Comparative Analysis of Stage and Other Prognostic Factors Among Urethral, Ureteral, and Renal Pelvis Malignant Tumors

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Urinary Tract Cancers

- Transitional epithelial tissue lines most of urinary tract (except for part of urethra)
- Over 85% of malignant tumors – urothelial (transitional cell) carcinomas
- Few squamous epithelial or glandular tumors (parts of urethra)

AJCC Cancer Staging Manual 7th Edition

- Four staging forms, including Kidney (C649), Bladder (C670-C679), plus:
  - Renal Pelvis and Ureter (C659 & C669)
    - Stage: 0a, 0is, I, II, III, IV
    - Prognostic factors are not required for staging
    - Clinically significant: extranodal extension status, size of tumor deposit in lymph nodes, WHO/ISUP grade
  - Urethra (C680) (also applicable to urothelial carcinomas of prostate and prostatic urethra)
    - Stage: 0a, 0is, I, II, III, IV
    - Prognostic factors are not required for staging
    - Clinically significant: WHO/ISUP grade

Summary Staging Manual 2000

- Renal Pelvis and Ureter combined in one category – similar to the AJCC manual
- Urethra combined with paraurethral glands and unspecified urinary organs - dissimilar to AJCC manual
- Regional extension in SS2000 corresponds to T1, or T2, or T3, or T4 in AJCC

Collaborative Staging

- UT covered by five CS schemas:
  - KidneyParenchyma
  - KidneyRenalPelvis (*renal pelvis and ureter*)
  - Bladder
  - Urethra (*inclusive of Transitional Cell Carcinoma of the prostatic ducts and prostatic urethra*)
  - UrinaryOther
- Tumors with similar histology and prognostic factors (i.e., WHO grade), likely comparable in etiology and treatment are staged by a different set of rules based on anatomic location alone

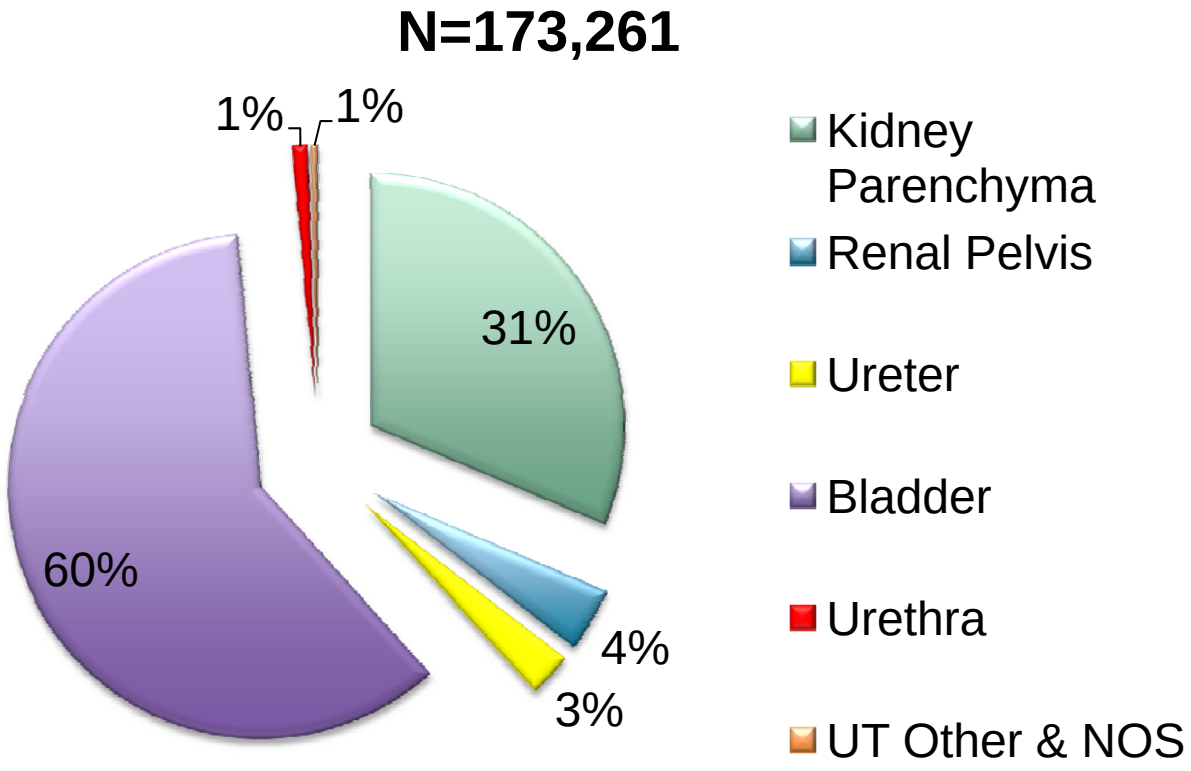
Research Questions

- Are there patterns of extension and dissemination of urothelial tumors that support the current categorization of renal pelvis, ureter and urethra tumors?
- Is there evidence in current surveillance data to support the inclusion of histology in the definition of urinary tract CS schema(s)?

