

# Munich Cancer Registry



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

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

### Survival

Year of diagnosis	1988-1997	1998-2016
Patients	3,109	13,299
Diseases	3,155	13,726
Cases evaluated	2,701	9,134
Creation date	08/22/2018	
Export date	08/09/2018	
Population	4.81 m	



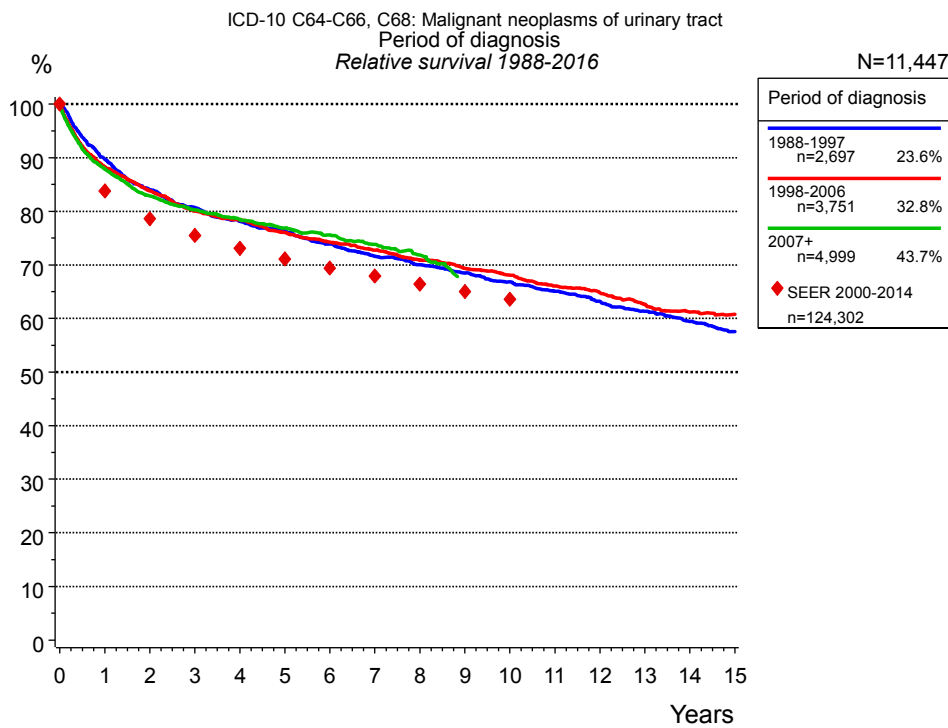
Munich Cancer Registry  
Cancer Registry Bavaria - Upper Bavaria Regional Center  
at Klinikum Grosshadern/IBE  
Marchioninstr. 15  
Munich, 81377  
Germany

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

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

## Index of figures and tables

Fig./Tbl.		Page
1a	Relative survival by period of diagnosis (chart)	3
1b	Survival by period of diagnosis (table)	3
2a	Survival by sex (chart)	4
2b	Survival by sex (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



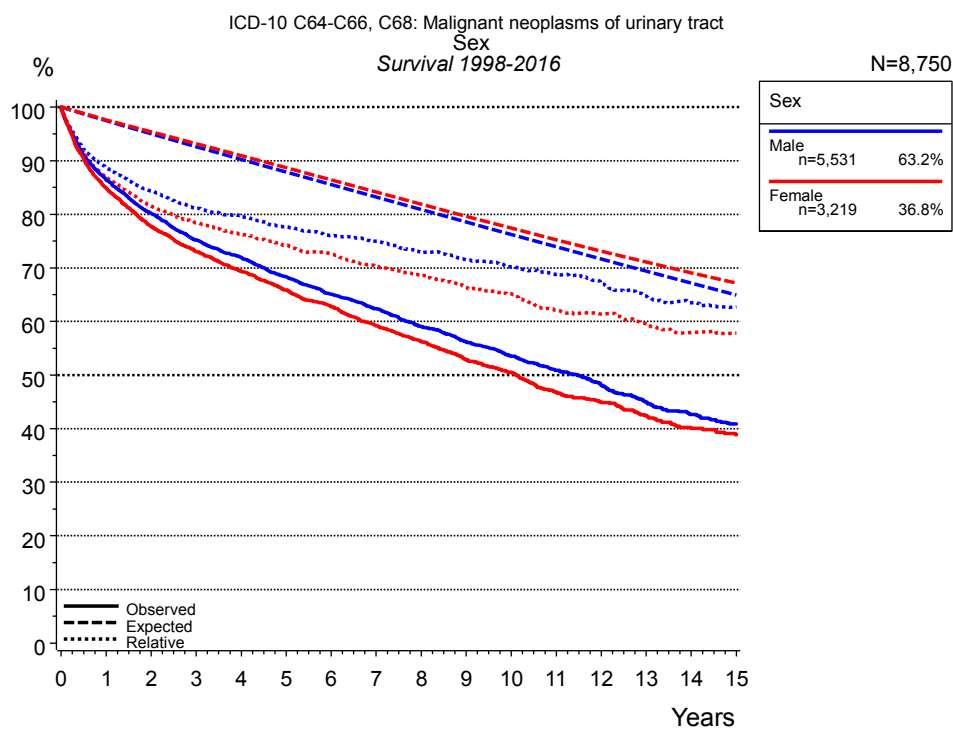
**Figure 1a.** Relative survival of patients with urinary tract cancer by period of diagnosis. Included in the evaluation are 11,447 cases diagnosed between 1988 and 2016.

