GEORGE WARREN BROWN SCHOOL of Social Work

Washington University in St. Louis

The Association between Insurance Status and Childhood Cancer Survival

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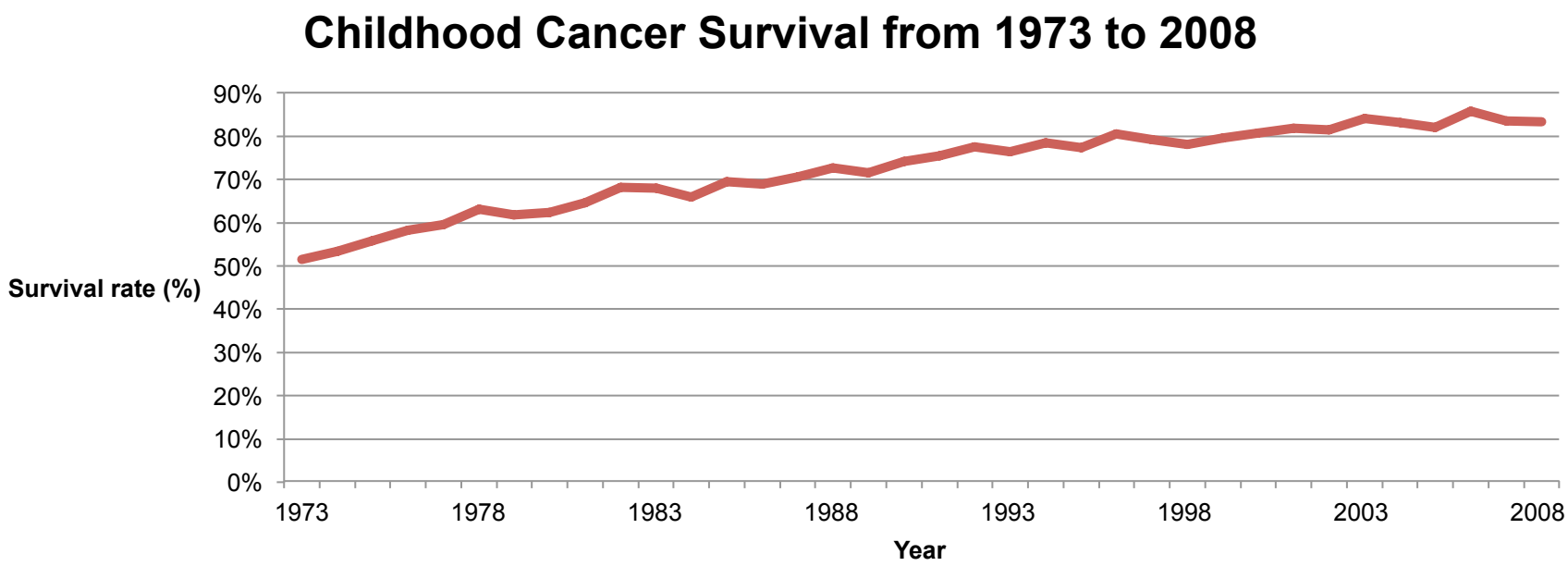
Background

- ~10,400 cancers diagnosed in U.S. children 0-14 years expected in 2016
- ~1,300 will die from their disease



Sources: Cancer Facts and Figures 2016, American Cancer Society & SEER 9, 1973-2008

Original Article

Insurance Status and Risk of Cancer Mortality Among Adolescents and Young Adults

Abby R. Rosenberg, MD, MS[1,2,3,4]; Leah Kroon, MN, RN[1]; Lu Chen, MPH[5,6]; Christopher I. Li, MD, PhD, MPH[5,6]; and Barbara Jones, PhD, MSW[7,8]

- **Methods**
  - Patients diagnosed at ages 15-39 years between 2007-2010 were ascertained from the SEER 18 registries
- **Results**
  - Patient with nonprivate insurance were more likely to have more advanced-stage cancer and a higher risk of death.
    - [HR 3.2 (95% CI: 3.0-3.5), HR 2.9 (95% CI:2.2-3.9), respectively]

