

# Munich Cancer Registry



- Incidence and Mortality
- Selection Matrix
- Homepage
- *Deutsch*

## ICD-10 C64-C66, C68: Urinary tract cancer

### Survival

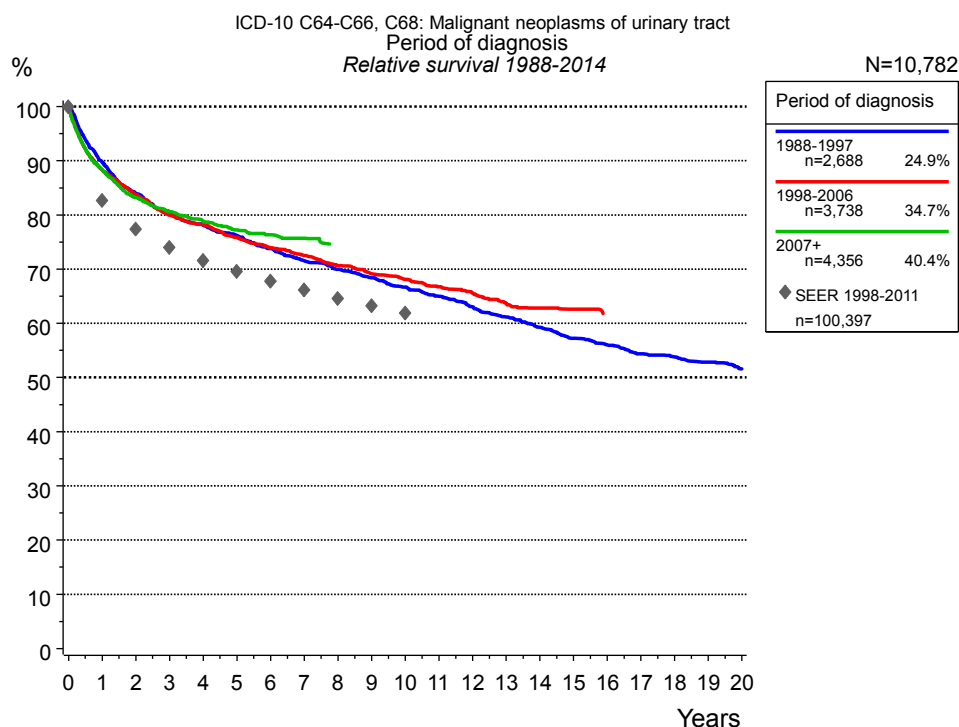
Year of diagnosis	1988-1997	1998-2014
Patients	3,091	11,729
Diseases	3,134	12,083
Cases evaluated	2,692	8,177
Creation date	04/11/2016	
Export date	12/23/2015	
Population	4.64 m	



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

<http://www.tumorregister-muenchen.de/en/facts/surv/sC6466E-ICD-10-C64-C66-C68-Urinary-tract-cancer-survival.pdf>



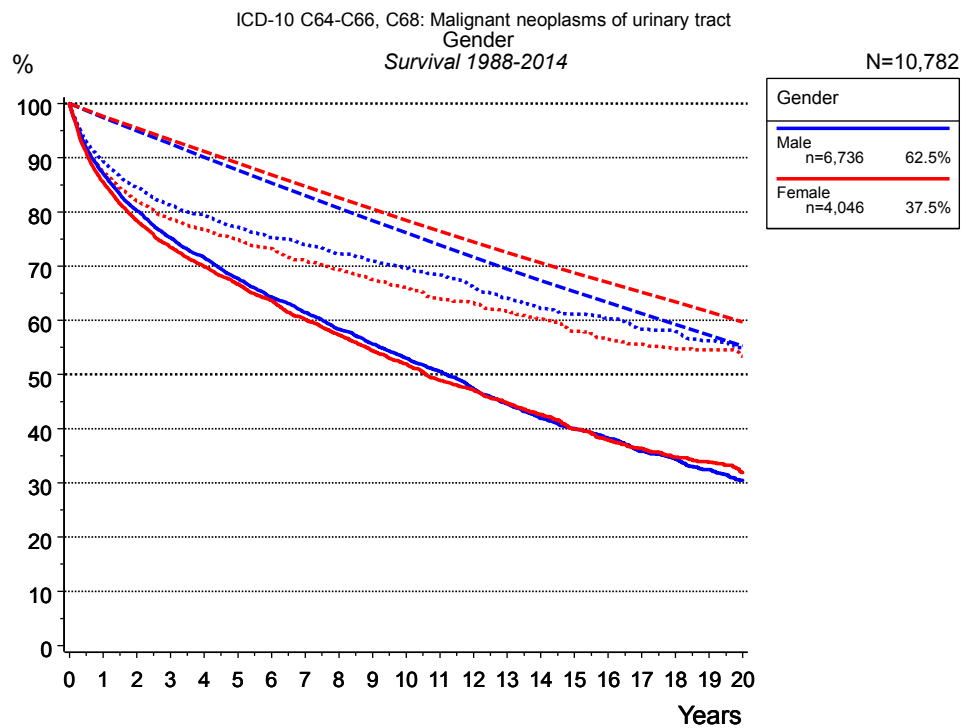
**Figure 1a.** Relative survival of patients with urinary tract cancer by period of diagnosis. Included in the evaluation are 10,782 cases diagnosed between 1988 and 2014.