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 2000 to 2014, and are represented by colored 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		1998-2006		2007+	
	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	85.7	87.9
2	79.9	84.0	79.7	83.8	78.9	82.9
3	74.9	80.7	74.2	80.0	74.6	80.3
4	70.7	78.1	70.9	78.4	71.1	78.5
5	67.3	76.3	67.1	76.1	67.9	76.9
6	63.6	73.9	63.8	74.2	64.9	75.6
7	60.1	71.6	60.9	72.8	61.6	73.8
8	57.3	70.0	57.7	70.9	58.2	71.8
9	54.5	68.5	54.9	69.4		
10	51.8	66.8	52.3	68.1		
11	49.2	65.1	49.3	66.0		
12	46.4	63.2	46.9	64.8		
13	43.8	61.3	44.0	62.7		
14	41.3	59.4	41.6	61.2		
15	38.8	57.5	40.1	60.8		

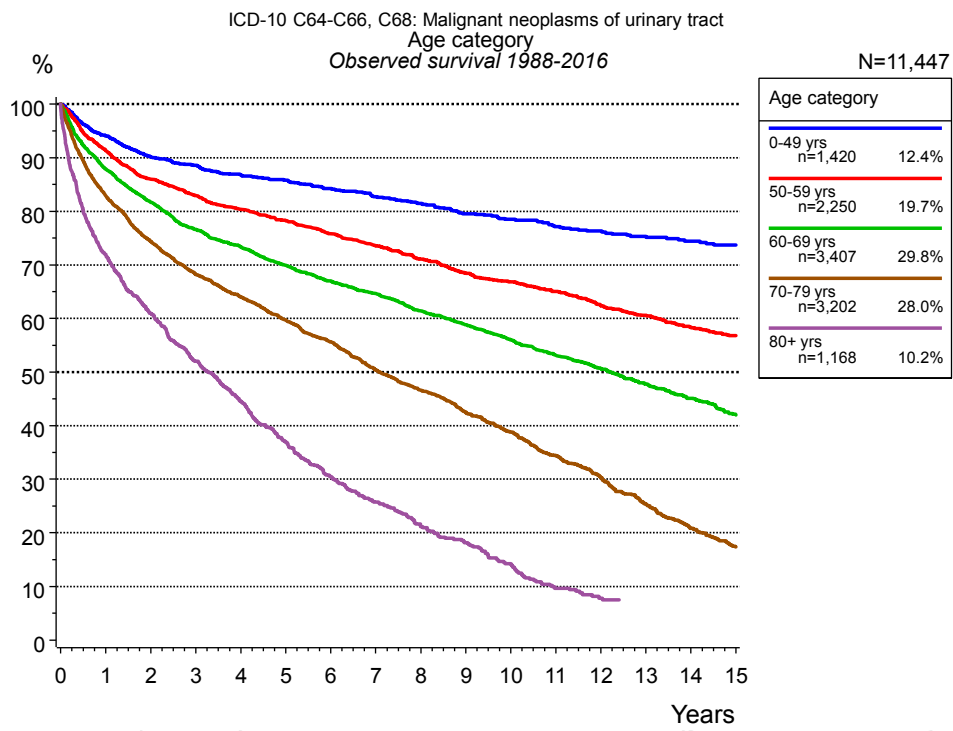
**Table 1b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by period of diagnosis for period 1988-2016 (N=11,447).



