

# Impact of Cancer Diagnosis on Life Expectancy by Area-level Socioeconomic Status in New South Wales, Australia

Md Mijanur Rahman, Michael David, David E Goldsbury, Karen Canfell, Kou Kou, Paramita Dasgupta, Peter Baade and Xue Qin Yu



26 September 2024



## Acknowledgement

*This research was completed using data from the CanDLe Initiative. The CanDLe Initiative is led by the Cancer Institute NSW and supported by the NSW Ministry of Health. Record linkage was provided by the Centre for Health Record Linkage*

*The presenting author received travel support the Daffodil Centre and KC is supported by National Health and Medical Research Council of Australia Investigator Grants: APP1194679*

*The authors have no conflict of interests*



**The Daffodil Centre**

A partnership between



**Cancer  
Council**



THE UNIVERSITY OF  
**SYDNEY**

# Background



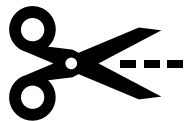
People with cancer are living longer



Socio-economic status (SES) disparities in cancer survival



Lifetime impact of a cancer diagnosis

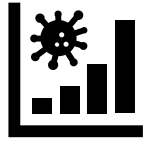


Loss of life expectancy (LOLE)

# Objectives

1. estimate the LE of people with cancer by area-level SES and compare it to the NSW general population
2. estimate the LOLE by area-level SES for 12 common cancers
3. quantify the number of life-years that could be saved if area-level SES differences were eliminated

# Data and Study Population



NSW Cancer Registry 2001-19  
& linked Reg. of Birth, Death &  
Marriage until 2020



555,766 people with the first  
diagnosis of 12 common  
cancers at age 50-89



In-situ cases, diagnosed using  
death certificate and missing  
SES info excluded

# Statistical Analysis

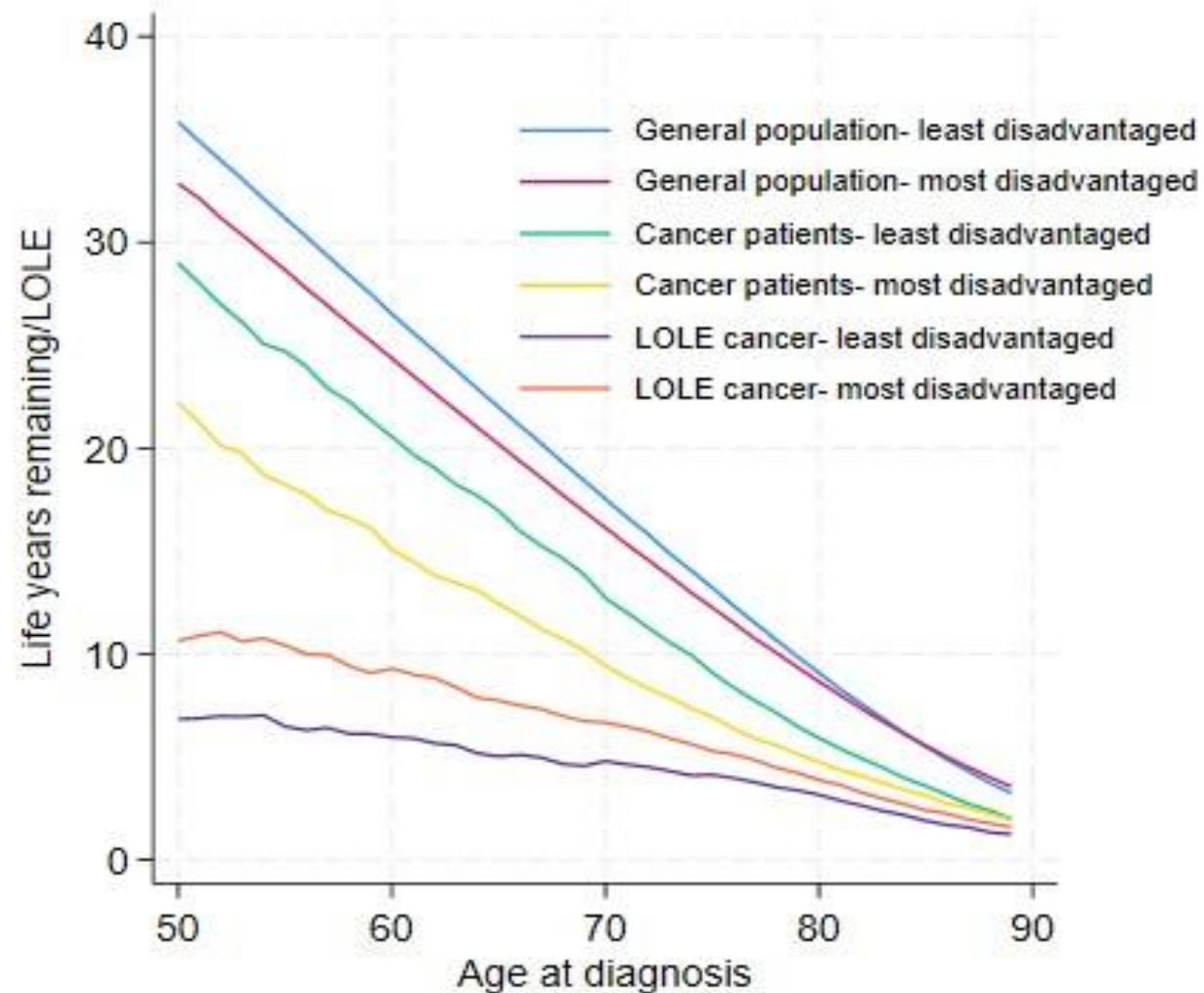
- Flexible parametric model (FPM)
- FPM extrapolates the RS curves beyond follow-up
- Population survival curves were estimated from the same FPM
- LOLE, the proportion of remaining life years (LYs), and gain in LYs by removing SES disparity in RS

