



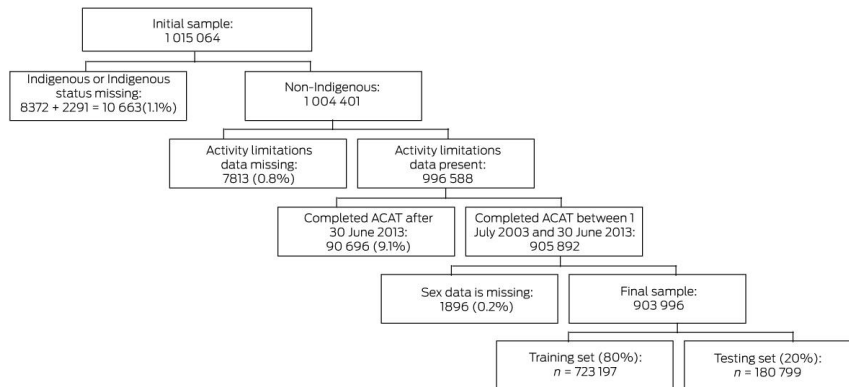
Supporting Information

Supplementary results

**This appendix was part of the submitted manuscript and has been peer reviewed.
It is posted as supplied by the authors.**

Appendix to: Khadka J, Visvanathan R, Theou O, et al. Development and validation of a frailty index based on Australian Aged Care Assessment Program data. *Med J Aust* 2020; doi: 10.5694/mja2.50720.

Figure 1. Flow chart of sample selection for the study



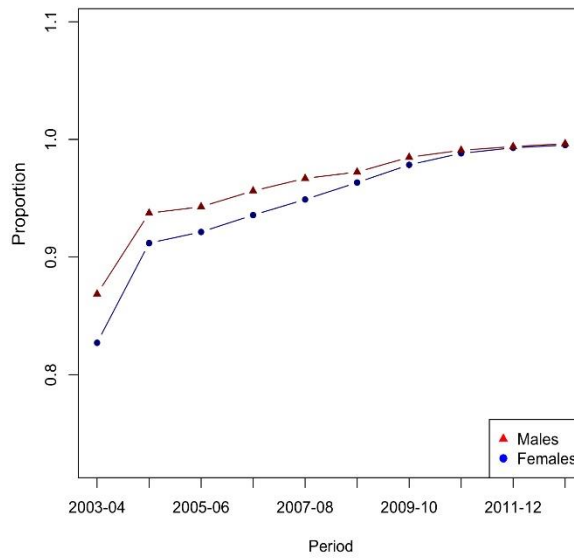
ACAT = Aged Care Assessment Team .

Table 1. Variables included in the frailty index: prevalence and missing data for 903 996 Australians aged 65 years or more with aged care assessment data, 2003–2013