Cancer, April 2015

Research Objective

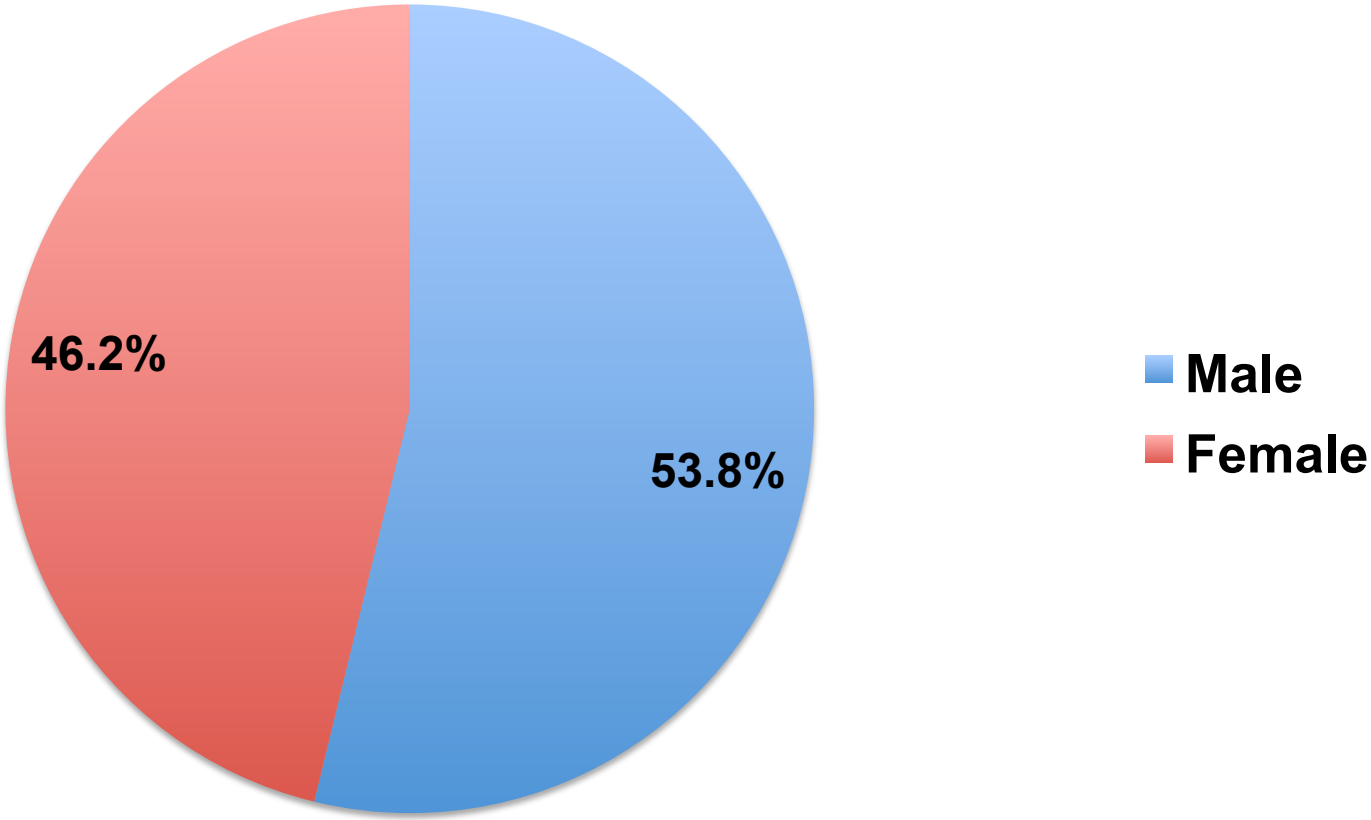
To examine the association between insurance status and childhood cancer survival in the United States