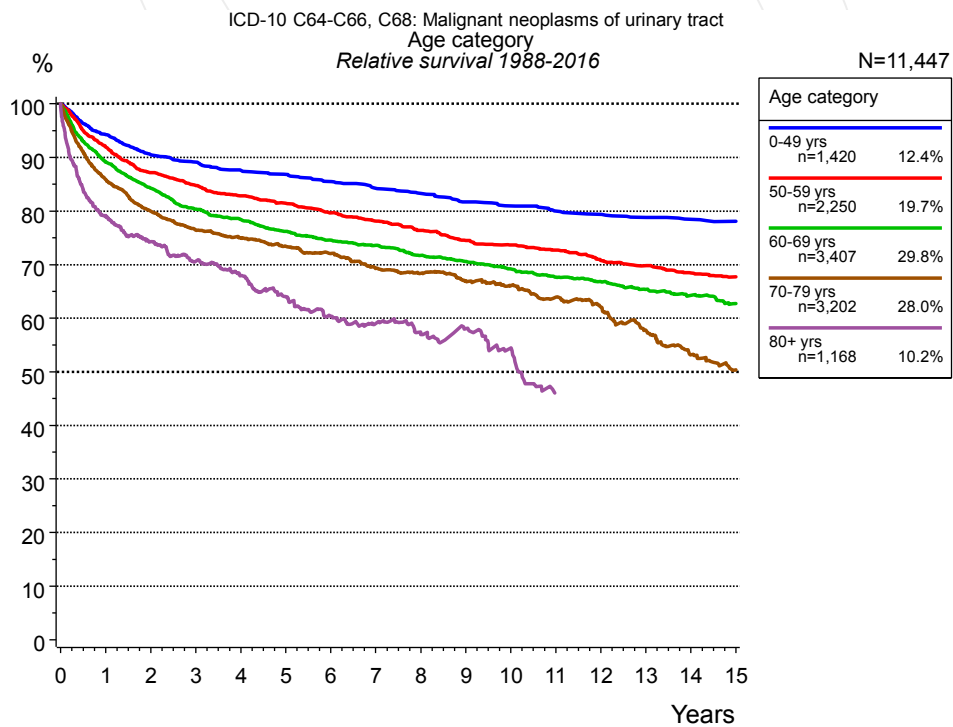
**Figure 2a.** Survival of patients with urinary tract cancer by sex. Included in the evaluation are 8,750 cases diagnosed between 1998 and 2016.

Years	Sex			
	Male n=5,531		Female n=3,219	
	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0
1	86.4	88.7	84.9	87.0
2	80.2	84.3	77.7	81.5
3	75.2	81.1	73.0	78.4
4	71.9	79.6	69.4	76.2
5	68.3	77.7	65.9	74.2
6	65.1	76.0	62.7	72.5
7	62.4	75.0	59.2	70.2
8	59.0	73.0	56.2	68.6
9	56.2	71.5	52.9	66.3
10	53.5	70.1	50.6	65.2
11	50.9	68.8	46.8	62.1
12	48.1	67.1	45.0	61.4
13	45.0	64.8	42.5	59.5
14	42.7	63.5	40.0	57.9
15	40.9	62.7	38.8	57.8

**Table 2b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by sex for period 1998-2016 (N=8,750).



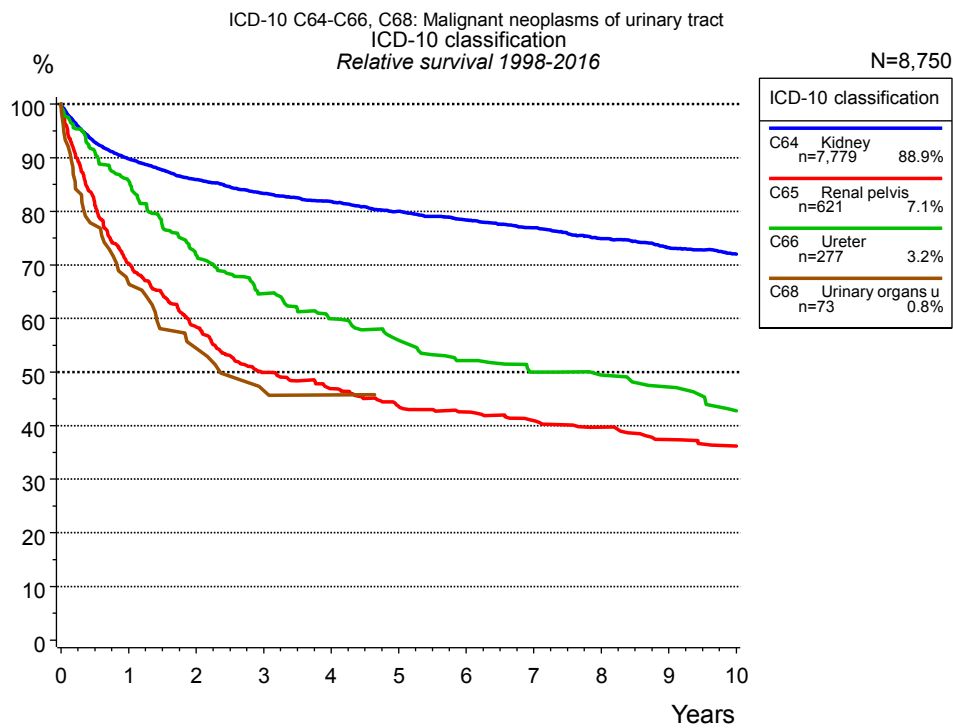
**Figure 3a.** Observed survival of patients with urinary tract cancer by age category. Included in the evaluation are 11,447 cases diagnosed between 1988 and 2016.



**Figure 3b.** Relative survival of patients with urinary tract cancer by age category. Included in the evaluation are 11,447 cases diagnosed between 1988 and 2016.