Number	Domain	Variables	Prevalence	Missing data
1	ADL	Communication	148 250 (16.4%)	7142 (0.79%)
2	ADL	Health care tasks	649 048 (71.8%)	7142 (0.79%)
3	ADL	Home maintenance	620 121 (68.6%)	7142 (0.79%)
4	ADL	Meals	696 054 (77.0%)	7142 (0.79%)
5	ADL	Movement activities	673 455 (74.5%)	7142 (0.79%)
6	ADL	Moving around places at or away from home	488 142 (54.0%)	7142 (0.79%)
7	ADL	Other	45 198 (5.0%)	7142 (0.79%)
8	ADL	Self-care	557 747 (61.7%)	7142 (0.79%)
9	HC	Cancers	170 850 (18.6%)	7955 (0.88%)
10	HC	Blood-related diseases	50 351 (5.6%)	7955 (0.88%)
11	HC	Diabetes	170 850 (18.9%)	7955 (0.88%)
12	HC	Other endocrine, nutritional, metabolic disorders	178 985 (19.8%)	7955 (0.88%)
13	HC	Dementia	188 929 (20.9%)	7955 (0.88%)
14	HC	Other mental disorders	112 996 (12.5%)	7955 (0.88%)
15	HC	Depression/mood affective disorders	98 532 (10.9%)	7955 (0.88%)
16	HC	Diseases of nervous system	105 764 (11.7%)	7955 (0.88%)
17	HC	Vision impairment/eye diseases	201 584 (22.3%)	7955 (0.88%)
18	HC	Hearing impairment/ear diseases	134 691 (14.9%)	7955 (0.88%)
19	HC	Heart diseases	353 451 (39.1%)	7955 (0.88%)
20	HC	Cerebrovascular diseases	162 714 (18.0%)	7865 (0.87%)
21	HC	Other diseases of circulatory system	87 323 (9.7%)	7955 (0.88%)
22	HC	Abnormal blood pressure	395 033 (43.7%)	7955 (0.88%)
23	HC	Diseases of the respiratory system	178 985 (19.8%)	7955 (0.88%)
24	HC	Diseases of digestive system	193 449 (21.4%)	7955 (0.88%)
25	HC	Skin diseases	50 261 (5.6%)	7955 (0.88%)
26	HC	Arthritis	331 756 (36.7%)	7955 (0.88%)
27	HC	Other disorders of musculoskeletal system	112 092 (12.4%)	7955 (0.88%)
28	HC	Osteoporosis	137 403 (15.2%)	7955 (0.88%)
29	HC	Diseases of the genitourinary system	179 985 (19.9%)	7955 (0.88%)
30	HC	Injuries	45 108 (5.0%)	7955 (0.88%)
31	HC	Fractures	98 532 (10.9%)	7955 (0.88%)
32	HC	Falls	128 363 (14.2%)	7955 (0.88%)
33	SS	Breathing difficulties/shortness of breath/cough	34 080 (3.77%)	7865 (0.87%)
34	SS	Pain/headache	107 572 (11.9%)	7865 (0.87%)
35	SS	Food and fluid intake symptoms	45 650 (5.0%)	7955 (0.88%)
36	SS	Bowel/faecal incontinence	27 481 (3.0%)	7955 (0.88%)
37	SS	Urine symptoms	44 204 (4.9%)	7955 (0.88%)
38	SS	Movement signs and symptoms	151 866 (16.8%)	7955 (0.88%)
39	SS	Disoriented and amnesia	112 092 (12.4%)	7955 (0.88%)
40	SS	Dizziness	27 119 (3.0%)	7955 (0.88%)
41	SS	Speech and voice disturbances	14 102 (1.6%)	7955 (0.88%)
42	SS	Malaise and fatigue	40 588 (4.5%)	7955 (0.88%)
43	SS	Oedema	17 808 (2.0%)	7955 (0.88%)
44	SS	Other symptoms and signs	71 865 (8.0%)	7865 (0.87%)

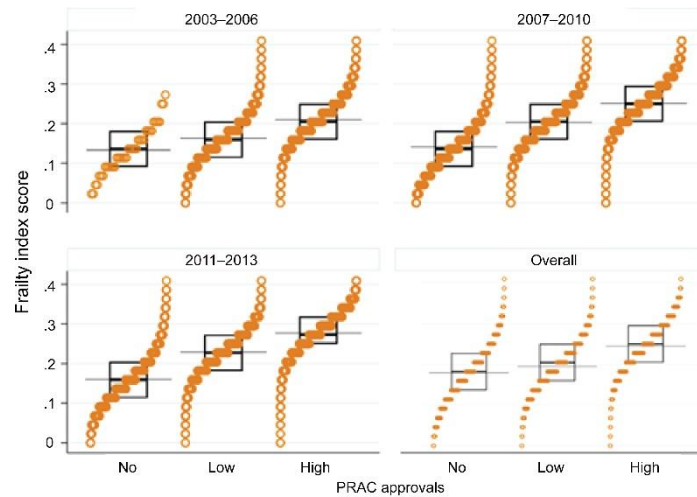
ADL= activities of daily living; HC = health condition; SS = signs and symptoms.

Figure 2. Proportion of participants with carers at the time of assessment for aged care eligibility, 2003–2013, by sex*



* Data available for 714,780 participants.

Figure 3. Strip plots of frailty index scores by permanent residential aged care approval level: overall, and by time period*



* Data available for 664,455 participants. Approvals: No = no approval, Low = low level care, High = high level care.

