

Years of Life Lost and Productivity Costs Due to Premature Cancer-Related Mortality in Morocco

Shira Yaari¹, Ihsane Sanaa El Joudani², El Mehdi Rakhi², Anne Meiwald³, Aimée Fox³, Peter Toth³, Chamath Perera³, Bernadette Pöllinger⁴

¹ V&I Outcome Research, MSD Israel

² MSD Morocco

³ Adelphi Values PROVE, Bollington, UK

⁴ V&I Outcome Research, MSD Sharp & Dohme GmbH, Germany, Munich

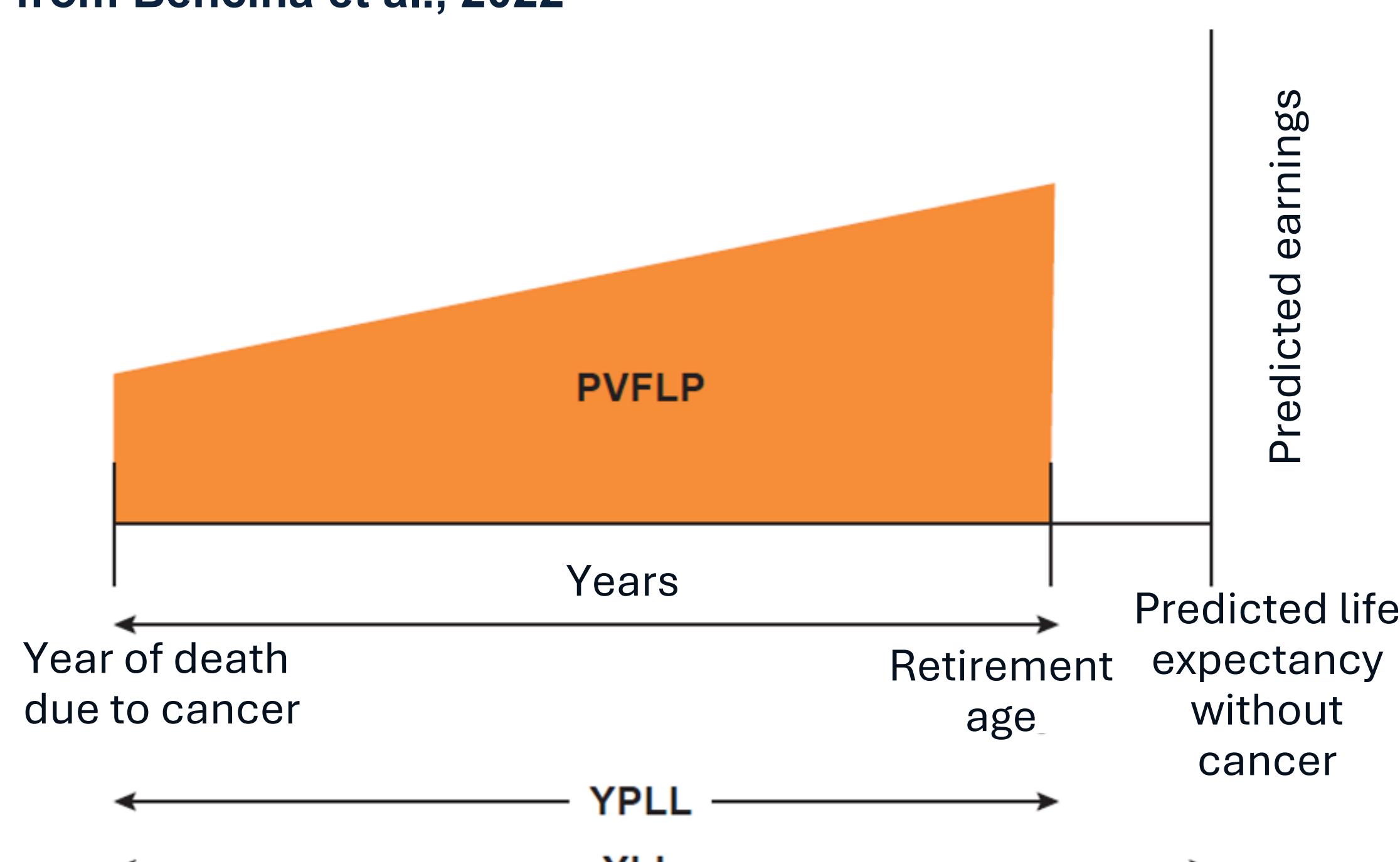
Background

Multiple cancer types have high mortality and afflict individuals at a relatively young age, leading to substantial productivity losses and premature death. This study aimed to provide a perspective on cancer mortality burden and productive life lost of selected tumors in Morocco.

Methods

The human capital approach was used to estimate both years of life lost (YLL) and the present value of future loss of productivity (PVFLP). Age- and sex-specific mortality data were sourced from the Institute for Health Metrics and Evaluation (IHME).¹ Retirement age, life expectancy, and labor force participation were sourced from the World Bank.²⁻⁵ Average wage was retrieved from a local source.⁶ Years of productive life lost (YPLL) measured the number of working years lost prior to the standard retirement age of 60 years, thus capturing the impact of premature mortality on economic productivity.

