

# The Global Interaction of Sociodemographic Status with Prostate Cancer Over 26 Years

**Bryn M. Launer, MS3**, University of Colorado School of Medicine

**Granville L. Lloyd, MD**, Dept. of Urology, University of Colorado/Rocky Mountain VA



Urology

UNIVERSITY OF COLORADO



# Introduction

- Prostate cancer is a disease of the aging male
  - Average age of diagnosis – 65 yrs
- 5-year survival rates in US approach 98%
- Early age of diagnosis + longer survival attributable to screening and diagnostic testing



# Introduction

- In high-income countries, prostate cancer is already prevalent and exerting a significant societal burden
  - Morbidity due to disease and treatment
- As life expectancy and access to testing increases in low-income countries, so will prevalence of age-related diseases

Aim: To assess the global interaction of economic status with prostate cancer burden

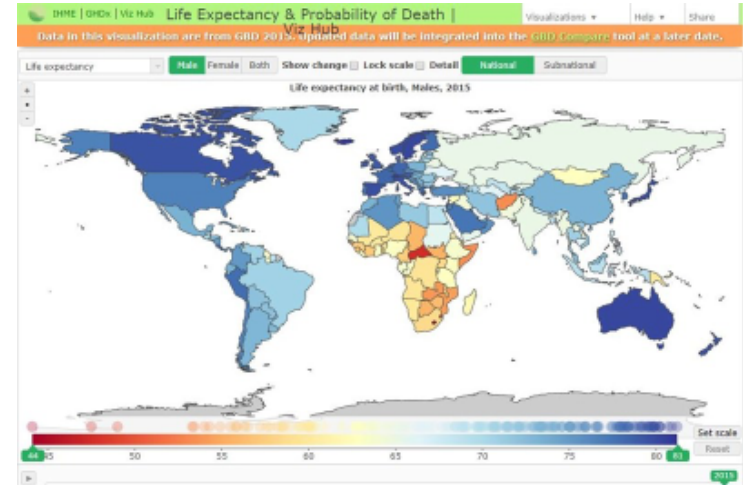


Urology

UNIVERSITY OF COLORADO

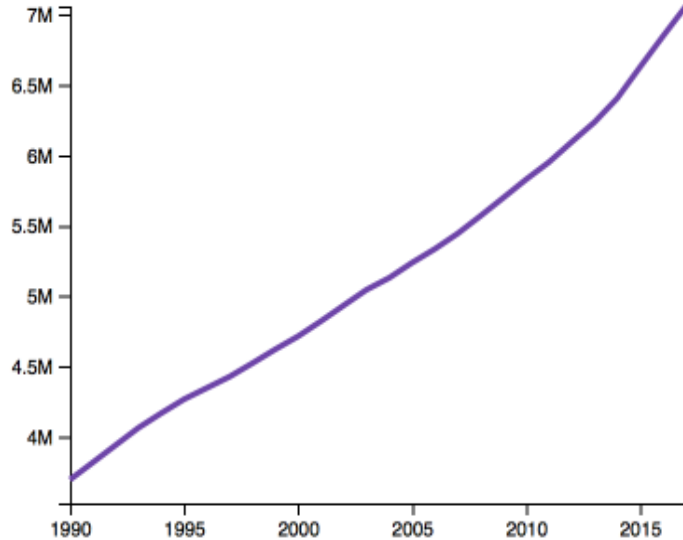
# Methods - Global Burden of Disease (GBD) Database

- GBD is an aggregate of thousands of worldwide registries, surveys, and health systems data from 1990-2017
- Disability-Adjusted Life Years (DALYs) were calculated (years lived with disease + years of life lost) and segregated by SDI quintile
- We trended estimates for DALYs for prostate cancer over 27 years, with subset analyses by sociodemographic (SDI) status

