**Gianattasio-Power Predicted Dementia Probability Scores and Dementia Classifications**

This data file (Version 3.0; hrsdementia\_2024\_1217.sas7bdat) contains predicted dementia probabilities and classifications for 2000-2020 HRS respondents aged 70+ with self-reported race/ethnicity non-Hispanic white, non-Hispanic black, or Hispanic, using three algorithms: a modified version of an algorithm originally developed by Hurd and colleagues1 (Modified Hurd Model), an expert-informed logistic model (Expert Model), and a LASSO-reduced logistic model (LASSO Model).

All three algorithms use different combinations of sociodemographic characteristics, health and physical functioning variables, social engagement indicators, and cognitive indicators (i.e. cognition test item scores and proxy-reports of cognition) to estimate a predicted dementia probability, which are then used to classify dementia status using race/ethnicity-specific probability thresholds. Each algorithm was developed to minimize differences in predictive performance across race/ethnicity groups, achieving pairwise differences of ≤3 percentage points for sensitivity and ≤5 percentage points for specificity, and are therefore adequate for use in race/ethnicity disparities research. Algorithms were trained and evaluated using HRS data and data from all four waves of the Aging, Demographics, and Memory Study (ADAMS; <https://hrsdata.isr.umich.edu/data-products/aging-demographics-and-memory-study-adams-wave>), and achieved 77-83% sensitivity, 92-94% specificity, and 90-92% accuracy in overall out-of-sample performance. Further details on the development and performance of the algorithms are available in our paper (see Gianattasio et al. Epidemiology 2020, full citation below).

This data file (hrsdementia\_2024\_1217.sas7bdat) was created using the 2020 RAND V2 HRS longitudinal file (“randhrs1992\_2020v2”) and core HRS data; code for reproducing this dataset is available in Github repository (<https://github.com/powerepilab/AD_algorithm_development>) and is dated 2024\_1217. Note, classifications from 2018 and 2020 web respondents are not provided given a subset of cognitive tests (orientation items, scissor/cactus and president/VP naming) were not asked of web respondents and imputed values are not currently available.

Note that there are small differences in the probabilities and classifications in this dataset compared to the two previously distributed datasets (hrsdementia\_2021\_1109.sas7bdat and ) due to differences in the source data. Version 2.0 covered 2000 to 2016, and was created using the 2018 RAND HRS longitudinal V2 file (“randhrs1992\_2018v1”) and core HRS data. Version 1.0 covered 2000 to 2014 and was created using the a 2014 RAND HRS longitudinal V2 file (“randhrs1992\_2014v2”) and core HRS data. Code for recreating these earlier versions is also available in the Github repository (<https://github.com/powerepilab/AD_algorithm_development>).

Variables list

* **HHID**: HRS household ID number
* **PN**: HRS person number
* **hrs\_year**: the survey year from which predictions are made
* **expert\_p**: predicted probability of dementia using the Expert Model
* **expert\_dem**: dementia classification (0=no, 1=yes) using Expert Model
* **LASSO\_p**: predicted probability of dementia using the LASSO Model
* **LASSO\_dem**: dementia classification (0=no, 1=yes) using LASSO Model
* **hurd\_p**: predicted probability of dementia using the Modified Hurd Model
* **hurd\_dem**: dementia classification (0=no, 1=yes) using Modified Hurd Model

Please note that the authors are not responsible for errors resulting from the use of this dataset or referenced SAS code.

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**References**

1. Hurd MD, Martorell P, Delavande A, Mullen KJ, Langa KM. Monetary Costs of Dementia in the United States. N Engl J Med. 2013;368(14):1326-1334. doi:10.1056/NEJMsa1204629
2. Gianattasio KZ, Ciarleglio A, Power MC. Development of algorithmic dementia ascertainment for racial/ethnic disparities research in the U.S. Health and Retirement Study. Epidemiology. 2020;31(1):126-133. doi:10.1097/EDE.0000000000001101