

# Munich Cancer Registry



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

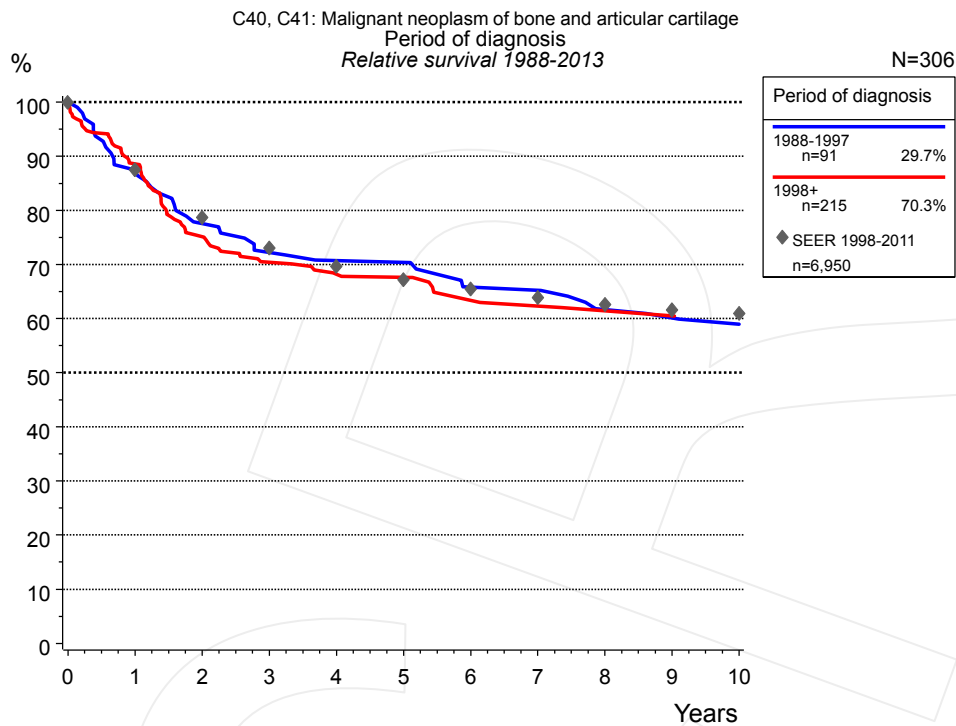
## Cancer statistics: Survival

### C40, C41: Bone cancer

Year of diagnosis	1988-2013
Patients	595
Diseases	598
Cases evaluated	306
Creation date	05/13/2015
Export date	12/30/2014
Population	4.64 m



[http://www.tumorregister-muenchen.de/en/facts/surv/surv\\_C4041E.pdf](http://www.tumorregister-muenchen.de/en/facts/surv/surv_C4041E.pdf)



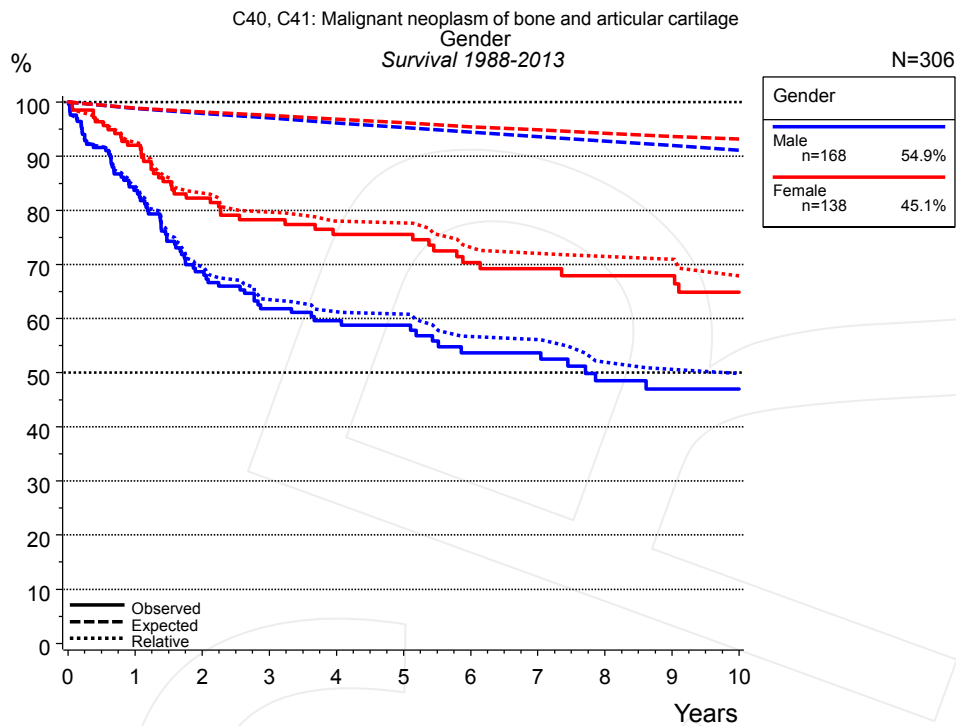
**Figure 1a.** Relative survival of patients with bone cancer by period of diagnosis. Included in the evaluation are 306 cases diagnosed between 1988 and 2013.

