

The development of the cost of cancer in 31 European countries

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AIM

To estimate the economic burden of cancer in Europe over the period 1995 to 2023, in total and by country.

BACKGROUND

The estimated number of new cancer cases in Europe has risen from 2.1 million in 1995 to 3.2 million in 2022. Around every fourth death is due to cancer, yet survival rates have been improving due to advances in early detection, diagnosis, and treatment. The implications of these epidemiological changes and medical advances for the overall cost of cancer are not well documented.

In addition to the costs arising for patients and their families, cancer also imposes an economic burden to society. In this study, the economic burden was defined more broadly than in an everyday meaning and included both direct and indirect costs as defined in Figure 1.

1. Direct costs

Medical expenditure: Services within the healthcare system (e.g. treatments, preventive measures, public health campaigns, screening, diagnostics, rehabilitation, psychosocial care) and any formal support services outside the healthcare system.

2. Indirect costs

Morbidity-related productivity loss: Patients' inability to work due to the disease which includes temporary inability (sick leave) or permanent (early retirement).
Mortality-related productivity loss: Premature death of working-age patients.

Figure 1. Components of the economic burden of cancer

METHODS

- Cost-of-illness study estimating the direct and indirect costs of cancer across 31 European countries (the EU-27 countries, plus Iceland, Norway, Switzerland, and the UK) from 1995 to 2023. All costs were calculated in euros and were adjusted for inflation and changes in exchange rates to 2023 values.

Direct costs

- Information on cancer-specific health expenditure was searched for all countries and combined with data from Eurostat and the OECD.
- Extrapolations based on geographical proximity and similarity in GDP per capita were made for countries with missing information.

Indirect costs

- Productivity losses due to premature mortality were calculated using mortality data from the World Health Organization, Eurostat, and the Office for National Statistics, combined with labor market data from Eurostat.
- Productivity losses due to morbidity were estimated using data from a previous study¹ and linked to changes in population structure using data from Eurostat.
- The human-capital approach was employed to calculate indirect costs.
- Total costs, costs per capita, and costs per new cancer case were estimated for Europe as a whole and for each individual country.

RESULTS- COST OF CANCER IN EUROPE

1. Overall and over time

- Between 1995 and 2023, the sum of indirect and direct costs increased from 159 to 228 billion euros (+46%) and the sum per capita increased from 313 to 423 euros (+35%); all numbers adjusted for inflation and exchange rates to 2023 values.
- Total direct costs of cancer rose from 62 to 146 billion euros (+146%) (Figure 2).
- In contrast, total indirect costs declined from 97 to 82 billion euros (-16%) (Figure 2) which was caused by less mortality-related productivity loss.
- The number of potential years of working life lost (PYWLL^a) due to cancer death declined by nearly 1 million (-33%) between 1995 and 2023 (Figure 3). The reduction in PYWLL was attributed to a reduction and shift of cancer deaths to older ages as well as improved survival rates.
- The PYWLL were considerable higher for men than women in 1995 but due to a faster decline for men (-38%) compared to women (-26%), the numbers between sexes were similar in 2023 (Figure 3).
- The cost of cancer per new case was relatively stable at around 75,000 euros between 1995 and 2023 with a small decline of 10% (Figure 4).

^a Defined as number of working years that a person of working age (uniformly defined as 15-64 years) loses due to death before retirement age (uniformly defined as 65 years)