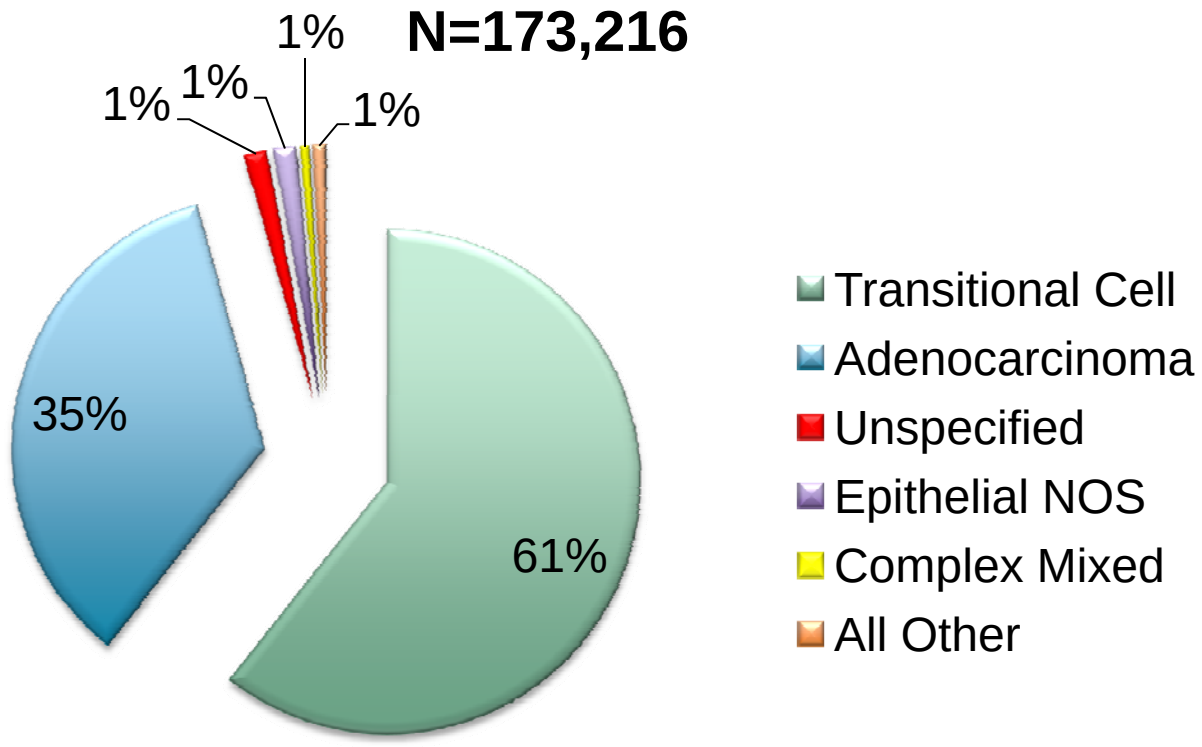
Method

- Surveillance, Epidemiology, and End Results (SEER) Program (www.seer.cancer.gov) Research Data (1973-2009), National Cancer Institute, DCCPS, Surveillance Research Program, Surveillance Systems Branch, released April 2012, based on the November 2011 submission.
- Cases select by:
  - Year of diagnosis: 2004 – 2009
  - SEER Recode: 29010 -29040 (urinary system codes)
  - Microscopically confirmed tumors
  - “Autopsy only” excluded

