

When Cancer Grows Old

Economic estimate of the cancer burden – United States

26 January

1 Introduction

The burden of cancer in older people (>65 years old) is a growing concern as the world’s population rapidly ages and the incidence of cancer increases. In line with the United Nations Decade of Healthy Ageing (2021-2030) vision to combat ageism, create age-friendly environments and secure integrated healthcare and long-term care, this research paper aims to shed light on the economic cost of the cancer burden among the elderly in three regions – United States, China, and the European Union: four EU countries (Germany, France, Italy, Spain) and the United Kingdom – over the next two decades. The intention of the paper is to raise awareness on the socio-economic implications of the convergence of cancer and ageing and to encourage the development of national policies to address it.

2 The Impact: An Economic Analysis

The economic burden of cancer among older adults has been evaluated by analysing two different metrics – Disability Adjusted Life Year (DALY) and the caregiver burden.

- The overall absolute DALY forecasts indicate that the cancer burden among the elderly will increase by about 80% over the next two decades, with the biggest increase seen in breast, stomach, and esophageal cancers. Tracheal, bronchus, and lung cancer will impose the heaviest burden.

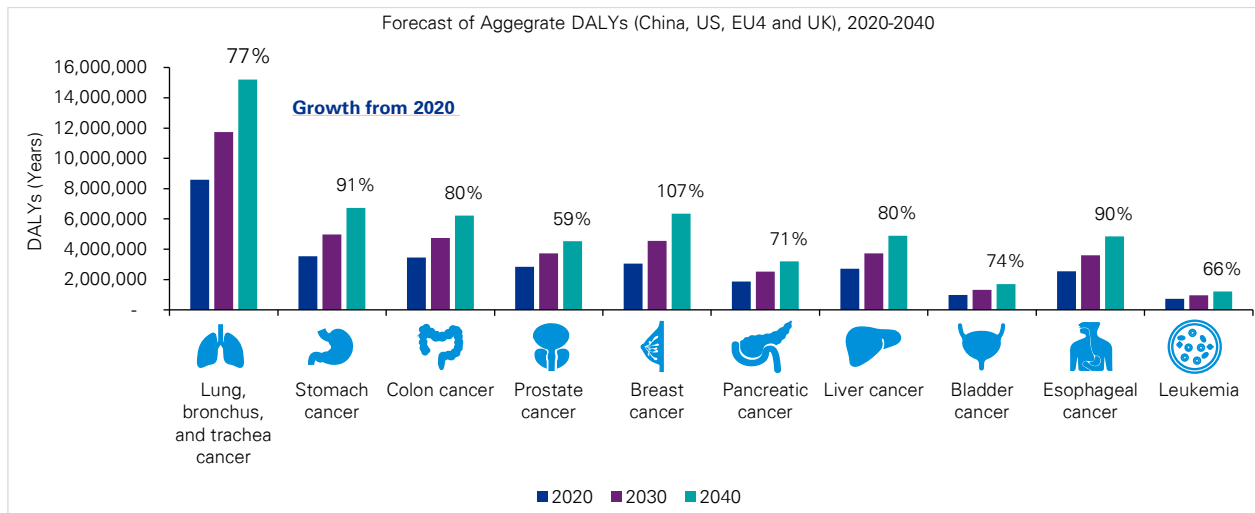


Figure 1: Forecast of aggregate DALYs across the next two decades
 Source: KPMG analysis using data from IHME 2019 GBD study¹ and WHO Global Cancer Observatory Cancer Tomorrow.²

- The cancer burden among older adults in China will almost double over the next two decades while the United States and EU4 and UK will see a notable increase of cancer among the ageing population.

China	US and EU4 and UK
<p>Adjusting for differences in population size, lung cancer will continue to have the highest DALY per thousand people (34 years in 2020). Years of life lost due to premature mortality will be the primary driver for DALYs across all cancer types.</p>	<p>Breast cancer will have a significant impact (in terms of DALY per 1000 people) in the United States and EU4 and UK (28 and 26 years in 2020, respectively). Years of life lost due to disability will be the primary contributor for prostate, breast and colon cancers.</p>

- Incidence of cancer will continue to affect the ability of patients to be economically productive, ultimately impacting the country's economy. The economic cost of cancer for the three studied regions has been assessed to be between 1-2% of GDP in 2020. By 2040, if the current spending and policies remain unchanged, the economic cost of cancer among

Note: Disability-adjusted life years (DALYs) represents the loss of the equivalent of one year of full health.

