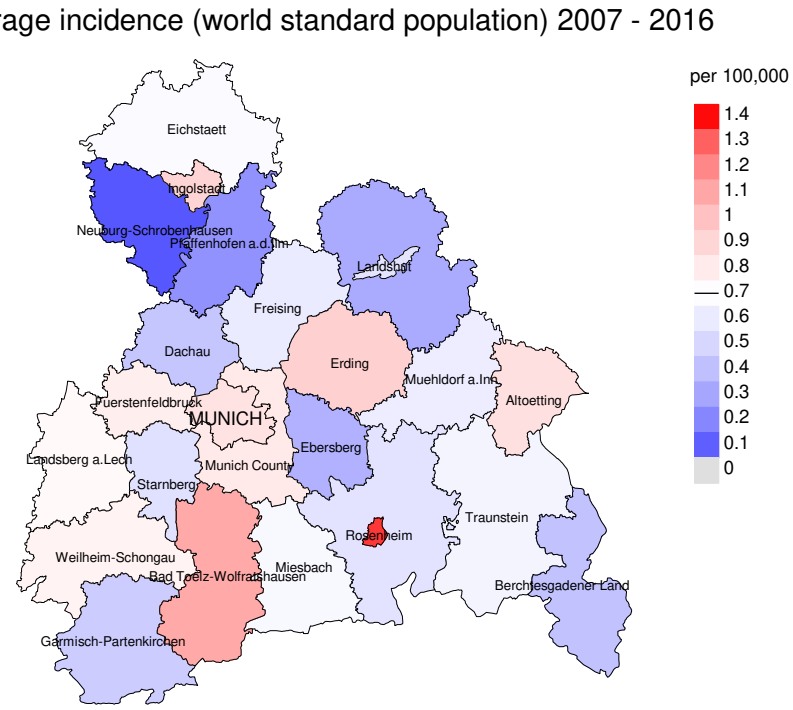

Figure 8a. Map of cancer incidence (world standard population, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual incidence rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (0.7/100,000 WS N=398).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 7 women were identified with newly diagnosed female genitale cancer NOS. Therefore, the mean incidence rate for this cancer type in this area can be calculated at 0.3/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.1 and 1.3/100,000.

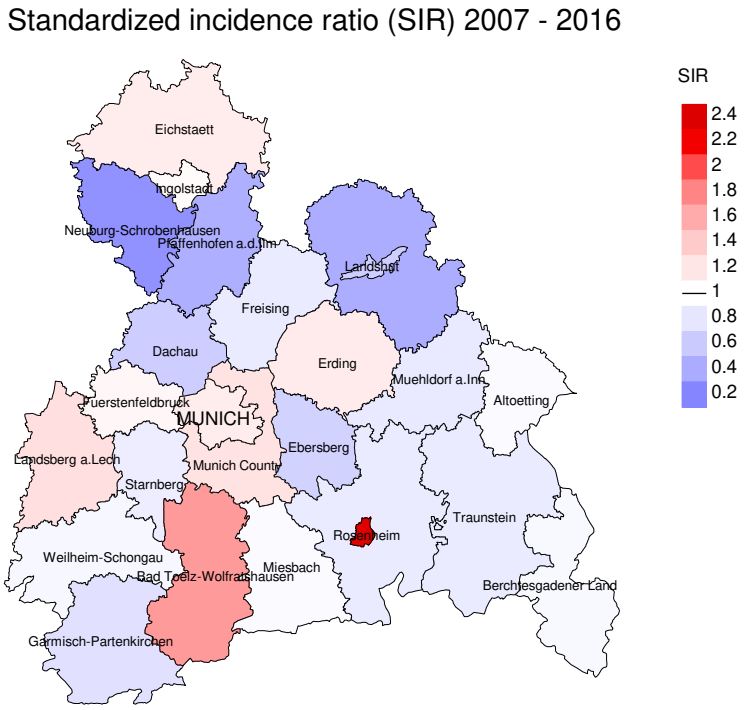

Figure 8b. Map of standardized incidence ratio (SIR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SIR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (N=398).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 7 women were identified with newly diagnosed female genitale cancer NOS. Therefore, the mean standardized incidence ratio (SIR) for this cancer type in this area can be calculated at 0.65. Though, the value of this parameter may vary with an underlying probability of 99% between 0.19 and 1.60, and is therefore not statistically striking.