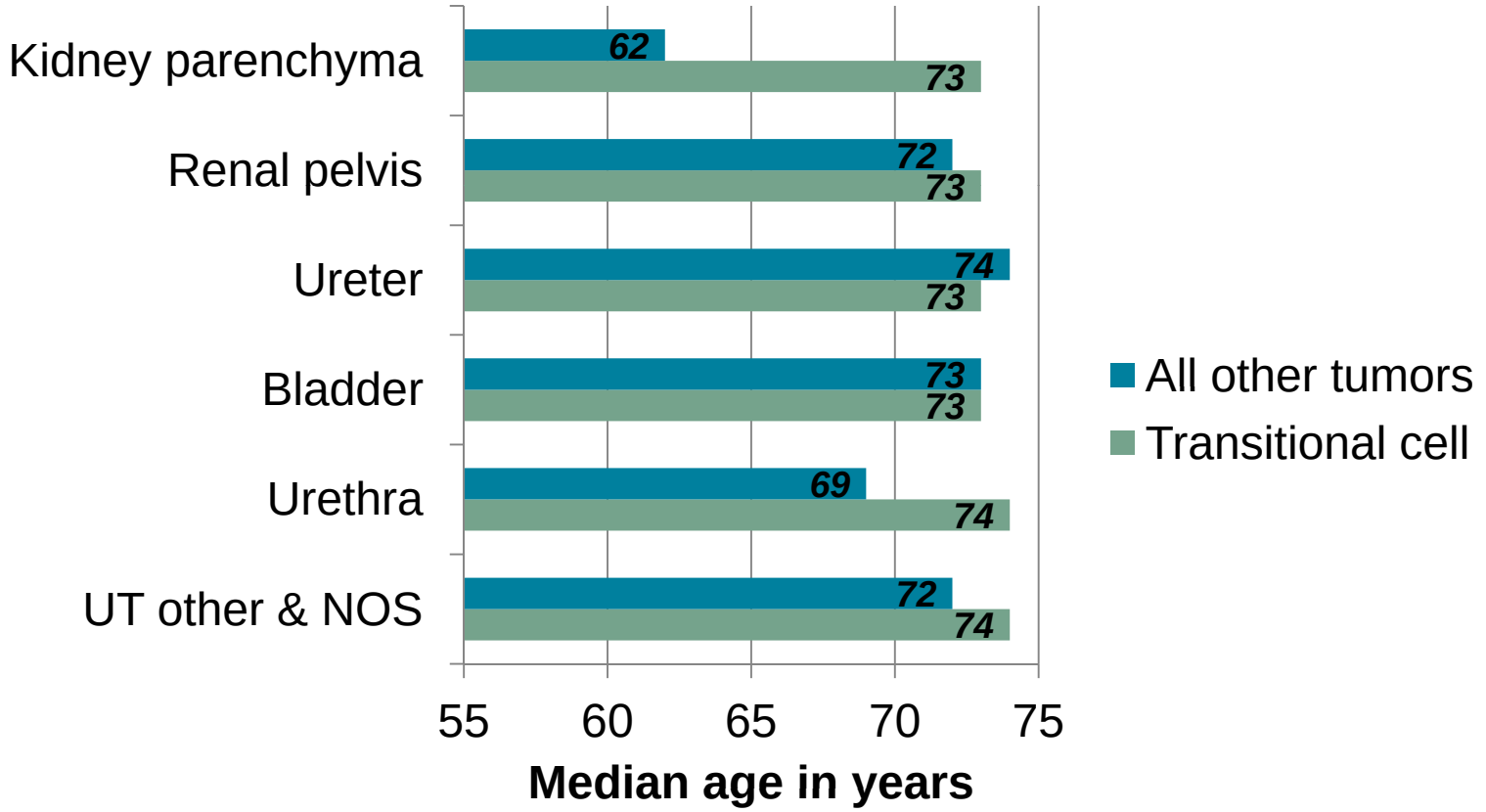
Distribution of Urinary Tract Cancer Cases by Anatomic Location



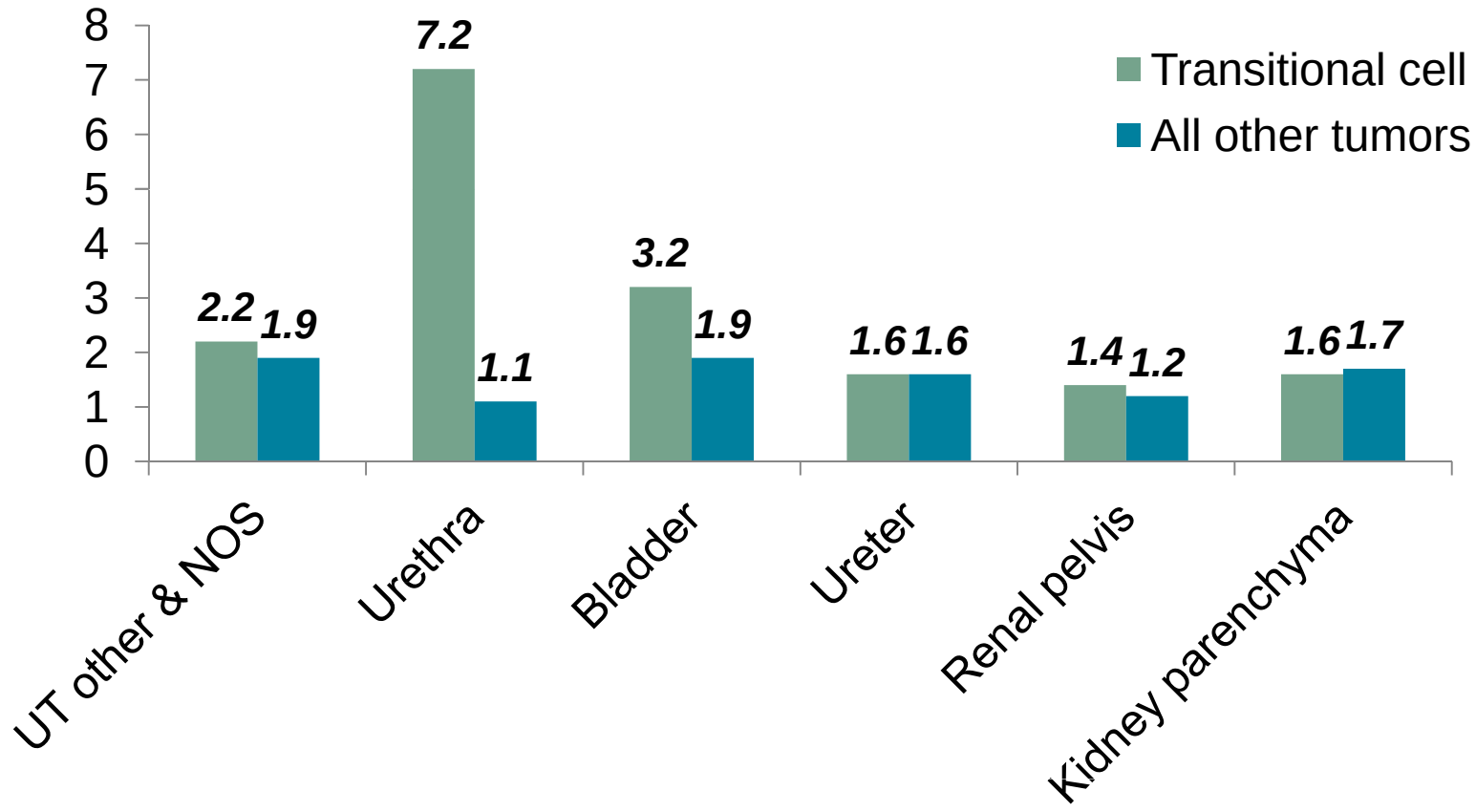
Distribution of Urinary Tract Cancer Cases by Tumor Histology