¹ [GBD Results Tool | GHDx \(healthdata.org\)](https://ghdx.healthdata.org/gbd-results-tool)

² [Cancer Tomorrow \(iarc.fr\)](https://cancer-tomorrow.iarc.fr/)

elderly patients in China, as a percentage of GDP, is projected to grow from 1.37% to 2.78%. In 2040, the EU4 and UK is also projected to see the highest percentage impact among the three regions, at 2.94% of GDP.

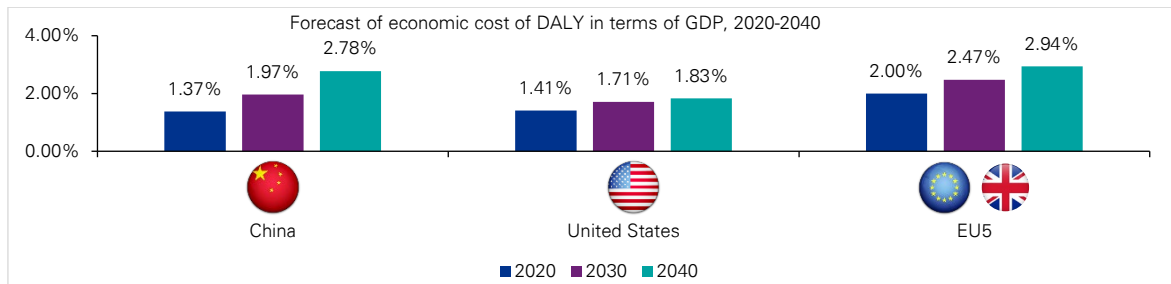


Figure 2: Forecast of economic costs of DALYs (% of respective countries GDP) across the next two decades
Source: KPMG analysis using data from IHME 2019 GBD study,¹ WHO Global Cancer Observatory Cancer Tomorrow,² and PwC World in 2050.³

Caregiver burden is another important consideration and provides an estimate of the loss of economic contribution when informal caregivers disassociate from the workforce to care for an elderly cancer patient.

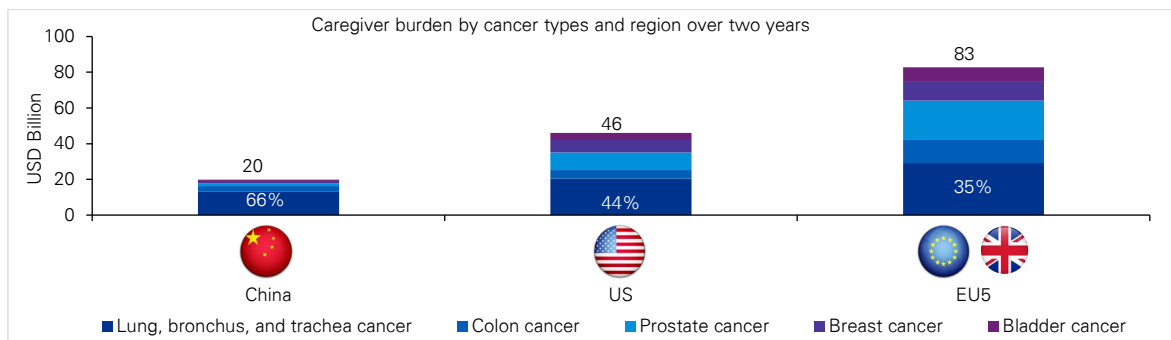


Figure 3: Caregiver burden by cancer types and region over two years
Source: ACS Journals,⁴ WHO,⁵ BIS,⁶ China Statistical Yearbook⁷ & International Labour Organisation,⁸ Eurostat,⁹ U.S. Bureau of Labor Statistics.¹⁰
Note(s): Figures labelled at the top indicate the total economic value of caregiver burden in the specified region. The percentages refer to the share of lung, bronchus, and trachea cancer of total in the specified region