# Results: LE by Area-level SES and Age

LE was lower among people with cancer than the general population

SES differences were wider in people with cancer than in the general population

SES differences in the LOLE declined as age at diagnosis increased

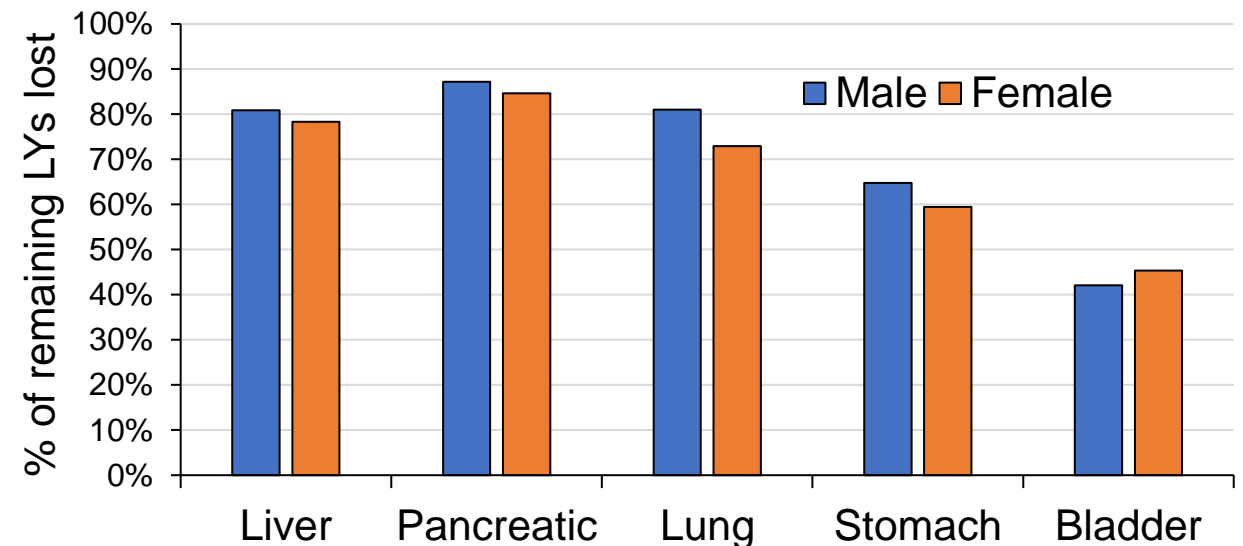
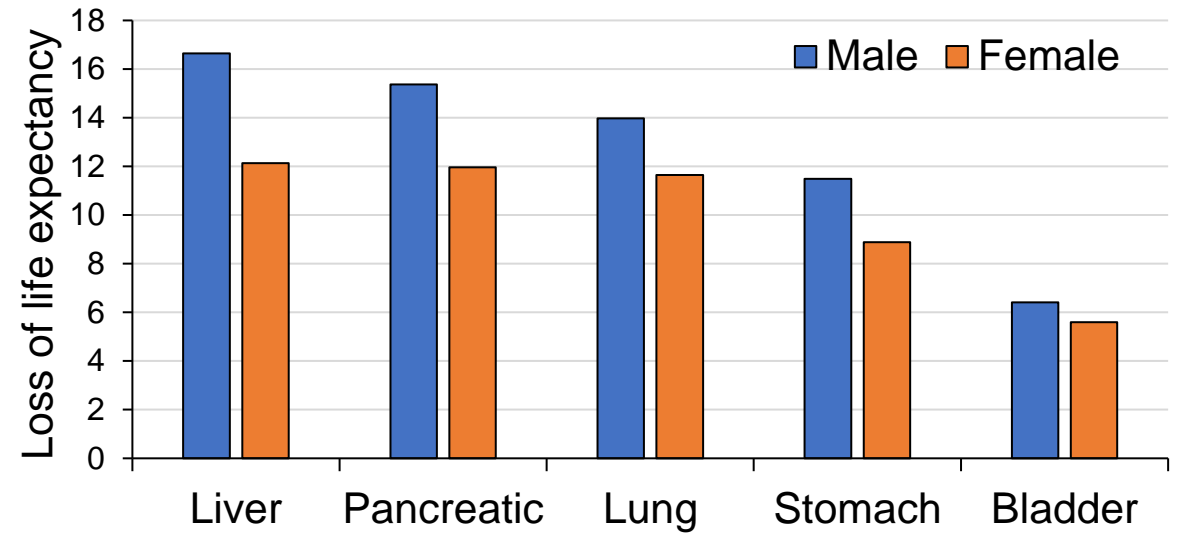


# LOLE by Sex and Cancer Type

Males had greater LOLE and proportion of remaining LY loss than females

Males with liver cancer had the highest LOLE followed by pancreatic and lung cancer

Males with pancreatic cancer had the highest proportion of remaining LY lost, followed by liver and lung