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 1998, 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=2,688		1998-2006 n=3,738		2007+ n=4,356	
	obs. %	rel. %	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.5	89.7	86.1	88.3	86.2	88.3
2	79.8	83.9	79.6	83.7	79.3	83.2
3	74.8	80.6	74.1	79.9	74.9	80.6
4	70.7	78.1	70.8	78.2	71.5	78.9
5	67.3	76.2	66.9	75.8	68.1	77.2
6	63.5	73.8	63.6	73.9	65.5	76.3
7	60.0	71.5	60.7	72.5	63.2	75.7
8	57.2	70.0	57.6	70.7		
9	54.5	68.4	54.8	69.2		
10	51.8	66.7	52.4	68.1		
11	49.1	65.0	49.8	66.8		
12	46.4	63.1	47.4	65.5		
13	43.7	61.2	44.8	63.7		
14	41.2	59.2	42.7	62.8		
15	38.7	57.2	41.5	62.6		
16	36.8	56.0				
17	34.7	54.4				
18	33.2	53.8				
19	31.8	52.9				
20	29.9	51.6				

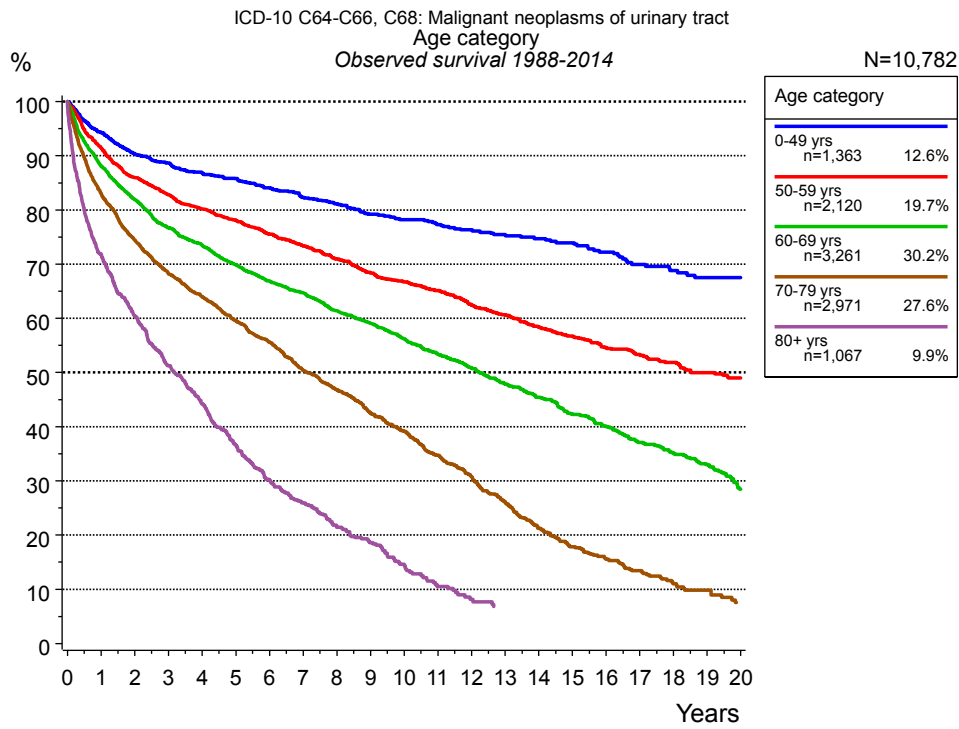
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by period of diagnosis for period 1988-2014 (N=10,782).



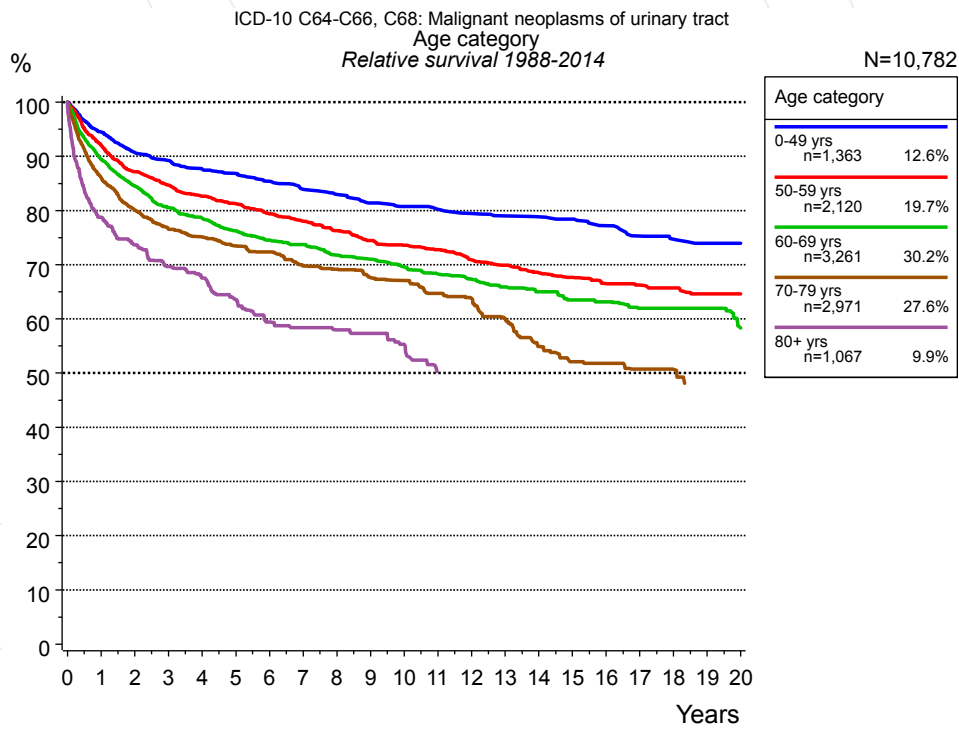
**Figure 2a.** Survival of patients with urinary tract cancer by gender. Included in the evaluation are 10,782 cases diagnosed between 1988 and 2014.