The survival results of the SEER program (Surveillance, Epidemiology, and End Results) of the American National Cancer Institute (NCI) are summarized as the period of diagnosis from 1998 to 2011, and are represented by gray diamonds in order to facilitate comparisons between MCR and SEER.

The presented survival curves are derived from clinical records with valid follow-up informations, which means that death certificate cases (DCO) cases are omitted from the analysis. With this one restriction, the MCR has provided population-based statistics since 1988, collecting data on all cancer cases in the region of southern Bavaria. Historical data of previous time periods can be heavily selected, therefore, univariate survival comparisons of the presented time periods must be carefully considered. Nonetheless, all calculable survival curves are depicted to facilitate the comparison of long time follow-up analyses of relative survival between particular cancers.

Years	Period of diagnosis			
	1988-1997 n=91		1998+ n=215	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	86.8	87.2	87.7	88.6
2	76.8	77.5	73.9	75.1
3	71.2	72.2	68.5	70.4
4	69.0	70.7	65.9	68.2
5	69.0	70.4	65.2	67.6
6	63.1	65.8	60.6	63.4
7	63.1	65.2	59.5	62.3
8	58.4	61.7	58.1	61.5
9	57.3	60.1	58.1	60.5
10	56.1	59.0	55.9	59.7

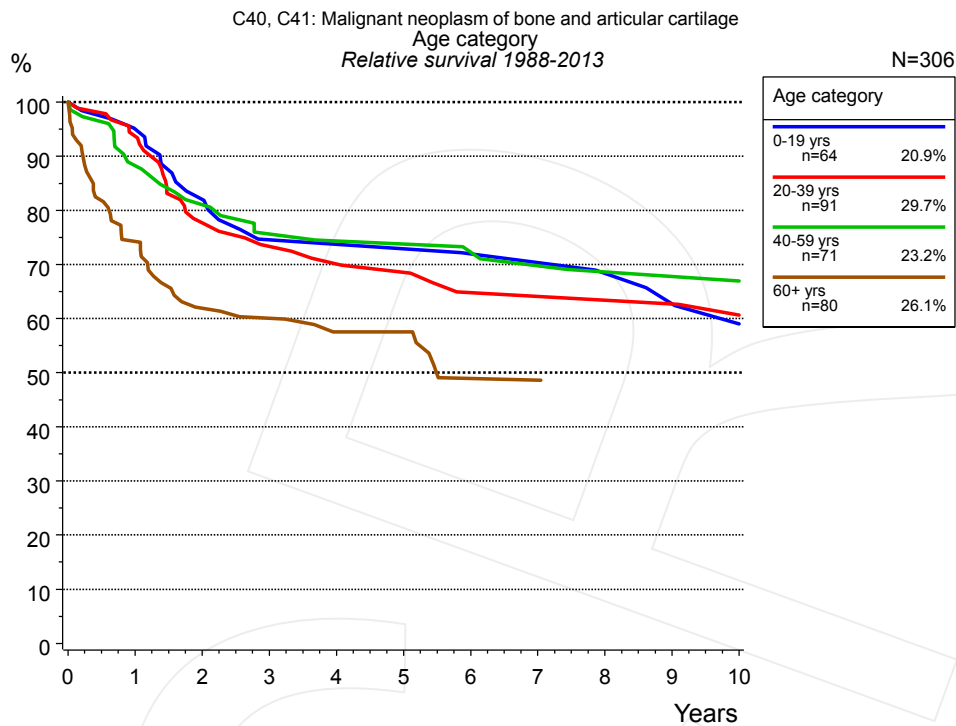
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with bone cancer by period of diagnosis for period 1988-2013 (N=306).



**Figure 2a.** Survival of patients with bone cancer by gender. Included in the evaluation are 306 cases diagnosed between 1988 and 2013.