Methods

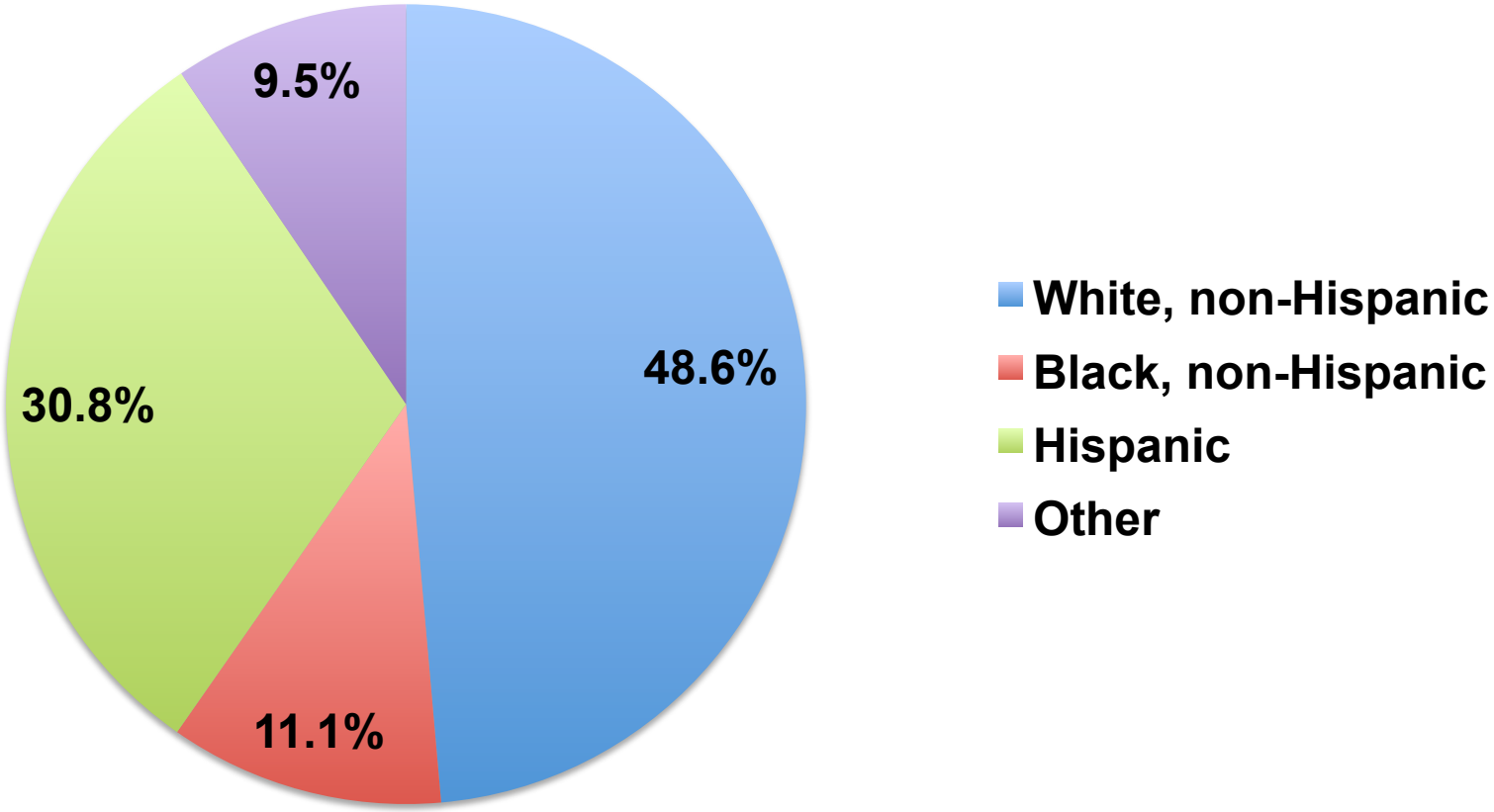
- Data Source: SEER 18 registries
- Eligibility Criteria:
  - 0-14 years at diagnosis
  - Diagnoses between 2007-2013
- Variables:
  - Insurance (Insured, Medicaid/Uninsured)
  - Ethnicity (White, non-Hispanic, Black, non-Hispanic, Hispanic and Other)
  - County level poverty (<5%, 5-9.99%, 10-19.99% and ≥20%)
- Statistical Method:
  - Cox proportional hazard regression