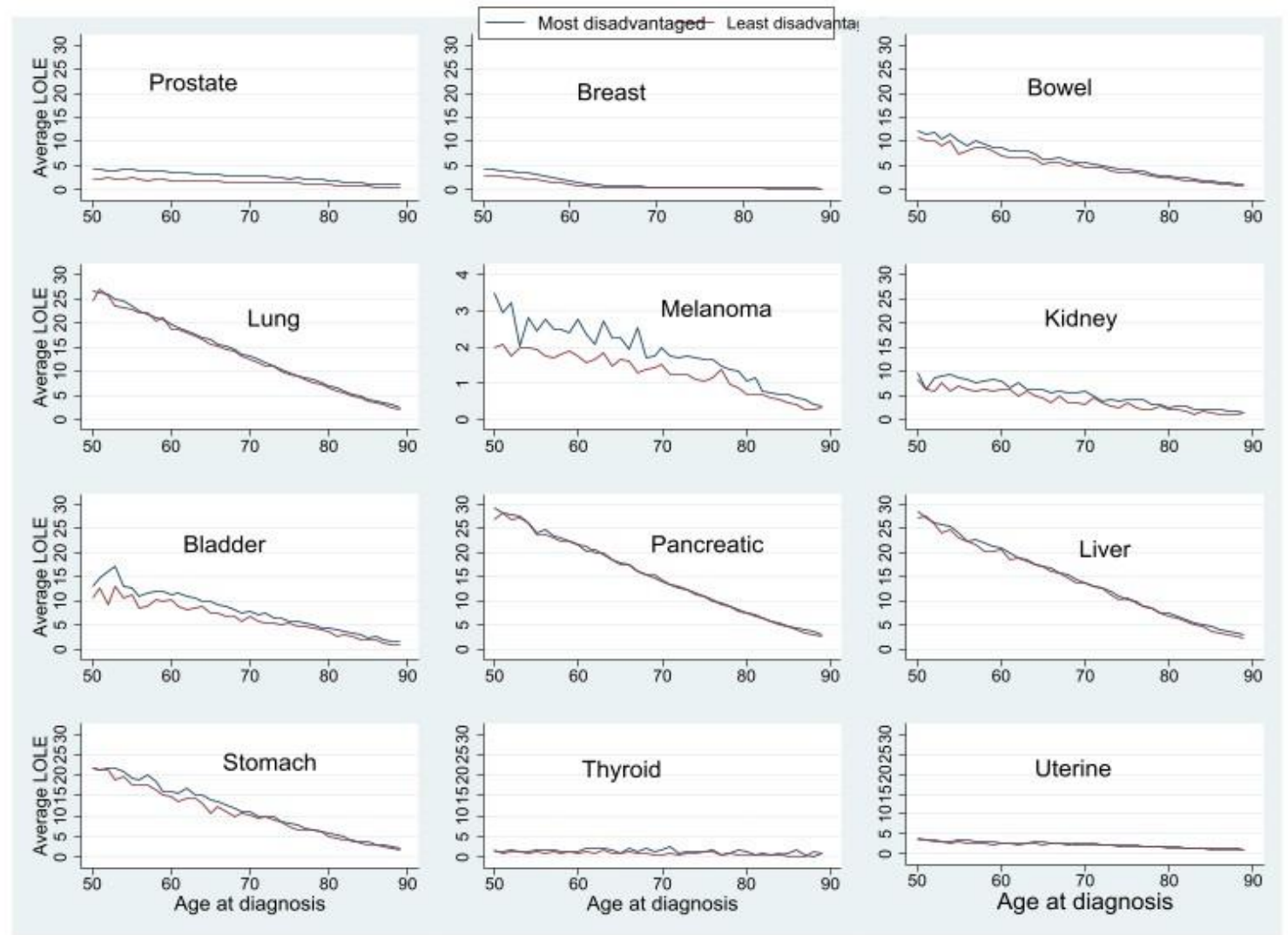


# LOLE by Age and Area-level SES

Greater LOLE was observed for people with the most disadvantaged SES

Significant SES differences for some cancers with high survival rates, e.g., prostate

