Munich Cancer Registry

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

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

Cancer statistics: Survival

C61: Prostate cancer

Year of diagnosis	1988-2013
Patients	50,967
Diseases	50,968
Cases evaluated	28,568
Creation date	05/13/2015
Export date	12/30/2014
Population (males)	2.28 m

http://www.tumorregister-muenchen.de/en/facts/surv/surv_C61__E.pdf

C61: Malignant neoplasm of prostate
Period of diagnosis
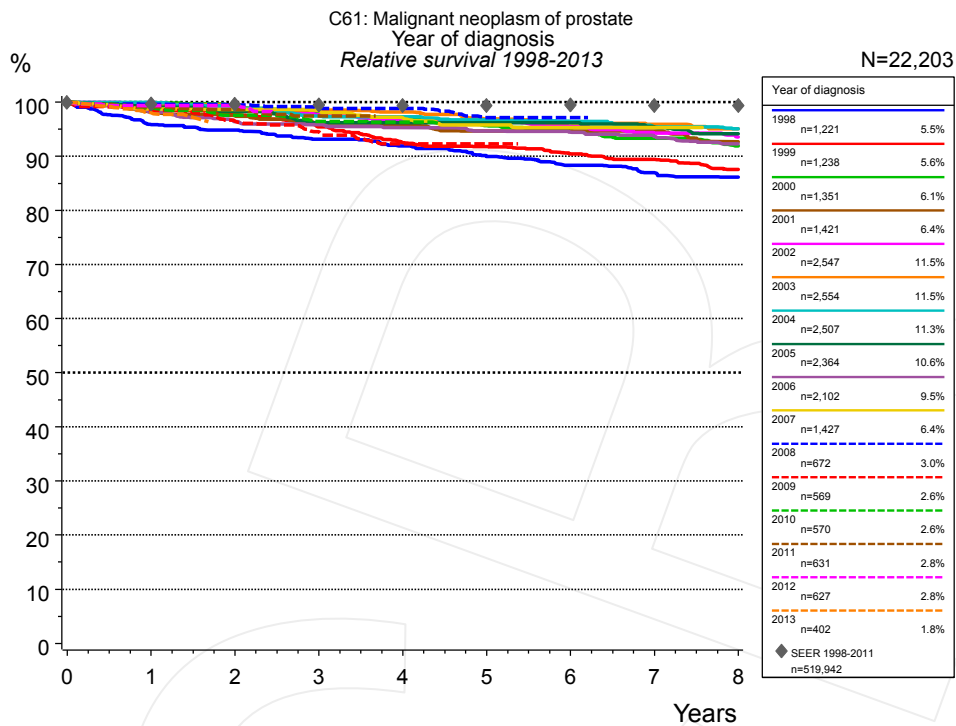*Relative survival 1988-2013*   N=28,568
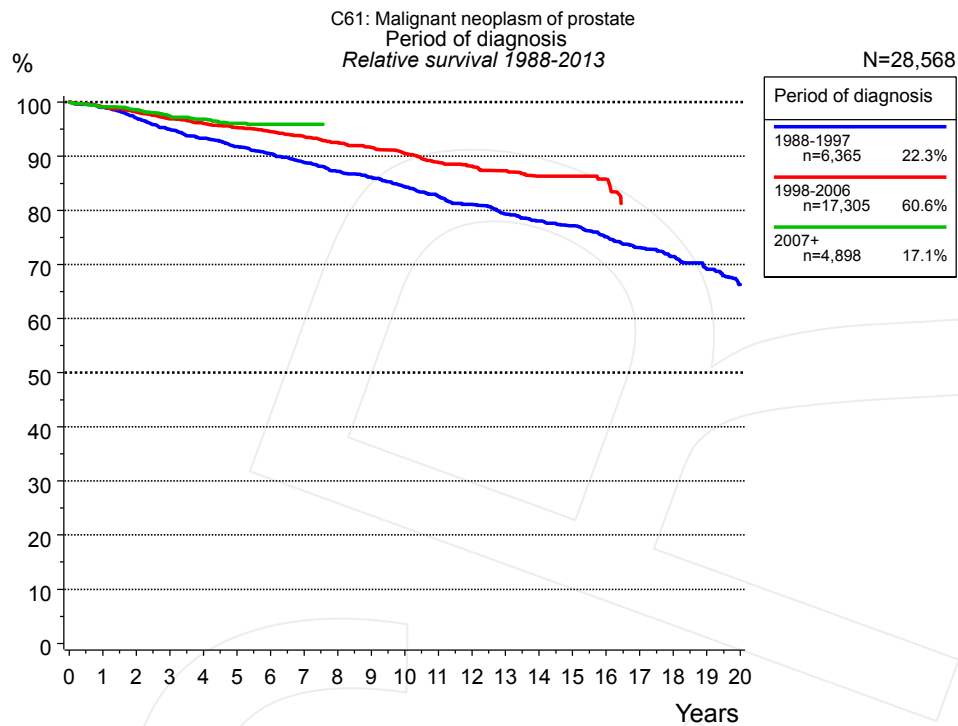
Figure 1a. Relative survival of patients with prostate cancer by period of diagnosis. Included in the evaluation are 28,568 cases diagnosed between 1988 and 2013.