Characteristics of Childhood Cancer Cases

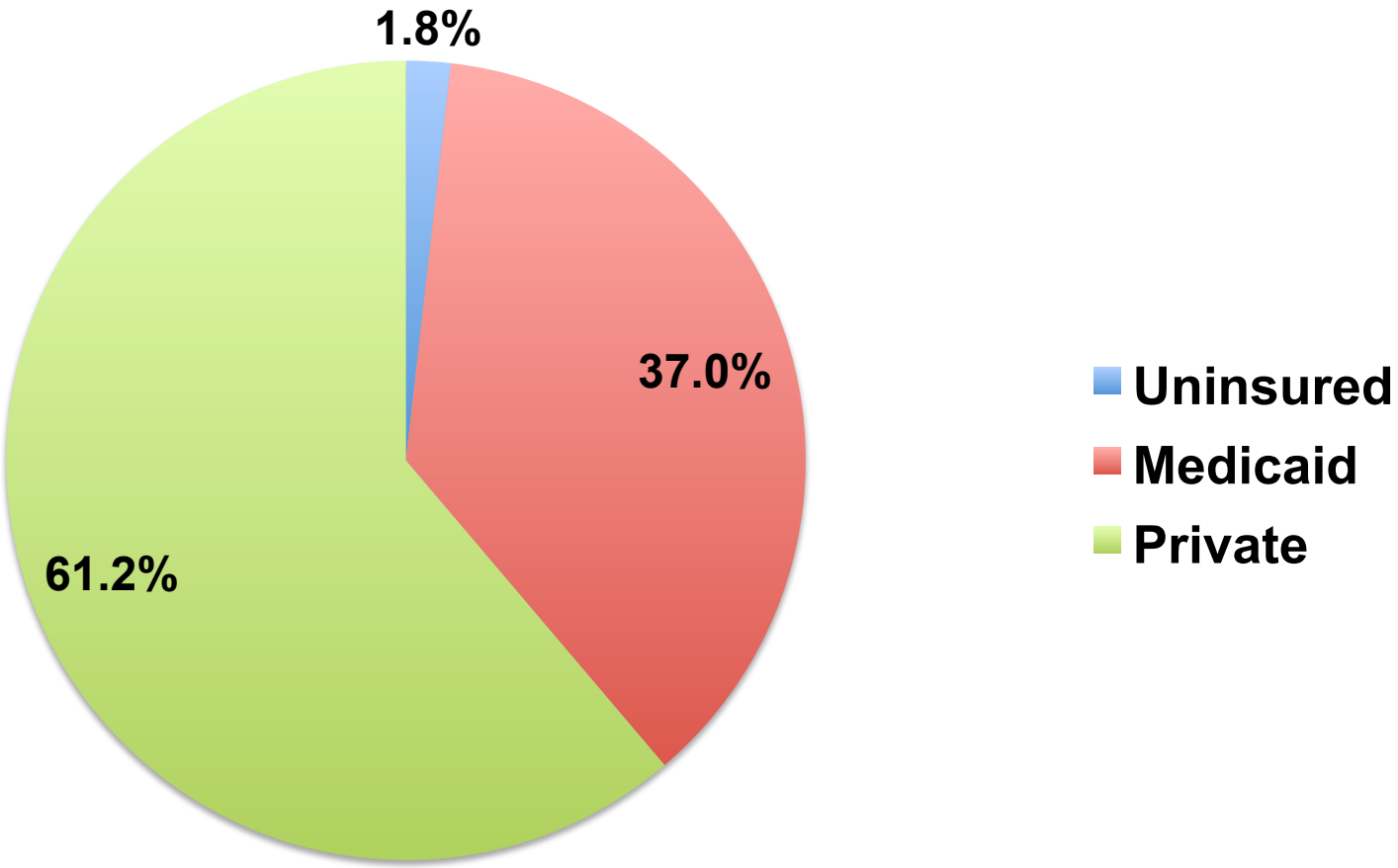
- A total of 19,135 individuals were included



