



**Australian Government Department of
Health and Aged Care**

Quality Assurance of the Australian National
Aged Care Classification – Final Report

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1 Executive Summary

The Department of Health ('the Department') has engaged Taylor Fry ('we' or 'us') to provide statistical quality assurance (quality assurance) of the shadow Australian National Aged Care Classification ('AN-ACC') assessment data to ensure assessor and assessment consistency regardless of who undertook the assessment or the location in which it was undertaken.

This report summarises findings on the quality of shadow assessments up to 30 June 2022.

1.1 Overview of the quality assurance approach

Our approach to quality assurance of the AN-ACC shadow assessments comprises several steps including:

- Weekly data cleaning and validation
- Weekly and monthly reviews of shadow assessments
- Detailed investigations into specific issues, such as inter-rater reliability.

For the weekly and monthly reviews, we conducted several statistical tests to provide quality assurance on the data. Statistical tests are conducted to determine anomalies and trends compared to a 'baseline' or expected casemix. These are calculated for all of the following target variables:

- AN-ACC casemix (the distribution of assessments across Classes 2 to 13)
- Instrument total scores (particularly those instruments that determine AN-ACC class)
- Instrument-question level scores.

Analysis is focussed on threshold values for instruments that directly determine AN-ACC class assignment. In order of importance these are:

- The de Morton Mobility Index (DEMMI) - Modified¹
- The Australian Modified Functional Independence Measure (AFM) Cognition
- Resource Utilisation Group – Activities of Daily Living (RUG-ADL)
- Braden Scale
- Behaviour Resource Utilisation Assessment (BRUA)
- Rockwood Clinical Frailty Scale (Rockwood).

We performed analysis at multiple levels, for different cohorts, including at:

- Facility level
- Provider level
- Assessor management organisation (AMO) level
- Assessor occupation level
- Individual assessor level.

¹ The modification of the DEMMI for AN-ACC resulted in four domains being assessed – bed mobility, chair mobility, static balance and walking.

1.2 Key anomalies

Table 1 outlines a summary of the key anomalies that were identified through the data cleaning, weekly reviews and monthly reviews. As at 30 June 2022 all material issues raised had been addressed by the Department.

Table 1 - Summary of key anomalies identified to date

Anomaly	Description	Outcome
Assessments completed in the first week of the shadow period	The first week of shadow assessments produced anomalous data, with several facilities that had unreasonably low average relative value units (RVUs ²) in their first week of operation and/or an unusual proportion of residents assigned to independent mobility.	The facilities assessed in the first week of the shadow assessment period will all be re-assessed before 1 October 2022.
Lower proportions of people in AN-ACC Classes 2 and 3 in shadow vs Trial	There has been a decrease in residents in AN-ACC Classes 2 and 3 and an increase in residents in AN-ACC Classes 7 and 8 for shadow assessments compared to assessments from the Resource Utilisation and Classification Study (RUCS) Trials.	This is due to the difference in DEMMI scores from the RUCS Trial compared to the shadow assessments. The Department advised this is due to a change in shadow assessment training to not rate residents with dementia with independent mobility. Residents are now rated in the DEMMI taking their cognitive ability into account.
Braden and Rockwood scores	At the beginning of the shadow assessment period, a significant number of assessors triggered validation warnings regarding contradictory Braden Scale/Rockwood scores.	The Department advised that this warning can be triggered when assessing residents with a valid set of care needs. Subsequently the validation rules were amended to remove this validation warning from future reporting.
Fast assessors	These assessors consistently maintained a high number of assessments over a period or had days where an abnormally high number of assessments were recorded. This potential indicated insufficient time being spent to accurately assess each resident.	These were flagged for further investigation by the Department on a case-by-case basis.
Deviation from casemix - assessor level	Each month, the casemix of all assessments completed by each assessor that month was analysed. Cases where there was a statistically significant deviation from the baseline or expected casemix were raised with the Department.	These anomalies were investigated by the Department on a case-by-case basis. In most cases they were attributed to the specialisation of the assessor in assessing residents with specific profile of care needs. For example, an assessor that was assigned to residents that had higher care needs within a facility,

² RVUs are a measure of relative resource consumption (staff time or dollars). An RVU of 1.2 means that the cost is 20% above the national average. An RVU of 0.5 means that the cost is 50% below national average.

Anomaly	Description	Outcome
		where the other assessors in the team would assess the lower care residents at the facility.
Deviation from casemix – facility level	Each week and each month, the casemix of all assessments completed for each facility was analysed. Facilities where over 80% of residents had been assessed, and there was a statistically significant deviation from the baseline, or expected casemix, were raised with the Department.	These anomalies were investigated by the Department on a case-by-case basis. In most cases they were attributed to facility arrangements which provide only for a specific resident care profile. For example, casemix at co-located facilities often appear anomalous when only one facility has been assessed as ‘like’ residents are often housed together.
Data entry errors	Data entry inconsistencies related to the timing of updates of weekly assessment data and supplementary resident and facility data.	These were addressed as they arose by liaising with the Department.