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.

	Period of diagnosis					
	1988-1997 n=6,365		1998-2006 n=17,305		2007+ n=4,898	
Years	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	94.3	99.0	95.7	99.1	96.2	99.1
2	88.0	97.1	91.5	98.2	92.8	98.6
3	82.1	95.0	87.2	96.9	88.9	97.4
4	76.8	93.3	83.4	96.1	85.6	96.8
5	71.8	91.8	79.7	95.3	82.1	96.1
6	67.4	90.5	76.1	94.5	79.1	95.9
7	63.0	88.8	72.5	93.6	77.4	95.9
8	58.9	87.2	68.9	92.5		
9	55.2	86.1	65.4	91.6		
10	51.4	84.4	61.9	90.5		
11	47.8	82.7	58.1	88.9		
12	44.4	81.1	55.0	88.2		
13	41.0	79.3	51.8	87.3		
14	38.1	78.0	48.6	86.3		
15	35.4	77.1	46.6	86.3		
16	32.3	75.1	43.2	85.8		
17	29.4	73.1				
18	27.0	71.5				
19	24.2	69.2				
20	21.5	66.3				

Table 1b. Observed (obs.) and relative (rel.) survival of patients with prostate cancer by period of diagnosis for period 1988-2013 (N=28,568).

C61: Malignant neoplasm of prostate
Year of diagnosis
Relative survival 1998-2013

Figure 1c. Relative survival of patients with prostate cancer by year of diagnosis. Included in the evaluation are 22,203 cases diagnosed between 1998 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.

	Year of diagnosis												
	1998 n=1,221		1999 n=1,238		2000 n=1,351		2001 n=1,421		2002 n=2,547		2003 n=2,554		2004 n=2,507	
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	92.0	95.9	95.2	99.0	96.4	99.8	94.7	98.2	95.9	99.5	96.6	99.5	96.9	99.9
2	87.4	94.8	90.3	97.6	92.1	99.2	90.6	97.5	91.8	98.7	92.9	99.3	93.0	99.1
3	82.4	93.1	84.9	95.4	87.7	98.1	86.3	96.2	87.6	97.7	89.3	98.5	88.5	97.4
4	77.9	91.9	79.1	92.5	83.5	97.0	82.7	95.7	83.5	96.5	85.8	98.2	85.9	97.3
5	73.2	90.0	75.5	91.8	79.0	95.7	79.0	94.7	80.5	96.3	81.7	96.9	82.2	96.7
6	69.1	88.3	71.5	90.4	75.1	94.6	76.2	94.7	76.8	95.5	78.4	96.2	79.1	96.4
7	65.2	87.0	68.0	89.4	71.6	93.3	73.1	94.7	72.9	94.3	75.3	95.9	75.5	95.4
8	61.9	86.1	64.2	87.5	67.3	91.9	68.4	92.7	69.5	93.5	71.9	95.1	72.5	95.1

	Year of diagnosis												
cont'd	2005 n=2,364		2006 n=2,102		2007 n=1,427		2008 n=672		2009 n=569		2010 n=570		2011 n=631	
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	96.2	99.3	95.1	98.1	95.5	98.7	97.0	99.6	95.8	98.5	96.1	98.9	96.7	99.1
2	92.1	98.3	90.4	96.4	92.9	98.6	94.0	99.5	91.0	96.5	92.1	97.6	93.7	98.6
3	87.4	96.2	87.3	95.9	89.3	98.4	90.6	98.8	86.6	94.6	88.1	96.4	89.7	97.4
4	84.7	96.2	84.1	95.3	85.4	97.1	88.1	98.8	82.1	92.3	85.2	96.3		
5	82.4	96.2	80.8	94.6	82.0	95.8	83.5	97.1	79.8	92.3				
6	79.2	96.2	77.6	94.4	78.5	95.3	80.9	97.1						
7	75.3	95.4	74.1	93.7	76.7	95.3								
8	72.0	94.1	70.2	92.3										

|	Year of diagnosis			
cont'd	2012 n=627		2013 n=402	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	96.7	99.3	95.4	98.0
2	93.5	99.3		