Years	Age category									
	0-49 yrs n=1,420		50-59 yrs n=2,250		60-69 yrs n=3,407		70-79 yrs n=3,202		80+ yrs n=1,168	
	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	94.0	94.2	91.3	91.9	87.8	89.1	82.9	85.8	71.9	79.1
2	90.1	90.5	86.0	87.2	81.7	84.2	74.4	80.0	60.9	74.3
3	88.6	89.1	82.9	84.7	76.6	80.3	68.2	76.4	52.0	70.7
4	86.8	87.6	80.3	82.8	73.4	78.4	64.0	75.0	44.5	67.9
5	85.8	86.8	78.2	81.4	69.9	76.2	59.7	73.4	37.0	64.0
6	84.3	85.5	75.8	79.6	66.9	74.5	55.6	72.1	30.5	60.4
7	82.7	84.2	73.6	78.1	64.6	73.6	50.3	69.3	25.7	59.0
8	81.4	83.3	71.1	76.4	61.4	71.7	46.6	68.4	21.2	57.0
9	79.5	81.7	68.4	74.5	58.8	70.5	42.4	66.9	18.2	58.0
10	78.5	80.9	66.8	73.7	56.0	69.1	38.8	66.1	14.3	54.5
11	77.2	80.0	65.1	72.7	53.1	67.7	34.4	63.9	9.7	46.2
12	76.3	79.4	62.4	70.8	50.7	66.8	30.3	62.1	7.8	46.2
13	75.3	78.8	60.6	69.8	47.7	65.4	25.5	57.7		
14	74.4	78.5	58.4	68.4	45.1	64.3	20.8	53.1		
15	73.7	78.1	56.8	67.7	42.0	62.7	17.4	50.3		

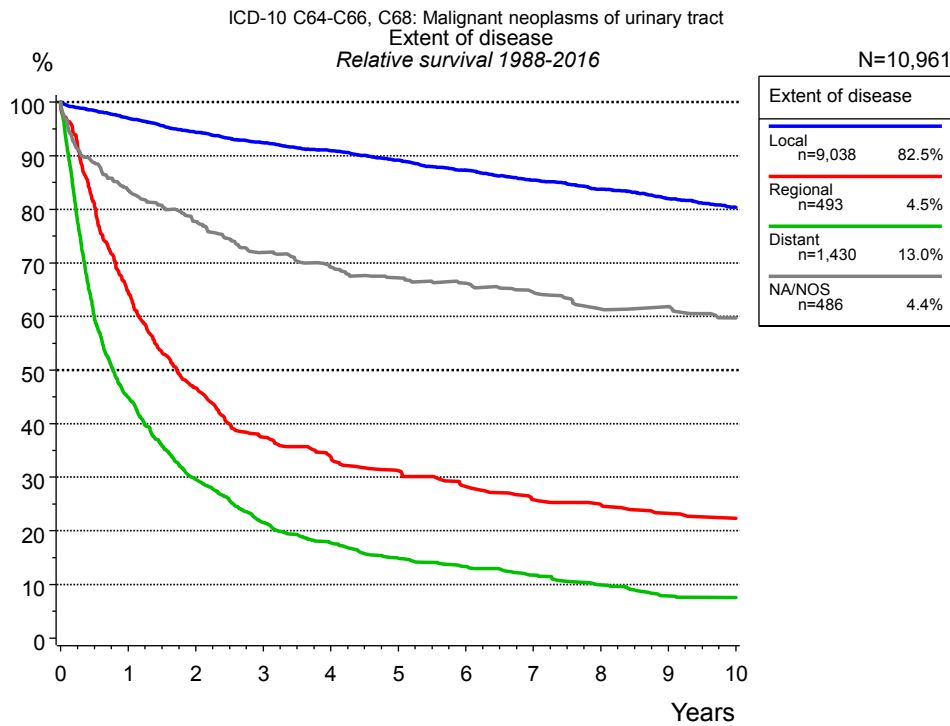
**Table 3c.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by age category for period 1988-2016 (N=11,447).



**Figure 4a.** Relative survival of patients with urinary tract cancer by ICD-10 classification. Included in the evaluation are 8,750 cases diagnosed between 1998 and 2016.

Years	ICD-10 classification							
	C64 Kidney		C65 Renal pelvis		C66 Ureter		C68 Urinary organs unspec.	
	n=7,779	n=621	n=277	n=73	obs. %	rel. %	obs. %	rel. %
0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	87.7	89.8	67.6	70.3	82.2	85.6	65.4	66.6
2	82.0	85.9	54.2	58.4	66.3	71.8	52.0	54.5
3	77.7	83.3	44.4	49.9	57.2	64.6	42.4	46.5
4	74.5	81.8	40.1	46.9	50.8	59.9	40.7	45.7
5	71.0	80.0	35.9	43.5	45.8	56.0		
6	67.8	78.4	33.8	42.6	40.9	52.1		
7	64.8	76.9	31.4	41.0	37.7	50.0		
8	61.4	74.9	29.3	39.7	35.8	49.5		
9	58.3	73.2	26.6	37.4	33.4	47.2		
10	55.8	72.0	25.1	36.2	28.9	42.8		

