



## **Survival disparities among Alzheimer's disease patients in Hawaii**

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**Background:** Survival after an Alzheimer's disease (AD) diagnosis is vital for patients, their families, caregivers, and healthcare providers. Hawaii, known for its diverse ethnic population, exhibits significant racial health disparities.

**Objective:** This study examined racial/ethnic and socioeconomic disparities in AD survival in Hawaii and developed machine learning models to predict overall survival using Hawaii Medicare data.

**Methods:** Nine years of Hawaii Medicare data were utilized to gather information on AD development after age 65, following patients to capture all-cause survival or until censoring. The study examined the effects of race/ethnicity and socioeconomic status (SES) on mortality risk. Cox regression analysis was conducted on overall survival, accounting for covariates. A Survival Random Forest was employed to model survival, incorporating K years of longitudinal health profiles.

**Results:** The study included 9393 AD subjects. Analysis revealed that Asian Americans (AA) had a later age at AD diagnosis ( $p < 0.001$ ), with an average age of 85.9, compared to 82.7 and 83.3 years for whites and Native Hawaiians and Pacific Islanders (NHPI), respectively. Low SES showed a marginal increase in hazard (Hazard Ratio [HR] = 1.36,  $p < 0.001$ ). After covariate adjustment, compared to AAs with better SES, increased hazards were found for their white counterpart (HR = 1.18,  $p < 0.001$ ) and groups with low SES: AA (HR = 1.28,  $p < 0.001$ ), white (HR = 1.51,  $p < 0.001$ ), and NHPI (HR = 1.39,  $p < 0.001$ ). The predictive model had a Concordance-Index of 0.82, showing reasonable predictability.

**Conclusions:** Racial/ethnic and SES disparities significantly influence AD onset and survival. Combined with longitudinal health status data, machine learning demonstrates reasonable predictability of survival.

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