- The economic analysis indicates that while cumulative cancer incidence is the highest in China, the caregiver burden over two years, using the respective 2020 wage levels and 2020 cancer incidences of the regions, is the highest in the EU4 and UK (US\$83 billion) followed by the US (US\$46 billion) and then China (US\$20 billion). The differences in caregiver burden are mainly driven by different wage levels across the regions.
- With the increasing incidence of cancer, the caregiver burden is expected to continue to rise. However, the higher disease incidence can also generate employment for formal caregivers, particularly in countries with access to large workforces.

³ [The World in 2050: PwC](https://www.pwc.com)

⁴ <https://acsjournals.onlinelibrary.wiley.com/doi/10.1002/cncr.24588>

⁵ [Cancer Tomorrow \(iarc.fr\)](https://www.iarc.fr)

⁶ Conversion Rates: <https://stats.bis.org/statx/srs/table/i3?m=E>, 1.00000 USD = 0.81493 EUR = 6.53777 RMB

⁷ Mean hourly wage is derived by dividing the average annual wage by 52 times the average hours worked per week. Average annual wage found here:

<http://www.stats.gov.cn/tjsj/ndsj/2020/indexeh.htm>

⁸ Average hours worked per week found here: <https://ilostat.ilo.org/topics/working-time/>

⁹ https://ec.europa.eu/eurostat/databrowser/view/lc_lci_lev/default/table?lang=en, for mean hourly wage of EU5 countries

¹⁰ https://www.bls.gov/oes/2020/may/oes_nat.htm for mean hourly wage in US

¹¹ [Closing the Age Gap: 2019 World Cancer Leaders' Summit Action Brief](https://www.who.int/publications/m/item/closing-the-age-gap-2019-world-cancer-leaders-summit-action-brief)

The analysis highlights significant gaps, challenges, and opportunities as countries around the world grapple with the rising tide of cancer among the ageing population. In order to alleviate the corresponding economic burden, there is need for urgent policy action. Adequate and timely use of geriatric assessments (GA) can be an important tool in this direction. The proper use of geriatric assessment is expected to lead to a reduction in DALYs for all types of cancer leading to a direct reduction in the economic burden. The economic impact of not adopting GA is estimated to be US\$64.2 billion in the United States followed by the EU4 and UK at US\$48.6 billion and China at US\$34.0 billion. Breakdown of the economic burden avoided due to use of GA for different cancer types is shown in Figure 4 below.