MORTALITY

Table 9a

Annual cohorts: Incident cancers, follow-up status, proportion of DCO, deaths among the annual cohorts and proportion of available death certificates (with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	20	95.0	25.0	13	65.0	92.3
1999	21	90.5	23.8	19	90.5	100.0
2000	26	100.0	23.1	24	92.3	100.0
2001	15	93.3	20.0	12	80.0	100.0
2002	54	98.1	53.7	46	85.2	95.7
2003	24	95.8	12.5	18	75.0	100.0
2004	32	100.0	25.0	26	81.3	100.0
2005	28	96.4	35.7	17	60.7	100.0
2006	33	93.9	24.2	22	66.7	100.0
2007	39	92.3	25.6	31	79.5	96.8
2008	28	89.3	14.3	20	71.4	100.0
2009	29	82.8	31.0	21	72.4	90.5
2010	41	90.2	17.1	28	68.3	92.9
2011	43	86.0	14.0	25	58.1	100.0
2012	42	78.6	14.3	22	52.4	100.0
2013	41	78.0	9.8	21	51.2	100.0
2014	53	90.6	15.1	32	60.4	96.9
2015	49	98.0	12.2	18	36.7	88.9
2016	33	75.8	27.3	16	48.5	75.0
1998-2016	651	90.5	22.4	431	66.2	96.5

Table 9b

Annual cohorts of incident cancers and deaths, proportion of death certificates and cases deceased within the same year of being diagnosed with cancer (incl. DCO)
(with respect to registry area expansion from 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 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	20	16	100.0	7	35.0
1999	21	26	88.5	10	47.6
2000	26	13	100.0	8	30.8
2001	15	20	100.0	4	26.7
2002	54	41	95.1	36	66.7
2003	24	16	93.8	4	16.7
2004	32	26	100.0	12	37.5
2005	28	21	95.2	12	42.9
2006	33	26	100.0	11	33.3
2007	39	24	100.0	16	41.0
2008	28	18	100.0	6	21.4
2009	29	17	100.0	6	20.7
2010	41	19	100.0	8	19.5
2011	43	24	100.0	8	18.6
2012	42	26	96.2	9	21.4
2013	41	32	93.8	10	24.4
2014	53	37	100.0	13	24.5
2015	49	41	97.6	10	20.4
2016	33	42	95.2	13	39.4
1998-2016	651	485	97.3	203	31.2

Table 9c

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 2.65 to 4.10 m as of 2002, and from 4.10 to 4.81 m as of 2007, respectively)

Year of death	Deaths n	Prop. cancer-related %	Prop. non-cancer-related %	Prop. cancer recorded on death certificate %
1998	16	68.8	31.3	100.0
1999	26	73.1	26.9	95.7
2000	13	69.2	30.8	84.6
2001	20	80.0	20.0	90.0
2002	41	73.2	26.8	94.9
2003	16	68.8	31.3	86.7
2004	26	73.1	26.9	92.3
2005	21	76.2	23.8	80.0
2006	26	73.1	26.9	84.6
2007	24	79.2	20.8	95.8
2008	18	83.3	16.7	88.9
2009	17	88.2	11.8	88.2
2010	19	73.7	26.3	94.7
2011	24	70.8	29.2	83.3
2012	26	88.5	11.5	92.0
2013	32	81.3	18.8	86.7
2014	37	78.4	21.6	86.5
2015	41	85.4	14.6	87.5
2016	42	83.3	16.7	87.5
1998-2016	485	77.9	22.1	89.4

Table 10

Medians of age at death according to the grouping in Table 9

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	16	86.2	84.8	87.0	86.2
1999	26	83.6	80.9	86.4	84.4
2000	13	86.1	83.7	86.2	83.7
2001	20	78.1	77.0	84.7	77.0
2002	41	82.0	81.1	87.1	81.5
2003	16	76.5	72.1	84.9	75.1
2004	26	80.8	79.3	81.1	80.8
2005	21	80.3	78.8	86.2	78.8
2006	26	80.4	71.5	84.1	73.5
2007	24	79.4	79.4	80.6	79.4
2008	18	76.6	75.8	77.5	73.6
2009	17	76.8	76.3	88.6	76.3
2010	19	80.6	75.0	89.1	80.6
2011	24	81.1	80.3	86.8	80.6
2012	26	80.7	76.4	89.9	76.4
2013	32	78.4	77.3	85.3	77.3
2014	37	83.6	78.5	87.4	83.6
2015	41	76.9	76.1	87.5	76.1
2016	42	77.3	75.5	92.5	76.5
1998-2016	485	79.9	77.7	86.4	78.9

