

The new dynamics of residential aged care in Australia: continuity and change

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Abstract.

Objective. This paper tests the hypothesis that increases in recorded dependency levels of permanent residential aged care clients are associated with reduced length of stay and higher turnover. A secondary objective is to compare the Aged Care Funding Instrument with its predecessor, the Resident Classification Scale, on a common schema.

Methods. Administrative data for all Commonwealth-subsidised residential aged care services in Australia from 2008–09 to 2018–19 were obtained from the National Aged Care Data Clearinghouse. More than 750 000 episodes of permanent residential aged care were analysed. The categories from the two rating systems were mapped to a six-level schema, primarily based on the dollar value of the categories at the time of transition.

Results. There was a strong trend towards higher dependency ratings across admissions, residents, and separations. However, contrary to expectation, measures of system activity showed a slowing of the system: length of stay increased and turnover decreased.

Conclusions. The mapping of dependency rating schemes to a common rating enables the analysis of long-term trends in residential care dynamics. There is no evidence that the marked increases in reported dependency ratings led to accelerated system activity, consistent with an earlier study. This analysis forms a solid base for ongoing analysis of care appraisals in the context of a possible new rating scheme. It highlights the interplay between policy changes and provider behaviour, and the need for robust data to monitor care appraisals and system dynamics.

What is known about the topic? Residential aged care subsidies are determined by care needs in relation to assessed dependency levels, using the Aged Care Funding Instrument since 2008, and before that, the Resident Classification Scale. Between 2008–09 and 2018–19, there was considerable growth in residents classified at more dependent levels, and this would be expected to result in greater turnover in the system.

What does this paper add? This paper maps the rating schemes to a simplified, common rating that enables the analysis of long-term trends in residential care dynamics. It shows that the system is slowing, contrary to the trends expected if residents were more frail as the reported ratings imply. The paper examines possible explanations of these trends, and addresses policy implications.

What are the implications for practitioners? In the context of a potential new client-dependency classification, this study shows the importance of robust measures of the dynamics of the system—and the underlying data—*vis-à-vis* the means by which client dependency is assessed.

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Introduction

Funding of residential aged care in Australia has used ratings of dependency-based care needs since the Resident Classification Instrument (RCI) was introduced in mid-1988. The RCI applied only to nursing homes, and was replaced by the Resident Classification Scale (RCS) in 1997, with eight categories covering both nursing homes and hostels as part of a move towards integration of 'high' and 'low' care. This move was furthered

with the introduction of the Aged Care Funding Instrument (ACFI) from 2008, and the distinction between high and low care was removed altogether from mid-2014. The ACFI comprises 64 categories of funding based on ratings at four levels across activities of daily living, cognition and behaviour, and complex health care.¹

Although the ACFI was intended to rebalance funding towards residents with high-care needs, marked increases in ratings saw

Commonwealth recurrent funding rise 6.6% p.a., from \$AUD6.5b in 2008–09 to \$AUD13.0b in 2018–19,^{2,3} far in excess of the 1.3% p.a. growth in permanent residents over that period. This divergence gives compelling grounds for investigating the extent to which funding growth was driven by increases in resident dependency and care needs *vis-à-vis* other factors at play.

Our analysis follows on from a study of dynamics associated with steady increases in dependency ratings over the 7 years 1998–99 to 2005–06, which found no association with increased turnover.⁴ Our analysis also provides baselines for monitoring future continuity and change; such information is especially timely as concerns over expenditure trends led to the development of the Australian National Aged Care Classification (AN-ACC), expected to be phased in during 2021.⁵

The specific objectives of this study are to:

- develop a schema that aligns the eight RCS categories with the 64 ACFI levels and use it to summarise and track dependency ratings from 2008–09 to 2018–19;
- use episode-level data in new analyses of turnover and length of stay (LOS), in addition to the person-level analyses of the earlier study;
- test whether increasing dependency is associated with increasing turnover and reduced LOS; and
- assess the implications for policy.

Methods

Data relating to all permanent residents in Commonwealth-subsidised residential aged care services in Australia for the 11 years from 1 July 2008 to 30 June 2019 were obtained from the National Aged Care Data Clearinghouse at the Australian Institute of Health and Welfare (AIHW). The dataset included dependency-level appraisal at admission and at separation, exact LOS, and client age at admission. Additional data published by the Data Clearinghouse were used to enumerate the number of residents at 30 June each year.

The earlier study was limited to published, aggregate data, and median LOS was interpolated from LOS distributions rather than calculated from data. Our dataset supports analysis at an episode level (a discrete period of care) and a person level (discrete periods aggregated for each person). Person-level analysis provides consistent comparison with the earlier study, whereas episode-level analysis better reflects changes in AIHW's approach to reporting LOS, and allows for more in-depth investigation of system dynamics. The scope of the dataset and measures used are detailed in Box 1; multiple measures of LOS are used because of the highly skewed nature of the LOS distributions. Analysis was conducted using Tableau and Microsoft Excel.

To enable comparison of the RCS and ACFI, categories were mapped to a six-level schema of Common Care Groups (CCG). Primarily based on the dollar value [ranges] of the categories within the two scales at the time of transition,⁶ the schema also considered other properties noted in Box 2.

Results

Following a summary of the mapping of the RCS and ACFI, three sets of results show the relationships between reported increases in dependency of residents and system dynamics.

Box 1. Datasets and measures

Scope

- Admissions for permanent care only included.
- A completed episode is a period of care that ends in separation; most episodes end in death, with other reasons being return to home/community, transfer to hospital (not expected to return; that is, not hospital 'leave'), transfer to another service, and 'other'.
- Transfers to permanent care from respite care and transitional care, even within the same service, count as new episodes.
- More than four-fifths of people had only one episode, another 15% had two episodes and <3% had three or more episodes.