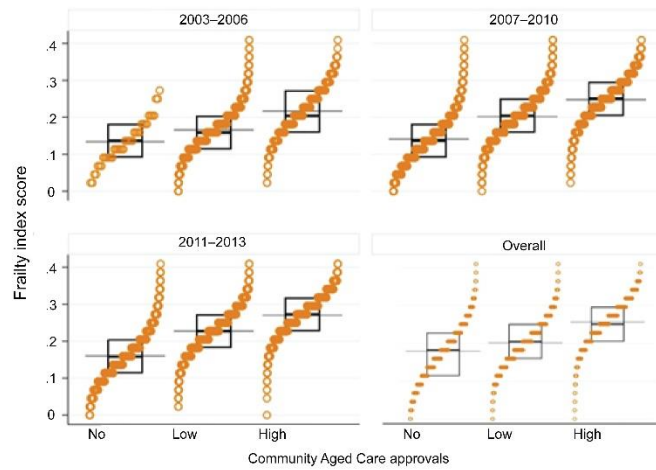
Mean frailty index scores are denoted by grey lines, median and interquartile range by boxes, and strips denoted the range in frailty index scores.

Table 2. Overall frailty index scores by the approval status for permanent residential aged care or community aged care

Approval status	Number of people assessed	Frailty index score	
		Mean (SD)	Median (IQR)
Permanent residential aged care	664 455		
None	190 538 (29%)	0.18 (0.08)	0.18 (0.15–0.23)
Low	272 641 (41%)	0.19 (0.07)	0.20 (0.17–0.25)
High	201 276 (30%)	0.24 (0.07)	0.25 (0.21–0.29)
Community aged care	309 347		
None	190 538 (62%)	0.18 (0.08)	0.18 (0.15–0.23)
Low	109 959 (35%)	0.20 (0.06)	0.20 (0.17–0.25)
High	8850 (3%)	0.26 (0.06)	0.25 (0.20–0.29)

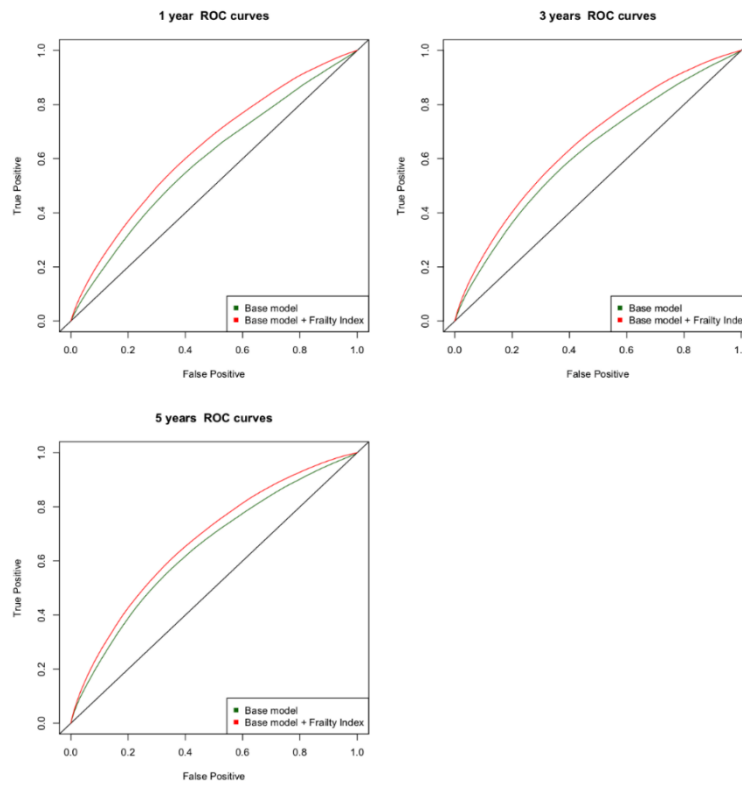
SD = standard deviation; IQR = interquartile range.

Figure 4. Strip plots of frailty index scores by community aged care approval level: overall, and by time period



* Data available for 309,347 participants. Approvals: No = no approval, Low = low level care, High = high level care. Mean frailty index scores are denoted by grey lines, median and interquartile range by boxes, and strips denoted the range in frailty index scores.

Figure 5. Receiver operating characteristic curves for Cox proportional hazard models predicting mortality at one, three, and five years, fitted to training dataset ($N = 723,197$) and validated with the testing dataset ($N = 180,799$)