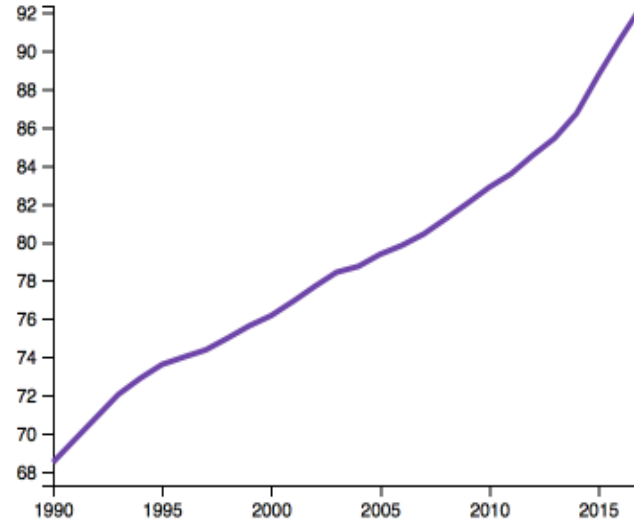


# Results: DALYs Attributed to Prostate Cancer

**DALYs (Disability-Adjusted Life Years), number**



**DALYs (Disability-Adjusted Life Years), rate per 100k**



Legend

■ Global, Both sexes, All Ages, Prostate cancer

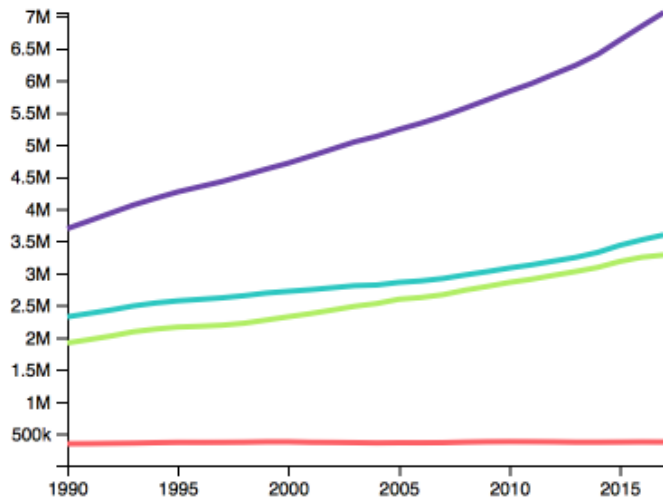


Urology

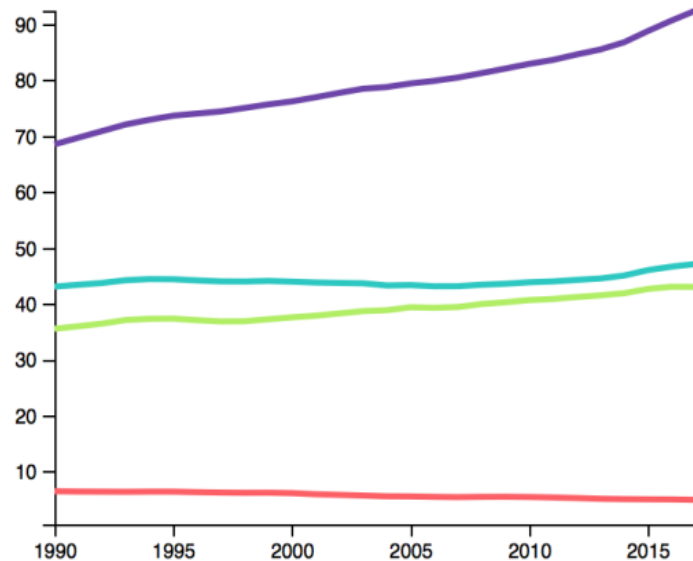
UNIVERSITY OF COLORADO

# Results: Prostate Cancer DALYs Compared to Other Sources of Urologic Malignancy

DALYs (Disability-Adjusted Life Years), number



DALYs (Disability-Adjusted Life Years), rate per 100k



- Global, Both sexes, All Ages, Prostate cancer
- Global, Both sexes, All Ages, Testicular cancer
- Global, Both sexes, All Ages, Kidney cancer
- Global, Both sexes, All Ages, Bladder cancer