Data quality

- Consistent data treatment over 11 years.
- Scale: total 751 056 completed episodes for 644 498 persons.
- Missing data regarding care needs <0.1% for residents and <1% for admissions and separations.
- Use of data from the National Aged Care Data Clearinghouse is pre-approved by the AIHW Ethics Committee.

Episode-level results

- Episode-level results are based on completed episodes, and counted in the year the episode is completed.

Person-level results

- Person-level results are based on the final separation for each person, counted in the year the person finally separates (noting that for people that do not separate due to death, they may have a future episode out of scope of this analysis).
- Length of stay is accumulated by summing episode LOS for each person regardless of year in which episodes occurred (noting that episodes completed before 30 June 2008 were not included in the dataset).

Measures of system dynamics

Turnover

- Person-level turnover: calculated as the number of people finally separating in the financial year per 100 residents at the beginning of the financial year (estimated by the number in people in care on 30 June of the prior financial year).
- Episode-level turnover: calculated as the number of completed episodes in the financial year per 100 residents at the beginning of the financial year (as above).

Length of stay

- Average LOS: total care days divided by number of persons separating, or completed episodes, converted to months.
- Percentile measures: median, 25th, 75th and 90th percentile calculated on exact LOS in days, converted to months.
- Proportion of episodes <6 months: calculated as number of episodes ≤183 days divided by total episodes, expressed as percentage.

Aligning RCS and ACFI

The initial effect of introducing ACFI was a slight upwards shift in the care ratings of new admissions (Table 1), consistent with a

Box 2. Mapping of RCS and ACFI categories to 6 Common Care Groups, 2008

Common Care Group (6)	RCS category (8)	Count of ACFI levels ^A (64)	ACFI subsidy		
			Min	Max	Range
			\$	\$	\$
1 (highest)	Not applicable	1	167.57	167.57	0.00
2	1	10	127.35	152.60	25.25
3	2, 3	13	98.84	122.81	23.97
4	4	15	69.92	94.97	25.05
5	5, 6	17	35.09	68.75	33.66
6 (lowest)	7, 8	8	0.00	28.56	28.56

^AThe complete mapping of ACFI levels is shown in Supplementary Table S1.

Properties:

- CCG 1 is defined as 'High' on all 3 ACFI domains; this category is \$14.97 above the next highest CCG.
- CCG 1 is defined as excluding all RCS categories, as the highest RCS funding was \$42.34 lower than the top ACFI level (that is, CCG 1).
- There is an average \$27 range of subsidy payment for each of CCGs 2–6.
- Given the \$ range property, there are approximately equal numbers of ACFI levels in each of CCGs 2–5.
- The original high/low care split is preserved: CCGs 1–4 = high care, CCGs 5–6 = lowcare.

Table 1. Initial distribution of RCS and ACFI appraisals by Common Care Group, 2008

Common Care Group	RCS distribution ^A		ACFI distribution ^B	
	%	Cumulative %	%	Cumulative %
1 (highest)	Not applicable	Not applicable	4.5	4.5
2	20.6	20.6	27.1	31.7
3	37.8	58.4	19.1	50.8
4	4.8	63.3	15.9	66.7
5	28.3	91.6	25.1	91.8
6 (lowest)	8.4	100.0	8.2	100.0

^ABased on RCS assessment on admission between 1 July 2007 and 19 March 2008 ($n = 34\,500$); sourced from *Residential aged care in Australia 2007–08: A statistical overview*.⁹

^BBased on ACFI assessment on admission between 1 July 2008 and 30 June 2009 ($n = 65\,862$).

policy objective of directing more funding to residents with higher-care needs.^{7,8} The outcome was most pronounced in the higher-dependency categories, whereas the share of admissions in the two lowest CCGs fell marginally. The most noticeable change was the disappearance of the 'waist' at RCS 4 that reflected the requirement (under RCS) for resident dependency to increase by two categories for reclassification from low to high care.

Trends in dependency/care ratings

Over the 11 years, there was a strong trend towards higher-dependency ratings, whether viewed on admission, for residents at the end of each financial year, or at separation (Table 2). The largest increases were in CCG 1, and are most apparent in the 'residents' view, which shows more than an eight-fold increase to 2015–16, tapering in later years. A decline of the same order is seen for residents in CCGs 5–6, with progressive upwards shifts across other CCGs.

System dynamics over time

Person-level turnover fluctuated slightly between 32.2 separations per 100 residents in 2008–09 and 34.3 per 100 in 2016–17 (Table 3). Recent person-level turnover is similar to that for 1998–99 to 2005–06, which ranged from 31.7 to 33.6 separations per 100 residents, with no evident trend.

Episode-level turnover is higher in the earlier years at over 40 separations per 100 residents, but rather than increasing in

line with higher-dependency ratings, this measure declines over the period. The very high turnover in CCG 1 in 2008–09 is due to the small number of residents in this group in the first year of ACFI, but this halved in 2009–10, and had halved again by 2016–17. The only exceptions to the gradual slowing were the steady turnover for CCG 3 and fluctuating turnover for CCG 6.

Average LOS conforms with the expected inverse relationship of shorter stays for higher dependency CCGs, but average LOS increased for each CCG and overall. Across all ratings, average LOS increased by 2 months to just on 2.5 years, but most notably, for CCG 1, this increased from 2.4 months to 16.6 months. The lower-dependency CCGs had longer average LOS at the start of the period, yet still almost doubled by the end.

Median LOS is shorter than average LOS, especially for the higher CCGs – a product of the skewed LOS distribution – but again increased for all CCGs over the 11 years. The median LOS overall of 17.3 months is not markedly shorter than the estimated median LOS over 1998–99 to 2005–06, which varied only slightly from 17.9 to 18.9 months.

