

AI-based Forecasting Of Alzheimer’s Disease And Dementia Burden In The United Kingdom (1990 2050)

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Projections suggest a gradual, albeit slowing, reduction in UK dementia burden through 2050, alongside possible stabilization trends among females.

INTRODUCTION	METHODS	RESULTS	CONCLUSIONS	REFERENCES
Alzheimer’s disease (AD) and dementia are major contributors to disability and mortality in the United Kingdom (UK), with significant implications for healthcare planning and resource allocation. Understanding future trends in their burden is essential to guide policy and service provision.	We applied artificial intelligence-based machine learning techniques, specifically time series modelling, to age-standardized disability-adjusted life year (DALY) rates for AD and dementia in the UK from 1990-2023. Data were obtained from the Global Burden of Disease study. Forecasts to 2050 were generated for the overall population, and separately for males and females to capture sex-specific differences.	• Age-standardised DALY rates for Alzheimer's and dementia in the UK fell from 429 to 407 per 100,000 between 1990 and 2023 across both sexes. • Machine-learning models predict this decline will continue through 2050, though at a slower pace. • Overall rates are forecasted to drop to 405 in 2030, 401 in 2040, and 398 in 2050. • Male rates are projected to decrease to 328 in 2030 and 327 in 2050, while female rates are expected to stabilize at 460.	Forecasts suggest that the overall burden of Alzheimer’s disease and dementia in the UK will likely continue to decline gradually through 2050. However, disparities in declines by individual sex were predicted. Despite ongoing improvements, the pace of reduction is slower than observed historically, indicating that gains may plateau eventually. This slowing in decline may reflect the combined impact of an aging population and limits in further reducing modifiable risk factors.	Zhou M, Shen H. Forecasting the global burden of disease to 2050. The Lancet. 2024 May 18;403(10440):1961-3. Murray CJ. The global burden of disease study at 30 years. Nature medicine. 2022 Oct;28(10):2019-26. Bhutta ZA. Global Burden of Disease 2023: Challenges and opportunities for a growing collaboration. PLoS Med. 2025 Nov 26;22(11):e1004838. doi: 10.1371/journal.pmed.1004838. PMID: 41296779; PMCID: PMC12654870.