Years	Gender			
	Male n=6,736		Female n=4,046	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	87.0	89.3	85.5	87.6
2	80.2	84.5	78.3	82.1
3	75.2	81.3	73.4	78.7
4	71.6	79.4	69.9	76.6
5	67.8	77.2	66.7	74.9
6	64.3	75.3	63.6	73.2
7	61.4	74.0	60.2	71.0
8	58.3	72.3	57.3	69.3
9	55.6	70.9	54.4	67.5
10	53.0	69.6	52.0	66.1
11	50.5	68.4	49.0	64.0
12	47.4	66.2	47.1	63.3
13	44.6	64.1	44.8	61.7
14	41.9	62.2	42.7	60.3
15	40.0	61.2	39.9	58.0
16	38.2	60.3	37.9	56.5
17	35.8	58.4	36.4	55.6
18	34.3	57.9	34.8	54.7
19	32.5	56.3	33.8	54.6
20	30.5	55.0	31.9	53.4

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by gender for period 1988-2014 (N=10,782).



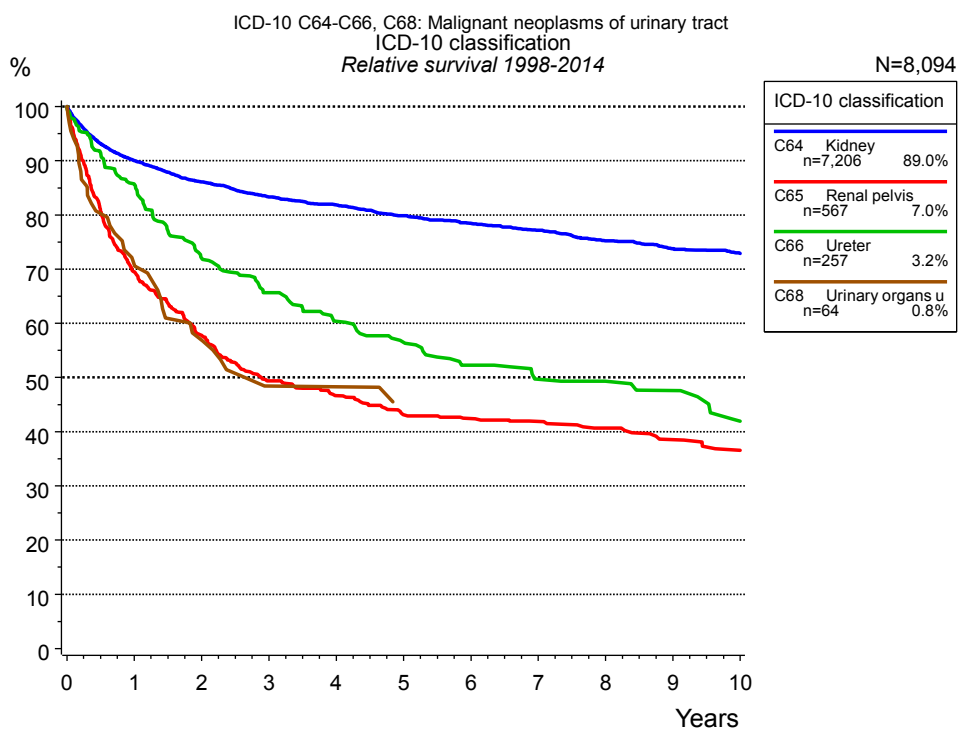
**Figure 3a.** Observed survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,782 cases diagnosed between 1988 and 2014.



**Figure 3b.** Relative survival of patients with urinary tract cancer by age category. Included in the evaluation are 10,782 cases diagnosed between 1988 and 2014.

