Supplementary material

Table S1.

Contribution of Age Sex and Education to Cognitive Test Variability;

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | aNART | | BDS | | SDMT | |
|  | β-weight | p-value | β-weight | p-value | β-weight | p-value |
| Age | -.03 | .06 | -.16 | <.001 | -.49 | <.001 |
| Sex | .008 | .64 | .02 | .11 | .09 | <.001 |
| Education | .35 | <.001 | .18 | <.001 | .16 | <.001 |

aNART: National Adult Reading Test; BDS: Backwards Digit Span; SDMT: Symbol Digit Modalities Test

Logistic regression models assessedthe probability of missing responses **(coded as 0)** for volunteering and for the cognitive variables according to age, sex (1=males, 2=females), education level (3 levels; 1=lowest), long-term health condition (1=no condition, 2=condition) and full-time employment (0=not employed full-time, 1=employed full-time).

Table S2. Missing values for volunteering and cognitive variables according to covariates

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Volunteer miss | | aNART miss | | BDS miss | | SDMT miss | |
| Covariate | OR | 95%CI | OR | 95%CI | OR | 95%CI | OR | 95%CI |
| Age | .96 | [.95,.98] | 1.02 | [1.00,1.03] | .98 | [.96,.99] | .99 | [.97,1.0] |
| Sex | .83 | [.67,1.02] | 1.06 | [.85,1.31] | .95 | [.71, 1.27] | .96 | [.78,1.18] |
| Education | 1.42 | [1.22,1.65] | 1.53 | [1.31,1.80] | 1.53 | [1.23,1.91] | 1.53 | [1.32,1.78] |
| FT Employ | .41 | [.30,.57] | 1.03 | [.72,1.48] | 1.04 | [.58,1.84] | .84 | [.59,1.20] |
| Health status | 1.60 | [1.29,1.97] | 1.16 | [.93,1.44] | 2.0 | [1.47,2.75] | 1.20 | [.98,1.48] |

aNART: National Adult Reading Test; BDS: Backwards Digit Span; SDMT: Symbol Digit Modalities Test

Lower education level was the most robust predictor of missing responses across the volunteering and cognitive variables. The established associations between low education and risk of cognitive impairment and high education and greater likelihood of volunteering suggest that missing data may have contributed to underestimating the loss of volunteering productivity associated with CI in the current study.

Outcomes from Opportunity Cost Method compared with the Replacement Cost Method of valuing volunteering hours

According to the Australian Bureau of Statistics (ABS) [1], Australian adults overall contributed 521 million hours of volunteering work over 2012-2013.

1. Estimated dollar-value loss estimated with **Opportunity Cost** method:

Using the Opportunity Cost method, the ABS calculated the value of volunteer services as being worth **18.10 billion dollars**. Volunteering time valued by **Opportunity Cost** method = $34.74[[1]](#footnote-1) (AUS).

3.8% \* **4,336,460 =164,785 people ≥60 with CI in the Australian population.**

1 hour 9 minutes volunteering/week value = ($34.74 (**Opportunity Cost** rate per hr) /60)\*69 minutes =$39.95.

**164,785 \***$39.95**= $6,583,160.75 potential value loss per week.**

**$6,583,160 \*48 (working weeks per annum) = $315,991,716 per annum potential value loss.**

2. Estimated dollar-value loss estimated with **Replacement Cost** method:

Using the Replacement Cost method the ABS calculated the value of volunteer services as being worth **17.32 billion dollars**. Volunteering time valued by **Replacement Cost** method = $33.24[[2]](#footnote-2) (AUS).

3.8% \* **4,336,460 =164,785 people ≥60 with CI in the Australian population.**

1 hour 9 minutes volunteering/week value = ($33.24 (**Replacement Cost** rate per hr) /60)\*69 minutes =$38.22.

**164,785 \***$38.22**=$6,298,082.70 \*48 (working weeks per annum) = $302,307,969 per annum potential value loss.**

1. Australian Bureau of Statistics, *Australian Health Survey: Updated Results, 2011-2012* 2013, Australian Government: Canberra.

1. [i.e.18.1billion/521 million=$34.74/hr] [↑](#footnote-ref-1)
2. [i.e.17.32 billion/521 million=$33.24/hr] [↑](#footnote-ref-2)