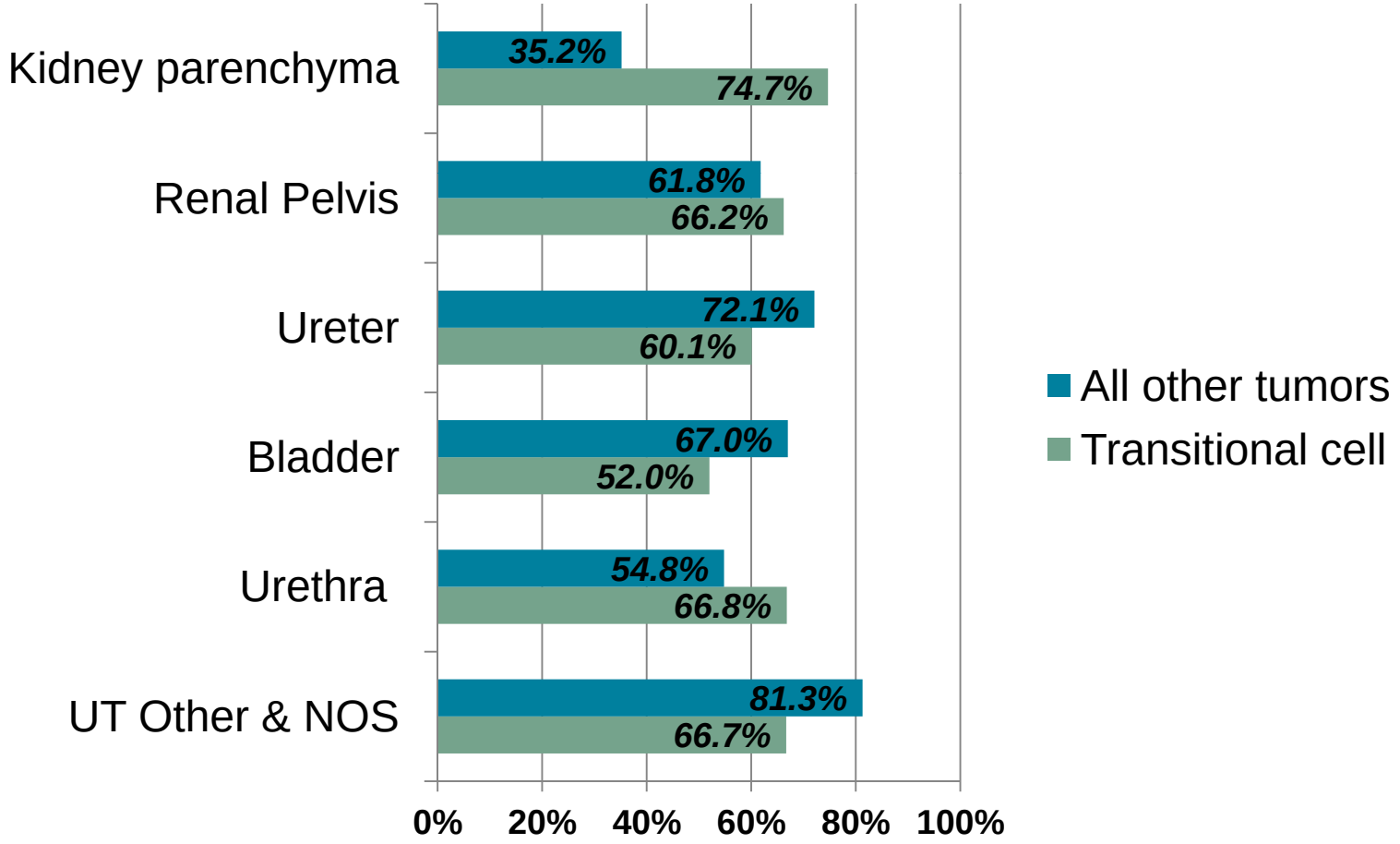
Median Age at Diagnosis by Histology Category