Years	Age category									
	0-49 yrs n=1,363		50-59 yrs n=2,120		60-69 yrs n=3,261		70-79 yrs n=2,971		80+ yrs n=1,067	
	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
1	94.3	94.5	91.4	92.0	88.1	89.4	83.0	86.0	71.8	78.8
2	90.2	90.6	85.9	87.1	81.9	84.5	74.4	80.1	60.4	73.6
3	88.7	89.2	82.8	84.6	76.8	80.5	68.2	76.5	51.3	69.6
4	86.9	87.6	80.1	82.6	73.5	78.6	64.0	75.1	44.2	67.5
5	85.8	86.8	78.0	81.2	69.9	76.2	59.5	73.5	36.6	63.5
6	84.1	85.4	75.5	79.4	66.9	74.5	55.6	72.3	30.2	59.5
7	82.4	83.9	73.4	78.0	64.7	73.7	50.4	69.7	25.9	58.4
8	81.1	83.0	70.9	76.3	61.4	71.7	46.8	69.2	21.4	58.0
9	79.2	81.4	68.4	74.4	59.1	71.0	42.6	67.6	18.6	57.3
10	78.2	80.8	66.7	73.6	56.2	69.6	39.1	67.1	14.6	55.3
11	77.3	80.2	65.1	72.8	53.4	68.3	34.8	64.7	10.5	50.3
12	76.3	79.5	62.5	70.9	50.9	67.3	30.8	63.8		
13	75.5	79.0	60.7	69.9	47.9	65.9	26.2	60.0		
14	74.7	78.8	58.4	68.5	45.4	65.0	21.3	54.9		
15	74.0	78.4	56.7	67.6	42.3	63.5	17.9	52.1		
16	72.2	77.2	54.6	66.5	40.1	63.1	15.5	51.8		
17	69.9	75.3	53.3	66.2	37.1	61.9	13.4	50.7		
18	68.8	74.7	51.9	65.7	35.0	61.9	11.1	50.7		
19	67.5	73.9	50.0	64.6	33.0	61.9				
20	67.5	73.9	48.9	64.6	28.5	58.3				

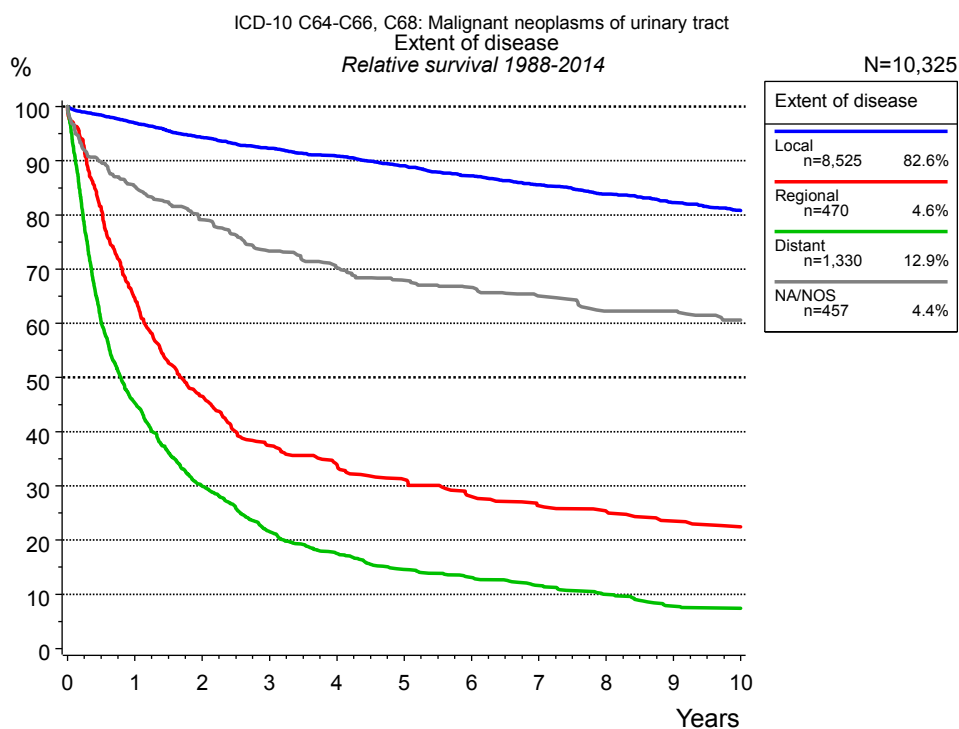
**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by age category for period 1988-2014 (N=10,782).



**Figure 4a.** Relative survival of patients with urinary tract cancer by ICD-10 classification. Included in the evaluation are 8,094 cases diagnosed between 1998 and 2014.

ICD-10 classification								
Years	C64 Kidney n=7,206		C65 Renal pelvis n=567		C66 Ureter n=257		C68 Urinary organs unspec. n=64	
	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	88.0	90.0	66.9	69.5	82.1	85.7	69.8	70.8
2	82.2	86.1	53.6	57.8	66.4	72.0	54.5	56.9
3	77.8	83.4	43.9	49.4	58.0	65.7	43.4	48.4
4	74.5	81.8	39.9	46.7	51.0	60.4	43.4	48.3
5	71.0	79.9	35.4	43.1	46.2	56.5	38.3	44.5
6	67.8	78.4	33.8	42.4	40.9	52.3		
7	65.0	77.1	32.2	41.9	37.4	49.7		
8	61.7	75.2	30.1	40.7	35.6	49.3		
9	58.8	73.8	27.6	38.6	33.7	47.6		
10	56.5	72.9	25.6	36.6	28.2	41.9		

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by ICD-10 classification for period 1998-2014 (N=8,094).