Table 1d. Observed (obs.) and relative (rel.) survival of patients with prostate cancer by year of diagnosis for period 1998-2013 (N=22,203).
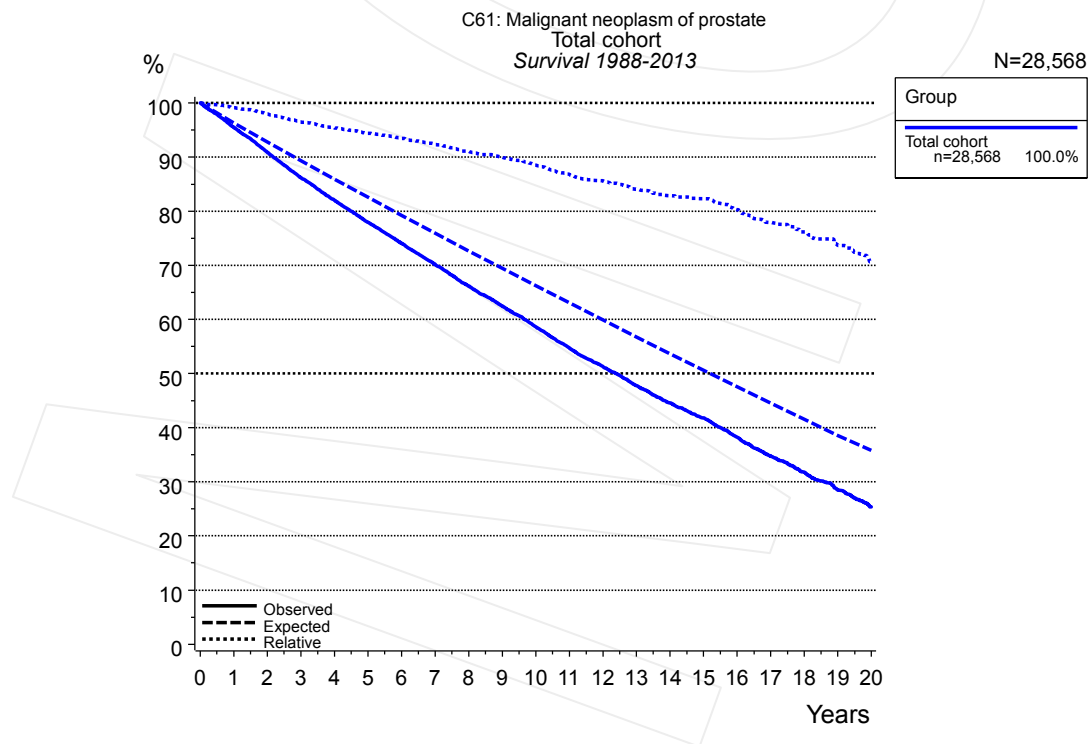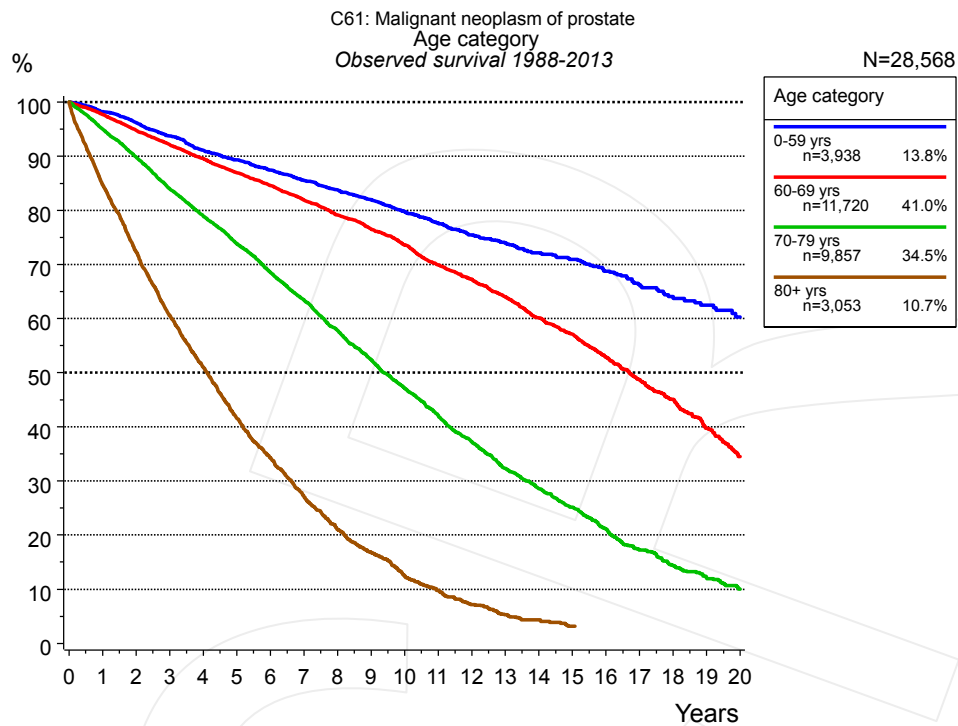

Figure 2a. Observed, expected and relative survival of the total cohort with prostate cancer. Included in the evaluation are 28,568 cases diagnosed between 1988 and 2013.