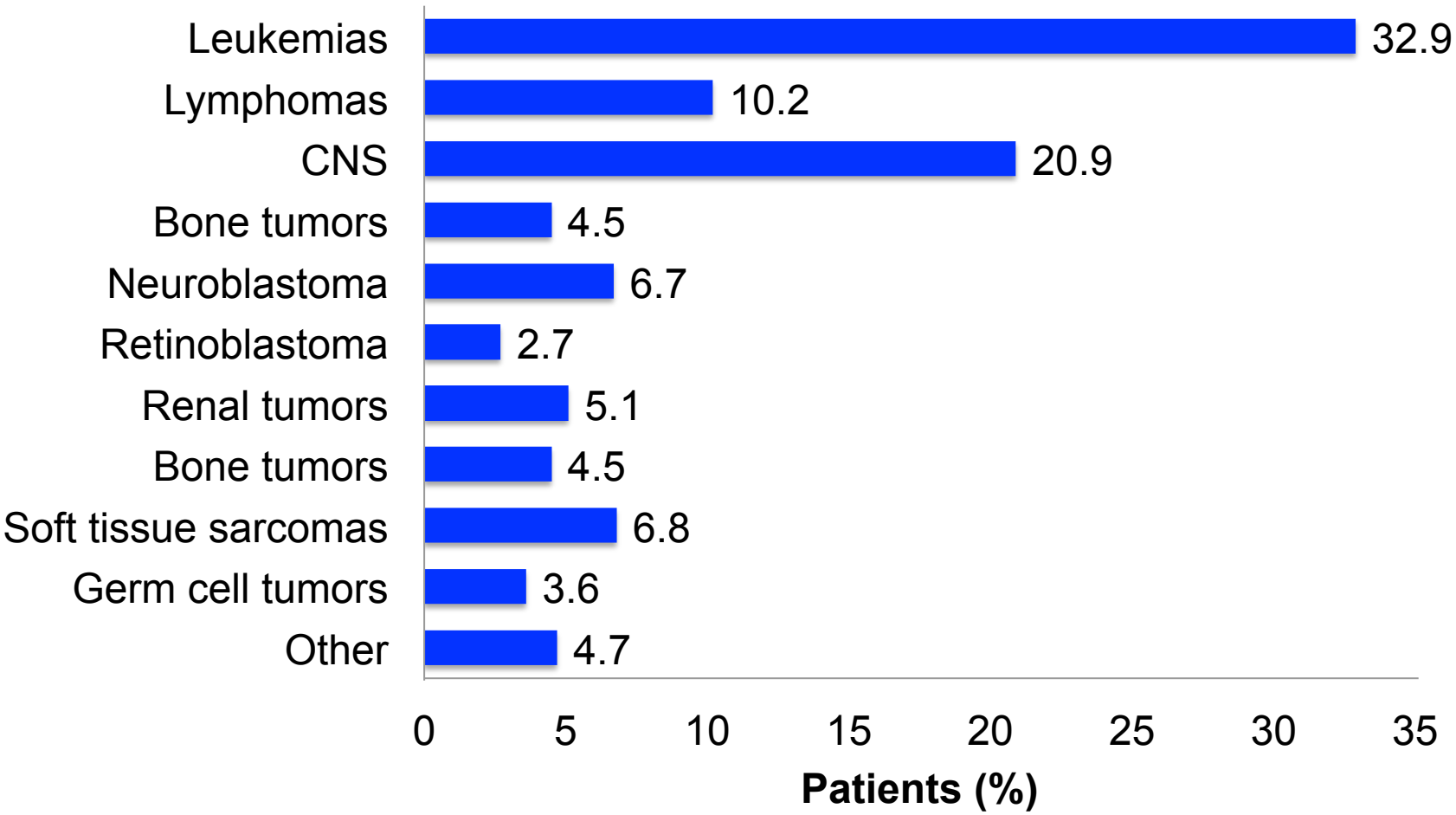
Characteristics of Childhood Cancer Cases cont'd