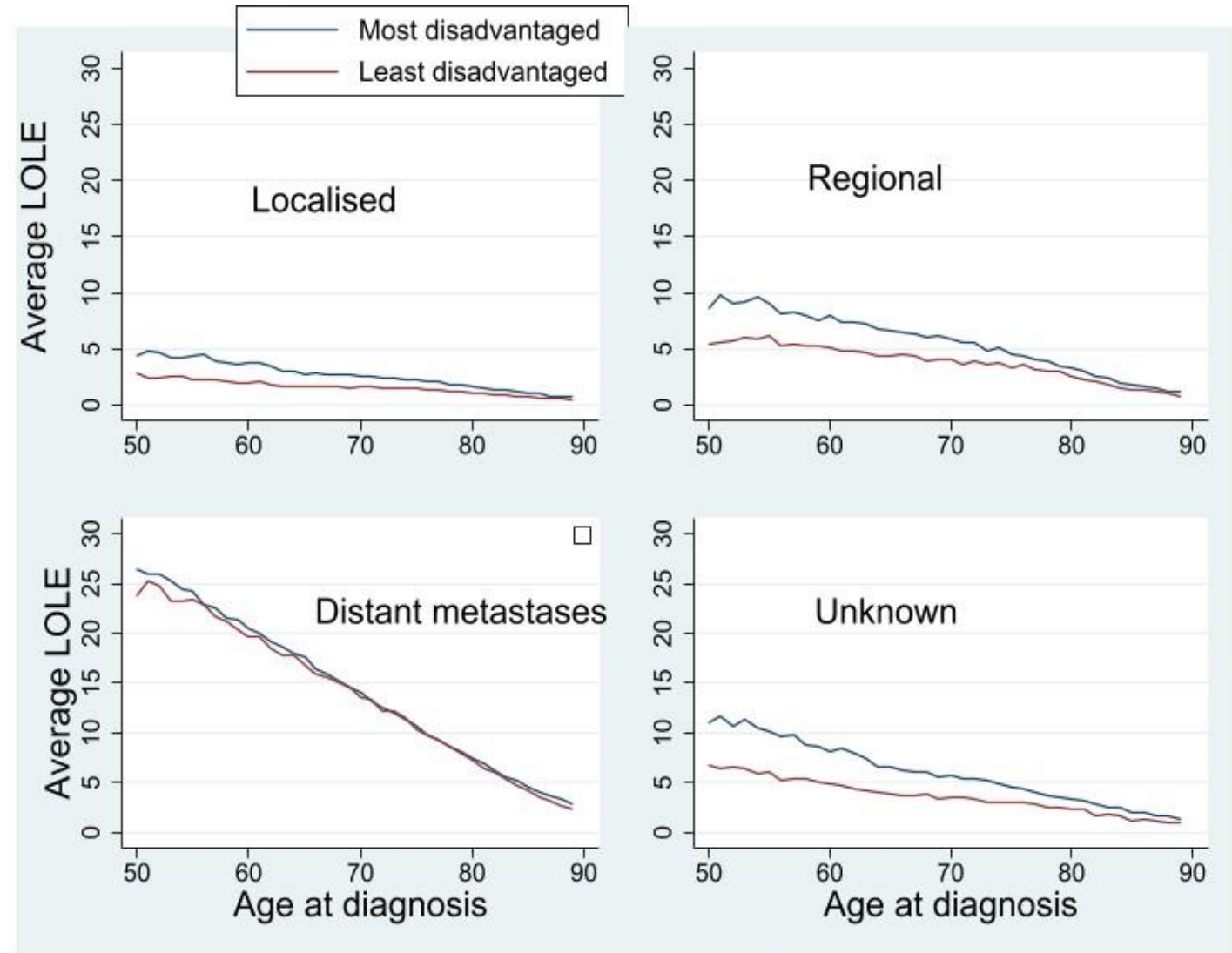
SES differences in LOLE were not significant for cancer types with high fatality rates



# LOLE by area-level SES and Cancer Stage

People diagnosed with distant metastases had the highest LOLE followed by unknown and regional

People with the most disadvantaged SES had greater LOLE, but the differences are not significant for people with distant metastases