Years	Gender			
	Male n=168		Female n=138	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	83.7	84.5	92.0	92.6
2	68.6	69.6	82.2	83.2
3	61.8	63.5	78.3	79.7
4	59.6	61.3	75.6	78.0
5	58.8	60.8	75.6	77.7
6	53.7	56.7	70.3	73.1
7	53.7	56.1	69.2	72.0
8	48.5	52.0	68.0	71.5
9	47.0	50.6	68.0	70.9
10	47.0	49.9	64.9	67.9

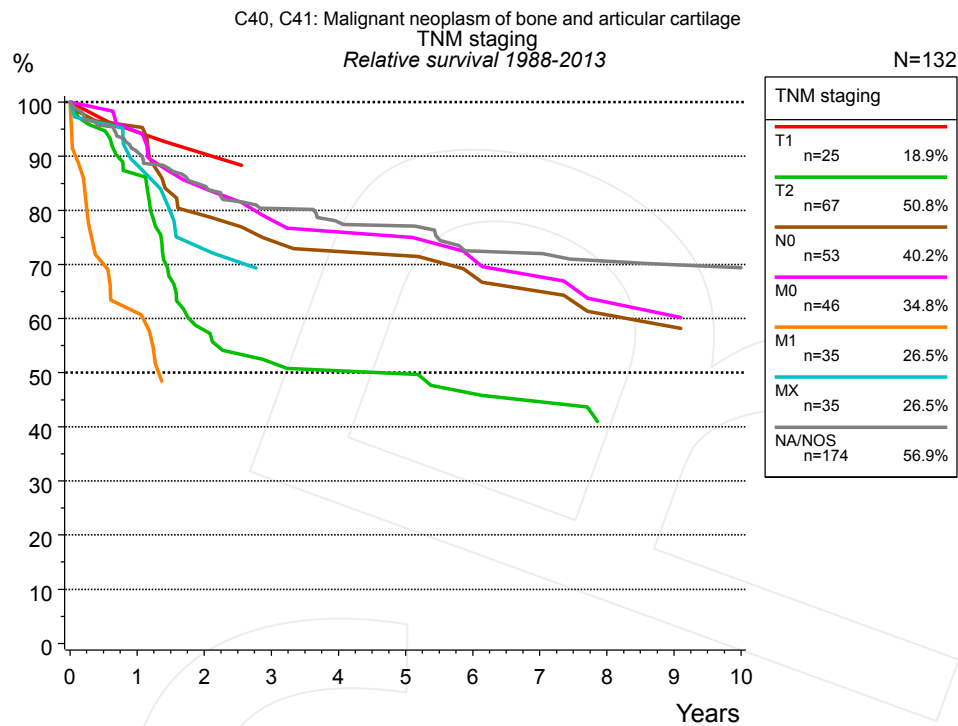
**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with bone cancer by gender for period 1988-2013 (N=306).



**Figure 3a.** Relative survival of patients with bone cancer by age category. Included in the evaluation are 306 cases diagnosed between 1988 and 2013.

Years	Age category							
	0-19 yrs n=64		20-39 yrs n=91		40-59 yrs n=71		60+ yrs n=80	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	95.2	95.0	94.4	93.7	88.6	88.3	72.4	74.2
2	83.5	82.0	78.4	77.7	81.3	81.0	58.1	61.9
3	74.6	74.5	73.6	73.4	74.9	75.6	55.3	60.1
4	74.6	73.7	71.0	70.1	73.1	74.4	50.4	57.6
5	74.6	72.9	69.7	68.5	73.1	73.8	50.4	57.6
6	72.0	72.0	64.6	64.8	70.8	72.3	40.6	48.9
7	72.0	70.3	64.6	64.1	68.5	69.8	40.6	48.6
8	68.8	68.3	64.6	63.4	65.9	68.6		
9	65.5	62.7	64.6	62.7	65.9	67.8		
10	62.2	59.0	62.1	60.6	65.9	66.9		

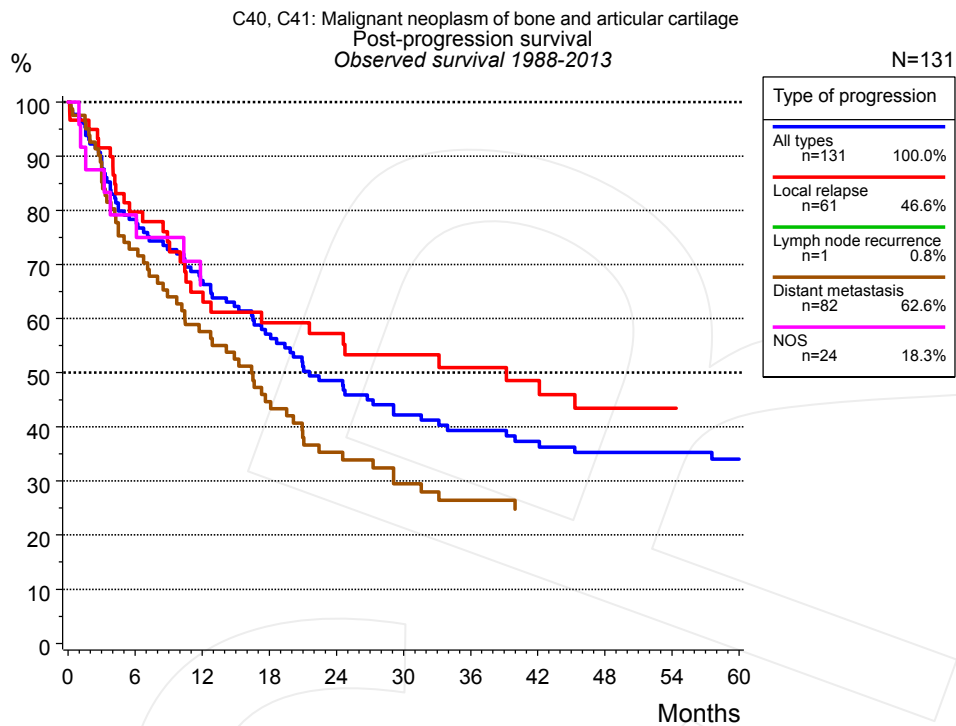
**Table 3b.** Observed (obs.) and relative (rel.) survival of patients with bone cancer by age category for period 1988-2013 (N=306).