Figure 2. Total direct and indirect costs over time in billion euros

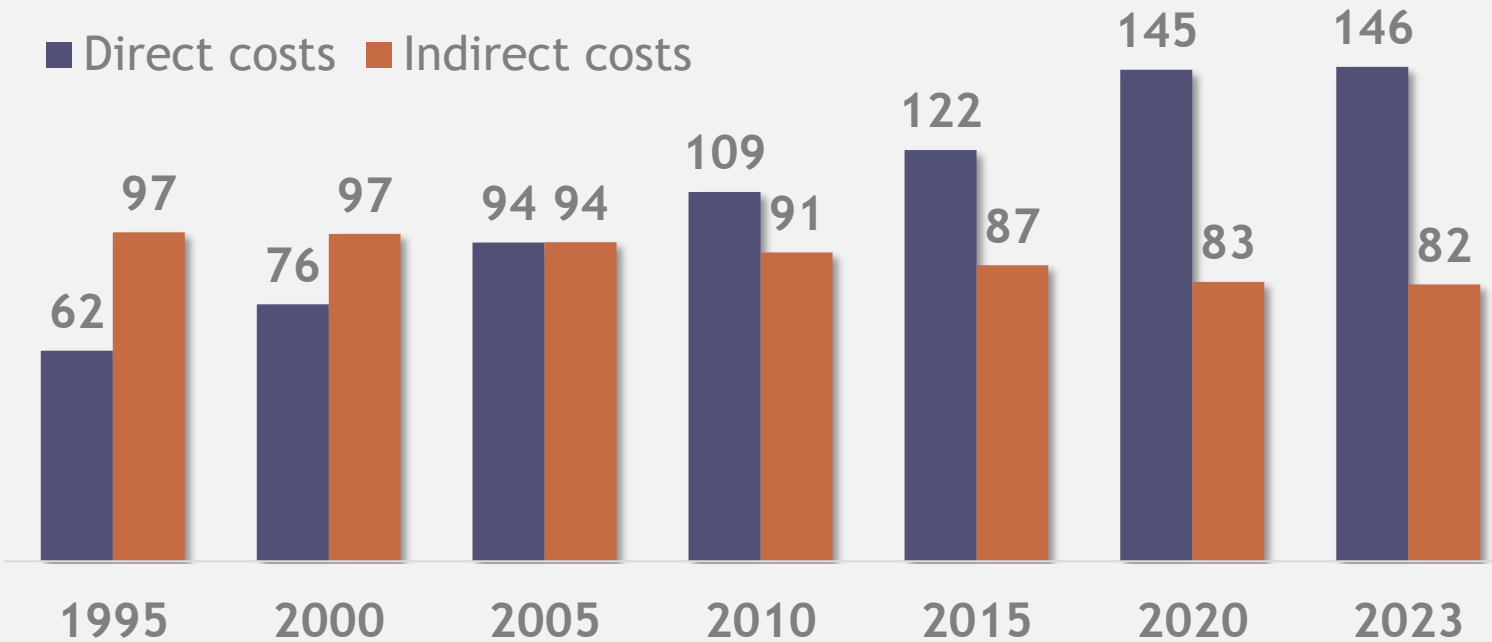