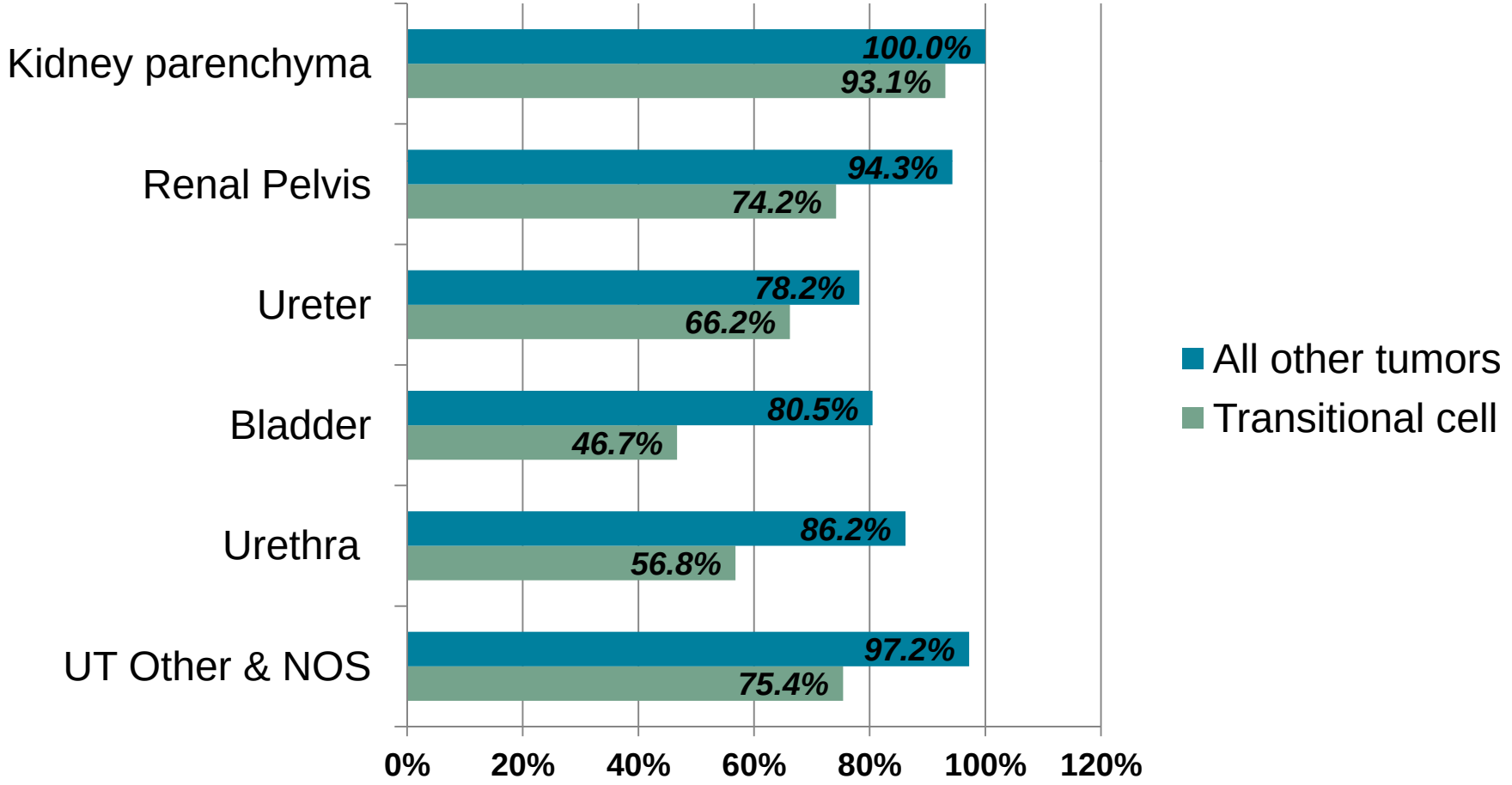
Male/Female Ratio of UT Tumors



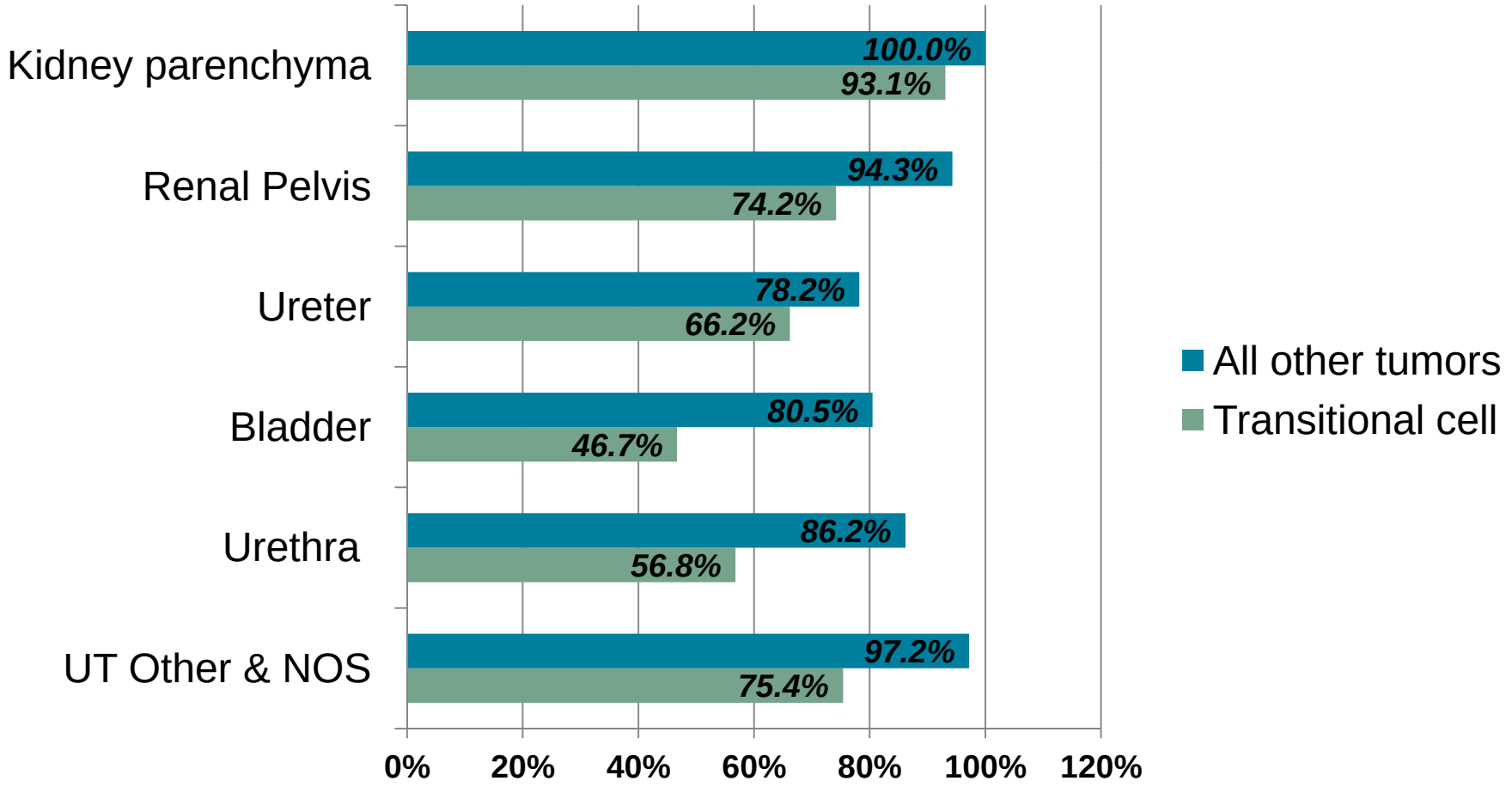
