

## OBJECTIVES

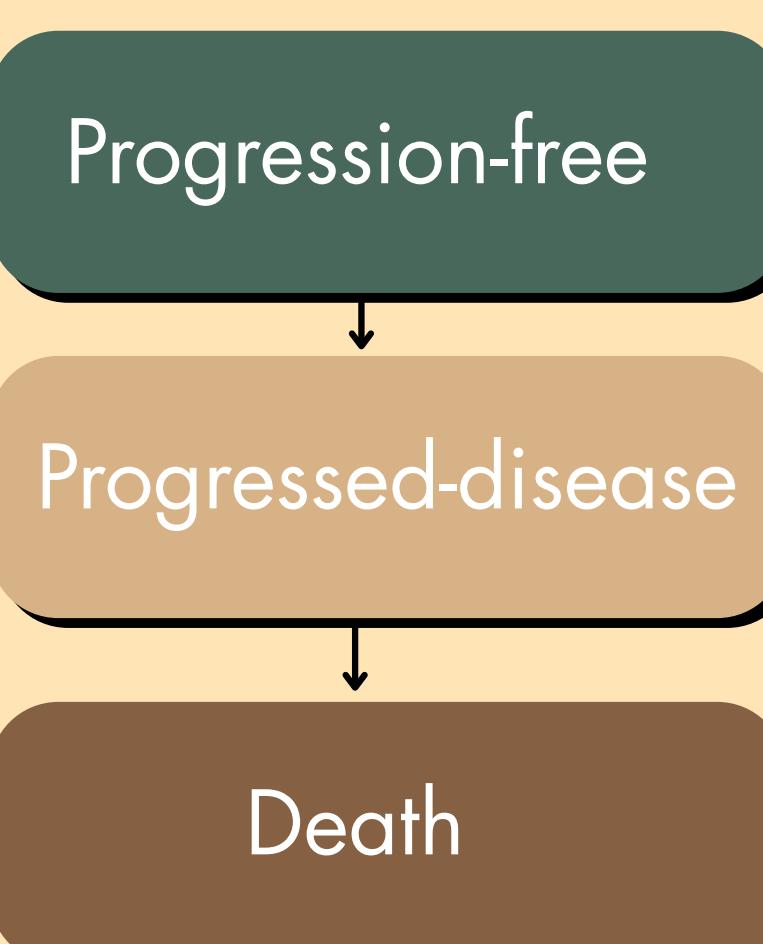
Melanoma is an aggressive skin cancer associated with substantial morbidity and mortality, especially in advanced stages. This analysis aimed to estimate the societal and economic impact of immunotherapy for melanoma in Bulgaria by modelling health outcomes and translating quality-adjusted life years (QALYs) gained into productivity-related economic value, focusing on working-age patients across different disease stages.



## METHODS

A partitioned survival model (PSM) with three health states and a 3.5% annual discount rate over a lifetime horizon was developed. The model allows adaptation to other countries with similar data availability. (Figure 1)