**Table 4b.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by ICD-10 classification for period 1998-2016 (N=8,750).

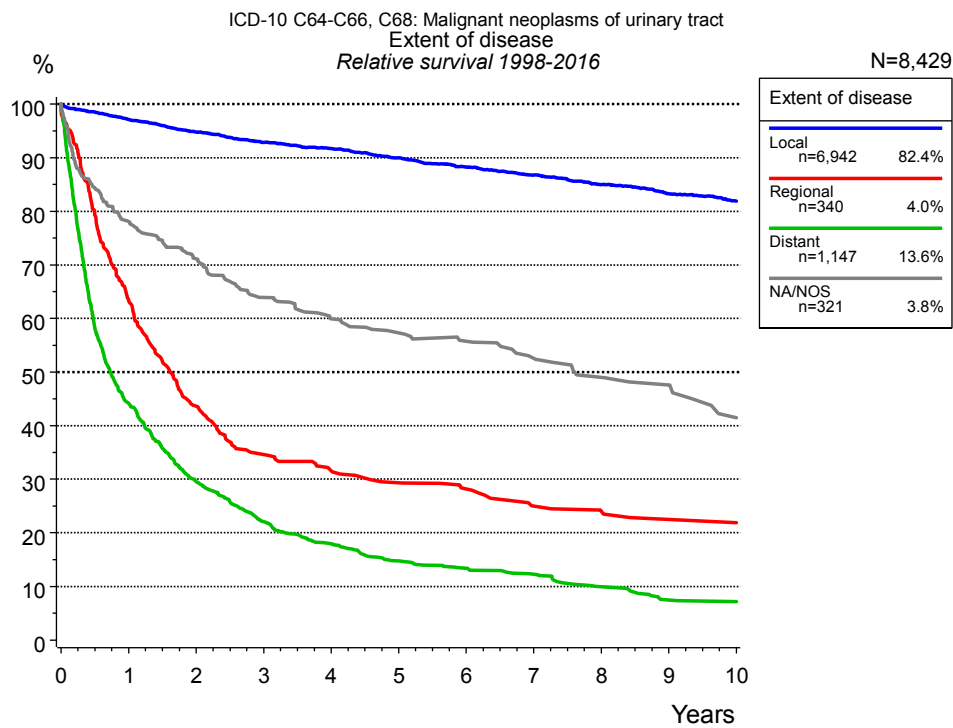


**Figure 4c.** Relative survival of patients with urinary tract cancer by extent of disease. For 10,982 of 11,447 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 10,961 cases an evaluable classification was established. The grey line represents the subgroup of 486 patients with missing values regarding extent of disease (4.2 % of 11,447 patients, the percent values of all other categories are related to n=10,961).

Years	Extent of disease							
	Local n=9,038		Regional n=493		Distant n=1,430		NA/NOS n=486	
	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	43.7	44.9	80.8	83.6
2	89.9	94.4	44.3	46.7	28.2	29.6	73.1	77.7
3	85.9	92.4	34.6	37.5	20.1	21.6	65.9	72.0
4	82.4	90.9	30.5	33.8	16.2	17.8	61.9	69.2
5	78.7	89.2	27.4	31.2	13.3	14.9	58.7	67.2
6	75.0	87.2	24.3	28.3	11.7	13.3	56.5	66.2
7	71.5	85.5	21.4	25.8	10.1	11.7	53.6	64.5
8	68.2	83.7	20.1	24.9	8.3	9.9	49.8	61.4
9	64.9	82.0	18.4	23.3	6.5	7.9	49.1	61.8
10	61.9	80.4	17.4	22.3	6.1	7.6	46.2	59.7