The two final measures of the **90th percentile** and **proportion staying <6 months** both show stays for all CCGs grew steadily, and considerably. In contrast to the expectation that increasing numbers in CCGs 1 and 2 would see more separations within 6 months, the proportions with such short episodes fell. At the same time, and despite the declining numbers in CCGs 5 and 6, the 90th percentile LOS for these groups increased.

Table 2. Trends in Common Care Group ratings for admissions, residents, final separations, and completed episodes, 2008–09 to 2018–19 (per cent)

Common Care Group	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19
Admissions^A											
1	4.4	6.8	9.4	12.3	13.6	15.1	19.2	23.6	20.0	20.1	20.1
2	26.8	30.4	32.3	32.0	30.3	31.4	36.7	38.7	40.6	42.0	42.7
3	20.0	16.8	15.7	15.2	15.1	14.4	17.3	16.1	17.6	18.6	18.6
4	15.7	15.1	16.5	16.8	17.5	18.2	15.7	13.6	13.5	12.5	12.2
5	25.0	25.2	22.1	20.7	20.7	18.6	10.0	7.2	7.5	6.2	5.8
6	8.1	5.6	3.9	3.1	2.9	2.2	1.1	0.8	0.8	0.5	0.6
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Missing No.	1053	781	813	807	735	778	638	535	584	544	795
Total No.	69 171	69 364	69 346	69 207	71 151	74 423	66 772	72 132	73 104	71 933	69 923
Residents^{B,C}											
1	3.8	6.1	9.7	14.5	18.0	21.2	26.8	33.0	30.6	31.1	30.8
2	28.1	32.6	36.2	37.7	36.3	36.6	38.0	38.4	40.3	41.6	42.3
3	19.4	18.2	17.0	15.9	15.3	14.7	13.9	12.3	13.4	13.5	13.7
4	17.6	17.0	16.3	15.3	15.3	14.5	12.7	10.6	10.4	9.4	9.0
5	21.5	19.3	16.4	13.7	12.8	11.2	7.6	5.1	4.8	4.1	3.9
6	9.6	6.8	4.4	2.8	2.4	1.8	1.1	0.7	0.5	0.4	0.4
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Missing No.	833	559	552	478	540	543	359	478	1124	837	311
Total No.	158 848	162 569	165 025	166 950	168 903	173 900	171 968	175 979	178 713	180 923	182 705
Final separations^D											
1	7.0	11.8	16.7	23.8	29.1	33.5	39.1	45.1	45.5	44.8	44.7
2	42.8	46.5	49.8	49.1	47.4	45.7	44.0	41.9	42.6	42.8	43.4
3	27.5	20.4	17.4	15.4	13.8	13.0	11.8	10.2	9.5	10.1	10.0
4	10.2	11.9	10.9	9.7	9.0	8.6	7.4	6.3	5.8	5.6	5.4
5	9.4	9.2	7.6	6.4	6.1	5.3	4.3	3.3	2.9	2.7	2.5
6	2.6	2.3	1.8	1.2	1.0	0.8	0.7	0.6	0.5	0.4	0.3
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Missing No.	1028	813	878	922	854	908	822	734	760	710	660
Total No.	51 438	50 864	53 452	54 473	56 320	56 872	57 818	58 304	60 157	60 620	60 090
Completed episodes^E											
1	6.7	11.1	15.7	22.6	27.5	31.5	37.4	43.4	43.3	42.6	42.9
2	41.0	44.8	48.0	47.1	44.8	43.1	41.5	39.5	40.8	41.1	41.8
3	26.7	19.6	16.4	14.3	12.9	12.0	10.5	8.9	8.7	9.3	9.0
4	11.5	12.1	10.7	9.2	8.5	8.1	6.6	5.5	5.0	4.8	4.5
5	10.9	9.9	7.5	5.8	5.6	4.6	3.5	2.4	2.0	2.0	1.7
6	3.2	2.6	1.7	1.0	0.8	0.7	0.4	0.3	0.3	0.2	0.2
Total %	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Missing No.	1319	1012	987	1006	945	1005	850	720	712	636	579
Total No.	67 529	65 643	66 874	67 294	69 123	69 482	67 907	68 943	70 394	69 750	68 117

^ACare rating assessed on admission (throughout the year). Includes existing RCS assessment for people transferred (admitted from other facility).

^BCare rating in effect on 30 June each year.

^CExcludes RCS assessments (~0.3% per year from 2009 onwards); sourced from GEN-aged care data.¹⁰

^DCare rating in effect on final separation (throughout the year). Includes RCS assessments for people separated without re-assessment under ACFL.

^ECare rating in effect when episode completed (throughout the year). Includes RCS assessments for people separated without re-assessment under ACFL.

Age and length of stay

Across the 11 years, there was a gradual upwards shift in age at admissions (Appendix Table 1). In 2008–09, 3.7% of admissions were for people aged <65 years, and 49.2% were for those aged ≥85 years; by 2018–19, the proportions were 3.0% and 52.9% respectively – most of this increase substituted for the drop in the proportion for people aged 65–84 years.

Length of stay was strongly inversely associated with age at admission. However, although LOS generally decreased as age increased, regardless of the measure used, it rose over time for all age groups, with one exception (65–74 years). Figure 1 demonstrates the highly skewed nature of LOS distributions;

whereas outliers are more influential for the 0–49 years age group, by age 95 average and median LOS somewhat converge. For all age groups, these patterns persist over time.

Discussion

This study has demonstrated striking changes in reported dependency ratings of residents in Australian aged care homes from 2008–09 to 2018–19, and highlighted how outcomes in system dynamics do not accord with the expected consequences of increasing resident dependency.