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 11

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	11	0.9	0.55	0.3	0.35	0.4	0.41	0.7	0.51
1999	19	1.6	0.90	0.6	0.73	1.0	0.87	1.3	0.97
2000	9	0.7	0.35	0.3	0.29	0.4	0.30	0.5	0.29
2001	16	1.3	1.07	0.5	0.99	0.8	1.03	1.1	1.05
2002	30	1.5	0.56	0.5	0.47	0.8	0.50	1.1	0.56
2003	11	0.6	0.46	0.2	0.44	0.3	0.44	0.4	0.43
2004	19	1.0	0.59	0.3	0.55	0.5	0.58	0.7	0.63
2005	16	0.8	0.57	0.3	0.39	0.4	0.47	0.6	0.52
2006	19	0.9	0.58	0.5	0.68	0.6	0.59	0.7	0.60
2007	19	0.8	0.49	0.2	0.35	0.4	0.39	0.6	0.44
2008	15	0.6	0.54	0.2	0.50	0.4	0.51	0.5	0.51
2009	15	0.6	0.52	0.2	0.45	0.4	0.47	0.5	0.54
2010	14	0.6	0.34	0.2	0.28	0.3	0.28	0.4	0.29
2011	17	0.7	0.40	0.2	0.32	0.4	0.33	0.5	0.36
2012	23	1.0	0.55	0.3	0.45	0.5	0.48	0.7	0.53
2013	26	1.1	0.63	0.3	0.40	0.5	0.46	0.8	0.56
2014	29	1.2	0.55	0.4	0.43	0.6	0.46	0.8	0.52
2015	35	1.4	0.71	0.5	0.47	0.7	0.53	1.0	0.62
2016	35	1.4	1.06	0.5	1.09	0.8	1.09	1.1	1.09
1998-2016	378	1.0	0.58	0.3	0.48	0.5	0.51	0.7	0.56

Table 12

Age distribution of age at death (cancer-related) for period 2007-2016 (**incl. multiple malignancies**)

Age at death Years	Cases n	%	Cum.%
0-4			
5-9			
10-14			
15-19			
20-24			
25-29			
30-34			
35-39			
40-44			
45-49	4	1.8	1.8
50-54	6	2.6	4.4
55-59	9	3.9	8.3
60-64	11	4.8	13.2
65-69	29	12.7	25.9
70-74	38	16.7	42.5
75-79	43	18.9	61.4
80-84	37	16.2	77.6
85+	51	22.4	100.0
All ages	228	100.0	

Table 13

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**incl. multiple malignancies**)

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		0.0		
45-49	4	0.2	0.40	0.3
50-54	6	0.4	0.25	0.3
55-59	9	0.6	0.26	0.3
60-64	11	0.8	0.24	0.3
65-69	29	2.2	0.52	0.5
70-74	38	3.0	0.73	0.6
75-79	43	4.3	0.67	0.6
80-84	37	5.2	0.97	0.5
85+	51	6.9	0.75	0.6
All ages	228			0.5
Mortality				
Raw		1.0	0.57	
WS		0.3	0.45	
ES		0.5	0.48	
BRD-S		0.7	0.54	
PYLL-70				
per 100,000		2.3		
ES		1.9		
AYLL-70		7.8		

Table 14

Further malignancies in deaths in period 1998-2016

Diagnosis		Total n	Total %↓	Pre n	Pre ←%	Syn-chron ±30d n	Syn-chron ±30d ←%	Post n	Post ←%
C17	Small intestine	2	1.5	1	50.0			1	50.0
C18	Colon	13	9.6	4	30.8	3	23.1	6	46.2
C19-C20	Rectum	9	6.6	4	44.4	1	11.1	4	44.4
C25	Pancreas	2	1.5					2	100.0
C33-C34	Lung	11	8.1	2	18.2	1	9.1	8	72.7
C43	Malign. melanoma	3	2.2	2	66.7			1	33.3
C44	Skin others	5	3.7	2	40.0	1	20.0	2	40.0
C46,C49	Soft tissue	2	1.5					2	100.0
C50	Breast	27	19.9	18	66.7	2	7.4	7	25.9
C52	Vagina	3	2.2	1	33.3	1	33.3	1	33.3
C53	Cervix uteri	3	2.2	1	33.3	1	33.3	1	33.3
C54	Corpus uteri	17	12.5	3	17.6	13	76.5	1	5.9
C55,C57	Fem. genitals un	4	2.9					4	100.0
C56	Ovary	2	1.5			2	100.0		
C64	Kidney	2	1.5					2	100.0
C65	Renal pelvis	4	2.9	2	50.0			2	50.0
C67	Bladder	3	2.2	1	33.3	1	33.3	1	33.3
C76-C79	CUP	6	4.4	1	16.7	2	33.3	3	50.0
C81	Hodgkin lymphoma	2	1.5	2	100.0				
C82-C85	NHL	6	4.4	1	16.7			5	83.3
Others, specified		10	7.4	3	30.0	2	20.0	5	50.0
All further malignancies		136	100.0	48	35.3	30	22.1	58	42.6

Further malignancies with number of cases 1 are pooled in category “Others, specified”.