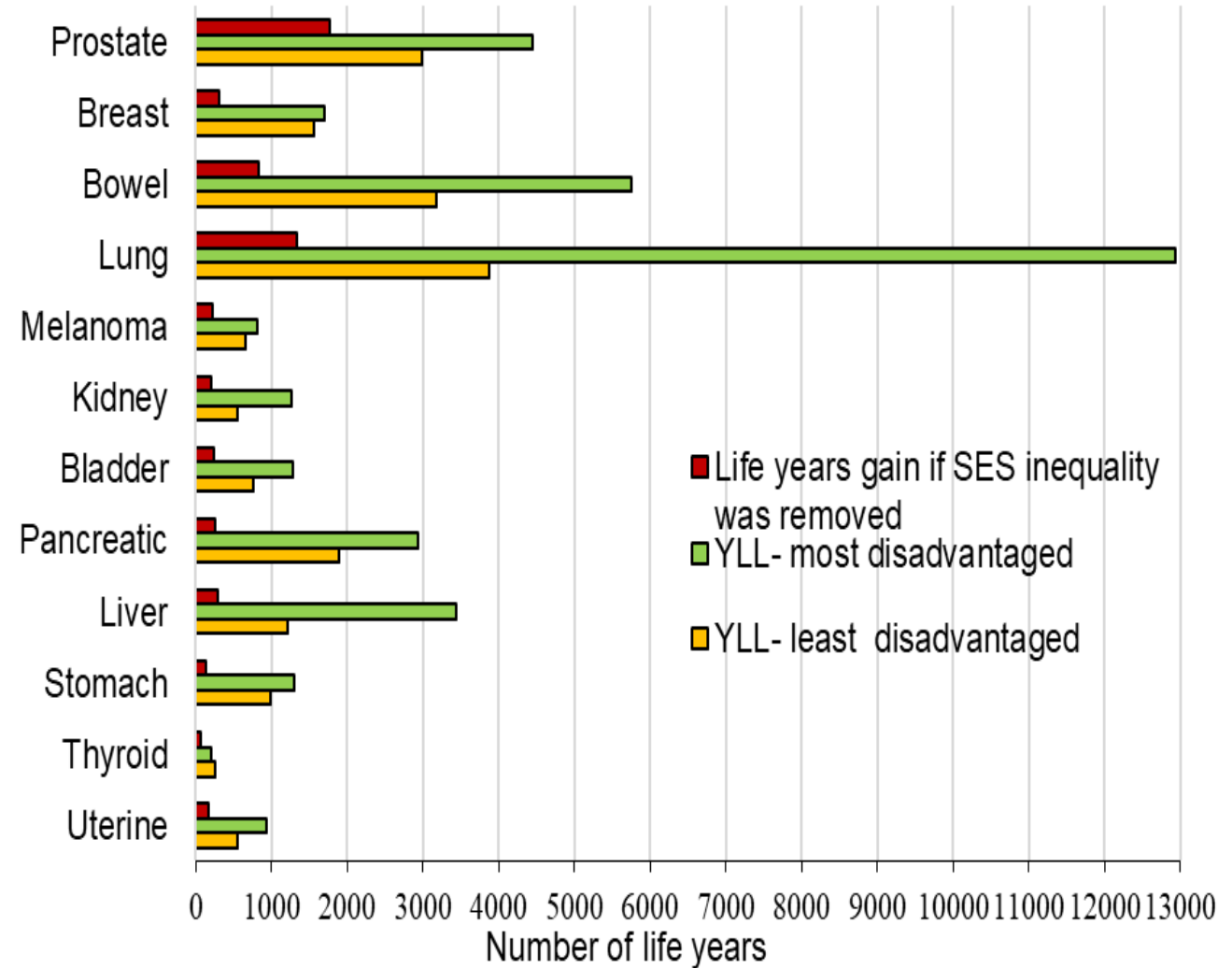


# Life Years Lost in 2019 by Area-level SES

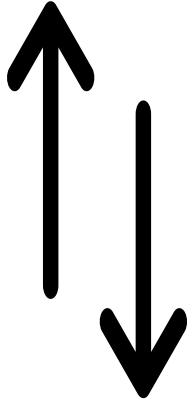
Almost 37,000 LYs were lost due to cancer among people with the most disadvantaged SES

The largest LYs lost in 2019 was due to lung cancer (~13000 LYs) followed by bowel and prostate

16% (5864 LYs) could be saved if SES inequality in relative survival was removed



# Summary



**Highest LOLE:** Males with liver cancer had the highest LOLE followed by pancreatic and lung cancer, **losing over 80% of remaining life years**

**Lowest LOLE:** Females with melanoma, followed by thyroid and breast cancer, **losing only 4-6% of remaining life years**



Most disadvantaged group had **↑**LOLE than the least disadvantaged:  
**Around 16% LYs** could be saved in 2019 if SES inequality was removed

Better understanding of the burden of cancer and public health perspective on prioritising early detection and reducing treatment-related barriers to improve life expectancy

# Thank you

**Published version available at:** <https://doi.org/10.20892/j.issn.2095-3941.2024.0166>

**Md Mijanur Rahman**

Research Fellow, The Daffodil Centre  
University of Sydney & Cancer Council NSW

Email: [m.m.rahman@sydney.edu.au](mailto:m.m.rahman@sydney.edu.au)