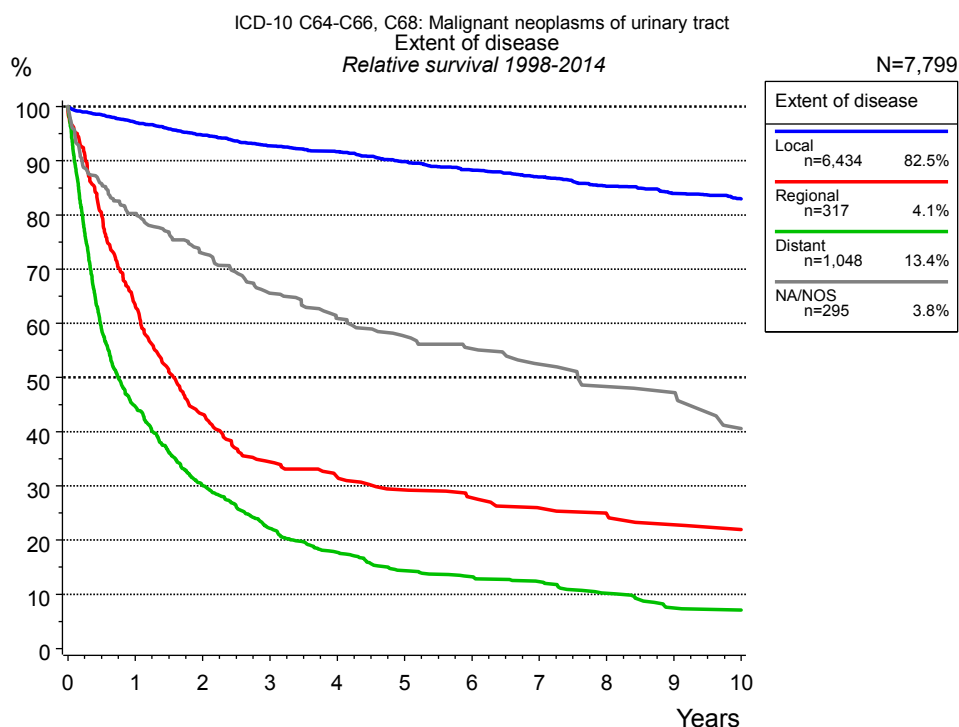


**Figure 4c.** Relative survival of patients with urinary tract cancer by extent of disease. For 10,346 of 10,782 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 10,325 cases an evaluable classification was established. The grey line represents the subgroup of 457 patients with missing values regarding extent of disease (4.2% of 10,782 patients, the percent values of all other categories are related to n=10,325).

Years	Extent of disease							
	Local n=8,525		Regional n=470		Distant n=1,330		NA/NOS n=457	
	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	94.7	97.0	62.6	64.5	44.1	45.3	82.6	85.3
2	89.8	94.3	44.2	46.6	28.5	30.0	74.6	79.1
3	85.8	92.3	34.6	37.5	20.1	21.6	67.3	73.3
4	82.3	90.9	30.6	34.0	16.0	17.5	63.1	70.3
5	78.6	89.1	27.4	31.2	13.0	14.6	59.6	67.9
6	75.0	87.2	24.1	28.1	11.5	13.1	57.2	66.6
7	71.6	85.5	21.9	26.4	10.0	11.6	54.3	65.1
8	68.3	83.8	20.5	25.4	8.4	10.0	50.7	62.2
9	65.2	82.3	18.6	23.5	6.5	7.8	50.3	62.2
10	62.2	80.8	17.5	22.5	6.0	7.5	47.2	60.6

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1988-2014 (N=10,325).

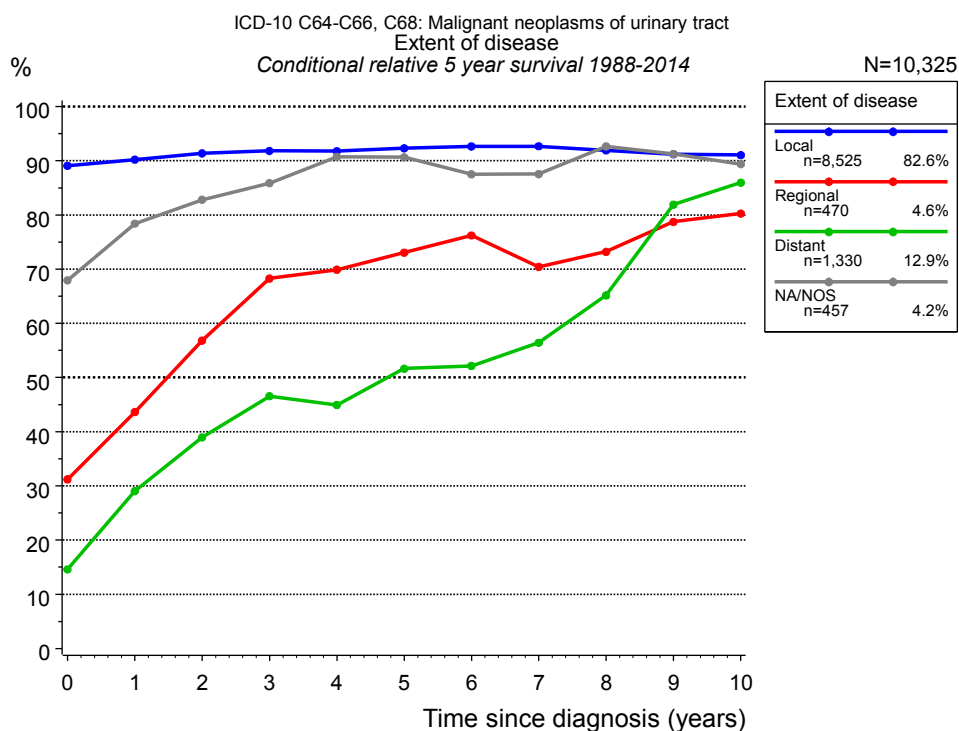




**Figure 4e.** Relative survival of patients with urinary tract cancer by extent of disease. For 7,815 of 8,094 cases diagnosed between 1998 and 2014 valid data could be obtained for this item. For a total of 7,799 cases an evaluable classification was established. The grey line represents the subgroup of 295 patients with missing values regarding extent of disease (3.6% of 8,094 patients, the percent values of all other categories are related to n=7,799).