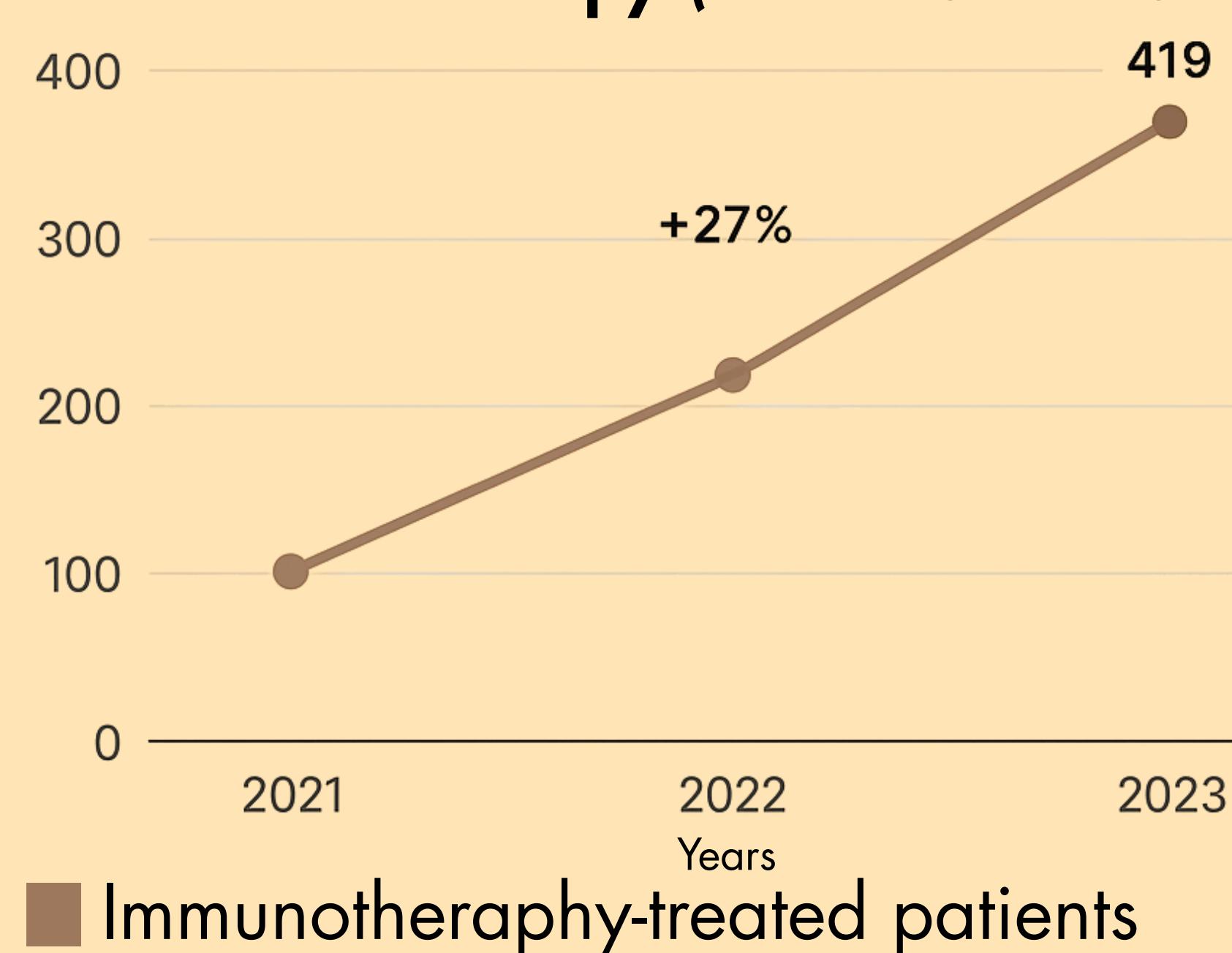
**Fig.1 Three-State Partitioned Survival Model (PSM)**