1.2.1 Inter-rater reliability analysis

The overall reliability of the AN-ACC assessment, as measured by Weighted Cohen’s Kappa, is excellent. The overall reliability of assessments at the individual instrument level is also excellent.

The AN-ACC assessment tool also had excellent reliability within almost all cohorts. Agreement on the DEMMI - Modified was excellent across all AMOs and professional cohorts. This is critical because DEMMI - Modified plays a critical role in the overall determination of AN-ACC class.

1.3 Conclusion

As at 30 June 2022, based on our review of the shadow assessments performed to date, we assess the data to be of a high quality and without any major issues. The AN-ACC assessment outcomes have excellent reliability. We believe that the data quality and casemix of assessments is appropriate for use in the AN-ACC pricing model.

The remainder of this report is structured as follows:

- **Section 2** provides background on the AN-ACC shadow assessment period, and the objectives of quality assurance of shadow assessments.
- **Section 3** provides a summary of progress of the AN-ACC shadow assessments completed up to 30 June 2022.
- **Section 4** provides an overview of the quality assurance process.
- **Section 5** outlines some of the key anomalies we have identified up to 30 June 2022.
- **Section 6** summarises the dual assessment process and inter-rater reliability of shadow assessments.

2 Background

2.1 The Australian National Aged Care Classification (AN-ACC)

The Australian Government has approved replacing the Aged Care Funding Instrument (ACFI) with the Australian National Aged Care Classification (AN-ACC) funding model from 1st October 2022. AN-ACC assessments will be the foundation of the new funding model that will apply to all permanent aged care residents in Australia.

The AN-ACC model aims to:

- Make funding for residential aged care fairer and more stable
- Improve the assessment process for funding so it is more accurate and nationally consistent
- Remove the paperwork burden on aged care providers and their workers so they can spend more time on providing safe and effective care.

The AN-ACC Assessment Tool is core to the new AN-ACC funding model. Independent assessors use the AN-ACC Assessment Tool to assess residents' care needs and assign an AN-ACC classification. The amount of funding provided will reflect the AN-ACC classification assigned to the resident, based on their independently assessed needs.

The assessment tool considers:

- Physical ability, including pain
- Cognitive ability, including memory, communication, sequencing, social skills, and problem solving
- Behaviour, including cooperation, agitation, problem wandering, passive resistance, verbal disruption and physical aggression
- Mental health, including depression and anxiety.

2.2 Shadow assessment period

This initial assessment period which commenced in April 2021 is called the “shadow assessment period”. All aged care residents will be assessed by independent assessors using the AN-ACC Assessment Tool to assign them to an AN-ACC class based on care needs.

The Department of Health contracted six independent AMOs to conduct assessments during the shadow assessment period. These are:

- Access Care Network Australia Pty Ltd
- Australian Healthcare Associates Pty Ltd
- Care Tasmania Pty Ltd, trading as Care Assess
- Health Administration Corporation, as represented by NSW Ministry of Health
- Healthcare Australia Pty Ltd
- Serendipity (WA) Pty Ltd trading as Advanced Personnel Management.

All AN-ACC assessors have clinical qualifications as either registered nurses, occupational therapists (OTs) or physiotherapists, and have considerable experience working in aged care settings. They have also undergone comprehensive training on the AN-ACC assessment process.

2.3 Objectives of quality assurance of the AN-ACC shadow assessments

Taylor Fry was engaged by the Department to provide statistical quality assurance of the shadow assessment data to ensure assessor and assessment consistency regardless of who undertakes the assessment or the location in which it is undertaken.

The quality assurance project supports the objectives of:

- Continuous quality improvement to shadow assessments and training of the assessor workforce
- Providing assurance to the Department, residential aged care providers and the sector generally that the casemix determined through AN-ACC shadow assessments is accurate and fit for purpose.

3 Progress summary

3.1 Progress summary as at 30 June 2022

The quality assurance process has comprised a total of 195,370 assessments completed as at 30 June 2022.

Figure 1 and Figure 2 show assessment progress by facility remoteness according to the Modified Monash Model (MMM) and by state.