Years	Extent of disease							
	Local n=6,434		Regional n=317		Distant n=1,048		NA/NOS n=295	
	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	94.8	97.1	61.1	63.1	43.5	44.6	77.6	80.3
2	90.3	94.7	40.9	43.2	28.6	30.0	68.3	72.9
3	86.3	92.7	31.8	34.5	20.6	22.2	59.6	65.6
4	83.1	91.7	28.9	31.6	16.3	17.8	54.1	60.9
5	79.4	89.9	25.7	29.3	12.9	14.4	50.0	57.7
6	75.9	88.3	23.6	27.8	11.7	13.2	47.0	55.3
7	72.9	87.1	21.2	25.9	10.6	12.3	43.2	52.5
8	69.4	85.3	19.8	24.8	8.6	10.2	39.2	48.3
9	66.4	84.0	18.2	22.8	6.3	7.5	38.0	47.3
10	63.7	82.9	17.3	21.9	6.0	7.1	31.4	40.6

**Table 4f.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1998-2014 (N=7,799).

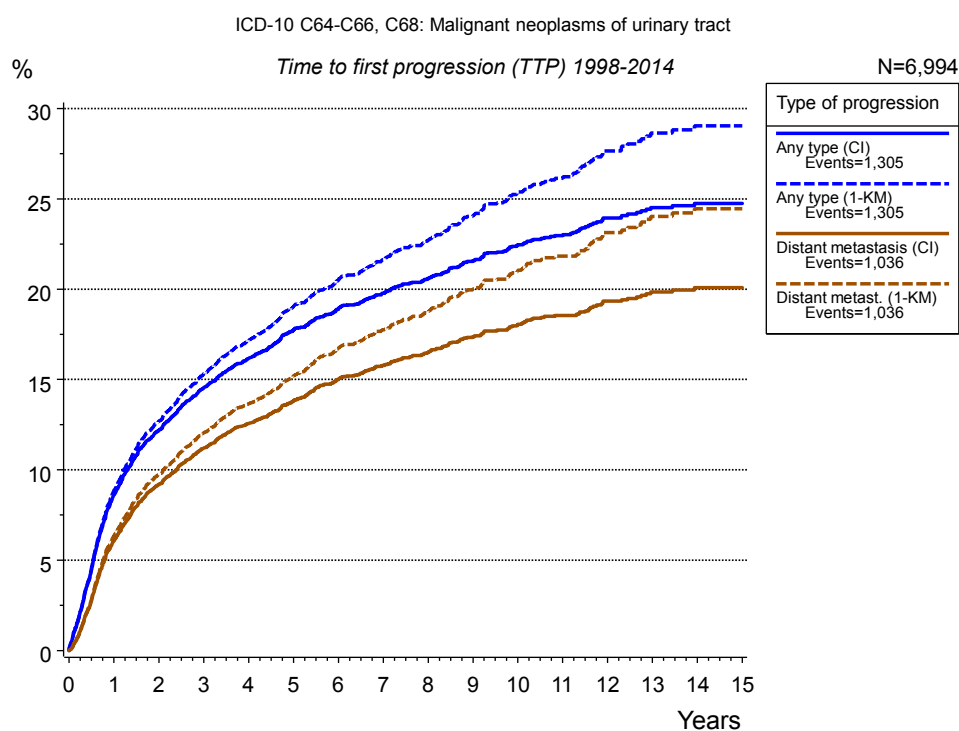


**Figure 4g.** Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease. For 10,346 of 10,782 cases diagnosed between 1988 and 2014 valid data could be obtained for this item. For a total of 10,325 cases an evaluable classification was established. The grey line represents the subgroup of 457 patients with missing values regarding extent of disease (4.2% of 10,782 patients, the percent values of all other categories are related to n=10,325).