Figure 3. Number of PYWLL due to premature cancer death in Europe in millions

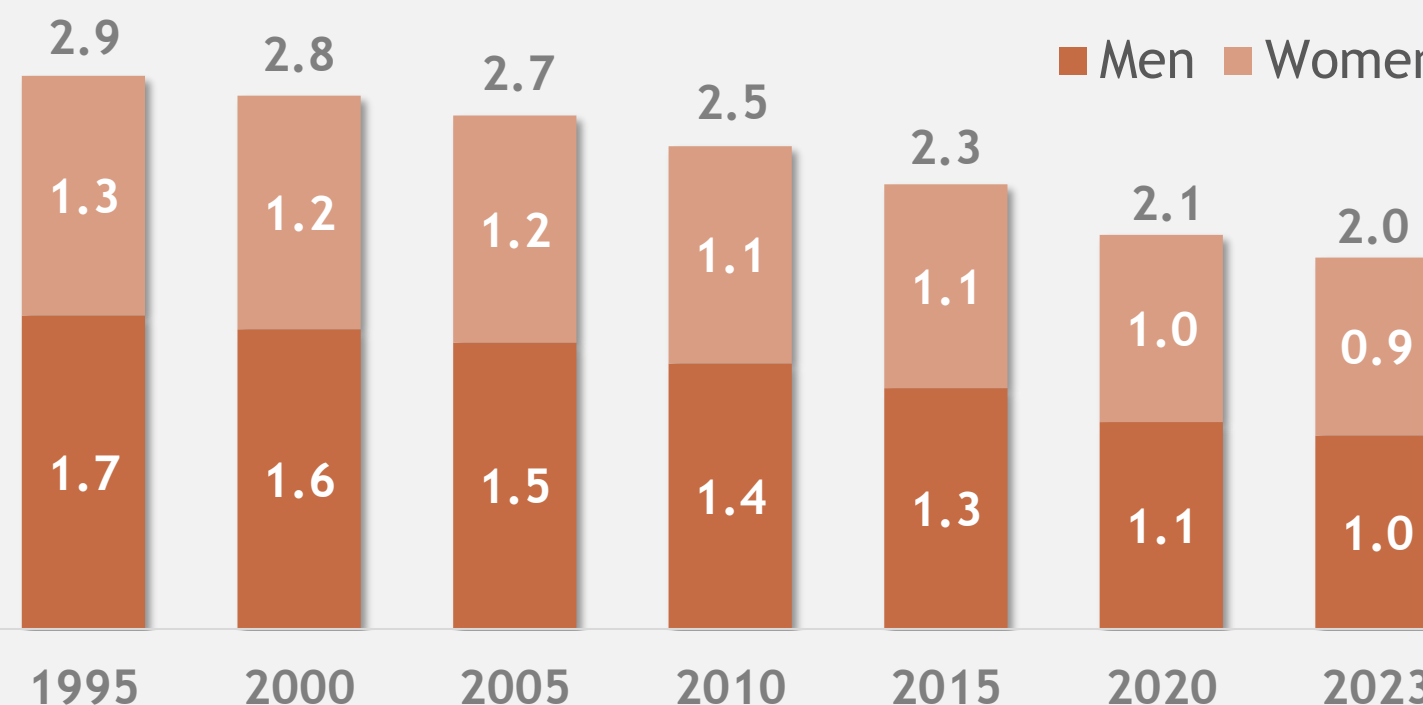
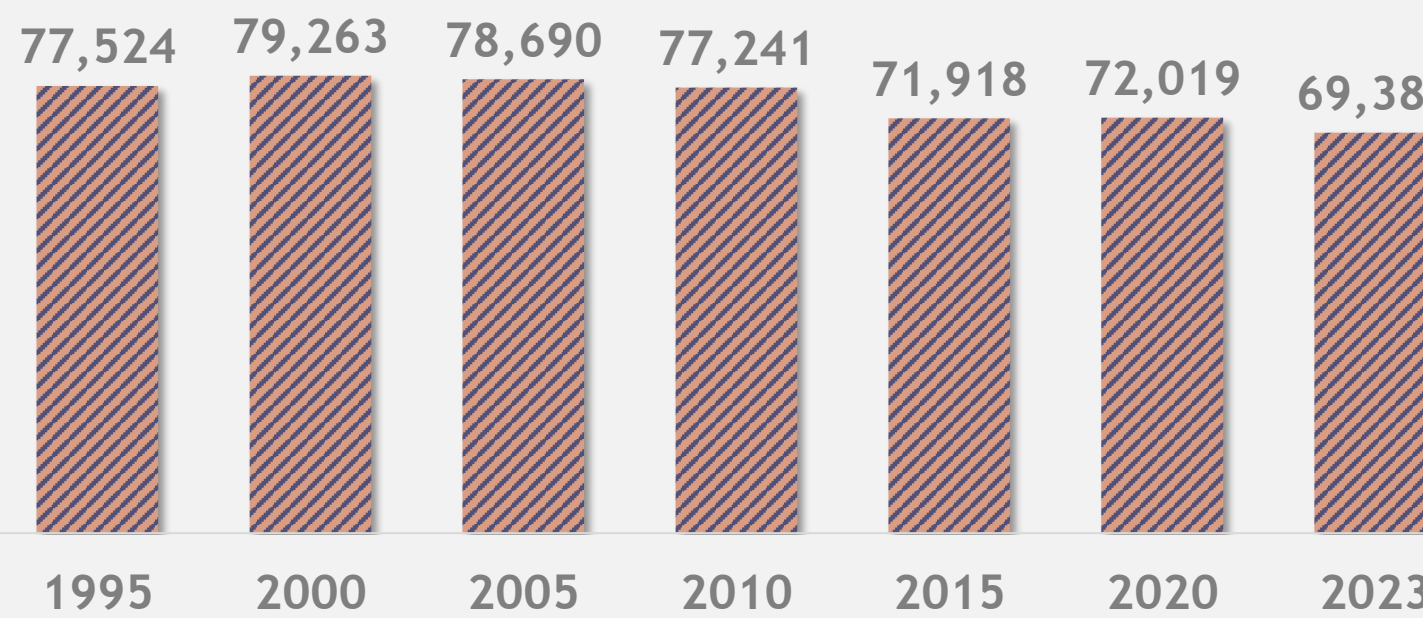
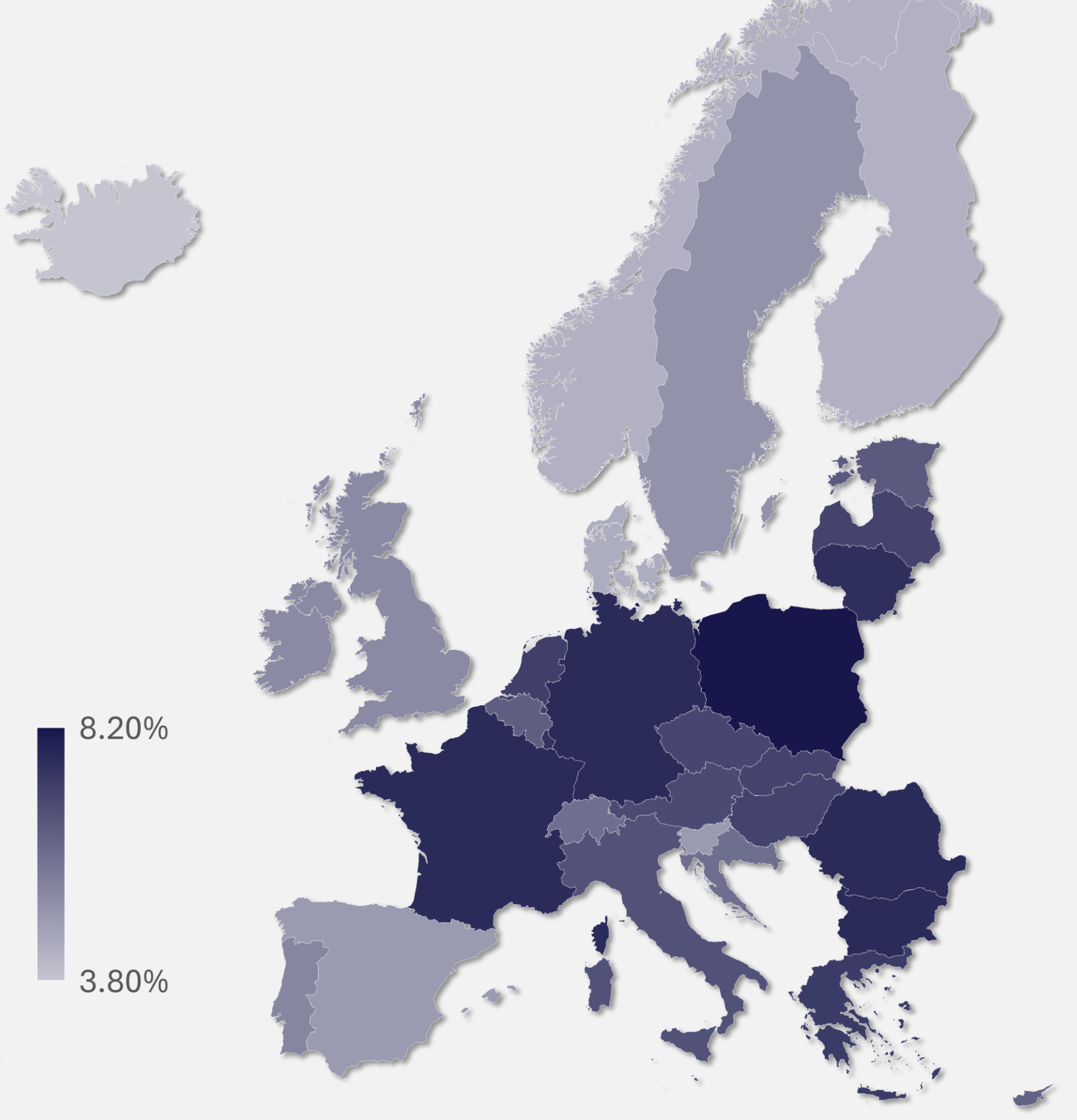