Figure 1 – Assessment progress by facility remoteness (MMM) as at 30 June 2022

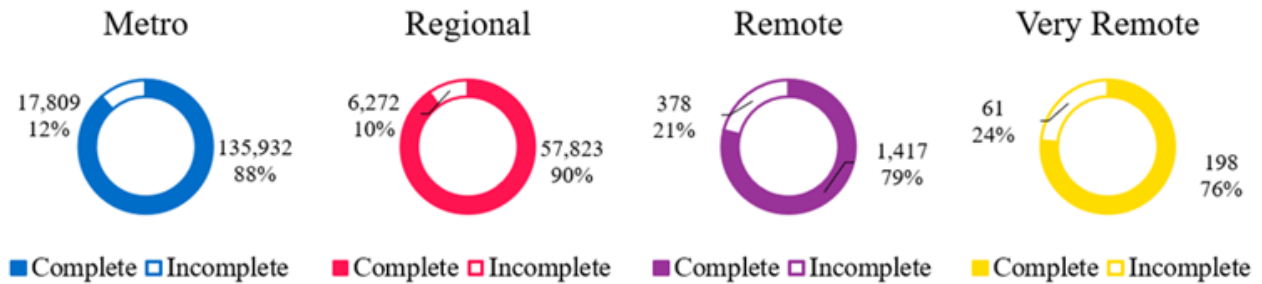
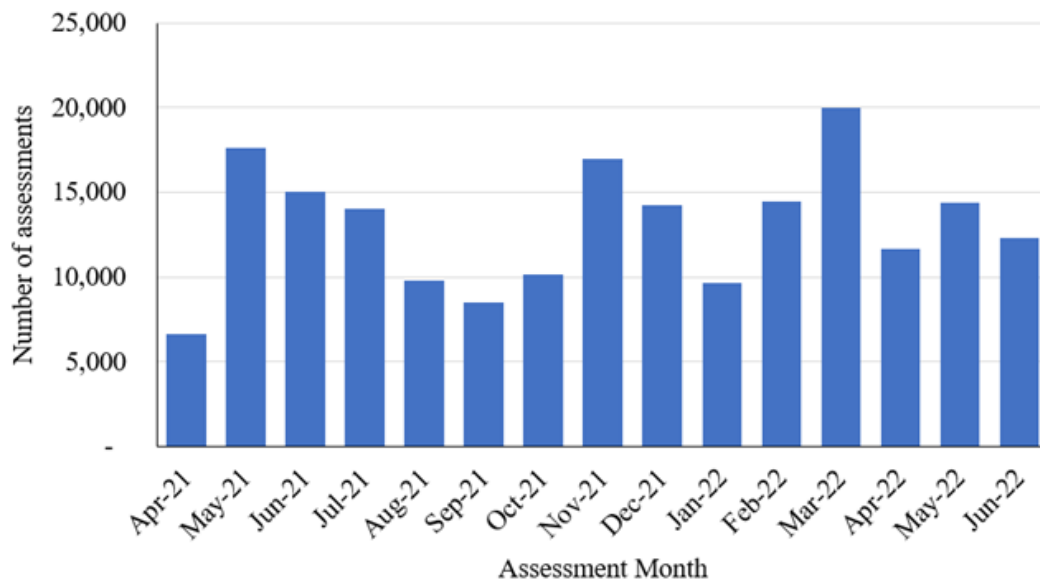


Figure 2 – Assessment progress by state as at 30 June 2022



Figure 3 shows the number of assessments completed in each month since the start of the shadow assessment period. Several months had lower assessment completion rates as a result of scaling back operations during outbreaks of COVID-19 in the wider community. Assessments across all states returned to their peak rates around February 2022.

Figure 3 – Assessments completed in shadow assessment period by month



3.2 Representation of key segments

As at 30 June 2022, a representative sample had been achieved in all key segments of the residential aged care population. These key segments are defined by the following factors influencing casemix: size of facility, prevalence of dementia amongst residents, and remoteness of facility. A representative sample means that the assessment data can be used for inference relating to the casemix of the larger population of all aged care residents (e.g. for use in budget estimates under the AN-ACC pricing model).

3.3 Casemix of assessments completed to date

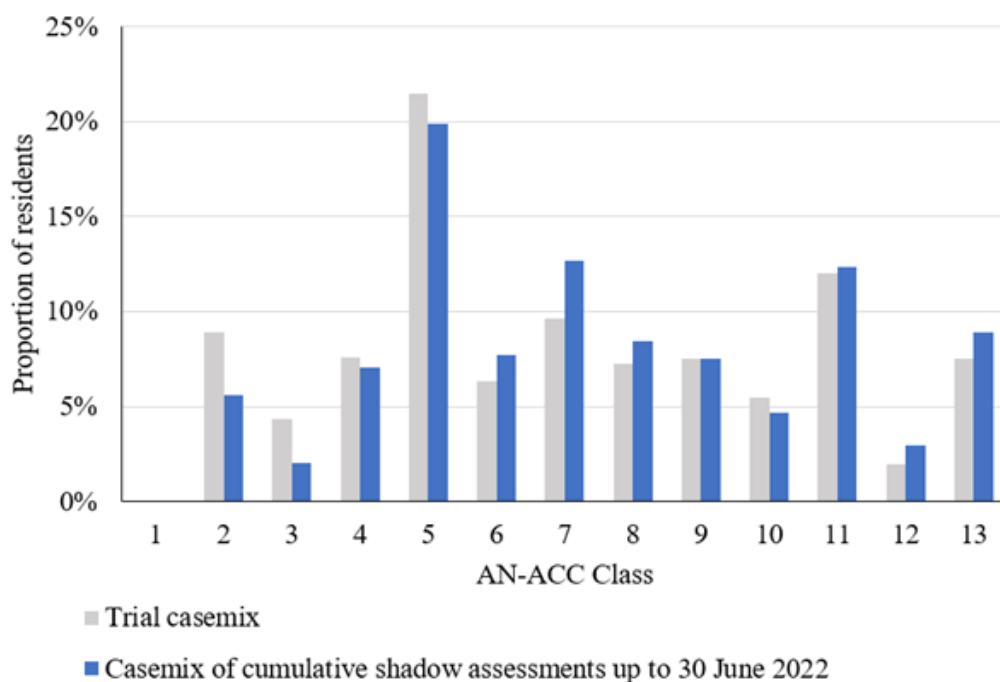
The RUCS Trial of the AN-ACC assessment model was conducted from late 2019 to early April 2020. The trial was done to field test the performance of:

- The AN-ACC assessment tool, which when administered produces residential aged care recipient functional status data required to calculate AN-ACC classification levels for individuals
- An independent assessment workforce to administer the tool, employed through competitively contracted assessment management organisations
- The support functions for training, clinical advice for using the tool, IT, data sharing, measurement of assessor variation and general contract management.

During the initial months of the shadow assessment period, the casemix of shadow assessments was compared to the casemix of the trial assessments.

Figure 4 shows the proportion of residents assessed in each AN-ACC class for both the trial and shadow assessment periods. The grey bars show the proportion of residents that were assigned to each AN-ACC class during the AN-ACC trial. The blue bars indicate the assessments made during the shadow assessment period.

Figure 4 - AN-ACC class distribution from the trial compared to shadow assessments to 30 June 2022³



We note that some differences emerged between the casemix in the trial and shadow assessment periods. Compared to the trial, the shadow assessment period recorded higher proportions of Classes 6 to 8 and Classes 11 to 13 and lower proportions of Classes 2 to 5 and 10.

The Department have investigated these differences and determined that they can be attributed to process changes and are within expected outcomes. The decrease in residents in AN-ACC Classes 2 and 3 and increase in residents in AN-ACC Classes 7 and 8 compared to trial is due to the difference in DEMMI scores from the RUCS Trial compared to the shadow assessments. The Department advised this is due to a change in shadow assessment training to not rate residents with dementia with independent mobility. Residents are now rated in the DEMMI taking their cognitive ability into account.

³ AN-ACC Class 1 is for residents who are in permanent residential aged care to receive planned palliative care at, or near, end of life. AN-ACC Class 1 was not included in the Trial or Shadow assessments.

4 Overview of the quality assurance process

The quality assurance process involves weekly, monthly and ad hoc analysis. Each week, assessment data is checked and cleaned and a dashboard summarising casemix and instrument-level data updated. We drill-down into results by key segment⁴, AMO, facility, and/or assessor group to find anomalies. Each month deeper analysis is performed on major trends and anomalies that have been identified. These are summarised in a monthly report that is provided to the Department. On an ad hoc basis the dashboard and algorithms are refined in response to the changing needs and insights.

4.1 Data

4.1.1 Data security and privacy

Taylor Fry access AN-ACC data through the Department's secure remote environment. We conduct quality assurance and analysis tasks within this secure remote environment which is governed by the Department's data security and privacy policies.

AN-ACC data that leaves the Department's system, for example, for producing reports for communication purposes, is in accordance with the Department's data security and privacy policies. We are committed to preserving the confidentiality, integrity, and availability of the data and information we hold. To achieve this, we have in place a mature Information Security Management System (ISMS) which governs the receipt, transfer and storage of all types of data. Our ISMS is certified under the internationally recognised ISO 27001 standard, which is best practice in the industry.

Our information security policy outlines the minimum expected control measures required in regard to the transfer of data, storage of data, access of data and security of data. At Taylor Fry, AN-ACC data is held securely in a folder where access is restricted to AN-ACC team members. Each AN-ACC team member undergoes a mandatory police check prior to working with AN-ACC data. Furthermore, all Taylor Fry staff members are required to undertake mandatory annual information security training.

4.1.2 Data received

Each week we received a de-identified data extract containing the shadow assessments that had been completed over the last week. The weekly extract contains data about the following:

- AN-ACC classification
- Individual instrument question scores
- Assessor
- Assessor management organisation
- Facility details
- Provider details.

To support the quality assurance work, we also receive aggregated demographic statistics by facility, on factors that may influence resident care needs such as:

- Distribution of residents' age
- Distribution of residents' length of stay

⁴ As discussed in Section 3.2 the 'key segments' are groups of facilities with similar: size of facility, prevalence of dementia amongst residents, and remoteness of facility.