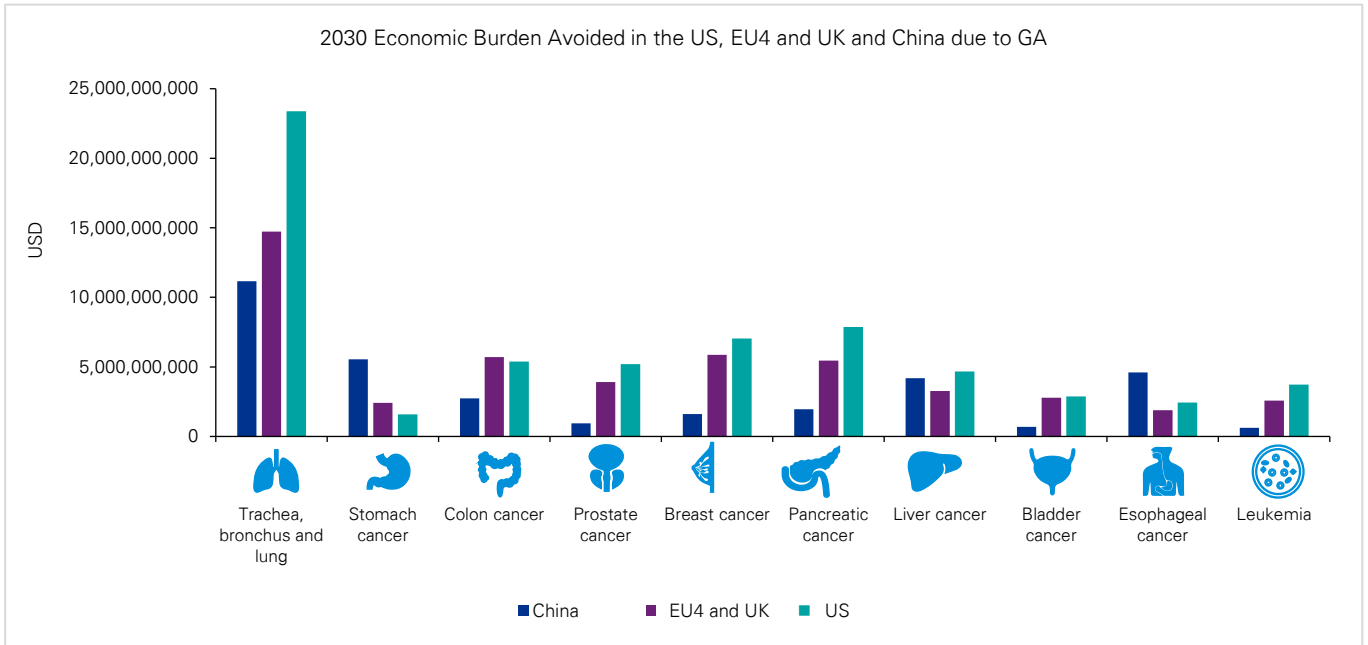


Figure 4: 2030 economic burden avoided due to the use of GA
 Source: KPMG analysis using data from European Journal of Cancer,¹¹ American Association for Cancer Research,¹² and Journal of Medical Economics.¹³

¹¹ <https://www.sciencedirect.com/science/article/abs/pii/S0959804919302928>

¹² <https://cebp.aacrjournals.org/content/cebp/early/2020/06/08/1055-9965.EPI-19-1534.full.pdf>

¹³ <https://pubmed.ncbi.nlm.nih.gov/25802950/>

3 A Closer Look: United States

In the United States, cancer incidence showed an exponentially rising trend across the age groups.

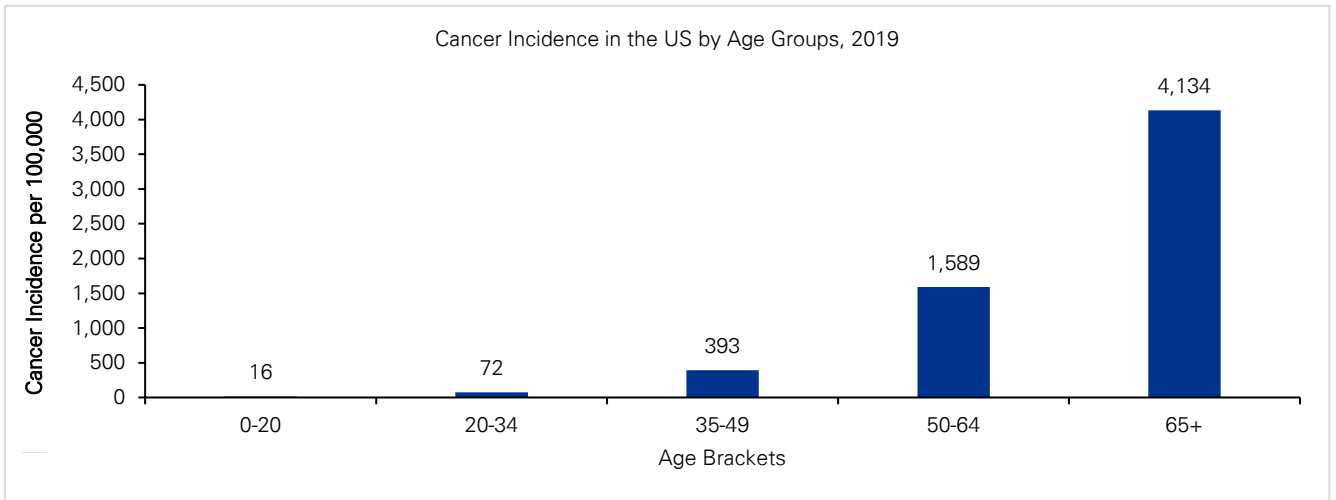


Figure 5: Cancer incidence in the U S by age groups, 2019
Source: IHME GBD Results Tool | GHDx (healthdata.org).