**Figure 4a.** Relative survival of patients with bone cancer by TNM staging. For 133 of 306 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 132 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potentially considered in more than one subgroup. The grey line represents the subgroup of 174 patients with missing values regarding TNM staging (56.9% of 306 patients, the percent values of all other categories are related to n=132).

TNM staging														
	T1 n=25		T2 n=67		N0 n=53		M0 n=46		M1 n=35		MX n=35		NA/NOS n=174	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	96.0	94.5	86.4	86.6	96.2	95.4	95.6	94.5	62.9	61.1	88.6	88.3	90.1	90.8
2	91.8	90.5	57.6	57.9	79.2	79.0	84.4	84.1			73.9	72.8	83.4	84.5
3			51.1	51.9	73.2	74.4	77.3	78.2			67.5	69.1	78.3	80.3
4			49.3	50.4	71.0	72.4	74.7	76.0			67.5	67.9	75.4	77.8
5			49.3	49.8	71.0	71.6	74.7	75.1			67.5	66.7	74.7	77.1
6			45.4	46.2	66.0	67.9	69.3	71.0					69.0	72.5
7			43.3	44.7	63.4	65.0	66.4	67.7					69.0	72.0
8			38.4	40.7	57.7	60.7	60.1	63.0					66.7	70.6
9			38.4	38.6	57.7	58.4	60.1	60.5					65.3	70.0
10					54.3	55.4	56.3	57.1					65.3	69.4

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with bone cancer by TNM staging for period 1988-2013 (N=261).



**Figure 5a.** Observed post-progression survival of 131 patients with bone cancer diagnosed between 1988 and 2013 (incl. M1). These 131 patients with documented progression events during their course of disease represent 42.8% of the totally 306 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=17, 5.6%). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously. The NOS (not otherwise specified) class is included under the condition, that it is the one and only progression type during the course of disease. Subgroups with sample size <15 are dropped from the chart.

Medical record documentation often lacks the linguistic severity to distinguish between local relapse, regional lymph node metastasis and distant spread in solid cancers. Frequently, the statement “not specified” is the only information in registries regarding relapse of the disease. The category “All types” denotes all cases who suffered from at least one relapse during the course of disease (incl. primary M1-status). Although, the real number of relapsed patients is likely to be much higher. The accumulated percentage of patients with local relapse or distant metastasis exceeds the 100% value because patients are potentially considered in more than one subgroup.

Months	Type of progression				
	All types n=131 %	Local relapse n=61 %	Lymph node recurrence n=1 %	Distant metastasis n=82 %	NOS n=24 %
0	100.0	100.0	100.0	100.0	100.0
12	67.1	64.9	100.0	57.6	66.2
24	48.6	57.3	100.0	35.3	
36	39.4	51.0	100.0	26.4	
48	35.3	43.4		24.8	
60	34.0				

**Table 5b.** Observed post-progression survival of patients with bone cancer for period 1988-2013 (N=131).

**Shortcuts**

MCR	Munich Cancer Registry, Germany (Tumorregister München)
NCI	National Cancer Institute, USA
SEER	Surveillance, Epidemiology, and End Results, USA
UICC	Union for International Cancer Control, Geneva
DCO	Death certificate only. The death certificate provides the only notification to the registry.
NA	Not available
NOS	Not otherwise specified
OS	Observed/overall survival (Kaplan-Meier estimate)
RS	Relative survival, compared to the general population, ratio of observed to expected survival (Ederer II method), reflecting excess mortality among cancer patients
AS	Assembled survival chart (observed, expected, relative)
PPS	Post-progression survival, survival since first relapse (Kaplan-Meier estimate)
progression	Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
	Event: Death of all causes
CS	Conditional survival, survival probability under the condition of surviving a given period of time

**Recommended Citation**

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