

# Appendix

## Scores and Equations for Risk Prediction Models Included in the External Validation Analysis

### 1. Cardiovascular Risk Factors, Aging, and Dementia (CAIDE)<sup>1</sup>

#### Score

1. Age: < 47 years = 0 points; 47–53 years = 3; 53 years = 4
2. Sex: women = 0; men = 1;
3. Education: ≥ 10 years = 0; 7–9 years = 2; 0–6 years = 3
4. Systolic Blood Pressure: > 140 mmHg = 2; ≤ 140 mmHg = 0
5. Body mass index: ≤ 30 kg/m<sup>2</sup> = 0; >30 kg/m<sup>2</sup> = 2
6. Cholesterol: ≤ 6.5 mmol/L = 0; >6.5 mmol/L = 2
7. Physical activity (leisure time physical activity at least twice a week): active = 0; inactivity = 1.

An additional risk score was developed, including the genetic information on whether an individual was an apolipoprotein (APOE) e4 carrier.

#### Equation

$$P(\text{dementia}) = \frac{e^{\beta_0 + \beta_1 + \beta_2 * \text{score}}}{1 + e^{\beta_0 + \beta_1 + \beta_2 * \text{score}}}$$

### 2. Australian National University Alzheimer's Disease Risk Index (ANU-ADRI)<sup>2</sup>

#### Score

1. Age: <65 years = 0 point; 65-70 = 1 point for men (m) and 5 for women (w); 70-75 = 12 (m) 14 (w); 75-80 = 18 (m) 21 (w); 80-85 = 26 (m) 29 (w); 85-90 = 33 (m) 35 (w); >90 = 38 (m) 41 (w)
2. Education: >11 years = 0; 8-11 years = 3; <8 years = 6
3. BMI (age < 60): normal = 0; overweight = 2; obese = 5
4. Diabetes: No = 0; Yes = 3
5. Symptoms of depression: CES-D<16 = 0; CES-D>16 = 2
6. Cholesterol (<60 years): not high = 0; high = 3
7. Traumatic brain injury: No = 0; Yes = 4
8. Smoking: Never = 0; ever = 1; current = 4
9. Alcohol intake: no = 0; light to moderate = -3
10. Social engagement: high = 0; lowest = 6; low to medium = 4; medium to high = 1
11. Physical activity: lowest = 0; medium = -2; high = -3
12. Cognitive activity: lowest = 0; middle = -7; highest = -6
13. Fish intake: <0.25 servings/week = 0; 0.25-2 = -3; 2-4 = -4; >4 = -5;
14. Pesticide exposure: never = 0; ever = 2

Notes: BMI and Cholesterol not included in the score because CHAP study participant are older than 65 years. Information on pesticide exposure was not available.

### 3. Brief Dementia Screening Indicator (BDSI)<sup>3</sup>

#### Score

1. Age: 65 years = 0 point; 66-79 = 1 point/year
2. Education <12 years = 9
3. BMI < 18.5 kg/m<sup>2</sup> = 8
4. Diabetes mellitus = 3
5. Stroke = 6
6. Needs help with money and medications = 10
7. Depressive symptoms = 6

### 4. Dementia Risk Score (DRS)<sup>4</sup>

#### Formula for individual aged 60-79 years

$$P = 0.20921 * (\text{age} - 65.608) + -0.00339 * (\text{age} - 65.608) * (\text{age} - 65.608) + -0.0616 * (\text{bmi} - 27.501) + 0.002508 * (\text{bmi} - 27.501) * (\text{bmi} - 27.501)$$

$$S = 0.9969$$

$$\text{Predicted 5-year risk (\%)} = 100 * (1 - S^{\exp(P)})$$

Formula for individuals age 80-95 is available in the original paper.<sup>4</sup>

# References

1. Kivipelto M, Ngandu T, Laatikainen T, Winblad B, Soininen H, Ilkka, Tuomilehto J. Risk score for the prediction of dementia risk in 20 years among middle aged people: A longitudinal, population-based study. *The Lancet Neurology*. 2006;5(9):735-741. doi:10.1016/S1474-4422(06)70537-3 ([https://doi.org/10.1016/S1474-4422\(06\)70537-3](https://doi.org/10.1016/S1474-4422(06)70537-3))
2. Anstey KJ, Cherbuin N, Herath PM. Development of a new method for assessing global risk of alzheimer's disease for use in population health approaches to prevention. *Prevention science : the official journal of the Society for Prevention Research*. 2013;14(4):411-421. doi:10.1007/s11121-012-0313-2 (<https://doi.org/10.1007/s11121-012-0313-2>)
3. Barnes DE, Beiser AS, Lee A, et al. Development and validation of a brief dementia screening indicator for primary care. *Alzheimer's & dementia : the journal of the Alzheimer's Association*. 2014;10(6):656-665.e1. doi:10.1016/j.jalz.2013.11.006 (<https://doi.org/10.1016/j.jalz.2013.11.006>)
4. Anstey KJ, Cherbuin N, Herath PM, et al. A self-report risk index to predict occurrence of dementia in three independent cohorts of older adults: The ANU-ADRI. *PLoS one*. 2014;9(1):e86141. doi:10.1371/journal.pone.0086141 (<https://doi.org/10.1371/journal.pone.0086141>)