Figure 4. Total costs per new case (direct+indirect) in euros



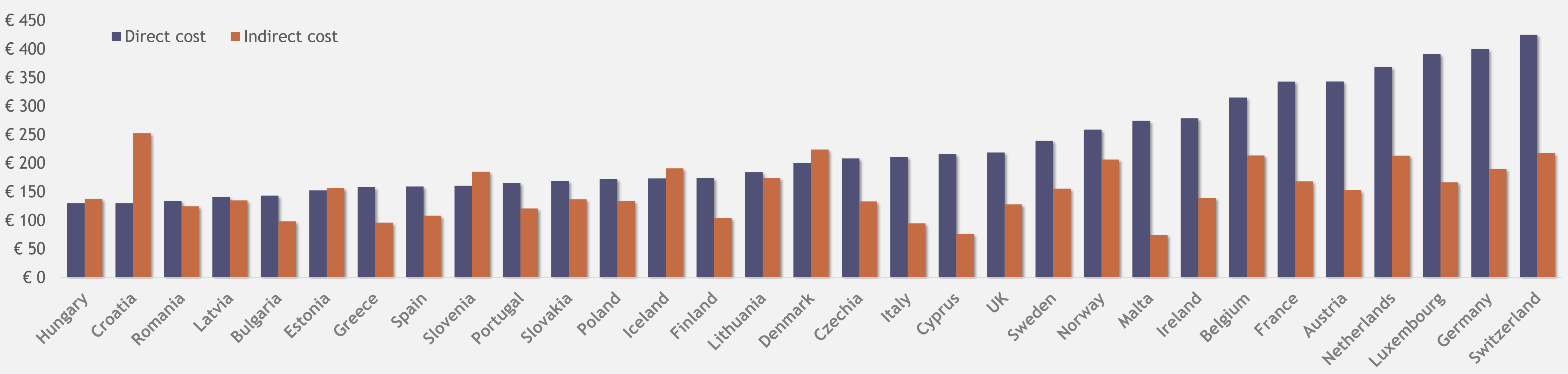
2. By country in 2023

Figure 5. Direct costs of cancer as percent of total health expenditure



- In Europe overall, the estimated share of total health expenditure allocated to cancer was 6.6% in 2023. Between countries, this differed in the range of ~4% in Iceland, Finland and Denmark to ~8% in Poland, Romania, Bulgaria, France and Germany (Figure 5).
- Direct and indirect costs per capita varied more than 3-fold between countries. Overall, countries in Western Europe had the highest direct costs and the largest difference between direct and indirect costs. Central and Eastern European countries showed more similar levels of indirect and direct costs (Figure 6).

Figure 6. Direct and indirect costs per capita in euros (purchasing power parity [PPP] -adjusted) in 2023



DISCUSSION AND CONCLUSIONS

- The growing number of cancer patients is spurring the growth in total costs rather than changes in the economic burden per new cancer case, which has remained relatively constant for nearly 30 years.
- The total economic burden of cancer in Europe has been steadily increasing between 1995 and 2023. Although the investments in cancer care (direct costs of cancer) have more than doubled, this has been partially offset by reductions in indirect costs.
- A reduction in productivity loss due to premature deaths is a result of more effective cancer care, indicating that investments in care have positive economic consequences for society in the long term (Figure 7).