Years	Extent of disease							
	Local		Regional		Distant		NA/NOS	
	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs	n	Cond. surv. % 5 yrs
0	8,525	89.1	470	31.2	1,330	14.6	457	67.9
1	7,568	90.2	279	43.7	559	29.1	358	78.4
2	6,799	91.4	184	56.8	346	39.0	314	82.8
3	6,098	91.8	136	68.3	230	46.6	270	85.9
4	5,492	91.8	113	69.9	173	44.9	235	90.7
5	4,848	92.3	97	73.1	126	51.7	207	90.7
6	4,244	92.7	79	76.2	102	52.2	182	87.5
7	3,702	92.7	65	70.4	78	56.4	159	87.5
8	3,208	91.9	58	73.2	62	65.2	137	92.7
9	2,788	91.2	50	78.7	42	81.9	132	91.2
10	2,399	91.1	42	80.3	32	86.0	119	89.4

**Table 4h.** Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease for period 1988-2014 (N=10,325).

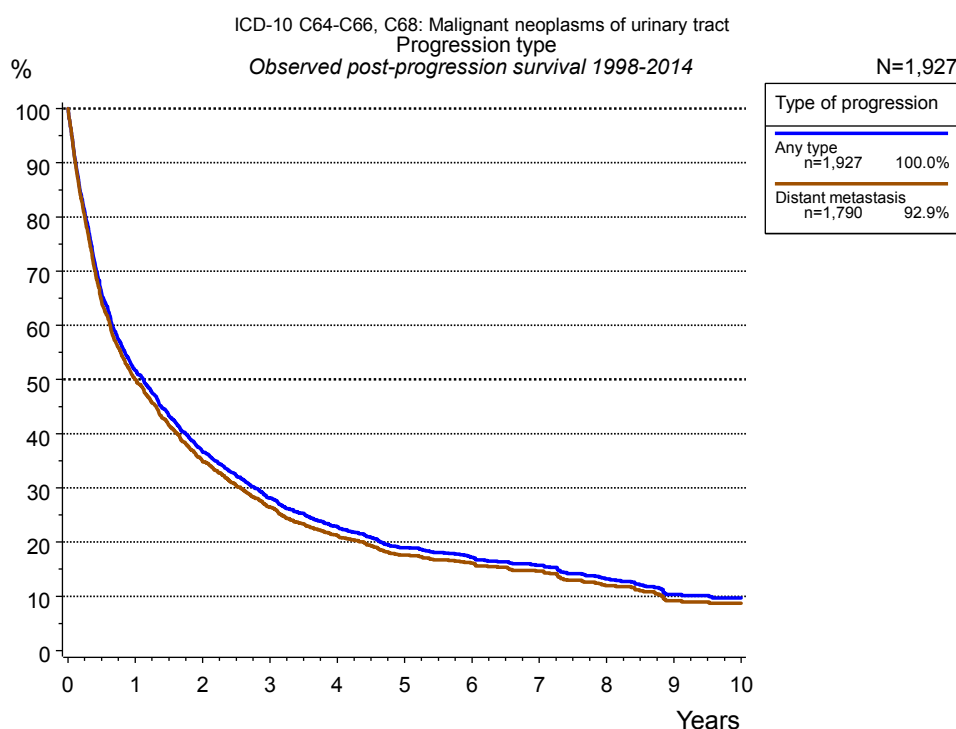
Conditional relative survival rates refer to the relative survival probability, in this case for 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100%) under the condition of being alive for a certain time period (x-axis in Figure 4e). The results illustrate to what extent 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 91.8% (n=6,098).



**Figure 5a.** Time to first progression of 6,994 patients with urinary tract cancer diagnosed between 1998 and 2014 (M0 only in solid cancers) estimated by cumulative incidence function (CI, solid line) accounting for death as competing risk and by inverse Kaplan-Meier estimate (1-KM, dashed line). The frequency of events may be underestimated due to underreporting.

Years	Type of progression			
	Any type (CI)	Any type (1-KM)	Distant metastasis (CI)	Distant metastasis (1-KM)
	n=6,994 %	n=6,994 %	n=6,994 %	n=6,994 %
0	0.0	0.0	0.0	0.0
1	8.6	8.9	6.1	6.4
2	12.2	12.7	9.2	9.8
3	14.5	15.3	11.2	12.1
4	16.2	17.2	12.6	13.7
5	17.8	19.1	13.8	15.2
6	18.9	20.5	15.0	16.7
7	19.8	21.6	15.8	17.8
8	20.6	22.7	16.5	18.7
9	21.6	24.1	17.4	20.0
10	22.5	25.4	18.1	21.0
11	23.0	26.1	18.6	21.8
12	23.9	27.7	19.3	23.1
13	24.5	28.6	19.8	24.0
14	24.8	29.0	20.1	24.5
15	24.8	29.0	20.1	24.5