	Group	
	Total cohort n=28,568	
Years	obs. %	rel. %
0	100.0	100.0
1	95.5	99.1
2	90.9	98.0
3	86.2	96.5
4	82.0	95.4
5	77.9	94.4
6	74.0	93.4
7	70.1	92.4
8	66.2	91.0
9	62.5	90.0
10	58.6	88.5
11	54.8	86.8
12	51.3	85.6
13	47.7	84.0
14	44.5	82.8
15	41.8	82.3
16	38.2	80.3
17	34.7	77.9
18	31.8	76.1
19	28.5	73.8
20	25.4	70.6

Table 2b. Observed (obs.) and relative (rel.) survival of the total cohort with prostate cancer for period 1988-2013 (N=28,568).
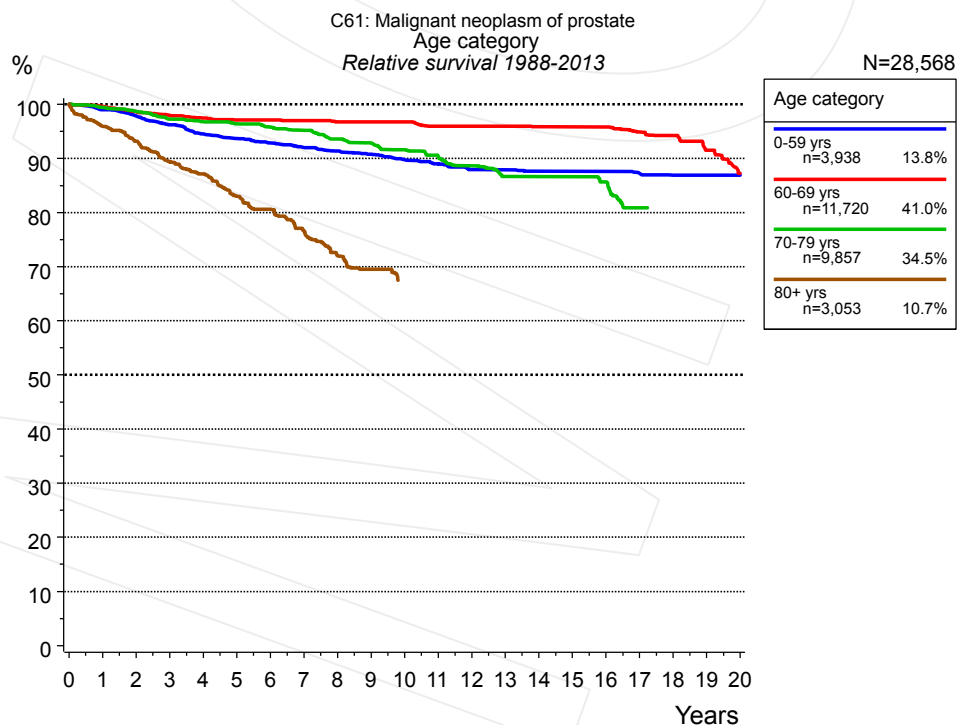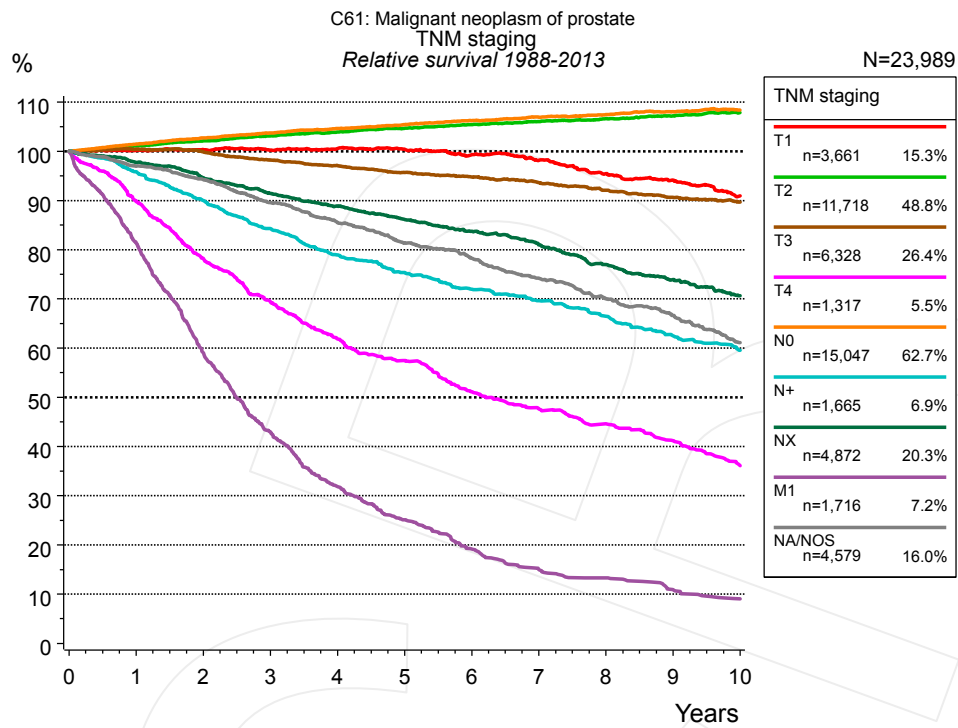