We have accounted for variations over time in conventions used for counting separations and derived measures,

Table 3. Selected measures of residential care dynamics, by Common Care Group, 2008–09 to 2018–19

Note: Turnover uses CCG relevant to the numerator and denominator; LOS measures use CCG on admission, and are tabulated against separation year; n.a., not applicable

Common Care Group	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19	Average
Person-level turnover (final separations per 100 residents)												
1	197.4	101.2	90.2	81.4	67.8	63.0	61.6	57.3	47.3	50.0	48.0	n.a.
2	55.7	53.2	50.4	44.9	42.5	42.6	40.1	37.4	38.0	36.3	34.9	n.a.
3	26.4	33.8	31.5	30.0	29.3	28.6	26.8	25.0	26.5	25.7	24.6	n.a.
4	34.4	21.7	21.2	19.7	19.9	19.0	17.0	17.0	18.7	18.4	19.1	n.a.
5	14.2	13.7	13.1	13.0	15.1	13.9	12.9	14.6	19.7	19.1	20.4	n.a.
6	10.5	7.9	8.7	9.4	11.6	11.7	13.1	18.1	25.0	25.7	28.7	n.a.
Total ^A	32.7	32.0	32.9	33.0	33.7	33.7	33.2	33.9	34.2	33.9	33.2	n.a.
Episode-level turnover (completed episodes per 100 residents)												
1	242.6	120.5	104.3	93.8	77.4	71.4	68.4	64.5	52.2	54.2	51.8	n.a.
2	68.8	65.1	59.9	52.4	48.6	48.4	43.9	41.4	42.1	39.7	37.7	n.a.
3	33.0	41.3	36.7	33.9	33.3	31.8	27.7	25.4	27.9	27.0	25.1	n.a.
4	50.0	28.1	25.6	22.6	22.6	21.5	17.7	17.4	18.8	18.1	18.0	n.a.
5	21.2	18.7	15.8	14.4	16.8	14.7	11.9	12.2	16.0	16.0	15.3	n.a.
6	16.5	11.1	10.1	9.5	11.3	11.4	9.2	10.7	14.9	12.1	15.8	n.a.
Total ^A	42.2	40.9	40.7	40.3	41.0	40.7	38.7	39.8	39.7	38.9	37.5	n.a.
Average LOS (months)												
1	2.4	4.0	5.4	6.6	7.8	9.5	10.8	11.3	13.2	15.0	16.6	11.3
2	15.3	14.6	15.1	16.5	17.6	18.7	20.0	20.3	20.3	21.3	22.4	18.8
3	30.1	33.3	36.7	38.1	37.2	37.0	36.1	34.8	33.2	31.8	31.6	34.3
4	18.9	18.4	19.7	21.6	23.1	24.3	27.7	30.8	33.7	35.6	36.5	27.0
5	30.8	32.1	34.2	36.6	37.9	39.6	43.3	48.3	52.9	56.2	59.8	40.8
6	55.4	56.9	59.1	64.6	69.2	69.3	75.9	80.6	87.0	91.7	95.7	67.4
Total ^B	27.4	27.2	27.6	28.1	28.2	28.2	29.3	29.2	29.4	29.7	29.9	28.6
Median LOS (months)												
1	1.4	2.0	2.3	2.6	3.0	3.5	4.3	4.8	6.9	8.2	8.9	4.6
2	5.4	5.6	6.6	8.1	9.4	9.8	11.3	11.3	12.2	13.2	14.6	10.0
3	20.1	25.7	28.9	27.6	24.2	22.5	22.2	21.5	20.8	20.0	20.8	22.9
4	7.3	10.8	13.0	15.3	16.8	17.9	21.4	25.0	28.2	29.3	29.8	19.5
5	22.9	24.5	26.3	29.3	30.9	32.4	35.4	40.9	46.8	51.4	57.4	33.1
6	44.5	44.5	47.5	52.2	57.5	60.0	67.6	72.6	78.2	85.8	89.0	56.5
Total ^B	15.9	15.8	16.2	16.8	16.8	16.8	18.2	18.3	18.2	18.5	19.1	17.3
90th percentile LOS (months)												
1	5.9	11.0	15.5	19.2	22.6	28.0	31.5	32.4	35.2	39.2	42.6	32.2
2	43.7	41.7	40.8	42.0	44.7	48.5	51.4	52.2	51.6	52.1	52.4	48.4
3	70.0	74.5	81.9	86.1	86.7	91.2	92.3	90.3	81.1	75.7	70.6	81.7
4	52.3	45.6	43.0	45.3	50.4	54.6	60.8	65.4	71.0	75.7	77.4	61.8
5	67.8	71.0	73.9	78.1	80.4	83.8	88.8	94.2	100.3	108.0	111.7	86.1
6	122.2	125.3	121.4	131.5	136.4	134.8	144.0	147.8	164.1	163.1	168.1	136.7
Total ^B	68.5	68.6	69.6	70.6	70.3	71.0	72.4	72.0	72.4	73.2	72.9	71.1
Proportion staying <6 months (per cent)												
1	90.3	78.7	71.6	67.7	63.5	59.3	56.5	54.5	47.2	44.7	42.9	54.9
2	52.1	51.6	48.2	44.0	40.9	40.3	37.4	35.7	34.8	32.8	29.8	39.6
3	21.6	21.3	20.7	20.8	23.4	23	22.6	21.4	21.9	23.2	21.1	21.8
4	45.2	33.7	30.3	26.8	25.7	24.5	18.8	15.1	14.7	14.2	14	22.6
5	18.3	16.9	15.0	13.1	13.9	12.5	8.2	6.5	6.8	7.4	7.4	12.2
6	10.1	8.6	5.8	5.2	5.1	5.6	3.6	3.1	4.1	3.4	3.9	6.1
Total ^B	31.4	31.6	31.2	30.5	30.8	30.5	28.4	28.3	27.9	27.6	26.4	29.5