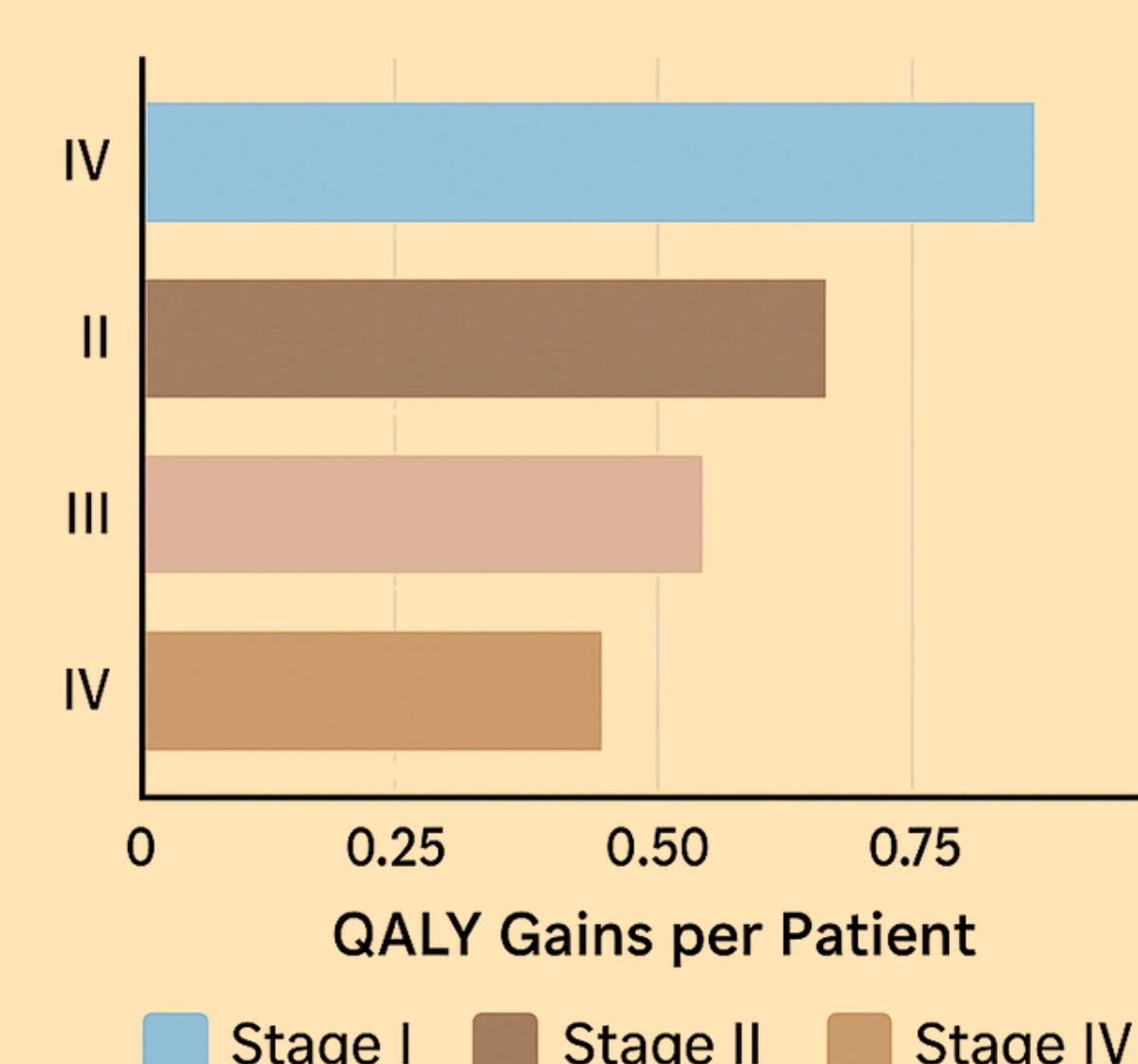
Real-world data from the Bulgarian National Health Insurance Fund (NHIF) show a steady rise in melanoma patients treated with immunotherapy between 2021 and 2023, reflecting the expanding access to innovative therapies. (Figure 2)

Stage-specific QALY gains in melanoma were estimated from published clinical trials and calibrated with real-world NHIF data, highlighting differences across disease stages. (Figure 3)