- Indicator for specialist facilities (such as services for people facing homelessness or for Indigenous Australians).

4.2 Cleaning and validation

New shadow assessments are received on a weekly basis. These weekly extracts require cleaning to remove duplicates, invalid records and validation to ensure data meets expectations. This process involves the following processes:

- Removing duplicate assessments for the same resident. The most recent assessment by an assessor with ‘un-restricted’ authority is retained and all earlier duplicates or assessments by ‘restricted’ assessors⁵ are discarded.
- Removing invalid assessments. These were typically assessments that were outside of the scope of analysis (i.e. not Classes 2 to 13).
- Applying a set of validation rules to indicate that valid scores are recorded and scores for a given assessment are internally consistent. The rules test whether individual instrument-question scores, two-way instrument-question scores and instrument total scores fall within acceptable ranges. Each validation rule generates either a pass, warning or fail result. Any assessments that do not pass all validation rules are manually investigated.

Throughout the data preparation process, further preliminary checks are performed including weekly reconciliation of new, replaced or missing assessments against the previous cumulative totals and the checking of various data fields.

4.3 Outline of analysis

Taylor Fry provides quality assurance to the AN-ACC shadow assessment process through statistical analysis. Statistical tests are conducted to determine anomalies and trends compared to a ‘baseline’ or expected casemix. These are calculated for all of the following target variables:

- AN-ACC casemix (the distribution of classes 2 to 13)
- Instrument total scores (particularly those instruments that determine AN-ACC class)
- Instrument–question level scores

At the beginning of the AN-ACC shadow assessment period, the baseline casemix referenced the AN-ACC trial where 7,387 assessments had been collected in a nationwide representative sample. As the experience from the shadow assessment period grew, the baseline transitioned from the AN-ACC trial data to the cumulative assessments from the shadow period. The transition was made once over 50,000 shadow assessments had been completed and a representative sample had been achieved as discussed in Section 3.2.

Analysis is focussed on threshold values for instruments that directly determine the AN-ACC classification for a resident. These are the DEMMI - Modified for the first-level branch and for the second-level branches: The Australian Modified Functional Independence Measure (AFM) Cognition, Resource Utilisation Group – Activities of Daily Living (RUG-ADL) and Braden Scale.

We perform analysis at multiple levels, for different cohorts, including:

- Facility level
- Provider level

⁵ Restricted assessors have not completed all their assessor training. They are flagged in the data because they need to be supervised and/or assessments completed by restricted assessors need to have a second assessment done by a un-restricted assessor.

- Assessor management organisation (AMO) level
- Assessor occupation level
- Individual assessor level.

Facility characteristics are used to segment analysis including:

- City, rural, remote or very remote (Modified Monash Model (MMM))
- Size of facility (total number of approved beds)
- Age distribution of residents
- Facility specialisation in care of homeless or Indigenous people.

The following assessor characteristics are analysed to determine if there is any bias on AN-ACC assessments:

- Occupation (nurse, physiotherapist, occupational therapist)
- Past assessor experience (number of previously completed AN-ACC assessments)
- Average daily workload.

Anomalies are identified where there is a statistically significant difference between the actual results over the period of analysis and the baseline measure, subject to materiality thresholds⁶. We identify differences that warrant further investigation by the Department. Anomalies do not necessarily indicate an underlying problem with the assessments and often there is a reasonable explanation for why the casemix within a cohort is different.

Anomalies then undergo more detailed checks and analysis by segment. For example, if a facility's casemix is anomalous we manually drill down into:

- Resident demographics, i.e. the resident age mix and proportion of residents with dementia
- Instrument and instrument-question level scores
- AMO and assessor-level scores relating to that facility.

4.3.1 Weekly reviews

Each week we produce a visual dashboard summarising casemix and instrument-level statistics for the assessments completed in the last week and over the full shadow assessment period (from April 2021 to date). We provide a summary report to the AN-ACC team outlining the key anomalies that were present in the data over the last week.

The dashboard consists of views of the AN-ACC casemix and instrument total scores by: key segment⁴, facility, AMO, assessor occupation and resident demographic statistics. For a specific cohort, the dashboard displays actual observed casemix versus the casemix of an 'expected' baseline, as shown in Figure 5. Over time the format of the dashboard has evolved in response to the AN-ACC team's analysis needs and quality assurance focus and as more assessments uncovered new trends for investigation and monitoring.

⁶ Two types of statistical testing were performed. At an overall casemix level, chi-squared tests are used to determine whether there is a statistically significant difference between the expected frequencies and the observed frequencies in one or more AN-ACC classes. In addition, for each AN-ACC class, a 95% confidence interval is constructed around the observed proportion of residents in each class. An anomaly is flagged if this confidence interval does not overlap the expected frequencies in the baseline, and the deviation between observed and expected assessments represents a minimum of 20 assessed residents.