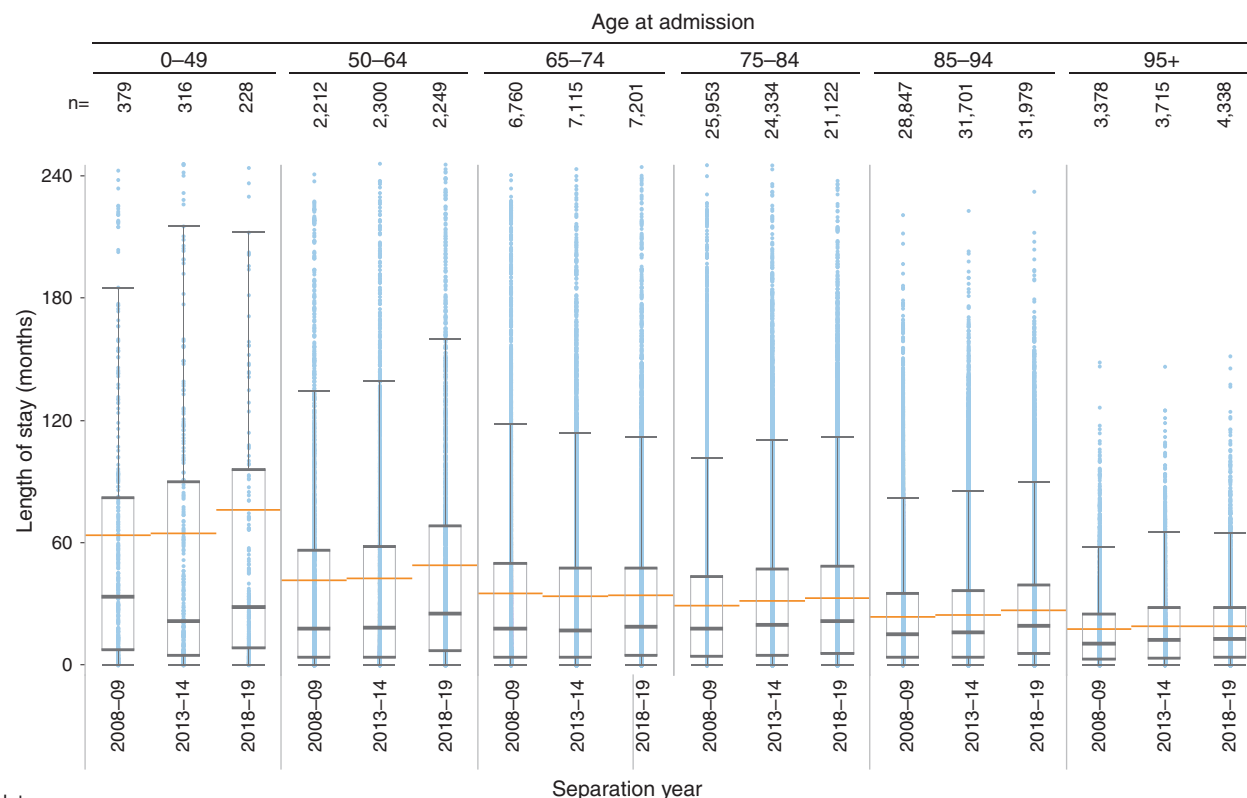
^ATotal includes episodes/separations for which a CCG for the numerator and/or denominator were not recorded (maximum of 1.3% overall).

^BTotal includes episodes for which a CCG on admission was not recorded (1.0% overall).

and such analysis was facilitated by the use of multiple measures. It was further aided by mapping the RCS and ACFI to six categories, enabling continuity across the transition years and simplifying comparison of dependency groups.

Increasing dependency not supported by findings

All measures showed a slowing of dynamics over the period: LOS increased and turnover fell, contrary to the expectation that more highly dependent residents would have shorter LOS leading to higher turnover across the system.



Notes:

1. The episodes are grouped by separation year (so completed length of stay can be determined): the 'n=' at the top of the chart refers to numbers at year of separation.
2. The vertical axis has been truncated at 20 years, but all episodes are included in the calculations.
3. The 'whiskers' are set at 1.5 x IQR above and below the 75th and 25th percentile, respectively. As such, all bottom whiskers are plotted at zero.
4. The longer horizontal bar represents the average LOS.
5. The dots represent individual episode lengths of stay.
6. The summary data for this figure are available at Supplementary Table S2.

Fig. 1. Distribution of length of stay by age at admission, selected years.

The more than four-fold increase in the highest ratings – and the converse trend among the lower ratings – cannot be accounted for by an aging-dependency effect. By 2018–19, 20% of admissions were in CCG 1 (rated high on all three ACFI domains) and another 43% were in CCG 2. The slight flattening in the second half of the decade likely reflects changes to the structure of the Complex Health Care domain of ACFI, which were introduced to curtail unexpected ACFI expenditure growth.⁷ Although it is not unreasonable that there is an upwards shift in aggregate ratings over time – given that residents can be reappraised when their care needs change, and dependency generally increases with advancing age – alternative explanations for the magnitude of the increases are discussed below.

Rather than showing change in system dynamics, the recent outcomes continue on from those following the introduction of the RCS,⁴ when the share of residents in the highest RCS category almost doubled from 12.2% to 23.4%. Both studies found higher-dependency residents had shorter LOS, but total median LOS changed little.

The results based on episode as the unit of analysis differ slightly from results published by the Australian Institute of Health and Welfare (AIHW) at various times,^{11–13} and recently by Gibson¹⁴ using published AIHW data. The differences are

largely due to changes in the treatment of transfers and readmissions and the lag effect of excluding episodes completed before 2008 in accumulating care days to person-level measures – this is particularly evident up to 2011–12 (Supplementary Table S3).