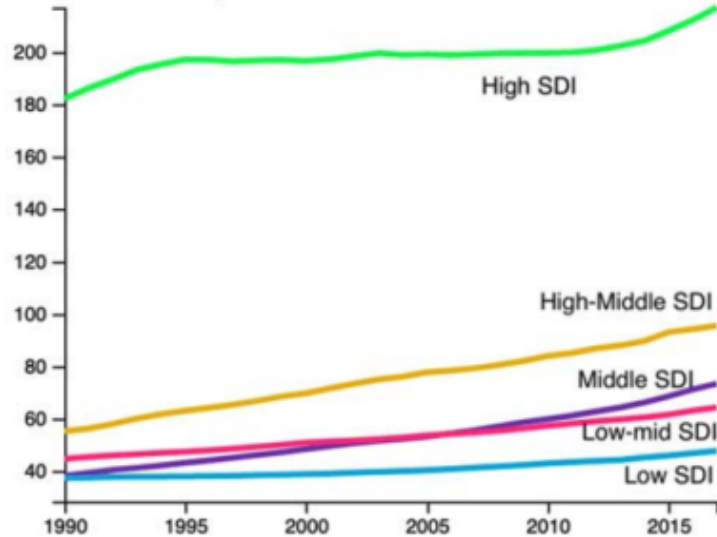


Urology

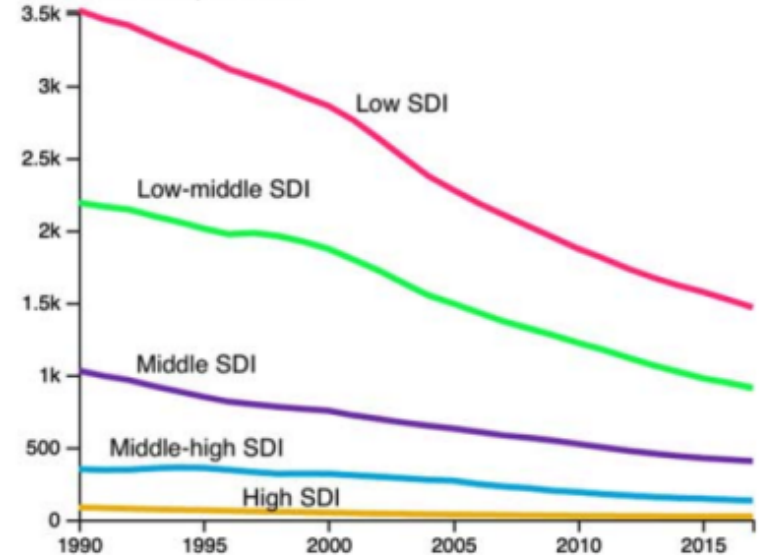
UNIVERSITY OF COLORADO

# Results: DALYs Attributed to Prostate Cancer, Stratified by SDI as Compared to Tuberculosis

**DALYs (Disability-Adjusted Life Years), rate per 100k Prostate Cancer, Global**



**DALYs (Disability-Adjusted Life Years), rate per 100k Tuberculosis, Global**



# Limitations

- Variability in standards of data gathering across the planet
- Challenges in diagnostic accuracy
  - Especially in indolent disease processes
- Disease severity and medical claims data are generalized from high-income countries
  - Ultimately underestimating morbidity in low- and middle- income countries





# Discussion – Global Trends of Prostate Cancer

- Prostate cancer exerts a burden of disease that is vastly higher in the top quintile of SDI
  - 3 lowest quintiles represent majority of global population
- Contrasting example - TB has its highest impact on the lowest SDI levels, but rates are declining
- As lower SDI countries overcome fatal diseases, a similar rise in prostate cancer can be expected



# Selected References

Collaboration GBoDC. Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life-years for 29 cancer groups, 1990 to 2017: a systematic analysis for the global burden of disease study. *JAMA oncology*. 2019;5(12):1749-1768.

Baade PD, Youlden DR, Krnjacki LJ. International epidemiology of prostate cancer: geographical distribution and secular trends. *Molecular nutrition & food research*. 2009;53(2):171-184.

Rawla P. Epidemiology of prostate cancer. *World journal of oncology*. 2019;10(2):63.

Bansal D, Wong J. Prostate cancer cost-of-care and evaluation of traditional cost control measures. In: American Society of Clinical Oncology; 2019.

Wong MC, Goggins WB, Wang HH, et al. Global incidence and mortality for prostate cancer: analysis of temporal patterns and trends in 36 countries. *European urology*. 2016;70(5):862-874.

Fitzmaurice C, Akinyemiju TF, Al Lami FH, et al. Global, regional, and national cancer incidence, mortality, years of life lost, years lived with disability, and disability-adjusted life-years for 29 cancer groups, 1990 to 2016: a systematic analysis for the global burden of disease study. *JAMA oncology*. 2018;4(11):1553-1568.

Naghavi M, Abajobir AA, Abbafati C, et al. Global, regional, and national age-sex specific mortality for 264 causes of death, 1980–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2017;390(10100):1151-1210.

Vos T, Abajobir AA, Abate KH, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*. 2017;390(10100):1211-1259.

Murray CJ, Barber RM, Foreman KJ, et al. Global, regional, and national disability-adjusted life years (DALYs) for 306 diseases and injuries and healthy life expectancy (HALE) for 188 countries, 1990–2013: quantifying the epidemiological transition. *The Lancet*. 2015;386(10009):2145-2191.