Anomaly analysis highlights potential areas for the Department to investigate further. These typically include segments where statistical differences from the baseline casemix are observed. In particular, the report highlights any differences observed for assessments made by individual AMO, facilities and by specific assessors which appear different from the baseline for further investigation.

We also checked for AN-ACC casemix and instrument total scores within each weekly period for internal consistency at various levels. For example, comparing the DEMMI - Modified scores recorded by each AMO to identify and investigate assessments over time and between groups.

In addition to the dashboard, we also implemented automated statistical checks that run each week, month and on cumulative data. This process checks all univariate combinations of assessor-level, facility-level and AMO-level factors and calculates a statistical difference measure against refined baseline casemix. The results are ranked by materiality for manual review and to support weekly and monthly analysis.

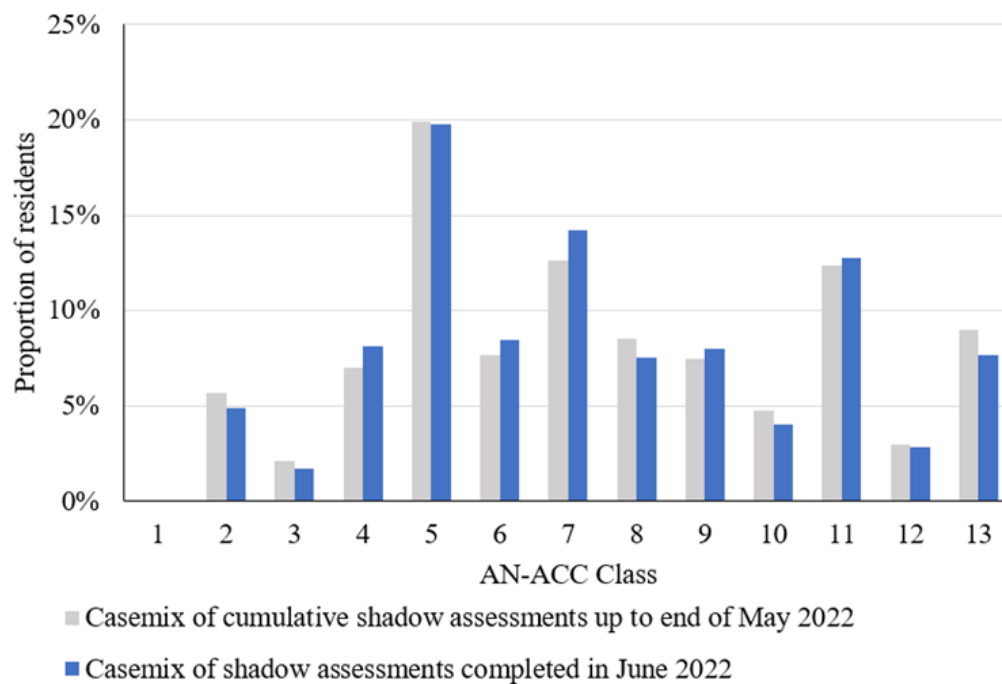
4.3.2 Monthly reviews

Each month deeper analysis is performed on major trends and anomalies identified in prior weeks and summarised in a monthly report. The monthly report incorporates more assessments and is considered more reliable for identifying trends and anomalies.

In addition to the analysis covered by the weekly reports, the monthly reports highlight:

- Average DEMMI - Modified by month and assessor occupation
- Instrument level total distribution by AMO
- Anomalous facilities and individual assessors
- Other ad hoc investigations relevant to the anomalies raised in the monthly report.

Figure 5: Example of the AN-ACC monthly casemix dashboard results⁷



⁷ AN-ACC Class 1 is for residents who are in permanent residential aged care to receive planned palliative care at, or near, end of life. AN-ACC Class 1 was not included in the Trial or Shadow assessments.

5 Key Anomalies

5.1 Summary of main anomalies identified and resolved

Table 2 outlines the key anomalies identified up to the 30 June 2022 and the outcome (or resolution) for each anomaly.