Proportion High Grade by Histology Category



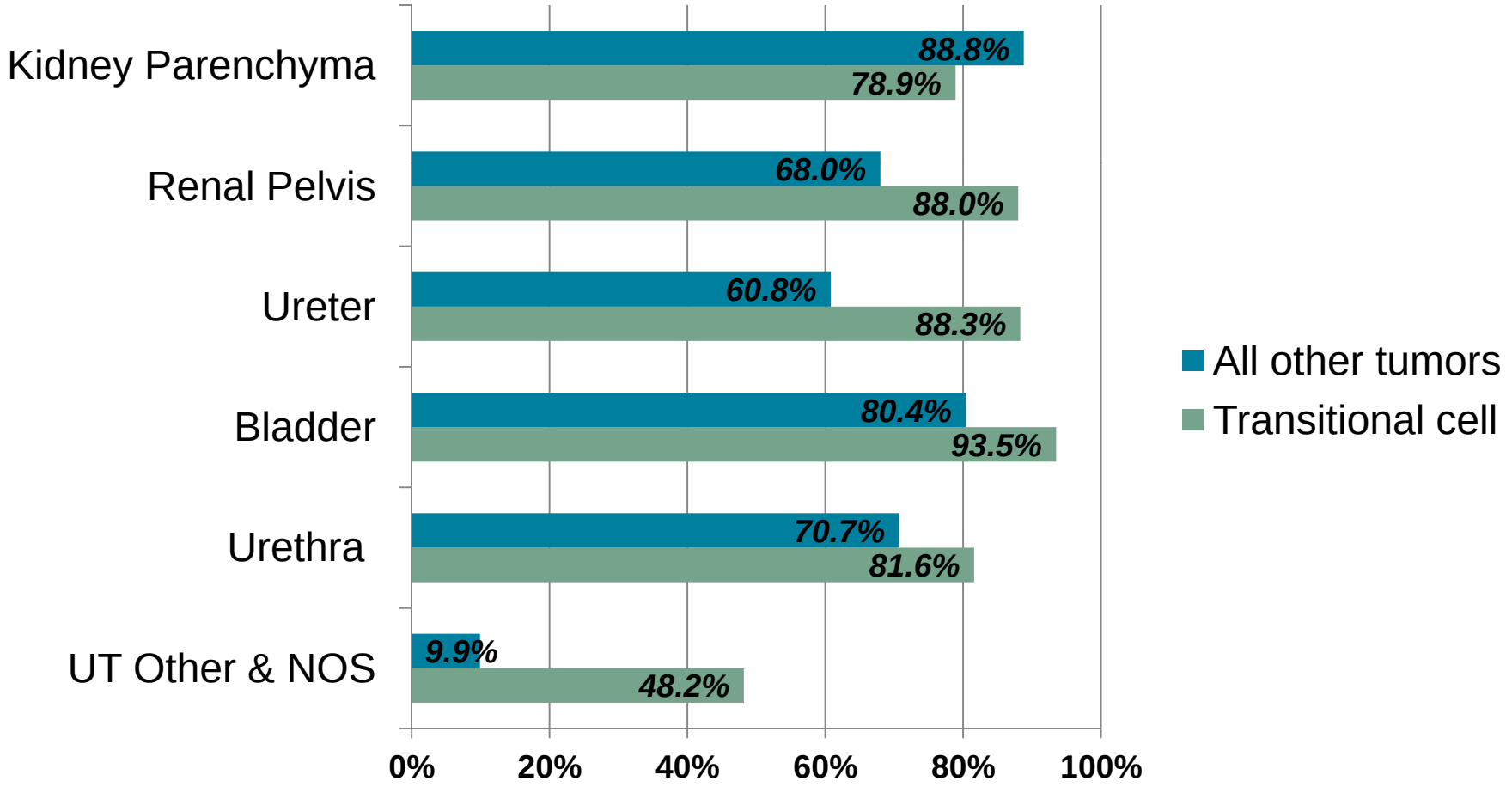
Proportion Invasive Tumors by Histology Category