Figure 3a. Relative survival of patients with prostate cancer by age category. Included in the evaluation are 28,568 cases diagnosed between 1988 and 2013.

C61: Malignant neoplasm of prostate
Age category
Observed survival 1988-2013   N=28,568

Age category		
0-59 yrs n=3,938		13.8%
60-69 yrs n=11,720		41.0%
70-79 yrs n=9,857		34.5%
80+ yrs n=3,053		10.7%

Figure 3b. Observed survival of patients with prostate cancer by age category. Included in the evaluation are 28,568 cases diagnosed between 1988 and 2013.

	Age category							
	0-59 yrs n=3,938		60-69 yrs n=11,720		70-79 yrs n=9,857		80+ yrs n=3,053	
Years	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	98.2	99.0	97.7	99.6	95.0	99.4	84.7	95.9
2	96.2	97.9	94.8	98.6	89.8	98.7	72.3	93.2
3	93.7	96.2	92.1	98.0	84.0	97.3	60.6	89.4
4	91.1	94.5	89.5	97.5	78.9	96.8	51.0	87.1
5	89.3	93.7	87.0	97.1	73.8	96.4	41.6	83.0
6	87.4	92.9	84.5	97.1	68.6	95.8	34.2	80.6
7	85.5	92.1	81.9	97.0	63.4	95.2	27.1	76.6
8	83.8	91.4	79.2	96.8	57.8	93.6	21.1	72.1
9	82.0	90.8	76.5	96.8	52.4	92.8	16.8	69.6
10	79.7	89.8	73.6	96.8	47.2	91.6		
11	77.7	89.0	69.9	95.9	42.1	90.5		
12	75.4	88.0	67.3	95.9	37.2	88.6		
13	74.0	87.9	64.0	95.9	32.3	86.6		
14	72.2	87.6	60.1	95.9	28.6	86.6		
15	70.9	87.6	57.1	95.9	25.2	86.6		
16	68.8	87.6	52.9	95.9	21.2	85.7		
17	66.3	87.3	48.7	94.9	17.3	80.8		
18	64.1	86.9	45.1	94.3				
19	62.5	86.9	39.7	91.6				
20	60.3	86.9	34.5	87.3				

Table 3c. Observed (obs.) and relative (rel.) survival of patients with prostate cancer by age category for period 1988-2013 (N=28,568).