Possible drivers of higher ratings

The first possible driver of higher dependency is the gradual increase in age at admission over the period. Until very recently, though, higher age was *not* associated with higher dependency rating on admission (Appendix Figure 1); for example, in 2008–09, 38% of people aged 50–64 years were rated in CCGs 1–2, compared with 29% of people aged 85–94 years. By 2018–19, the differences were less pronounced, and broadly pushed to higher ratings; 62% and 63%, respectively. Even so, LOS has been increasing within age groups, with the exception of the relatively small group aged 65–74 years.

A second possible driver is the effect of increasing use of residential respite, community-based and restorative programs (such as the Home Care Packages program) on delaying admission to permanent residential care. Several studies have shown varying associations between use of home-based care services and eventual take-up of residential care.^{15–19} However, only

Welberry *et al.*, in a large-scale study of people with dementia,¹⁹ quantified the dependency level on admission to residential care against level of community-based care. They showed that the group who had received high-level home care were significantly more dependent on admission than those not using home care, but were not significantly more likely to die within 2 years than the comparison group.

A third possible driver is provider claiming behaviour. Auditing of more than 78 000 ACFI appraisals for the 5 years to June 2019 shows an average of 20.5% were downgraded each quarter.²⁰ A review of the ACFI in 2017 noted that consultancy and benchmarking services, and specialised ACFI coordinators, served to optimise ACFI income, and that some providers were using business models based on continuing ACFI revenue growth to build scale.⁷

Commonwealth action to control the growth of claims from 2016 – by way of changes to the ACFI and a freeze on indexation – saw the increase in the highest dependency ratings flatten, but also put providers under financial pressure, creating incentives to maximise claims. These tensions are summarised in the Aged Care Financing Authority's submission to the Royal Commission into Aged Care Quality and Safety in 2019, observing that providers point to increasing frailty of residents (and consequently costs of care) and Government points to income-optimising behaviours of providers.²¹

A final driver is the small but persistent fall in occupancy over the period. The 22% expansion in operational places²² has considerably exceeded the 15% growth in permanent residents, and increases in admissions and separations have fluctuated from year to year, but neither has increased commensurately with capacity. Fewer residents for whom ACFI subsidies could be claimed has added to pressure on providers, but has not seen earlier entry of residents to fill 'excess beds', leading to subsequent longer episodes.

Policy implications

This paper underlines the value of monitoring dependency ratings, and has provided a means to follow changes across the transition from RCS to ACFI. With the likely adoption of AN-ACC, it will be critical to track the performance of the tool – and any associated perverse system dynamics – including changes in provider behaviour in response to policy changes, and vice versa. A technical mapping between ACFI and AN-ACC has been undertaken,²³ and further simplification for monitoring purposes would be valuable.

Second, the paper highlights the importance of monitoring respite, community and restorative programs (duration of use, mode of exit and use before admission to permanent care) to assess targeting in relation to risk of admission and impacts on dependency and subsequent LOS. An update of the AIHW analysis of pathways in aged care²⁴ would be valuable for this purpose.

Third, the Common Care Group schema presented here emphasises the need for a classification system with sufficient categories to differentiate residents with differing care needs and costs. The aggregation of nearly three-fifths of residents into two of the six CCGs – equivalent to 11 of the 64 ACFI levels – by mid-2019 masks substantial heterogeneity in care 'streams', such as palliative care and dementia care.

Finally, there are policy implications of the impacts of dynamics on access. The interplay between access, care ratings and LOS/turnover is most evident with regard to very long episodes. For example, in 2018–19, there were 838 separations of people admitted at CCG 6 who had LOS above the 90th percentile; these episodes accounted for 3.3 million care days, equivalent to some 12 000 episodes at the median LOS for CCG 1 in the same year. Hence, better understanding of these dynamics is important for informing the capacity of the system to meet the equity objectives of the *Aged Care Act 1997*, particularly as these pertain to certain geographies, provider types and special needs groups.

Strengths, limitations and further research

The major strength of this study was the use of a large administrative dataset with episode-level exact LOS – this avoids the bias inherent in other methods of estimating LOS. A further strength was the development of a schema for monitoring ratings across the RCS–ACFI transition.

A limitation was that it was not possible to analyse care ratings in the context of pre-admission eligibility assessment or use of home-based care programs. Joining up data sources to provide a comprehensive picture of assessed care needs and progressive care use would yield richer insights into the dynamics of the whole care system.^{25,26}

Using this study dataset, further work could include more in-depth analysis of particular subgroups of residents; system dynamics by provider type, location and service size; and relationships between LOS and mode of separation. The small group of residents with very long LOS especially warrants further investigation as they use a disproportionately large share of bed days. All of these topics would be relevant to monitoring the classification and funding scheme selected to replace ACFI.

Conclusion

The mapping of RCS and ACFI to a simplified, common rating enables the analysis of long-term trends in residential aged care dynamics. The analysis has shown a marked increase in dependency ratings over the decade to 2018–19, but found no evidence that the higher reported dependency levels have led to accelerated system activity. A comparison of these findings with those reported in an earlier study show more continuity than change.

This analysis provides a solid base for ongoing monitoring of care appraisals in the context of a possible new rating scheme. It highlights the potential interplay between policy changes and provider behaviour, and the need for robust validation of care appraisals. Analyses along these lines require that detailed data be designed into the system, and be routinely collected, interrogated, reported and available for research uses.

Finally, this study illuminates the relationships among service capacity, care patterns and turnover, in turn informing consideration of equity issues regarding access to residential aged care nationally, regionally and for particular client groups.