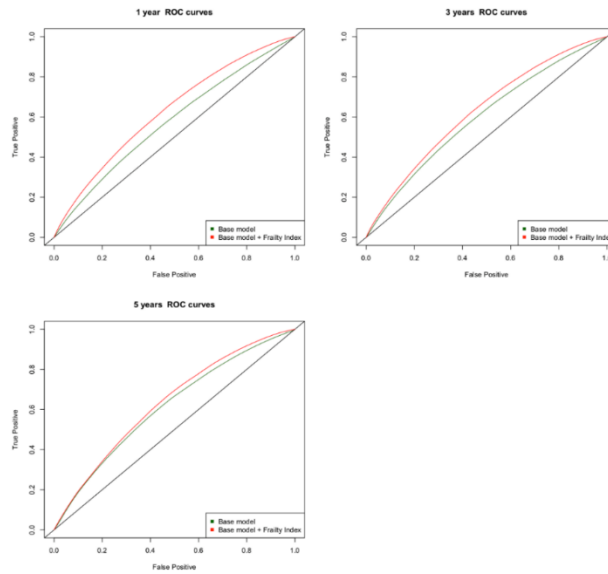


Base model (green): adjusted for age and sex; frailty index model (red): adjusted for age, sex, and frailty index score.

Table 3. Area under the receiver operating characteristics curve estimates for Cox regression models predicting mortality fitted to training dataset ($N = 723,197$) and validated with the testing dataset ($N = 180,799$) (adjusted for age and sex), overall and by year

Period	Area under the curve (95% confidence interval)		
	1 year	3 years	5 years
All	0.64 (0.63–0.64)	0.66 (0.65–0.67)	0.67 (0.67–0.68)
2003–2004	0.64 (0.63–0.65)	0.66 (0.65–0.67)	0.69 (0.67–0.69)
2004–2005	0.64 (0.63–0.65)	0.67 (0.66–0.67)	0.68 (0.67–0.69)
2005–2006	0.64 (0.63–0.65)	0.67 (0.66–0.68)	0.68 (0.67–0.69)
2006–2007	0.64 (0.63–0.65)	0.66 (0.65–0.67)	0.68 (0.67–0.69)
2007–2008	0.64 (0.63–0.64)	0.66 (0.65–0.67)	0.68 (0.67–0.69)
2008–2009	0.65 (0.64–0.66)	0.66 (0.65–0.67)	0.68 (0.67–0.69)
2009–2010	0.65 (0.64–0.66)	0.67 (0.66–0.68)	0.67 (0.65–0.68)
2010–2011	0.65 (0.64–0.66)	0.67 (0.66–0.67)	0.67 (0.65–0.68)
2011–2012	0.65 (0.64–0.66)	0.66 (0.65–0.67)	0.66 (0.64–0.67)
2012–2013	0.65 (0.64–0.66)	0.67 (0.65–0.69)	0.67 (0.65–0.69)

Figure 6. Receiver operating characteristic curves for Cox proportional hazard models predicting entry into permanent residential aged care at one, three, and five years, fitted to training dataset ($N = 723,197$) and validated with the testing dataset ($N = 180,799$)



Base model (green): adjusted for age and sex; frailty index model (red): adjusted for age, sex, and frailty index score.

Table 4. Area under the receiver operating characteristics curve estimates for Cox regression models predicting entry into permanent residential aged care fitted to training dataset ($N = 723,197$) and validated with the testing dataset ($N = 180,799$) (adjusted for age, sex), overall and by year

Period	Area under the curve (95% confidence interval)		
	1 year	3 years	5 years
All	0.63 (0.62–0.63)	0.63 (0.63–0.63)	0.63 (0.63–0.64)
2003–2004	0.64 (0.63–0.65)	0.64 (0.63–0.65)	0.64 (0.63–0.66)
2004–2005	0.64 (0.63–0.65)	0.65 (0.64–0.65)	0.65 (0.64–0.66)
2005–2006	0.64 (0.63–0.65)	0.65 (0.64–0.66)	0.65 (0.64–0.66)
2006–2007	0.63 (0.62–0.64)	0.63 (0.63–0.64)	0.64 (0.63–0.65)
2007–2008	0.64 (0.64–0.65)	0.64 (0.63–0.65)	0.64 (0.63–0.65)
2008–2009	0.64 (0.63–0.65)	0.64 (0.63–0.65)	0.64 (0.63–0.65)
2009–2010	0.63 (0.62–0.64)	0.63 (0.62–0.64)	0.65 (0.63–0.66)
2010–2011	0.64 (0.63–0.65)	0.63 (0.62–0.64)	0.64 (0.62–0.65)
2011–2012	0.63 (0.63–0.64)	0.63 (0.62–0.65)	0.63 (0.62–0.65)
2012–2013	0.63 (0.62–0.64)	0.63 (0.62–0.65)	0.63 (0.62–0.65)