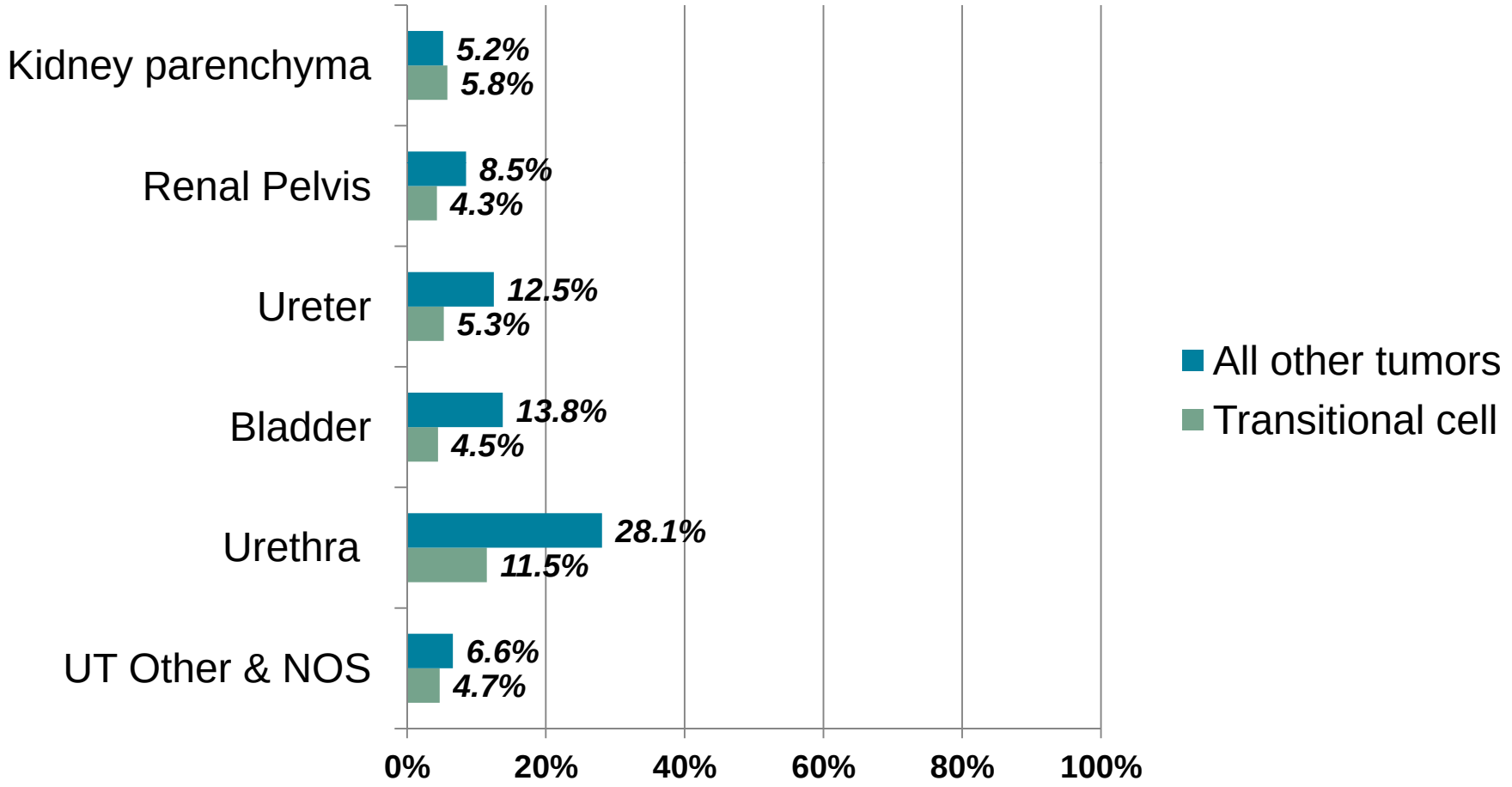
Proportion Tumors with Distant Dissemination by Histology Category