Competing interests

The authors declare that they have no competing interests.

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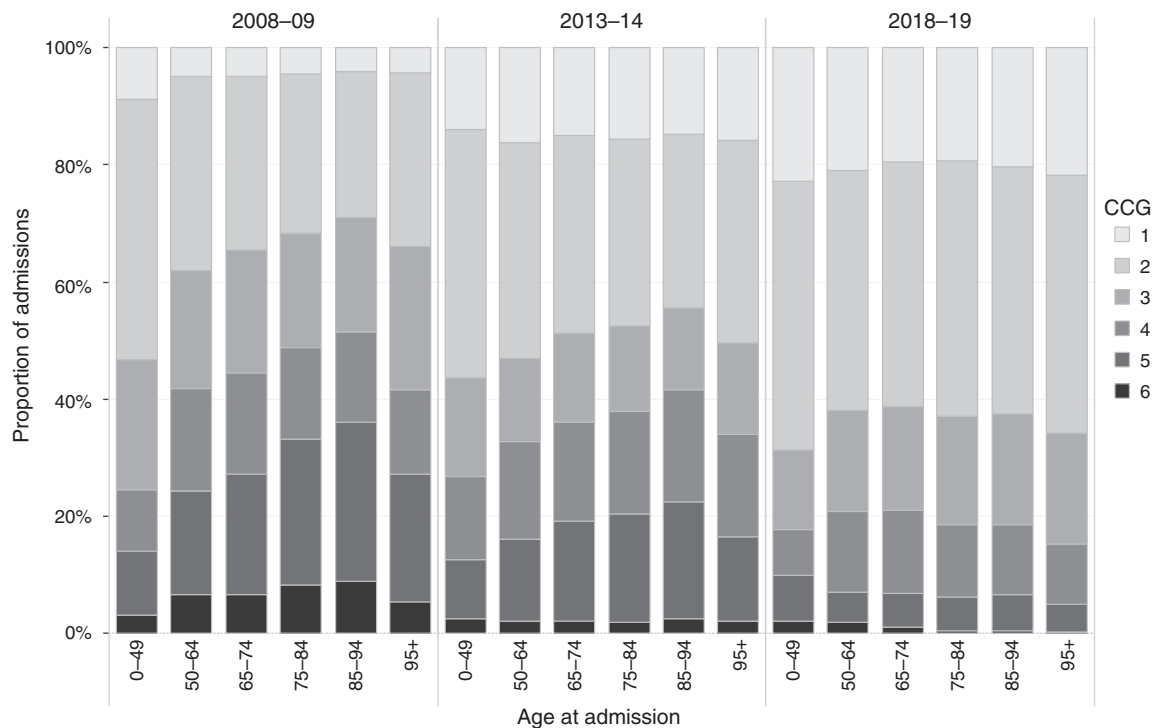
References