Characteristics of Childhood Cancer Cases cont'd



Characteristics of Childhood Cancer Cases cont'd

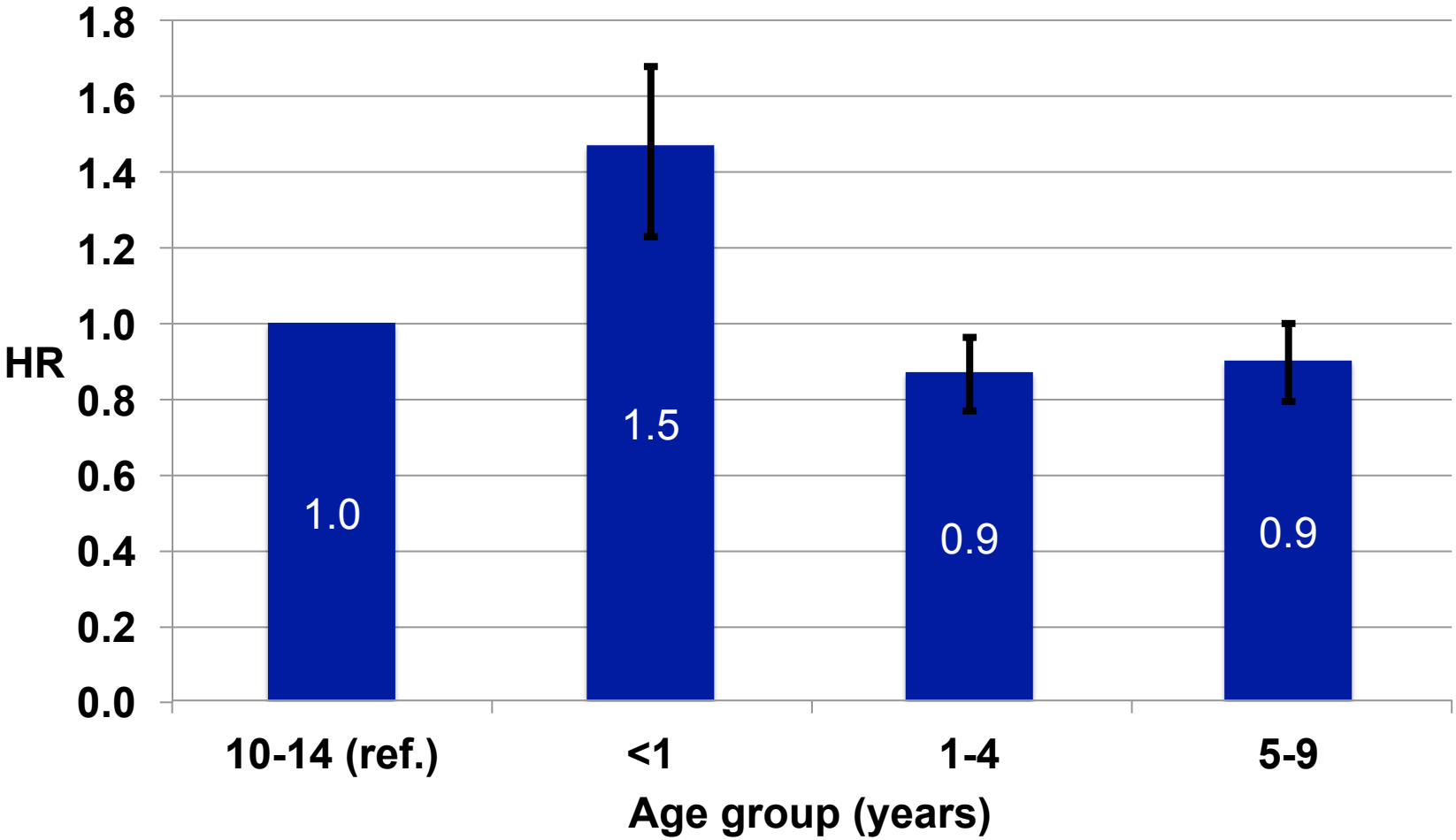


Associations between Insurance Type and Childhood Cancer Survival

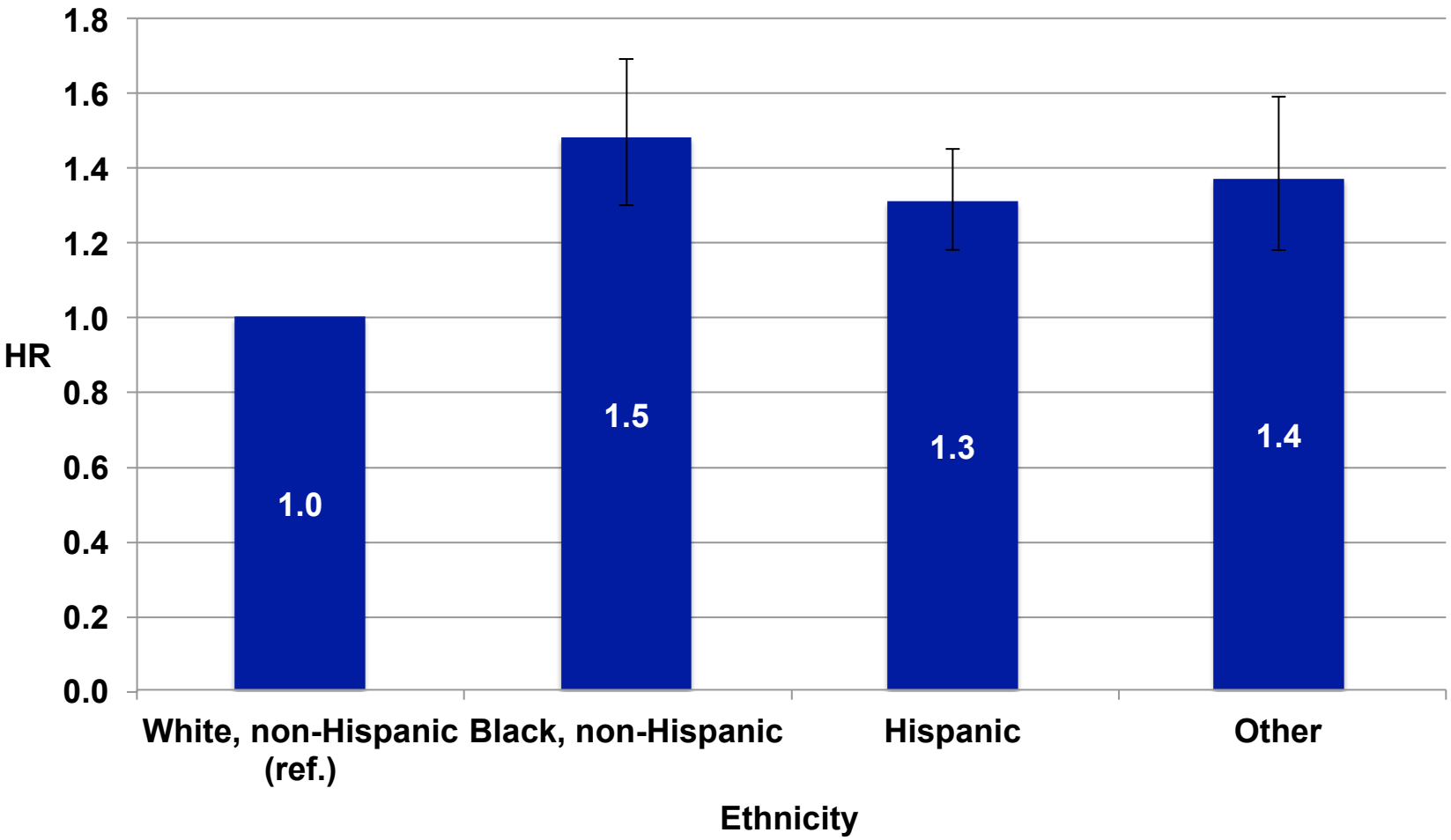
Cancer type	N (% Died)	HR (95% CI)
Overall	19,135 (11.5)	1.07 (0.98-1.18)
Leukemia	6,295 (9.2)	1.08 (0.91-1.30)
Lymphoma	1,952 (4.0)	1.02 (0.63-1.66)
CNS	3,993 (20.1)	0.95 (0.82-1.11)
Neuroblastoma	1,285 (12.9)	**1.45 (1.03-2.05)**
Retinoblastoma	524 (2.1)	0.48 (0.12-1.87)
Renal tumors	973 (5.3)	0.78 (0.43-1.41)
Hepatic tumors	353 (15.3)	1.23 (0.66-2.30)
Bone tumors	864 (16.2)	1.05 (0.72-1.54)
Soft tissue sarcomas	1,300 (17.0)	**1.48 (1.10-1.98)**
Germ cell tumors	693 (4.3)	0.61 (0.25-1.45)
Other	903 (6.3)	1.40 (0.80-2.47)