**Table 5b.** Time to first progression of patients with urinary tract cancer for period 1998-2014 (N=6,994).

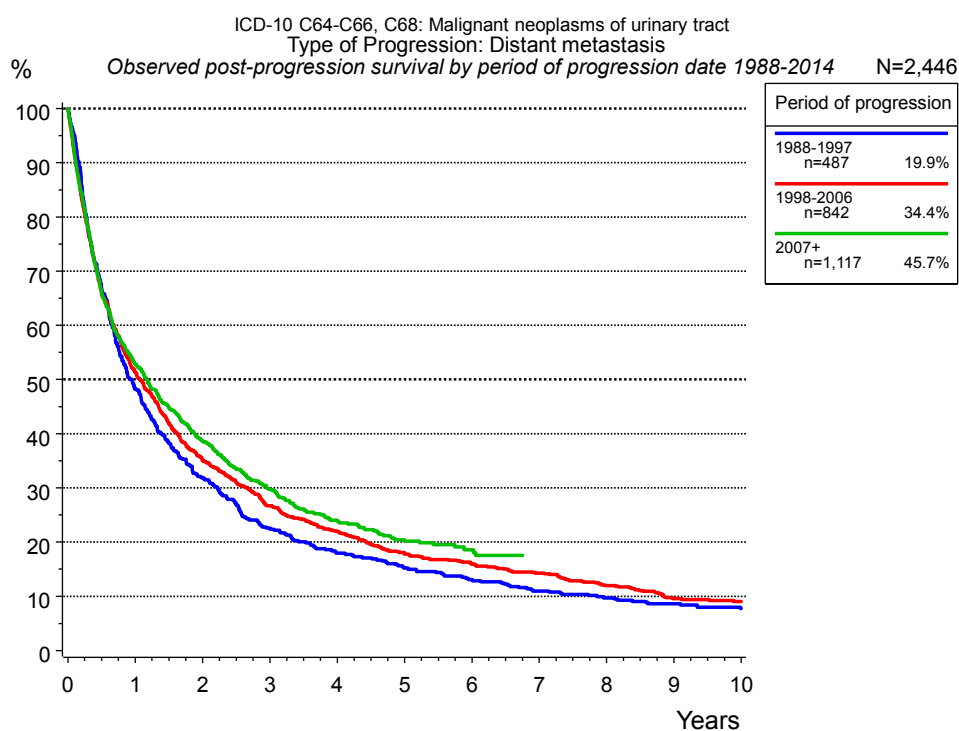


**Figure 5c.** Observed post-progression survival of 1,927 patients with urinary tract cancer diagnosed between 1998 and 2014. These 1,927 patients with documented progression events during their course of disease represent 24.0 % of the totally 8,022 evaluated cases (incl. M1, n=1,028, 12.8 %). Patients with cancer relapse documented via death certificates only were excluded (n=406, 5.1 %). Multiple progression types on different sites are included in the evaluation even when not occurring synchronously.

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 “Any type” 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.

Years	Type of progression	
	Any type n=1,927 %	Distant metastasis n=1,790 %
0	100.0	100.0
1	51.7	50.0
2	36.7	35.0
3	28.1	26.4
4	22.8	21.2
5	19.0	17.6
6	17.2	16.1
7	15.7	14.7
8	13.2	12.0
9	10.4	9.2
10	9.7	8.7

**Table 5d.** Observed post-progression survival of patients with urinary tract cancer for period 1998-2014 (N=1,927).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 2,446 patients with urinary tract cancer diagnosed between 1988 and 2014 by period of progression.

Years	Period of progression		
	1988-1997 n=487	1998-2006 n=842	2007+ n=1,117
	%	%	%
0	100.0	100.0	100.0
1	48.1	51.4	52.8
2	31.9	35.1	38.6
3	22.6	26.7	29.7
4	17.9	21.9	23.9
5	15.2	17.8	20.2
6	13.1	16.0	18.6
7	11.0	14.3	17.5
8	9.7	12.0	
9	8.6	9.6	
10	7.8	9.0	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with urinary tract cancer for period 1988-2014 by period of progression (N=2,446).

## Shortcuts

MCR Munich Cancer Registry, Germany

NCI National Cancer Institute, USA

SEER Surveillance, Epidemiology, and End Results, USA

UICC Union for International Cancer Control, Geneva

DCO Death certificate only Death certificate provides the only notification to the registry.

NA Not available

NOS Not otherwise specified

OS Overall/Observed survival Overall/Observed survival (Kaplan-Meier estimate)

Date of entry: diagnosis

Event: death from any cause

RS Relative survival Survival compared to “general population”, ratio of observed to expected survival (Ederer II method), reflecting cancer specific survival

AS Assembled survival Assembled chart of observed, expected, relative survival

CS Conditional survival Survival probability under the condition of surviving a given period of time

TTP Time to progression Time to first progression / relapse  
Date of entry: diagnosis  
Event: (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression

1-KM 1 minus Kaplan-Meier estimator  
 (“inverse” Kaplan-Meier estimator)

CI Cumulative incidence  
Death as competing risk (according to Kalbfleisch und Prentice)

PPS Post-progression survival Survival since first progression / relapse (Kaplan-Meier estimate)  
Date of entry (progression / relapse): first local-, lymph node recurrence, distant metastasis or unspecified progression  
Event: death from any cause

## Recommended Citation

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# Index of figures and tables

Fig./Tbl.	Page
1a Relative survival by period of diagnosis (chart)	2
1b Survival by period of diagnosis (table)	3
2a Survival by gender (chart)	4
2b Survival by gender (table)	4
3a Observed survival by age category (chart)	5
3b Relative survival by age category (chart)	5
3c Survival by age category (table)	6
4a Relative survival by ICD-10 classification (chart)	7
4b Survival by ICD-10 classification (table)	7
4c Relative survival by extent of disease 1988+ (chart)	8
4d Survival by extent of disease 1988+ (table)	8
4e Relative survival by extent of disease 1998+ (chart)	9
4f Survival by extent of disease 1998+ (table)	9
4g Conditional survival by extent of disease (chart)	10
4h Conditional survival by extent of disease (table)	10
5a Time to first progression (chart)	11
5b Time to first progression (table)	11
5c Observed post-progression survival (chart)	12
5d Observed post-progression survival (table)	12
5e Observed post-progression survival by period of progression (chart)	13
5f Observed post-progression survival by period of progression (table)	13