

# Societal Costs of Alzheimer’s Disease: Informal Caregiver Burden and Patient Productivity Loss

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## BACKGROUND

- Alzheimer’s disease (AD), which has no current cure and is increasing in prevalence in the US, is one of the most pressing health concerns we face today<sup>1</sup>
- AD not only has debilitating impacts on an individual’s health and finances but also places heavy burdens on patients, caregivers, the healthcare system and society as a whole<sup>2</sup>
- The direct medical costs associated with AD in the US were estimated at >\$360 billion US dollars in 2024, but this value does not reflect the substantial financial burden on informal caregivers and society<sup>1</sup>
- To accurately assess the value and cost-effectiveness of new therapies, it is essential to have usable estimates of key costs to society across disease severity stages

## OBJECTIVE

- We estimated the economic burden on informal caregivers and the loss of patient productivity to better understand the societal impacts of AD across all stages of disease severity

## METHODS

- We performed a narrative literature review to identify inputs in order to estimate informal caregiver burden and market productivity loss (**Table 1**)
- Disease severity stages were based on the Clinical Dementia Rating Sum of Boxes and aligned to health states in the US Institute for Clinical and Economic Review cost-effectiveness model<sup>3</sup>
- Because direct data were unavailable for patients’ nonmarket productivity loss, we used a predictive algorithm to generate estimates<sup>4</sup>

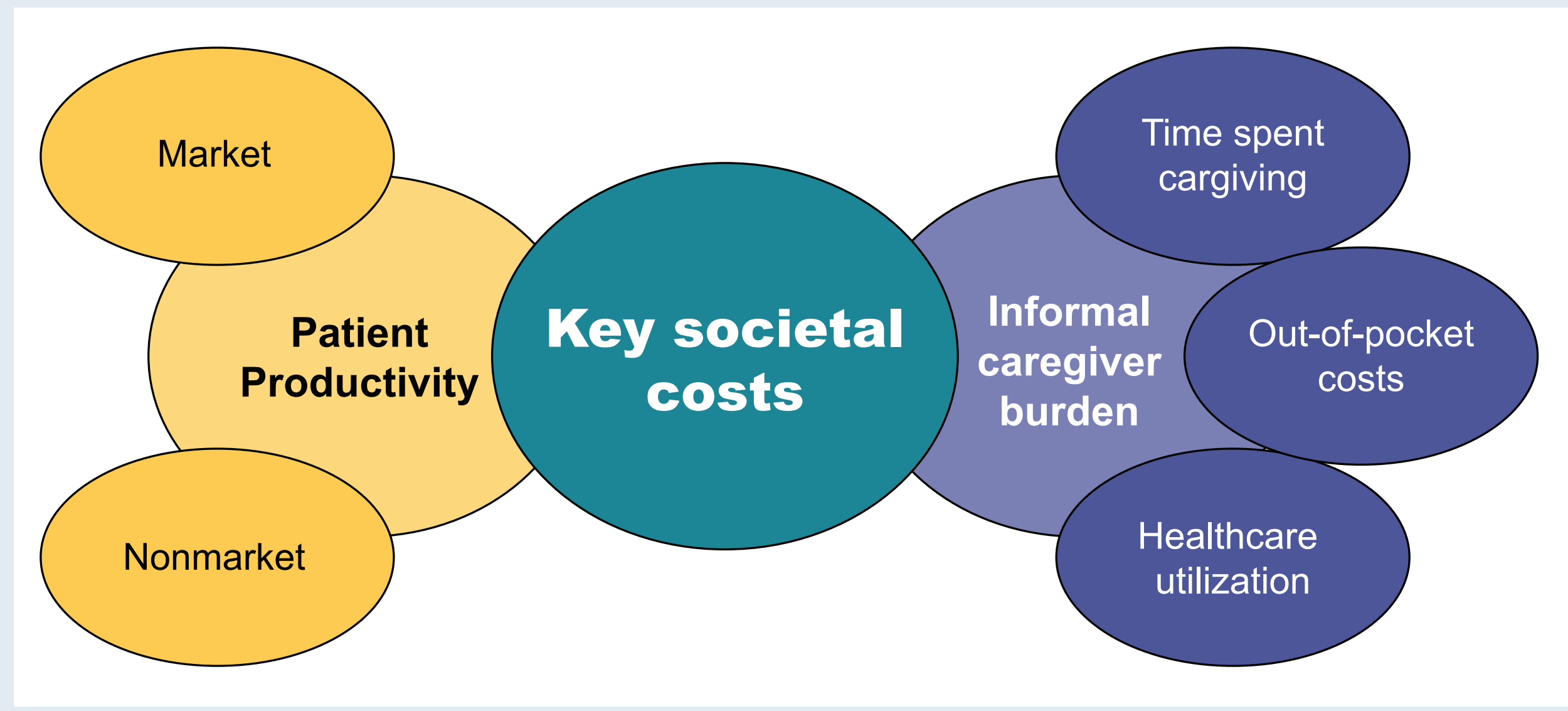
**Table 1.** Key Inputs by Disease Stage (US Patients)

Patients with AD, n	
MCI due to AD <sup>5</sup>	5,750,000
Mild <sup>1,6</sup>	3,376,800
Moderate <sup>1,6</sup>	2,030,100
Severe <sup>1,6</sup>	1,293,100
Patient age, mean, years	
MCI due to AD <sup>7</sup>	69.5
Mild <sup>7</sup>	70.9
Moderate <sup>8</sup>	80.6
Severe <sup>8</sup>	82.1
HRQOL score, mean <sup>9,10</sup>	
MCI due to AD	0.65
Mild	0.57
Moderate	0.38
Severe	0.21

AD, Alzheimer’s disease; HRQOL, health-related quality of life; MCI, mild cognitive impairment.