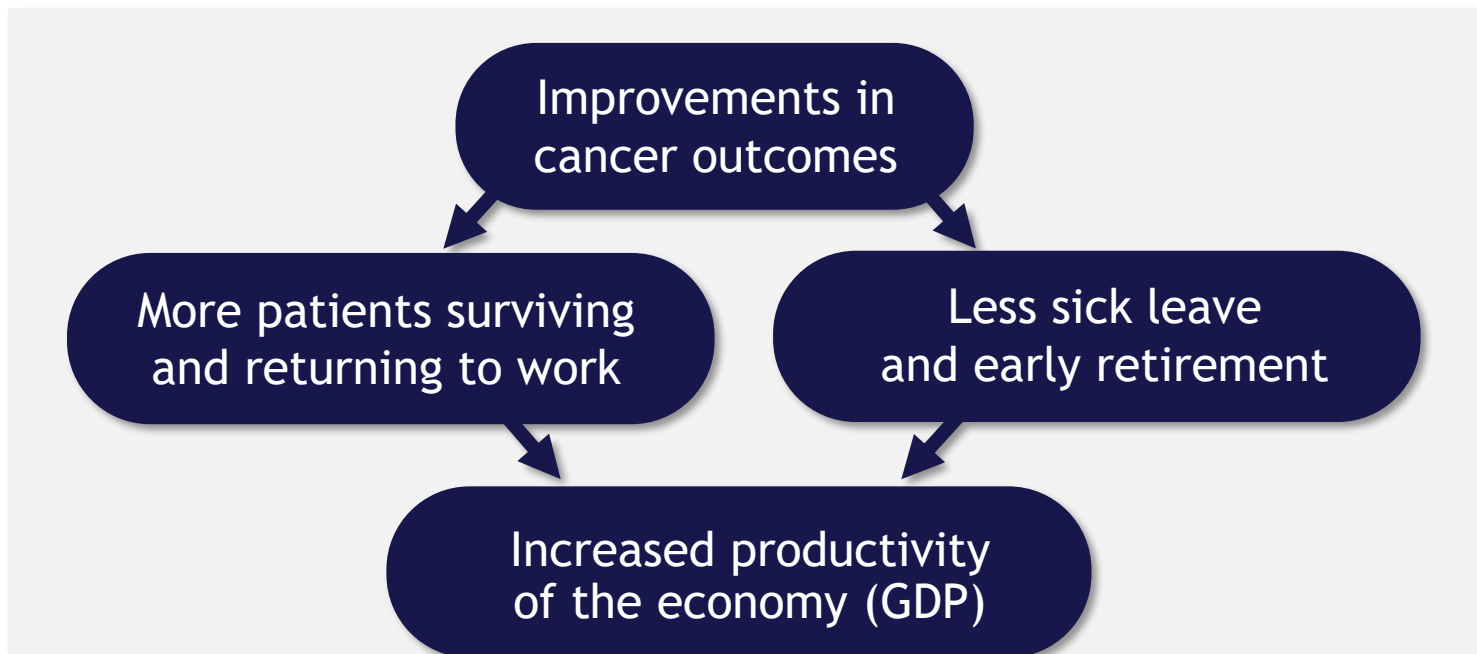


Figure 7. Indirect economic benefits of better cancer care

- The share of health expenditure allocated to cancer in Europe is low in relation to the relative disease burden of cancer (Figure 8).