Figure 1. Schematic model illustrating years of life lost (YLL) and present value of future lost productivity (PVFLP) calculations. This model was adapted with permission from Bencina et al., 2022⁷



Results

In 2022, 19,744 patients died of cancer in Morocco (Table 1). Lung, colorectum, breast, cervical, ovary and endometrial cancer were amongst the cancers with the highest mortality with an estimated number of 4,934, 2,782, 1,809, 1,092, 551 and 114 deaths in 2022, respectively.

Table 1 : Mortality: Estimated number of deaths by cancer subtype in 2022

Cancer sub-type	Lung	Colorectum	Breast	Cervical	Ovary	Endometrial
	4,934	2,782	1,809	1,092	551	114

References

- Institute for Health Metrics and Evaluation (IHME). Global Burden of Disease Study. 2025. Available via: <https://www.healthdata.org/research-analysis/gbd>. Data used under license; restrictions apply. Permission required from IHME for access.
- The World Bank. Indicator: Pension, Age at which men and women can retire with full pension benefits 2023. Available via: https://wbl.worldbank.org/en/data/exploratopics/wbl_gopen. Accessed: 12th May 2025.
- The World Bank. Life expectancy at birth, male (years). Available via: <https://data.worldbank.org/indicator/SP.DYN.LE00.MA.IN?locations=MA>. Accessed: 12th May 2025.
- The World Bank. Life expectancy at birth, female (years). Available via: <https://data.worldbank.org/indicator/SP.DYN.LE00.FE.IN?locations=MA>. Accessed: 12th May 2025.
- The World Bank. Indicator: Labor force participation rate, total (% of total population ages 15+) (modelled ILO estimate) 2022. Available via: <https://data.worldbank.org/source/world-development-indicators#>. Accessed: 15th May 2025.
- Haut-Commissariat au Plan (HCP). Enquête Nationale sur la Structure des Revenus des Ménages (ENSRM) 2019. Rabat, Morocco: HCP; 2020. Available via: <https://medias24.com/2024/03/08/lecart-salarial-hommes-femmes-dans-le-secteur-prive-est-de43-hcp/>. Accessed: 3rd June 2025.
- Bencina G, Chami N, Hughes R, Weston G, Baxter C, Salomonsson S, Demedtsl. Indirect Costs Due to Lung Cancer-Related Premature Mortality in Four European Countries. *Adv Ther*. 2023 Jul;40(7):3056-3069. doi: 10.1007/s12325-023-02509-x. Epub 2023 May 17. PMID: 37195488; PMCID: PMC10189212. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10189212/pdf/12325_2023_Article_2509.pdf

Table 2 : Years of Life Lost (YLL) ; estimated number of YLL in cancer sub-types in 2022

We estimated that all cancer deaths resulted in 250,663 YLL overall, with lung accounting for 42,470, colorectum for 31,692, breast for 38,056, cervical for 22,865, ovary for 9,244 and endometrial cancer for 1,531 YLL in 2022.

Cancer sub-type	YLL 2022
Lung	42,470
Colorectum	31,692
Breast	38,056
Cervical	22,865
Ovary	9,244
Endometrial	1,531
All Cancer	250,663

Table 3 : Present Value of Future Loss of Productivity (PVFLP); estimated annual PVFLP in cancer sub-types

A: PVFLP in both sexes (\$)

Annual PVFLP was estimated to be \$248,982,938 for all cancer types, with lung accounting for \$32,830,576, colorectum for \$28,976,897, breast for \$41,832,883, cervical for \$23,934,688, ovary for \$7,814,125 and endometrial cancer for \$1,004,463, respectively.

Cancer sub-type	PVFLP
Lung	\$32,830,576
Colorectum	\$28,976,897
Breast	\$41,832,883
Cervical	\$23,934,688
Ovary	\$7,814,125
Endometrial	\$1,004,463
All Cancer	\$248,982,938

B : PVFLP in each sex in 2022 (\$)

Cancer sub-type	PVFLP			PVFLP/death (Average)		
	Male	Female	Total	Male	Female	All
Lung	\$30,712,964	\$2,117,612	\$32,830,576	\$6,753	\$5,494	\$6,655
Colorectum	\$15,774,557	\$13,202,340	\$28,976,897	\$11,504	\$9,359	\$10,417
Breast	\$1,049,922	\$40,782,961	\$41,832,883	\$28,286	\$23,012	\$23,120
Cervical	\$0	\$23,934,688	\$23,934,688	\$0	\$21,924	\$21,924
Ovary	\$0	\$7,814,125	\$7,814,125	\$0	\$14,184	\$14,184
Endometrial	\$0	\$1,004,463	\$1,004,463	\$0	\$8,823	\$8,823
Total / Average (All cancer)	\$120,935,759	\$128,047,180	\$248,982,938	\$10,408	\$15,760	\$12,611

Conclusion

YLL and PVFLP due to premature cancer mortality in Morocco were substantial, with lung, colorectum, breast, cervical, ovary and endometrial cancer having a major impact. Continued prioritization of investment in cancer care including awareness, prevention, early detection and treatment is imperative and should take priority to reduce societal burden for Morocco.

Limitations

This study did not account for direct costs of cancer to the healthcare system, productivity loss due to cancer morbidity, or inability to work while alive. There is a wider impact on the caregivers of patients with cancer, which was not included here.

Contact information

Bernadette.Pöllinger; bernadette.poellinger@msd.de