C61: Malignant neoplasm of prostate
TNM staging
Relative survival 1988-2013   N=23,989
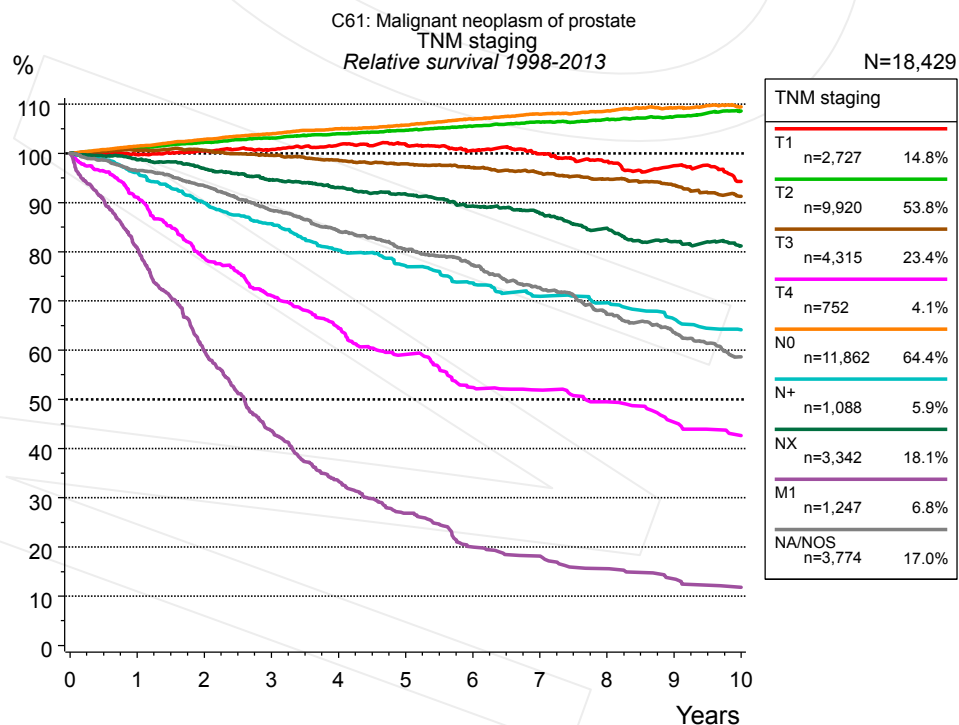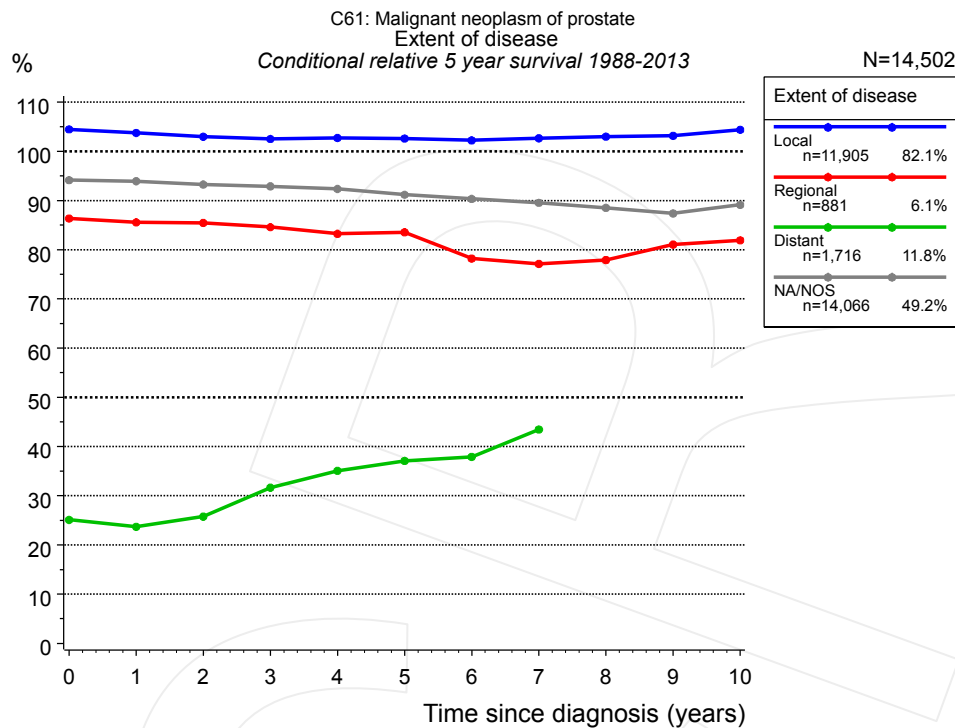

Figure 4a. Relative survival of patients with prostate cancer by TNM staging. For 24,066 of 28,568 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 23,989 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potientially considered in more than one subgroup. The grey line represents the subgroup of 4,579 patients with missing values regarding TNM staging (16.0% of 28,568 patients, the percent values of all other categories are related to n=23,989).

	TNM staging													
	T1		T2		T3		T4		N0		N+		NX	
	n=3,661		n=11,718		n=6,328		n=1,317		n=15,047		n=1,665		n=4,872	
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	95.5	100.2	98.4	101.1	97.3	100.4	85.8	89.9	98.9	101.4	93.4	95.8	92.6	97.7
2	91.1	100.3	96.6	102.1	93.7	99.9	71.4	78.2	97.5	102.7	85.2	90.0	85.0	94.6
3	86.6	100.2	94.8	103.1	89.2	98.2	60.6	69.4	95.8	103.7	77.5	84.3	77.8	91.5
4	82.5	100.6	92.6	103.9	85.2	97.1	51.6	61.8	93.8	104.6	70.5	78.9	71.5	88.8
5	78.1	100.4	90.3	104.7	80.9	95.7	45.8	57.5	91.6	105.4	65.3	75.4	65.3	86.1
6	73.1	99.3	87.9	105.4	77.2	94.8	39.0	51.1	89.3	106.2	60.3	72.0	59.8	83.7
7	68.2	98.2	85.4	106.0	73.4	93.6	34.7	47.6	86.8	106.9	56.4	69.6	54.4	81.0
8	62.5	95.4	82.7	106.6	69.3	92.1	31.0	44.6	84.1	107.5	51.8	66.4	48.7	77.0
9	58.0	94.1	80.0	107.2	65.3	90.6	27.4	41.2	81.3	108.1	46.9	62.5	43.8	74.0
10	52.6	90.9	77.1	107.8	61.9	89.7	22.8	36.1	78.2	108.4	42.9	59.6	39.2	70.7