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 further malignancy.

Table 15

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**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		0.0		
45-49	3	0.2	0.30	0.3
50-54	4	0.2	0.21	0.2
55-59	7	0.5	0.23	0.3
60-64	10	0.8	0.29	0.3
65-69	23	1.8	0.52	0.5
70-74	29	2.3	0.71	0.5
75-79	37	3.7	0.74	0.7
80-84	31	4.4	1.03	0.6
85+	37	5.0	0.69	0.5
All ages	181			0.5
Mortality				
Raw		0.8	0.57	
WS		0.3	0.46	
ES		0.4	0.49	
BRD-S		0.6	0.54	
PYLL-70				
per 100,000		1.8		
ES		1.5		
AYLL-70		7.6		

* See corresponding tables with multiple malignancies.

Table 16

Age-specific mortality (cancer-related) and proportion of all cancers
for period 2007-2016
(**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		0.0		
45-49	3	0.2	0.30	0.3
50-54	4	0.2	0.21	0.2
55-59	7	0.5	0.23	0.3
60-64	10	0.8	0.31	0.3
65-69	22	1.7	0.54	0.5
70-74	27	2.1	0.66	0.5
75-79	27	2.7	0.60	0.5
80-84	28	4.0	0.93	0.5
85+	33	4.5	0.63	0.5
All ages	161			0.4
Mortality				
Raw		0.7	0.53	
WS		0.2	0.43	
ES		0.4	0.46	
BRD-S		0.5	0.50	
PYLL-70				
per 100,000		1.8		
ES		1.4		
AYLL-70		7.7		

* See corresponding tables with multiple malignancies.

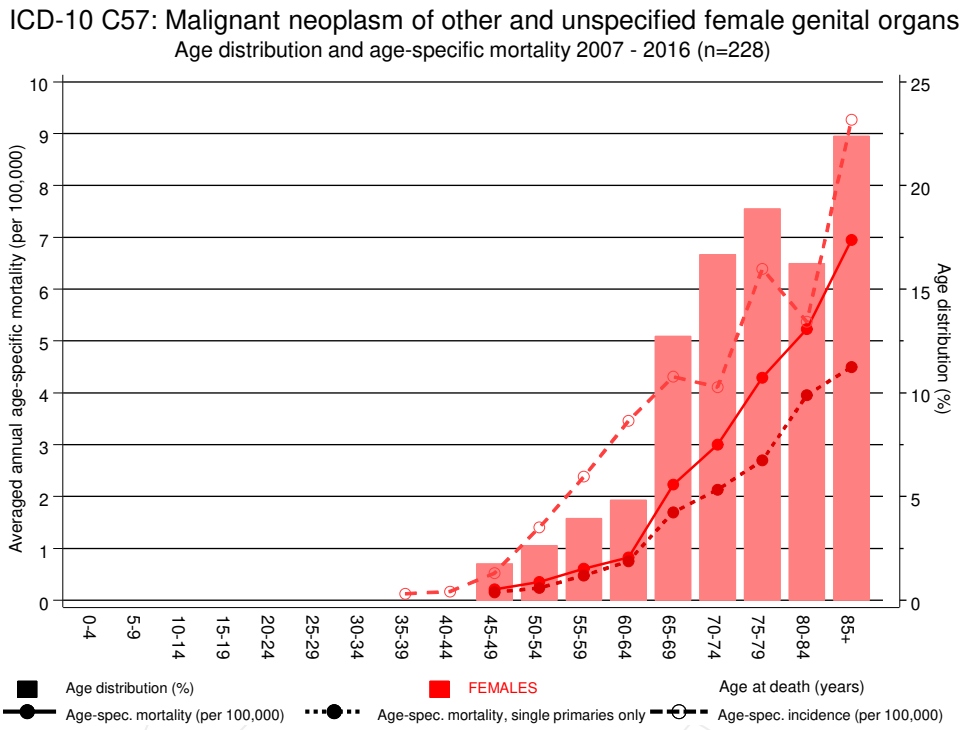

Figure 17. Distribution of age at death (bars; n=mean=71.6 yrs, median=72.5 yrs) and age-specific mortality (all patients: solid line, patients with single primaries: dotted line). The age-specific incidence is additionally plotted for comparison (dashed line).