**Table 4d.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1988-2016 (N=10,961).

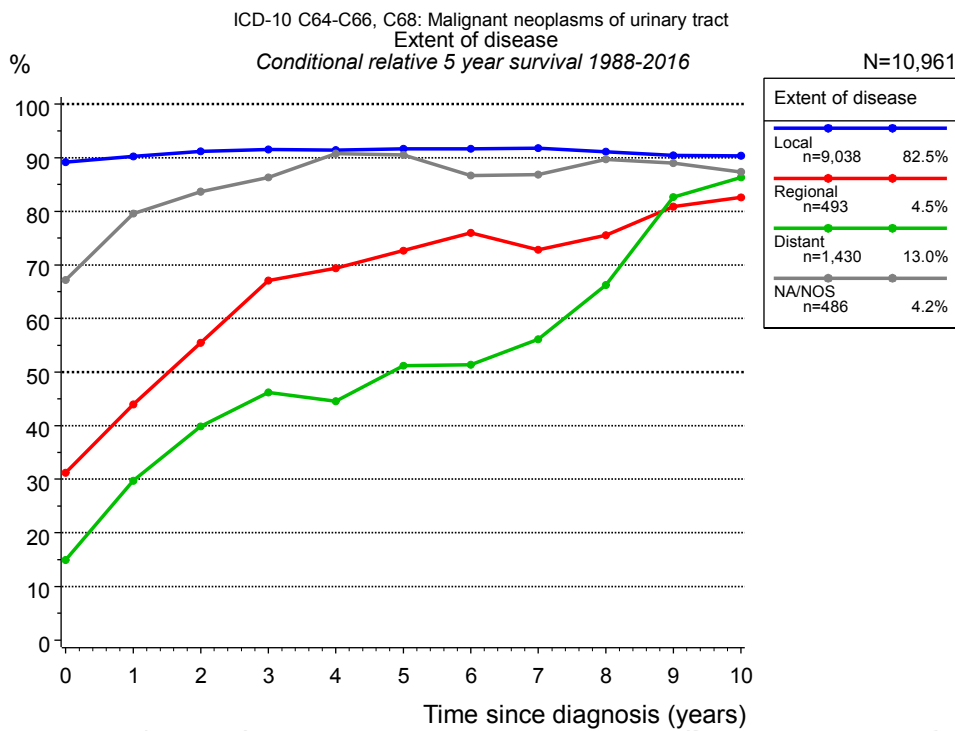




**Figure 4e.** Relative survival of patients with urinary tract cancer by extent of disease. For 8,445 of 8,750 cases diagnosed between 1998 and 2016 valid data could be obtained for this item. For a total of 8,429 cases an evaluable classification was established. The grey line represents the subgroup of 321 patients with missing values regarding extent of disease (3.7 % of 8,750 patients, the percent values of all other categories are related to n=8,429).

Years	Extent of disease							
	Local n=6,942		Regional n=340		Distant n=1,147		NA/NOS n=321	
	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	94.9	97.1	61.3	63.3	43.0	44.1	75.2	78.0
2	90.4	94.8	41.3	43.6	28.1	29.5	66.3	71.1
3	86.4	92.9	32.0	34.6	20.5	22.1	57.8	63.9
4	83.1	91.7	28.8	31.5	16.5	17.9	52.8	59.9
5	79.5	90.0	25.9	29.4	13.2	14.7	49.3	57.3
6	75.9	88.2	24.0	28.2	11.8	13.4	46.8	55.7
7	72.6	86.8	20.5	25.0	10.6	12.3	43.0	52.5
8	69.1	85.0	19.3	24.1	8.4	9.9	39.4	49.0
9	65.8	83.3	17.9	22.5	6.2	7.4	37.5	47.6
10	62.9	81.9	17.2	21.9	6.0	7.2	31.7	41.4

**Table 4f.** Observed (obs.) and relative (rel.) survival of patients with urinary tract cancer by extent of disease for period 1998-2016 (N=8,429).

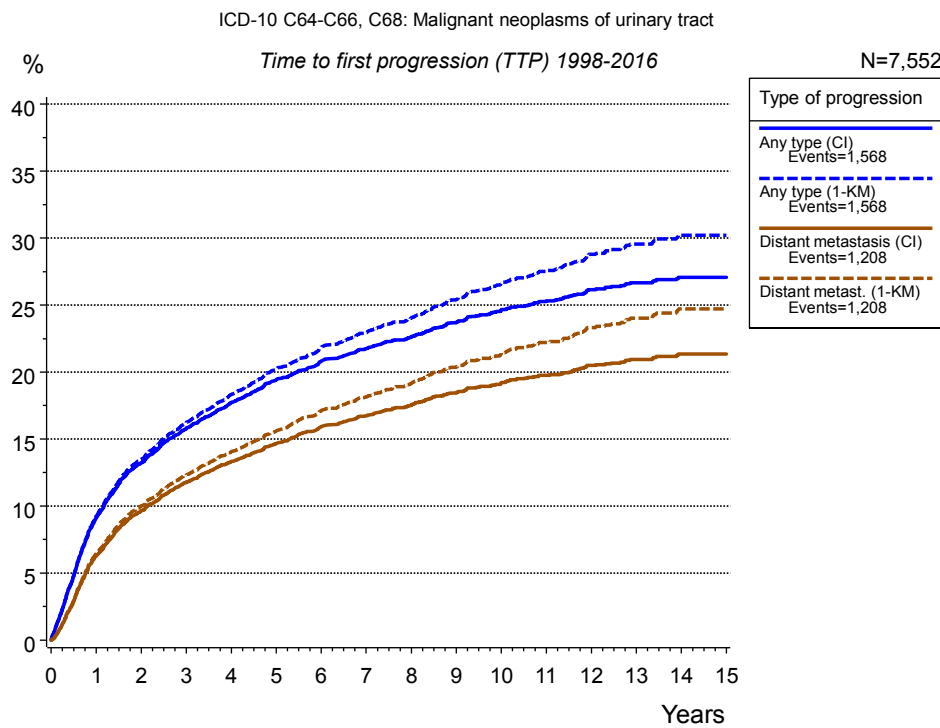


**Figure 4g.** Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease. For 10,982 of 11,447 cases diagnosed between 1988 and 2016 valid data could be obtained for this item. For a total of 10,961 cases an evaluable classification was established. The grey line represents the subgroup of 486 patients with missing values regarding extent of disease (4.2 % of 11,447 patients, the percent values of all other categories are related to n=10,961).