Table 2 - Summary of key anomalies identified to date

Anomaly	Description	Outcome
Assessments completed in the first week of the shadow period	The first week of shadow assessments produced anomalous data, with several facilities that had unreasonably low average relative value units (RVUs) in their first week of operation and/or an unusual proportion of residents assigned to independent mobility.	The facilities assessed in the first week of the shadow assessment period will all be re-assessed before 1 October 2022.
Lower proportions of people in AN-ACC Classes 2 and 3 in shadow vs Trial	There has been a decrease in residents in AN-ACC Classes 2 and 3 and an increase in residents in AN-ACC Classes 7 and 8 for shadow assessments compared to assessments from the Resource Utilisation and Classification Study (RUCS) Trials.	This is due to the difference in DEMMI scores from the RUCS Trial compared to the shadow assessments. The Department advised this is due to a change in shadow assessment training to not rate residents with dementia with independent mobility. Residents are now rated in the DEMMI taking their cognitive ability into account.
Braden and Rockwood scores	At the beginning of the shadow assessment period, a significant number of assessors triggered validation warnings regarding contradictory Braden Scale/Rockwood scores.	The Department advised that this warning can be triggered when assessing residents with a valid set of care needs. Subsequently the validation rules were amended to remove this validation warning from future reporting.
Fast assessors	These assessors consistently maintained a high number of assessments over a period or had days where an abnormally high number of assessments were recorded. This potential indicated insufficient time being spent to accurately assess each resident.	These were flagged for further investigation by the Department on a case-by-case basis.
Deviation from casemix - assessor level	Each month, the casemix of all assessments completed by each assessor that month was analysed. Cases where there was a statistically significant deviation from the baseline or expected casemix were raised with the Department.	These anomalies were investigated by the Department on a case-by-case basis. In most cases they were attributed to the specialisation of the assessor in assessing residents with specific profile of care needs. For example, an assessor that was assigned to residents that had higher care needs within a facility, where the other assessors in the team

Anomaly	Description	Outcome
		would assess the lower care residents at the facility.
Deviation from casemix – facility level	Each week and each month, the casemix of all assessments completed for each facility was analysed. Facilities where over 80% of residents had been assessed, and there was a statistically significant deviation from the baseline, or expected casemix, were raised with the Department.	These anomalies were investigated by the Department on a case-by-case basis. In most cases they were attributed to facility arrangements which provide only for a specific resident care profile. For example, casemix at co-located facilities often appear anomalous when only one facility has been assessed as ‘like’ residents are often housed together.
Data entry errors	Data entry inconsistencies related to the timing of updates of weekly assessment data and supplementary resident and facility data.	These were addressed as they arose by liaising with the Department.

5.2 Actions taken in response to anomalies

The Department undertook several actions in response to the anomalies identified in Table 2. These actions included:

- Supervision activity (e.g., phone and follow-up with AMOs)
- Retraining
- Training refresher courses
- Senior clinical support in the field and targeted clinical communities of practice with assessors
- Re-assessment of individual residents or facilities.

5.3 Summary of additional investigations

In addition to the key anomalies outlined in Table 2, we also completed some additional investigations on an ad hoc basis. This included an investigation into differences between the average scores in assessments completed by registered nurses versus occupational therapists and/or physiotherapists. Assessor occupational based deviations were present in some weekly periods, but the anomaly was not material on a cumulative basis. The investigation evidence suggested that this was due to the allocation of residents to assessors by profession (i.e. that occupational therapists and physiotherapists tend to be allocated fewer mobile residents for assessment). Furthermore the inter-rater reliability study (discussed further in Section 6) showed the reliability in assessments between registered nurses and occupational therapists and physiotherapists is excellent. We conclude that this is not a material issues and poses low risk to the overall casemix.

6 Inter-rater reliability assessment

6.1 Introduction

It is important that AN-ACC assessments produce reliable results. That is, that repeated or equivalent AN-ACC assessments of the same individual provide consistent results. As the AN-ACC is a relatively new instrument little is known about its reliability and the factors that influence inter-rater agreement.

During the shadow assessment period, reliability of the shadow assessments was tested via dual assessment i.e. individual aged care residents being assessed independently by two different unrestricted assessors. As part of our engagement we analysed the dual assessments conducted in November and December 2021 for the purpose of inter-rater reliability checking and produced a report titled *Reliability of the Australian National Aged Care Classification shadow assessments* dated 16 February 2022 that summarises the dual assessment process and results on the reliability of AN-ACC shadow assessments.

6.2 Dual assessment process

A robust process was followed to obtain 533 dual AN-ACC assessments for a representative sample of the residential aged care population. In a dual assessment, a single resident was independently assessed by two different assessors, at the same time without discussion or consultation with each other. All conditions in the dual assessments were the same as an assessment by a single assessor, i.e. the same information and instructions were provided to the assessors and AMOs at the beginning of the assessment process.

This has enabled thorough investigation of the inter-rater reliability of the AN-ACC assessment tool. Reliability was tested at an overall level and for cohorts of assessors grouped by their AMO and their professional training.

6.3 Findings

The overall reliability of the AN-ACC assessment, as measured by Weighted Cohen's Kappa, is excellent. The overall reliability for individual instruments is also excellent, as shown in Table 3.

The AN-ACC assessment tool also had excellent reliability within almost all cohorts. Agreement on the DEMMI - Modified was excellent across all AMOs and professional cohorts. This is critical because DEMMI - Modified plays a critical role in the overall determination of AN-ACC class.