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

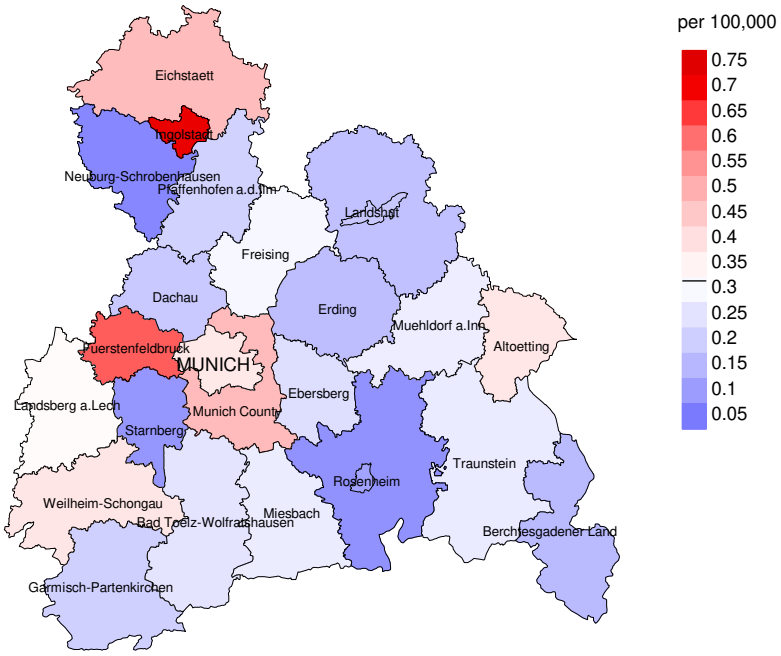

Figure 18a. Map of cancer mortality (world standard population) by county averaged for period 2007 to 2016. According to their individual mortality rates, the counties are displayed in different red and blue hues, being the fine white color attributed to the population mean (0.3/100,000 WS N=228).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 4 women died from female genitale cancer NOS. Therefore, the mean mortality rate for this cancer type in this area can be calculated at 0.2/100,000 (world standard population). Though, the value of this parameter may vary with an underlying probability of 99% between 0.0 and 1.2/100,000.

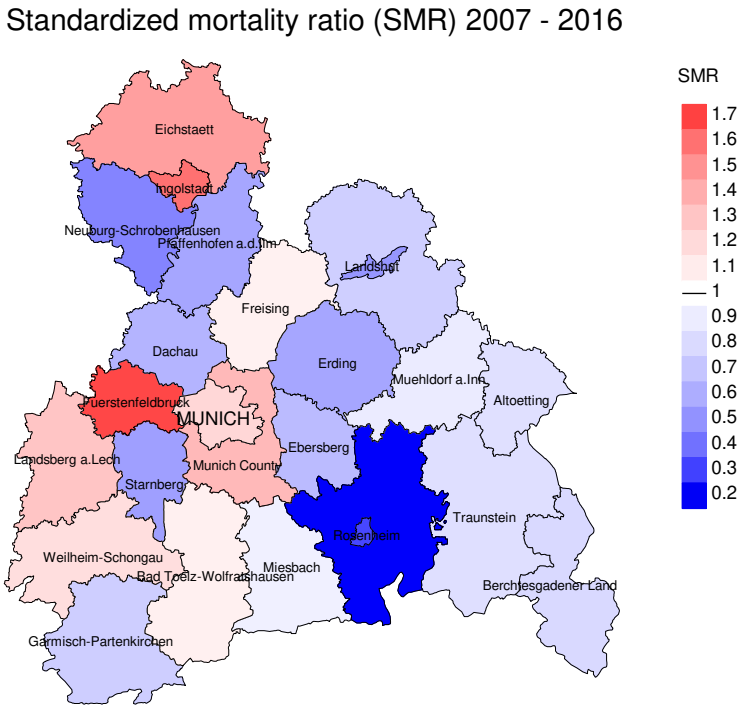

Figure 18b. Map of standardized mortality ratio (SMR, incl. DCO cases) by county averaged for period 2007 to 2016. According to their individual SMR values, the counties are displayed in different red and blue hues, being the fine white color attributed to the population overall of 1.0 (N=228).

The results should be interpreted with caution! E.g., in county Ebersberg with a population of 66,416 female residents (averaged) in the period from 2007 to 2016 a total of 4 women died from female genitale cancer NOS. Therefore, the mean standardized mortality ratio (SMR) for this cancer type in this area can be calculated at 0.66. Though, the value of this parameter may vary with an underlying probability of 99% between 0.11 and 2.08, 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

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

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