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	9,038	89.2	493	31.2	1,430	14.9	486	67.2
1	8,023	90.3	294	44.0	596	29.7	376	79.5
2	7,209	91.2	194	55.4	363	39.9	328	83.6
3	6,505	91.6	139	67.1	249	46.2	289	86.3
4	5,869	91.4	119	69.4	187	44.6	255	90.7
5	5,261	91.7	99	72.6	145	51.2	225	90.6
6	4,628	91.7	86	75.9	113	51.4	201	86.7
7	4,064	91.8	71	72.8	90	56.1	175	86.9
8	3,546	91.1	62	75.5	67	66.3	150	89.7
9	3,057	90.4	53	80.9	50	82.7	137	89.0
10	2,655	90.4	47	82.6	39	86.3	124	87.3

**Table 4h.** Conditional relative 5-year survival of patients with urinary tract cancer by extent of disease for period 1988-2016 (N=10,961).

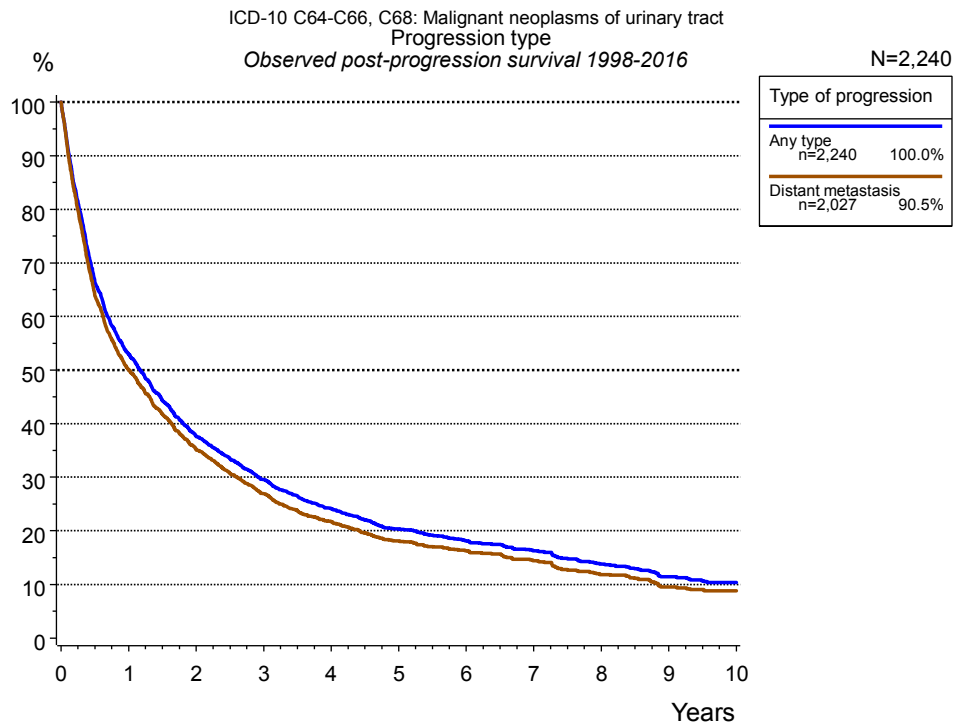
Conditional relative survival rates refer to the relative survival probability, in this case for 5 years after cancer diagnosis, compared to the age- and sex-matched population (=100 %) under the condition of being alive for a certain time period (x-axis in Figure 4e). The results illustrate to what 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 91.6% (n=6,505).



**Figure 5a.** Time to first progression of 7,552 patients with urinary tract cancer diagnosed between 1998 and 2016 (in solid cancers M0 only) 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 metast. (1-KM)
	n=7,552 %	n=7,552 %	n=7,552 %	n=7,552 %
0	0.0	0.0	0.0	0.0
1	9.2	9.3	6.3	6.5
2	13.2	13.5	9.7	10.0
3	15.8	16.2	11.8	12.3
4	17.7	18.3	13.3	14.1
5	19.4	20.2	14.7	15.6
6	20.8	21.8	15.9	17.1
7	21.8	23.0	16.8	18.1
8	22.6	24.0	17.5	19.1
9	23.7	25.4	18.5	20.4
10	24.7	26.7	19.2	21.4
11	25.3	27.5	19.8	22.2
12	26.1	28.8	20.5	23.3
13	26.7	29.6	20.9	24.0
14	27.1	30.2	21.4	24.7
15	27.1	30.2	21.4	24.7