Table 3 - Summary of reliability of AN-ACC overall and by instruments, for different cohorts

Cohort	AN-ACC	DEMMI-Modified	AFM Cognition	RUG-ADL	Braden Scale	BRUA Disruptive
Overall	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Registered Nurses (RNs)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
OTs or Physiotherapists	Excellent	Excellent	Excellent	Excellent	Excellent	Very good
Mixed (RN vs. OTs or Physiotherapists)	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent

(a) "Excellent" denotes Weighted Cohen's Kappa > 0.75.

(b) "Very good" denotes $0.65 < \text{Weighted Cohen's Kappa} < 0.75$.

(c) Statistical methodology is explained in detail in *Reliability of the Australian National Aged Care Classification shadow assessments* Section 3.3.

Some instruments and cohorts, while having very good reliability, had weaker levels of agreement relative to others. These points are noted for completeness but do not call into question reliability of AN-ACC:

- BRUA Disruptive scores had the lowest reliability of all instruments within AN-ACC. This is consistent with assessors' feedback on the BRUA Disruptive tool, that emotional dependence is very subjective and quite difficult to score for most residents.
- Assessor profession did not adversely impact reliability of the AN-ACC assessment overall or on specific instruments.

The complete [report on the Reliability of the AN-ACC Shadow](#) assessments has been published on the Department's website.

7 Summary

Based on our review of the 195,370 shadow assessments performed to 30 June 2022, we assess the data to be of high quality and without any major issues. The AN-ACC assessment outcomes also have excellent reliability.

The majority of identified anomalies have been investigated and closed, and the rest will be closed prior to 1 October 2022.

Overall, we believe that the data quality and casemix of assessments is appropriate for use in the AN-ACC pricing model.

Appendix A Log of anomalies and status

To protect data security and privacy, anomalies relating to individual facilities have been excluded from this table.

Table 4 - Summary of closed anomalies (excluding anomalies relating to specific facilities)

Anomaly	Description of investigations undertaken by the Department and status
Assessments completed in the first week of the shadow period	<p>The first week of the shadow assessment period produced anomalous data with several facilities that had unreasonably low average RVU in their first week of operation and/or an unusual proportion of residents assigned to independent mobility.</p> <p>The facilities assessed in the first week will be re-assessed by 1st October 2022.</p>
Difference in casemix between AN-ACC Trial vs Shadow periods	<p>Trial/Shadow variations in casemix and instrument scores largely rest on the change to mobility assessment for residents with dementia. Residents are rated in the DEMMI taking in account their cognitive ability.</p> <p>Residents who were assessed in both the Trial and Shadow periods were assessed as slightly frailer, in line with changes in the casemix from the RUCS Study to Trial.</p> <p>The one unexpected result was the significant decrease in complex wound management between Trial and Shadow.</p> <p>The Department have not really changed anything in the training for simple to complex other than clearly defining complex wounds.</p> <p>The Department have checked the training manuals and no changes have been made between the trial manual and the shadow manual.</p>
Anomalous Rockwood and Braden scores for a resident	<p>The Department advised that this warning can be triggered when assessing residents with low cognition, who cannot manage common day to day functions but have no trouble with their mobility. The Department advised to remove this validation warning from future reporting.</p>
Number of assessments conducted exceeding the number of approved beds at a facility	<p>The Department advised that this is a delay in the updating of numbers of operational approved beds. This has now been updated and will be regularly updated in the future (noting that there may be some degree of delay in system updates).</p>
More than one active assessment per resident	<p>The Department advised that this is a timing issue. The first assessment was done in one period. The subsequent assessment was done in the next period and, as Taylor Fry work on weekly extracts, did not see the automated change of the old assessment to 'replaced'.</p>

Anomaly	Description of investigations undertaken by the Department and status
Clustering around score 1 for AFM.Expression, AFM.Social-Interaction, AFM.Problem Solving and AFM.Memory	<p>The Department advised that residents with these assessment results tend to be entering, or in, end of life stage – and therefore, 1 in AFM.Expression, AFM.Social-Interaction, AFM.Problem Solving and AFM.Memory is not unusual.</p> <p>Residents with these assessment results also had scores on DEMMI - Modified of “not mobile”, Rockwood as severe or very severe, ADL scores indicating two people were required to assist the individual, most were in a wheelchair.</p>
Difference in casemix for classes 7 and 8 between trial and shadow	<p>The Department advised that an update to the approach to DEMMI - Modified assessments for residents with dementia (i.e. not to be rated as Independent on the DEMMI- Modified) has created more 7s and 8s and less 2s and 3s. Residents are moving from Class 2 and 3 to Class 7 and 8 (rather than from Classes 4, 5 and 6 as may have been expected) because of cognitive deficit as assessed by the AFM Cognition. It is likely that a material proportion of residents assessed as classes 2 and 3 during the Trial had a cognitive deficit significant enough to have been classed in the middle AN-ACC mobility branch under this revision.</p>

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