cont'd	TNM staging			
	M1 n=1,716		NA/NOS n=4,579	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	77.8	81.5	91.5	97.0
2	53.9	59.0	83.9	94.2
3	37.6	43.0	75.2	89.6
4	26.7	31.8	67.6	85.5
5	20.1	25.1	60.4	81.3
6	14.7	19.2	54.6	78.2
7	10.9	15.0	48.6	74.2
8	9.4	13.3	42.9	70.0
9	7.2	10.9	38.2	66.6
10	5.8	9.0	32.7	61.1

Table 4b. Observed (obs.) and relative (rel.) survival of patients with prostate cancer by TNM staging for period 1988-2013 (N=46,324).

Figure 4c. Relative survival of patients with prostate cancer by TNM staging. For 18,495 of 22,203 cases diagnosed between 1998 and 2013 valid data could be obtained for this item. For a total of 18,429 cases an evaluable classification was established. The accumulated percentage exceeds the 100% value because patients are potientially considered in more than one subgroup. The grey line represents the subgroup of 3,774 patients with missing values regarding TNM staging (17.0% of 22,203 patients, the percent values of all other categories are related to n=18,429).

	TNM staging												
	T1 n=2,727		T2 n=9,920		T3 n=4,315		T4 n=752		N0 n=11,862		N+ n=1,088		NX n=3,342	
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	95.4	99.7	98.6	101.1	98.0	100.6	87.9	91.1	99.2	101.4	93.9	96.1	94.4	98.7
2	92.0	100.4	97.1	102.2	95.4	100.6	73.3	78.7	98.1	102.8	85.7	89.9	88.7	96.9
3	88.2	100.7	95.3	103.1	91.7	99.6	63.9	71.0	96.8	103.9	79.7	85.7	82.7	94.6
4	85.0	101.7	93.4	104.0	88.1	98.6	55.8	64.4	95.1	105.0	72.8	80.3	77.6	93.1
5	81.1	101.9	91.2	104.7	84.8	97.9	49.5	59.1	93.1	105.7	68.1	77.1	72.8	91.7
6	76.2	100.6	89.0	105.5	81.5	97.1	42.5	52.4	91.4	106.9	63.2	73.6	67.4	89.3
7	71.7	99.9	86.8	106.4	77.8	95.9	40.6	51.9	89.4	107.9	59.1	70.9	62.9	87.8
8	66.8	98.4	84.4	107.0	74.2	94.8	37.1	49.5	87.0	108.6	56.2	69.6	57.7	84.8
9	62.4	97.5	81.7	107.4	70.5	93.6	32.8	45.3	84.4	109.2	51.6	66.3	53.0	82.1
10	57.0	94.3	79.4	108.6	66.1	91.3	29.5	42.6	81.4	109.4	48.2	64.2	49.5	81.2

	TNM staging			
cont'd	M1 n=1,247		NA/NOS n=3,774	
Years	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	77.5	80.8	91.2	96.5
2	55.3	59.9	83.4	93.3
3	38.7	43.6	74.6	88.4
4	28.5	33.3	67.0	84.2
5	22.0	26.9	60.3	80.4
6	15.9	20.0	54.5	77.3
7	13.9	18.2	48.2	72.7
8	11.5	15.6	41.8	67.3
9	9.6	13.5	37.0	63.6
10	8.1	11.8	32.0	58.6

Table 4d. Observed (obs.) and relative (rel.) survival of patients with prostate cancer by TNM staging for period 1998-2013 (N=35,253).

C61: Malignant neoplasm of prostate
Extent of disease
*Conditional relative 5 year survival 1988-2013*

Figure 4e. Conditional relative 5-year survival of patients with prostate cancer by extent of disease. For 24,066 of 28,568 cases diagnosed between 1988 and 2013 valid data could be obtained for this item. For a total of 14,502 cases an evaluable classification was established. The grey line represents the subgroup of 14,066 patients with missing values regarding extent of disease (49.2% of 28,568 patients, the percent values of all other categories are related to n=14,502).