The United States will see a notable increase in geriatric cancer burden over the next two decades. The biggest increases are expected to be seen in breast cancer, bladder cancer, and leukaemia. However, tracheal, bronchus, and lung cancer will impose the heaviest burden among the ageing population, followed by breast cancer.

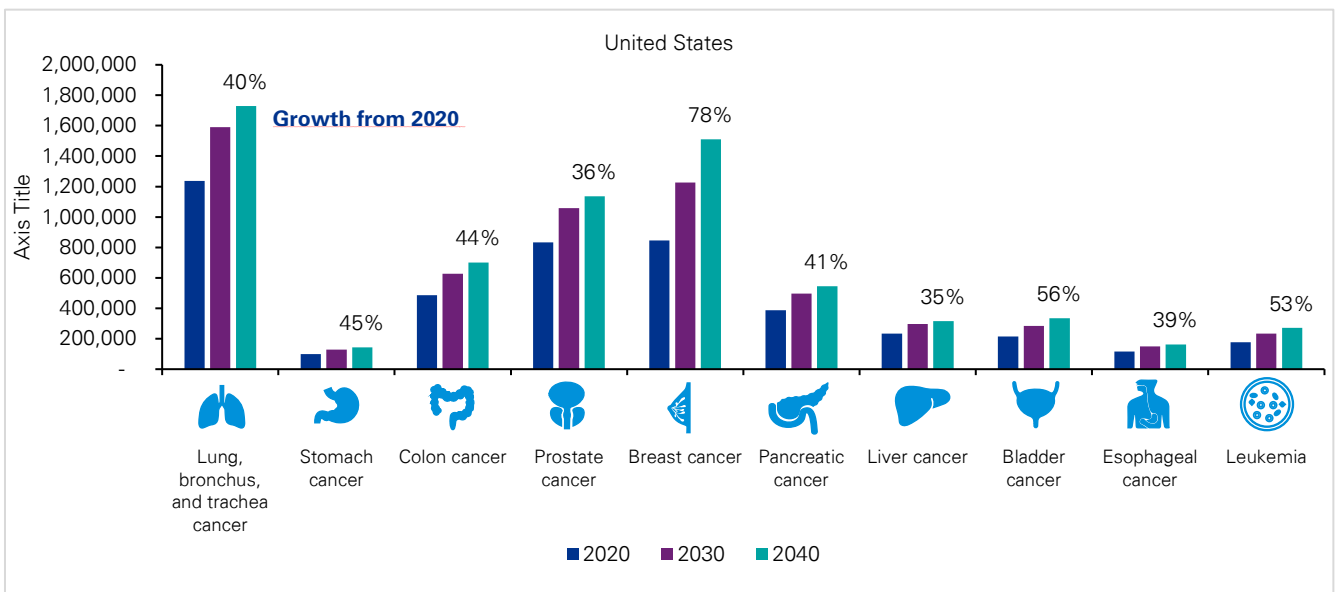


Figure 6: Projections of cancer burden in the U.S.
Source: KPMG analysis using data from IHME 2019 GBD study and WHO Global Cancer Observatory Cancer Tomorrow.

4 Summary

The increase in the economic burden due to cancer among the elderly is an unprecedented phenomenon faced by countries with an ageing population. While cancer among the elderly cannot be eliminated, it can be managed such that the strains on the economy are minimized. The National Cancer Control Programmes (NCCP) are enablers and can provide guidance in making the right investments towards improving cancer outcomes. Many NCCPs today lack focused cancer plans tailored towards the elderly and this could be the first step towards achieving that outcome.¹¹

Disclaimer

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