- Classification Principles. 1997, F2008C00139 (As amended 20 March 2008); 2008. Available at: <https://www.legislation.gov.au/Details/F2008C00139> [verified 15 April 2021].
- Department of Health. 2018–19 Report on the Operation of the Aged Care Act 1997. Canberra: Commonwealth of Australia; 2019.
- Department of Health and Ageing. 2008–09 Report on the Operation of the Aged Care Act 1997. Canberra: Commonwealth of Australia; 2009.
- Andrews-Hall S, Howe A, Robinson A. The dynamics of residential aged care in Australia: 8-year trends in admission, separations and dependency. *Aust Health Rev* 2007; 31: 611–22. doi:10.1071/AH070611
- McNamee J, Poulos C, Seraji H, Kobel C, Duncan C, Westera A, *et al.* Alternative Aged Care Assessment, Classification System and Funding Models Final Report. Centre for Health Service Development, Australian Health Services Research Institute, University of Wollongong; 2017.
- Aged Care (Residential Care Subsidy—Basic Subsidy Amount) Determination 2008 (No. 1), F2008L00818; 2008.
- Applied Aged Care Solutions. Review of the Aged Care Funding Instrument Report—Part 1: Summary Report. 2017. Available at: https://www.health.gov.au/sites/default/files/documents/2019/11/review-of-the-aged-care-funding-instrument-acfi-review-of-the-aged-care-funding-instrument-acfi-part-1-summary-report_0.pdf [verified 1 December 2020].
- The Parliament of the Commonwealth of Australia. Aged Care Amendment (Residential Care) Bill 2007: Explanatory Memorandum. 1997. Available at: https://parlinfo.aph.gov.au/parlInfo/download/legislation/ems/r2735_ems_eaaa5530-17be-490a-bca7-0ba0affb73ae/upload_pdf/07040%20em.pdf;fileType=application%2Fpdf#search=%22acfi%20bills%20and%20legislation%22 [verified 15 April 2021].
- Australian Institute of Health and Welfare. Residential aged care in Australia 2007–08: A statistical overview. Canberra: AIHW; 2009.
- Australian Institute of Health and Welfare. GEN data: Care needs of people in residential aged care: AIHW; 2020. Available at: <https://www.gen-agedcaredata.gov.au/Resources/Access-data/2020/March/GEN-data-Care-needs-of-people-in-residential-care> [verified 1 December 2020].
- Australian Institute of Health and Welfare. Residential aged care and aged care packages in the community 2011–12: AIHW; 2013. Available at: <https://webarchive.nla.gov.au/awa/20140212010001/http://www.aihw.gov.au/aged-care/residential-and-community-2011-12/> [verified 1 December 2020].
- Australian Institute of Health and Welfare. Residential aged care and aged care packages in the community 2012–13: AIHW; 2014. Available at: <https://webarchive.nla.gov.au/awa/20141215042043/http://www.aihw.gov.au/aged-care/residential-and-community-2012-13/> [verified 1 December 2020].
- Australian Institute of Health and Welfare. People leaving aged care (2016–17): AIHW; 2018. Available at: <https://webarchive.nla.gov.au/awa/2019030222916/https://gen-agedcaredata.gov.au/Topics/People-leaving-aged-care> [verified 1 December 2020].
- Gibson D. Who uses residential aged care now, how has it changed and what does it mean for the future? *Aust Health Rev* 2020; 44: 820–8. doi:10.1071/AH20040
- Rahman MM, Efird JT, Byles JE. Transitioning of older Australian women into and through the long-term care system: a cohort study using linked data. *BMC Geriatr* 2019; 19: 286. doi:10.1186/s12877-019-1291-z
- Jorgensen M, Siette J, Georgiou A, Warland A, Westbrook J. Modeling the Association Between Home Care Service Use and Entry Into Residential Aged Care: A Cohort Study Using Routinely Collected Data. *J Am Med Dir Assoc* 2018; 19: 117–21.e3. doi:10.1016/j.jamda.2017.08.004
- Visvanathan R, Amare AT, Wesselingh S, Hearn R, McKechnie S, Mussared J, *et al.* Prolonged Wait Time Prior to Entry to Home Care Packages Increases the Risk of Mortality and Transition to Permanent Residential Aged Care Services: Findings from the Registry of Older South Australians (ROSA). *J Nutr Health Aging* 2019; 23: 271–80. doi:10.1007/s12603-018-1145-y
- Rahman MM, Byles JE. Older women's patterns of home and community care use and transition to residential aged care: An Australian cohort study. *Maturitas* 2020; 131: 28–33. doi:10.1016/j.maturitas.2019.10.004
- Welberry HJ, Brodaty H, Hsu B, Barbieri S, Jorm LR. Impact of Prior Home Care on Length of Stay in Residential Care for Australians With Dementia. *J Am Med Dir Assoc* 2020; 21: 843–50.e5. doi:10.1016/j.jamda.2019.11.023
- Department of Health. Aged Care Funding Instrument (ACFI) Review Quarterly Reports 2020. Available at: <https://www.health.gov.au/resources/publications/aged-care-funding-instrument-acfi-review-quarterly-reports> [verified 1 December 2020].
- Aged Care Financing Authority. Submission to the Royal Commission into Aged Care Quality and Safety. 2019. Available at: <https://agedcare.royalcommission.gov.au/system/files/2020-09/AWF.500.00197.0002.pdf> [verified 1 December 2020].
- Australian Institute of Health and Welfare. GEN: Services and places in aged care: AIHW; 2020. Available at: <https://www.gen-agedcaredata.gov.au/Topics/Services-and-places-in-aged-care>. [verified 1 December 2020].
- Kobel C, Eagar K. Technical mapping between ACFI and AN-ACC. Australian Health Services Research Institute, University of Wollongong; 2020. Royal Commission into Aged Care Quality and Safety: Research Paper 10.
- Australian Institute of Health and Welfare. Pathways to permanent residential aged care in Australia: a Pathways in Aged Care (PIAC) analysis of people's aged care program use before first entry to permanent residential aged care in 2013–14. Cat. no. AGE 81. Canberra; 2017.
- Jukic M. Modelling residential aged care in Australia: entry and exit [dissertation]; 2017. Available at: <http://hdl.handle.net/11343/210541> [verified 1 December 2020].
- Cooper-Stanbury M. Response to Program Design consultation paper: submission to the Royal Commission into Aged Care Quality and Safety. 2020. Available at: <https://agedcare.royalcommission.gov.au/system/files/submission/AWF.660.00088.0001.pdf> [verified 1 December 2020].

Appendix

Appendix Table 1. Age at admission, 2008–09 to 2018–19

Age group (years)	2008–09	2009–10	2010–11	2011–12	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18	2018–19
	(Number)										
0–49	303	264	261	224	292	289	237	267	238	217	145
50–64	2271	2241	2213	2197	2400	2509	2303	2398	2360	2365	1965
65–74	6807	6746	6900	6999	7357	7693	7106	7705	7978	8182	8158
75–84	25 730	25 269	24 683	24 208	24 361	24 700	21 792	22 905	23 600	23 285	22 668
85–94	30 542	31 151	31 579	31 872	32 887	35 146	31 585	34 539	34 385	33 286	32 188
95+	3518	3693	3710	3707	3854	4085	3749	4318	4543	4598	4799
Total	69 171	69 364	69 346	69 207	71 151	74 422	66 772	72 132	73 104	71 933	69 923
	(Per cent)										
0–49	0.4	0.4	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.3	0.2
50–64	3.3	3.2	3.2	3.2	3.4	3.4	3.4	3.3	3.2	3.3	2.8
Subtotal under 65	3.7	3.6	3.6	3.5	3.8	3.8	3.8	3.7	3.6	3.6	3.0
65–74	9.8	9.7	10.0	10.1	10.3	10.3	10.6	10.7	10.9	11.4	11.7
75–84	37.2	36.4	35.6	35.0	34.2	33.2	32.6	31.8	32.3	32.4	32.4
Subtotal 65–84	47.0	46.2	45.5	45.1	44.6	43.5	43.3	42.4	43.2	43.7	44.1
85–94	44.2	44.9	45.5	46.1	46.2	47.2	47.3	47.9	47.0	46.3	46.0
95+	5.1	5.3	5.3	5.4	5.4	5.5	5.6	6.0	6.2	6.4	6.9
Subtotal 85+	49.2	50.2	50.9	51.4	51.6	52.7	52.9	53.9	53.3	52.7	52.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0



Note: the data for this figure are available at Supplementary Table S4.

Appendix Figure 1. Common Care Group rating on admission, by age at admission, selected years.