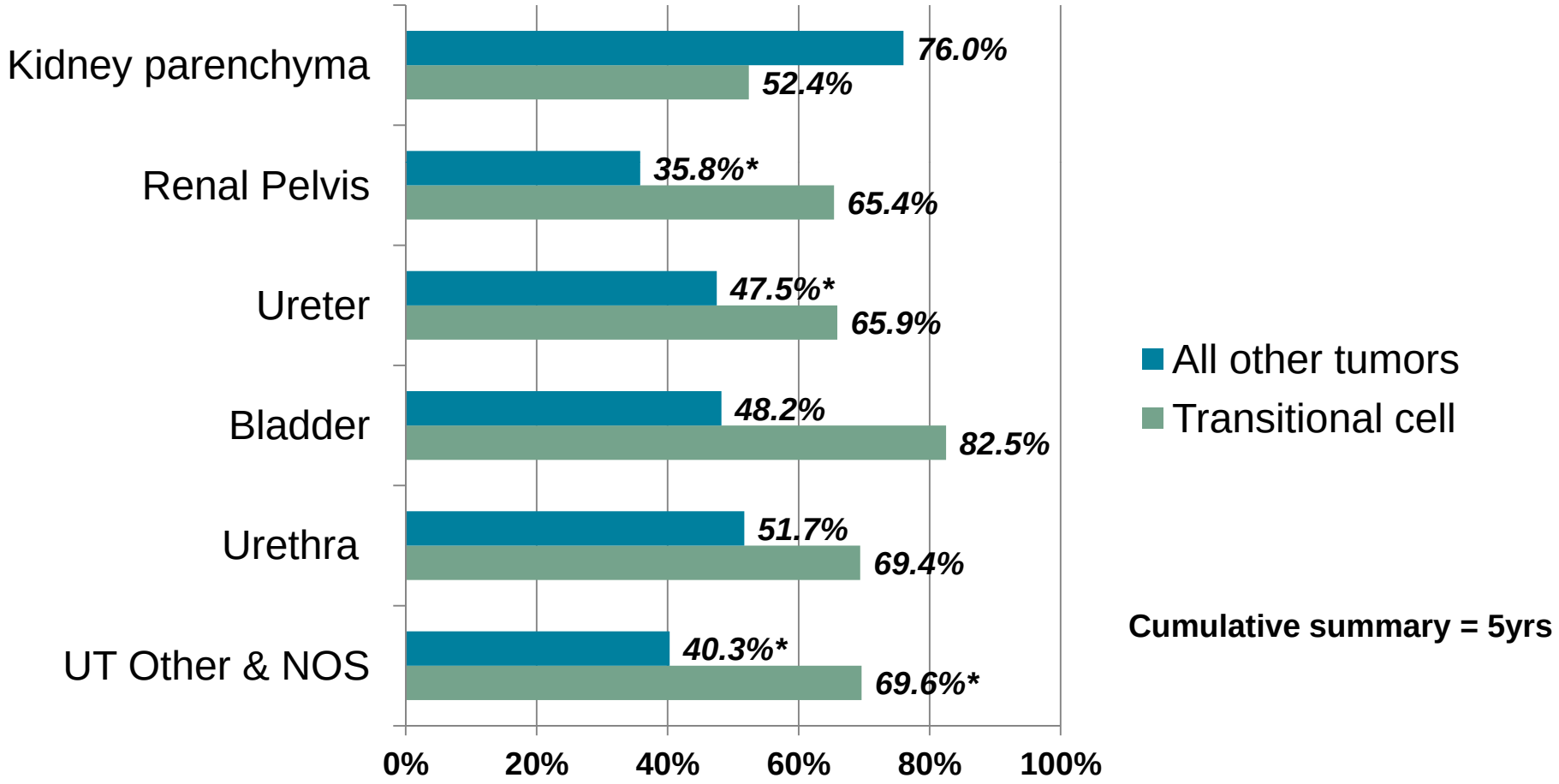
Proportion Tumors with Surgical Treatment by Histology Category



Proportion Tumors with Radiation Therapy by Histology Category



Age-Standardized Cause-Specific Survival by Histology Category



Discussion

- Altogether, renal pelvis & ureter & urethra accounts for < 8% of urinary tract cancers
- Over 90% are transitional cell carcinomas
  - Approximately one third of urethra cancers are not transitional cell
- Transitional cell carcinoma tend to be diagnosed at older ages
  - Median age at diagnosis for urethral : transitional cell = 74yrs. vs. All other tumors= 69 yrs

Discussion (cont.)

- Based on the frequency of invasiveness and distant metastases at diagnosis, transitional cell carcinoma is the less aggressive histology
  - Urethral tumors are similar to renal pelvis and ureter tumors in terms of invasiveness and distant dissemination
- Survival is better for transitional cell carcinoma for all but kidney parenchyma
- Histologic type is significant in the selection of treatment modalities
  - Treatment modalities for urethra transitional cell more similar to other UT tumors of same histology than for urethral tumors of different histology

Conclusion

- As expected, anatomic location is associated with specific histology; however, for luminal organs covered by urothelium, histology is a better predictor of tumor occurrence, aggressiveness, treatment modality and survival
- For the purpose of cancer surveillance in general, and cancer staging in particular, classification schemas based on histology might be more appropriate for UT tumors
  - Moving away from anatomic classifications to more accurate prognostic factors does not necessarily entail the creation of new categories; for UT it might just require updating operational definitions