	Extent of disease							
	Local		Regional		Distant		NA/NOS	
		Cond. surv. %		Cond. surv. %		Cond. surv. %		Cond. surv. %
Years	n	5 yrs	n	5 yrs	n	5 yrs	n	5 yrs
0	11,905	104.5	881	86.4	1,716	25.1	14,066	94.2
1	11,226	103.7	829	85.6	1,259	23.7	12,748	93.9
2	10,300	103.0	752	85.5	799	25.8	11,178	93.2
3	9,178	102.5	639	84.6	497	31.6	9,449	92.9
4	8,019	102.7	546	83.2	315	35.1	7,920	92.4
5	6,867	102.6	461	83.6	210	37.1	6,568	91.2
6	5,902	102.2	403	78.2	129	37.9	5,385	90.3
7	5,225	102.6	363	77.1	85	43.5	4,446	89.5
8	4,587	103.0	310	77.9			3,648	88.5
9	4,058	103.2	266	81.1			2,897	87.4
10	3,484	104.4	230	81.9			2,240	89.1

Table 4f. Conditional relative 5-year survival of patients with prostate cancer by extent of disease for period 1988-2013 (N=14,502).

Conditional relative survival rates refer to the relative survival probability, in this case for 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100%) under the condition of being alive for a certain time period (x-axis in Figure 4c). The results illustrate to what extent the cancer induced mortality of particular subgroups declines in the subsequent years after detection of the malignancy. For instance, according to the presented survival statistics, patients in the subgroup extent of disease="Local", who are alive at least 3 years after cancer diagnosis, the conditional relative 5-year survival rate is 102.5% (n=9,178).

C61: Malignant neoplasm of prostate
Post-progression survival
Observed survival 1988-2013
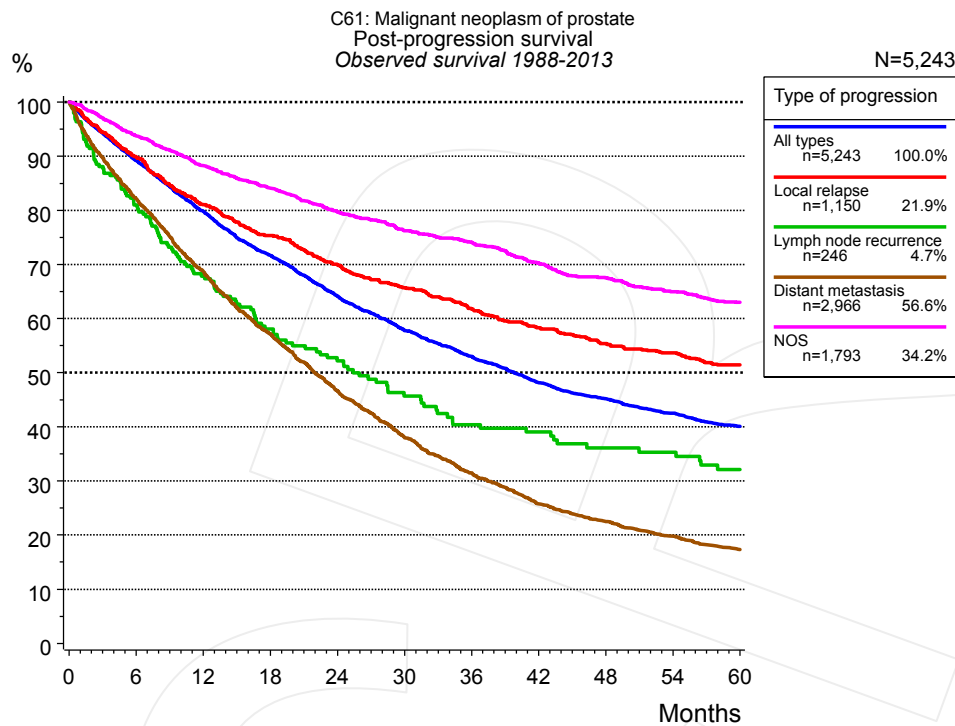
Figure 5a. Observed post-progression survival of 5,243 patients with prostate cancer diagnosed between 1988 and 2013 (incl. M1). These 5,243 patients with documented progression events during their course of disease represent 18.4% of the totally 28,568 evaluated cases. Patients with cancer relapse documented via death certificates only were excluded (n=936, 3.3%). Multiple progression types on different sites are included in the evaluation even when not occuring 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.

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 potientially considered in more than one subgroup.

| | **Type of progression** | | | | |
Months	All types n=5,243 %	Local relapse n=1,150 %	Lymph node recurrence n=246 %	Distant metastasis n=2,966 %	NOS n=1,793 %
0	100.0	100.0	100.0	100.0	100.0
12	79.8	81.0	67.8	68.7	88.2
24	64.1	69.9	52.2	46.6	79.7
36	53.0	61.8	40.4	31.4	74.1
48	45.2	55.3	36.1	22.5	67.5
60	40.1	51.4	32.1	17.3	63.0

Table 5b. Observed post-progression survival of patients with prostate cancer for period 1988-2013 (N=5,243).

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)
            Date of entry: Date of first locoregional recurrence, distant metastasis, unspecified
progression
            Event: Death of all causes
CS   Conditional survival, survival probability under the condition of surviving a given period of time

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