**Fig.2 Increase in Melanoma Patients Treated with Immunotherapy (NHIF 2021–2023)**



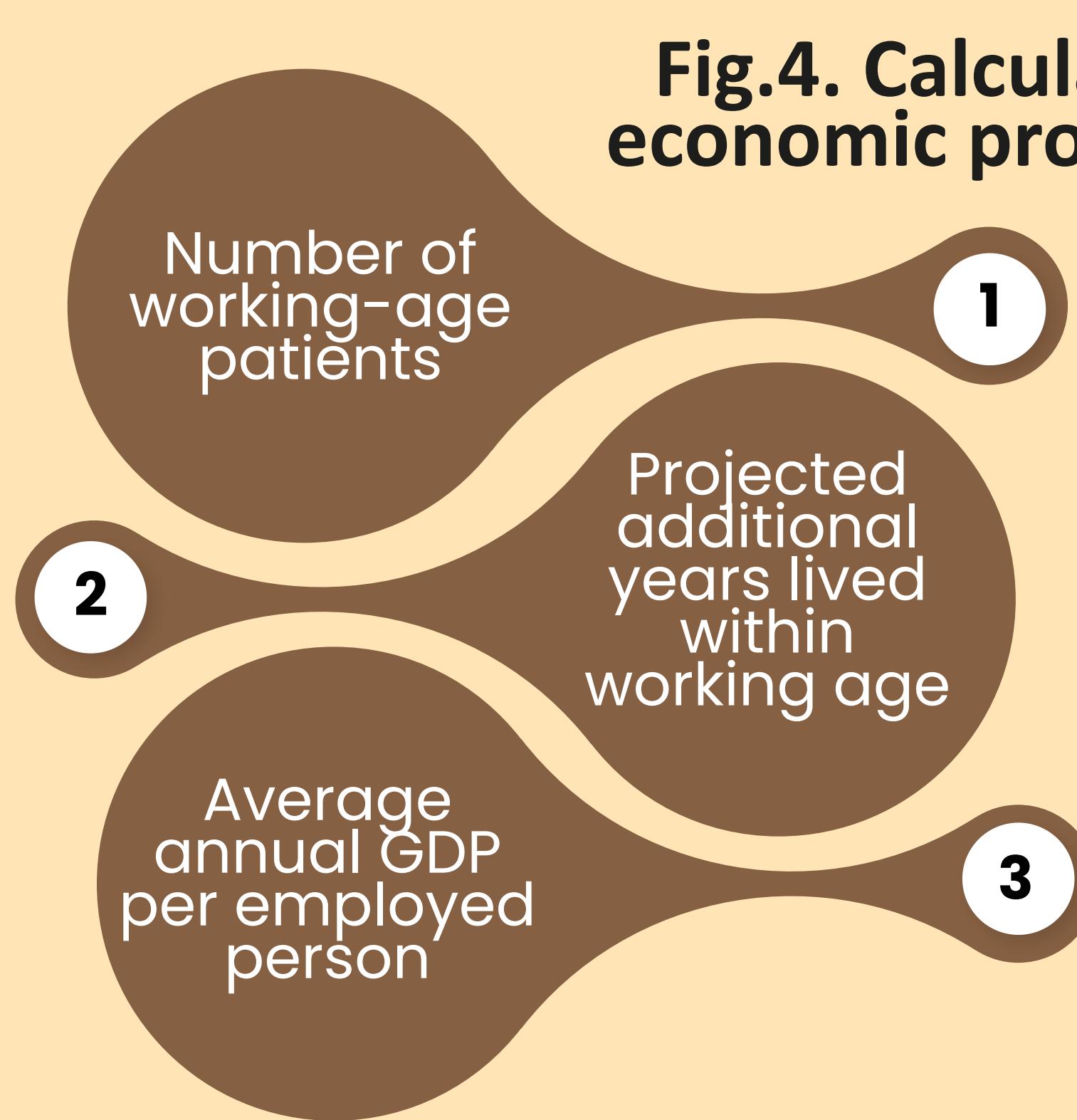
**Fig.3 Stage-Specific QALY Gains in Melanoma**



## RESULTS

Economic productivity was estimated by combining working-age survival gains with national GDP data. (Figure 4)