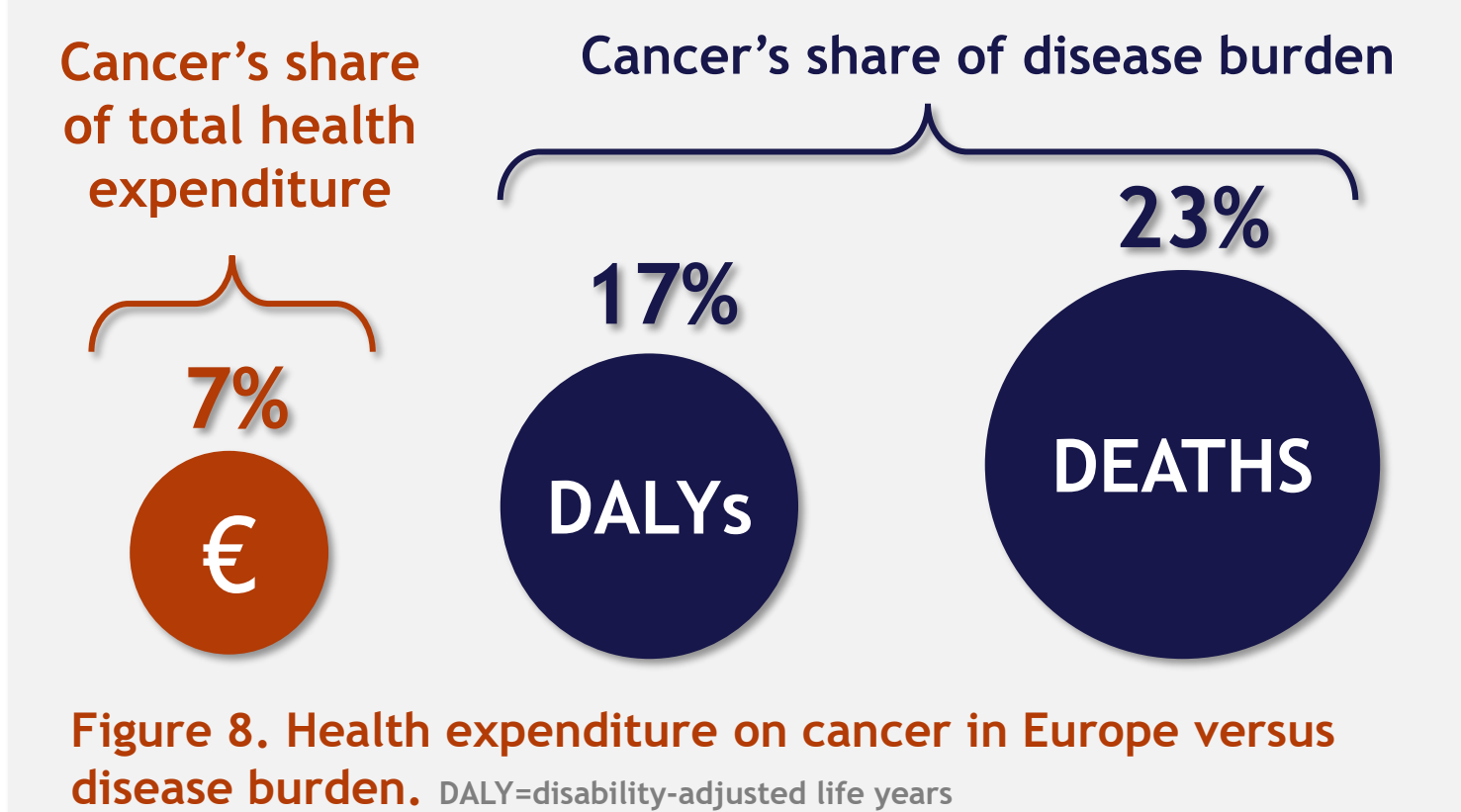


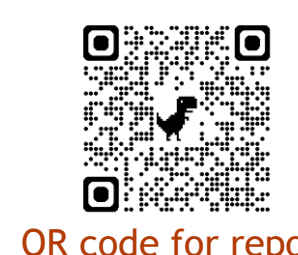
Figure 8. Health expenditure on cancer in Europe versus disease burden. DALY=disability-adjusted life years

- There are large disparities across Europe in terms of how much the countries invest in cancer care in absolute terms per capita.
- Changes in indirect costs and epidemiological trends should be considered in debates about the rising costs of cancer.

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¹ IHE Luengo-Fernandez et al. (2013) Economic burden of cancer across the European Union: a population-based cost analysis. Lancet Oncol. 14(12):1165-74.

The numbers presented in this poster derive from IHE report 2025:2: "Comparator Report on Cancer in Europe 2025 - Disease Burden, Costs and Access to Medicines and Molecular Diagnostics".



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