- The key societal costs included in this analysis are shown in the **Figure**
  - Patient productivity was defined as both market and nonmarket productivity (i.e. time spent in uncompensated labor such as household tasks)
  - Informal caregiver burden included caregiver productivity (captured by time spent caregiving), caregiver out-of-pocket (OOP) spending on the care recipient and increased caregiver healthcare utilization
- We assumed that compensated (market productivity) time was valued at the average hourly compensation and fringe benefits of an American worker (\$45.42) and that uncompensated time (nonmarket productivity and, for informal caregivers, time spent caregiving) was valued at the average hourly wage after taxes (\$27.03)<sup>11,12</sup>
- Patient-level estimates were scaled to the population based on US AD prevalence weighted by disease severity<sup>1,5,6</sup>

**Figure.** Included Societal Costs



## RESULTS

- The total annual societal costs of informal caregiving and productivity loss of AD at the patient level increased with disease severity: \$53,384 for mild cognitive impairment (MCI) due to AD, \$95,554 for mild AD, \$101,072 for moderate AD and \$142,633 for severe AD
- A larger portion of societal costs were incurred due to market productivity loss for patients with MCI and mild AD vs those with moderate and severe disease; this finding is attributable to patients with less-severe AD being younger on average and more likely to still be employed; therefore, such patients were more likely to need to leave work or reduce working hours due to AD
- This proportion of loss shifted to nonmarket productivity with higher levels of severity because most productive time among persons aged 80 years and older was spent outside the formal labor market
- Considering the current distribution of patient prevalence across severity stages, the total annual societal cost of AD was estimated at \$1 trillion (**Table 2**), which included an estimated \$587 billion in informal caregiving costs and \$430 billion in patient productivity loss

**Table 2.** Societal Costs of AD in 2023 US Dollars

### A. Patient productivity loss

Severity	Monthly per pwAD	Annual per pwAD	Annual total
Market			
MCI	\$1753	\$21,033	\$120,942,126,802
Mild	\$3816	\$45,797	\$154,648,023,061
Moderate	\$554	\$6643	\$13,485,773,995
Severe	\$554	\$6643	\$8,589,948,452
Nonmarket			
MCI	\$310	\$3717	\$21,371,411,494
Mild	\$493	\$5914	\$19,970,231,878
Moderate	\$2310	\$27,717	\$56,268,833,920
Severe	\$2258	\$27,097	\$35,039,618,745

### B. Informal caregiver burden

Severity	Monthly per pwAD	Annual per pwAD	Annual total
Caregiving time			
MCI	\$1824	\$21,883	\$125,828,401,660
Mild	\$2730	\$32,758	\$110,618,431,056
Moderate	\$4083	\$48,993	\$99,459,860,919
Severe	\$7199	\$86,389	\$111,710,009,196
OOP spend			
MCI	\$605	\$7264	\$41,769,551,026
Mild	\$843	\$10,118	\$34,166,766,312
Moderate	\$1043	\$12,518	\$25,412,575,386
Severe	\$1043	\$12,518	\$16,186,887,952
Increased healthcare utilization			
MCI	\$68	\$814	\$4,492,112,817
Mild	\$80	\$956	\$2,615,906,980
Moderate	\$99	\$1183	\$1,945,660,677
Severe	\$117	\$1402	\$1,468,818,027

### C. Overall costs

Severity	Monthly per pwAD	Annual per pwAD	Annual total
MCI	\$4449	\$53,384	\$306,803,473,310
Mild	\$7962	\$95,544	\$322,019,359,287
Moderate	\$8423	\$101,072	\$204,595,897,429
Severe	\$11,886	\$142,633	\$183,881,443,054
Total costs			\$1,017,300,173,080

AD, Alzheimer’s disease; MCI, mild cognitive impairment; OOP, out of pocket; pwAD, person with Alzheimer’s disease.

## CONCLUSIONS

- Conventional cost estimates, which do not typically consider informal caregiver burden and patient productivity loss, significantly underestimate the total economic burden of AD on individuals and society
- Elements of both cost and burden should be incorporated into cost estimates and value assessments to best capture the total economic impact of AD and the value of new therapies

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## DISCLOSURES

J Fox, ES Mearns, KL Rosettie, T Majda, D Glazebrook, N Win and SL Kowal are employees of Genentech, Inc. ES Mearns, KL Rosettie, T Majda, D Glazebrook, N Win and SL Kowal are shareholders of F. Hoffmann-La Roche Ltd. N Win also owns stock with Amgen. J Li has nothing to disclose.

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