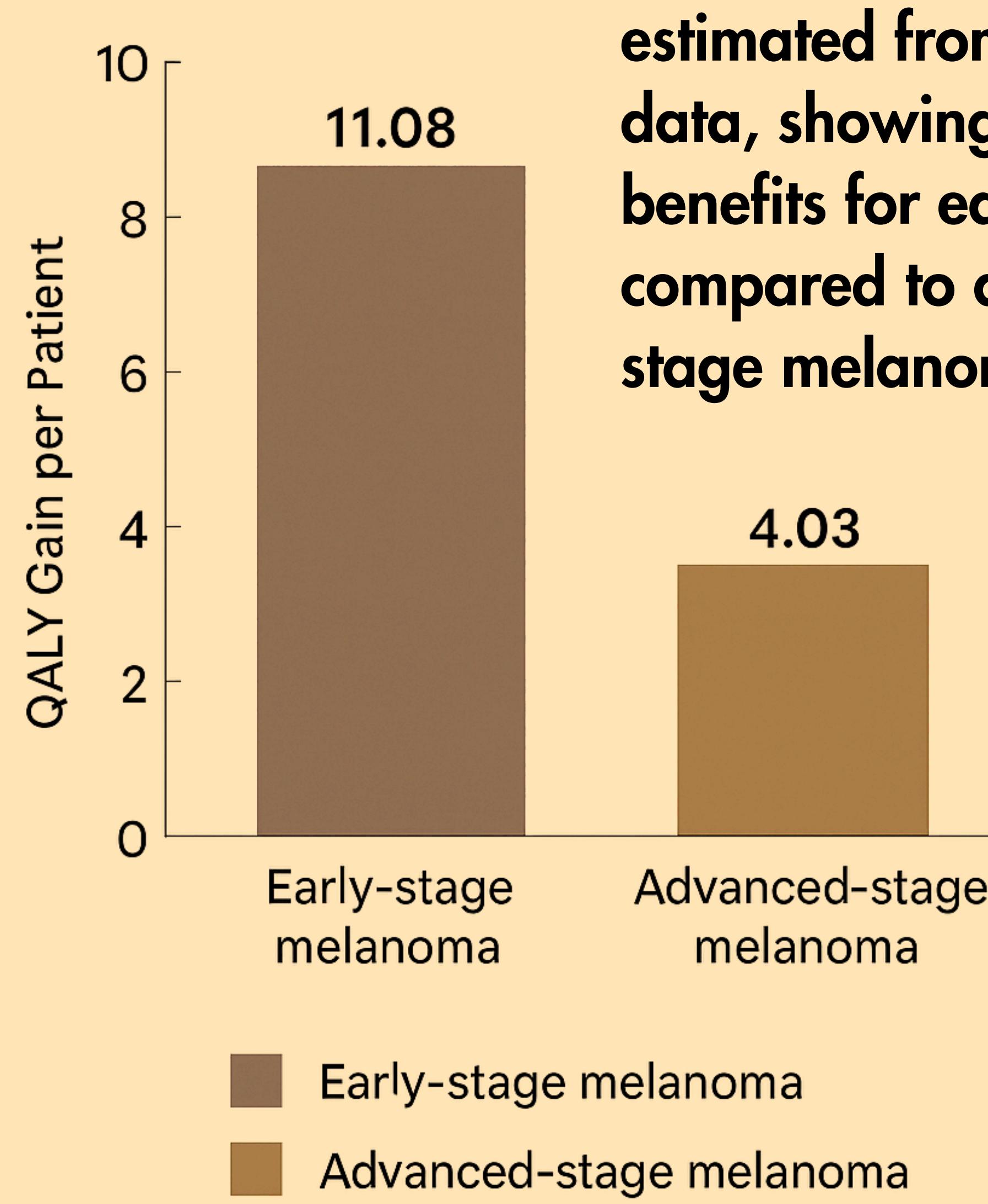
**Fig.4. Calculation of economic productivity**



**EUR 64,797,713**

**Total GDP contribution associated with these working-age patients**

**Fig.5. QALY gains were estimated from clinical trial data, showing higher benefits for early-stage compared to advanced-stage melanoma patients.**



## CONCLUSION

Immunotherapy in melanoma provides substantial health and economic value, especially when introduced earlier in the disease course. The significant QALY gains and measurable GDP contributions underline the dual benefit of improving patient outcomes while supporting national economic productivity. In the Bulgarian context, these findings reinforce the importance of timely access to immunotherapy and integrating societal value considerations into national oncology planning.