**Table 5b.** Time to first progression of patients with urinary tract cancer for period 1998-2016 (N=7,552).

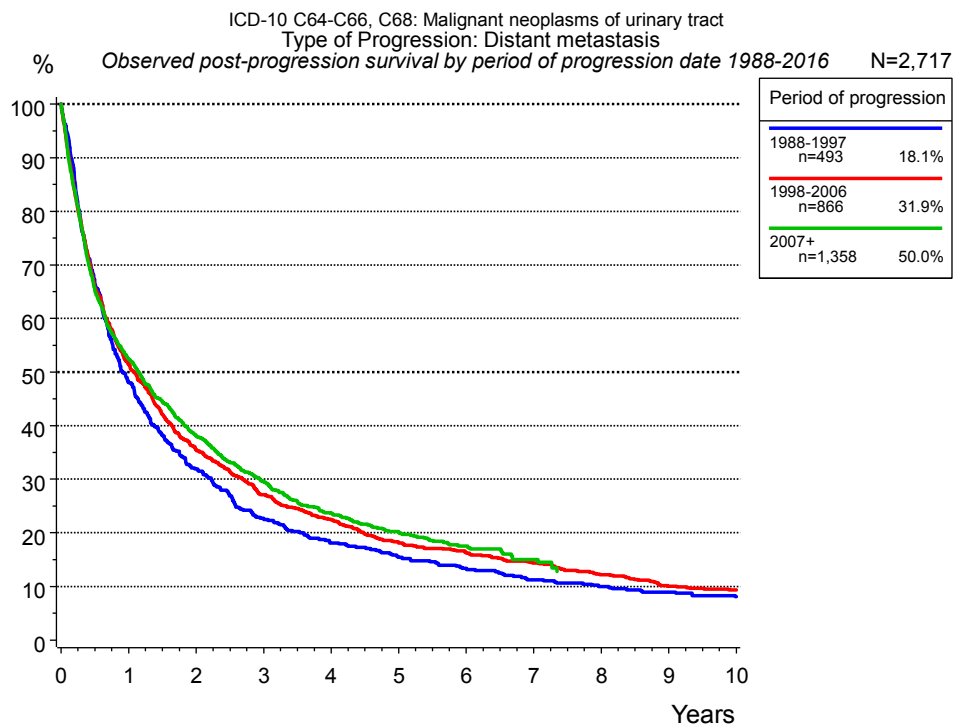


**Figure 5c.** Observed post-progression survival of 2,240 patients with urinary tract cancer diagnosed between 1998 and 2016. These 2,240 patients with documented progression events during their course of disease represent 25.8 % of the totally 8,680 evaluated cases (incl. M1, n=1,128, 13.0 %). Patients with cancer relapse documented via death certificates only were excluded (n=456, 5.3 %). 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=2,240 %	Distant metastasis n=2,027 %
0	100.0	100.0
1	53.0	50.0
2	37.7	35.2
3	29.5	26.9
4	24.1	21.6
5	20.3	18.1
6	18.1	16.3
7	16.3	14.5
8	13.8	11.8
9	11.4	9.5
10	10.3	8.8

**Table 5d.** Observed post-progression survival of patients with urinary tract cancer for period 1998-2016 (N=2,240).



**Figure 5e.** Observed post-progression (distant metastasis) survival of 2,717 patients with urinary tract cancer diagnosed between 1988 and 2016 by period of progression.

Years	Period of progression		
	1988-1997 n=493 %	1998-2006 n=866 %	2007+ n=1,358 %
0	100.0	100.0	100.0
1	48.0	51.5	52.4
2	31.9	35.5	38.2
3	22.7	27.1	29.5
4	18.1	22.4	23.6
5	15.4	18.1	20.1
6	13.3	16.4	17.5
7	11.3	14.4	15.0
8	10.0	12.2	
9	8.9	10.0	
10	8.1	9.4	

**Table 5f.** Observed post-progression (distant metastasis) survival of patients with urinary tract cancer for period 1988-2016 by period of progression (N=2,717).

## 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

Munich Cancer Registry. Survival ICD-10 C64-C66, C68: Urinary tract cancer [Internet]. 2018 [updated 2018 Aug 22; cited 2018 Oct 1]. Available from: <https://www.tumorregister-muenchen.de/en/facts/surv/sC6466E-ICD-10-C64-C66-C68-Urinary-tract-cancer-survival.pdf>

## Copyright

The content of the public web site provided by the Munich Cancer Registry is available worldwide and free of charge. All documents are free to download, utilize, copy, print-out and distribute, providing that the MCR is referenced.

## Disclaimer

The Munich Cancer Registry reserves the right to not be responsible for the topicality, correctness, completeness or quality of the information provided. Liability claims regarding damage caused by the use of any information provided, including any kind of information which is incomplete or incorrect, will therefore be rejected.