* Adjusted for patient age, sex, ethnicity and county poverty level

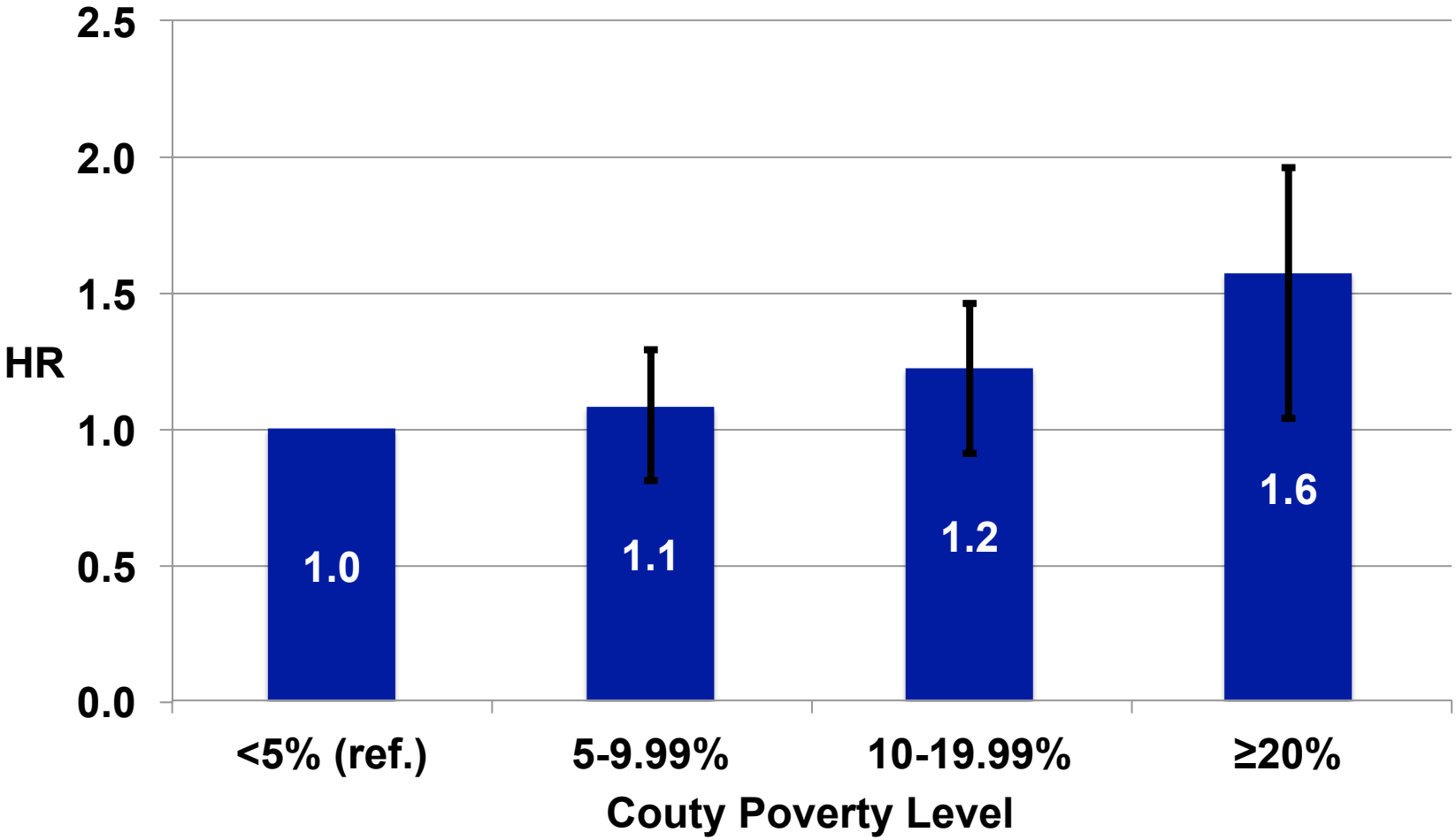
Association between Childhood Cancer Survival and Age



Association between Childhood Cancer Survival and Ethnicity



Association between Childhood Cancer Survival and County Poverty Level



Strengths

- First population-based study to examine the association between insurance status and childhood cancer survival
- Large sample size
- High quality cancer registry data

Limitations

- Cannot infer causality between insurance status and childhood cancer survival
- The insurance variable is subject to misclassification
- Factors such as parental education or treatment weren't included

Conclusions and Implications

- Overall, insurance status was not associated with childhood cancer survival
- Even after adjusting for insurance status, socio-demographic and economic factors are associated with childhood cancer survival
- Further study is recommended to understand the underlying reasons for these patterns

Acknowledgements

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