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Independent Health and Aged Care Pricing Authority

Residential Aged Care Costing Pilot Study Report

August 2022

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Disclaimer

Independent Health and Aged Care Pricing Authority

The Independent Hospital Pricing Authority (IHPA) was established under the *National Health Reform Act 2011* (NHR Act) to improve health outcomes for all Australians.

Its primary responsibility has been to enable the implementation of national activity based funding of public hospital services through the annual determination of the national efficient price (NEP) and national efficient cost (NEC). These determinations play a crucial role in calculating the funding contribution of the Commonwealth to Australian public hospital services and offer a benchmark for the efficient cost of providing those services as outlined in the NHRA.

On 12 August 2022 amendments to the NHR Act came into effect changing IHPA's name to the Independent Health and Aged Care Pricing Authority (IHACPA) and expanding its role including to provide costing and pricing advice on aged care to the Commonwealth Government.

Response to Royal Commission into Aged Care Quality and Safety

Among the 148 recommendations of the Royal Commission into Aged Care Quality and Safety (the Royal Commission) were recommendations to establish an independent pricing authority for aged care services. The Aged Care and Other Legislation Amendment (Royal Commission Response) Act 2022 (Cwlth) includes amendments that expanded the remit of the existing IHPA and renamed it to become IHACPA. Commencing 12 August 2022, Schedule 8 amended the Act, the Aged Care Act 1997 and the Quality and Safety Commission Act 2018 to expand the functions of a renamed IHACPA to include the:

- provision of advice on healthcare pricing and costing matters
- provision of advice on aged care pricing and costing matters
- performance of certain functions conferred by the Aged Care Act.

Residential Aged Care Costing Pilot Study Report

This report is not intended to be used by anyone other than IHACPA.

We prepared this report solely for IHACPA's use and benefit in accordance with and for the purpose set out in our engagement letter with IHACPA dated 08 November 2021. In doing so, we acted exclusively for IHACPA and considered no one else's interests.

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Executive summary

Background

In response to the 2018 Royal Commission into Aged Care Quality and Safety, the Commonwealth Government announced that the Independent Health and Aged Care Pricing Authority (IHACPA) would take on the role of providing advice to Government on costing and pricing in aged care from 1 July 2023. In addition, IHACPA's work will inform the operation of the Australian National Aged Care Classification (AN-ACC) funding model which is due to be implemented from 1 October 2022. The AN-ACC model was developed by the Australian Health Services Research Institute (AHSRI) at the University of Wollongong and replaces the current Aged Care Funding Instrument (ACFI) funding model.

In October 2021, the Department of Health and Aged Care engaged PricewaterhouseCoopers (PwC) Australia on behalf of IHACPA to conduct the Residential Aged Care Costing Pilot Study (RACCPS) project. The primary objectives of the project were to:

- Undertake a pilot costing study for residential aged care to collect cost and activity data related to the provision of care and related services
- Provide recommendations for the type of data to be collected in the subsequent broader Residential Aged Care Costing Study
- Consider a range of electronic time capture tools and technologies to collect care time data
- Describe how the collected data will be used
- Develop a Data Collection Tool to be used by facilities to collect the required cost and activity data
- Provide recommendations for the development and implementation of the broader study.

Study overview

The RACCPS involved 23 facilities with different geographic, demographic, facility and resident cohort characteristics. The study focussed on collecting the direct-care time data of up to 30 residents in each participating Residential Aged Care (RAC) facility, using one of three data collection methods over a period of up to four weeks. Participation in the study was voluntary for both facilities and individual residents.

In January 2022, the original timeline of the study was delayed by four months due to coronavirus disease (COVID-19) significantly impacting facilities. Once the study resumed in April 2022, the pandemic together with staffing issues and other competing priorities from the sector reform continued to hinder progress, including delayed starts or withdrawals from the study for some participants. The study was conducted over four tranches running from early May to late July 2022. The project team visited each facility to set-up the required technology as well as providing face-to-face training and education about the study to participating staff members/site sponsors.

The RACCPS also included the collection of one month of financial data and operational information on rostered workforce and occupied bed days. These data points were used in the costing process although delays were experienced with the collection of this data impacting the number of facilities that were costed. Participants were set up to securely transfer the data in line with IHACPA's data protection policies. Throughout the study, weekly calls were conducted between the PwC project team and site sponsors to check-in with participating facilities and where possible, validate the information collected throughout the study.

Following the data collection period, the financial data and time data captured by the different technologies was cleansed to remove data anomalies using agreed data cleansing principles. A costing methodology was developed and then applied to allocate costs across all participating residents. The time collected from the technologies was a key input in this costing process.

The time data captured was analysed to test the feasibility of the technologies for use in an aged care setting to capture interaction time between staff and residents. The analysis considered:

- How did the study function? What did the pattern of data capture look like over the course of the study and what were the learnings?
- What were the trends in average minutes? Were there any observed differences between different AN-ACC classed residents or types of aged care facilities participating in the study?

Findings

Throughout the RACCPS, several learnings were identified which should be considered as IHACPA moves towards conducting future, larger costing studies in this sector. The context of these learnings is grouped into three themes: Future costing study design, Sector engagement and participation, and Data quality.

Future costing study design

COVID-19 and other virus outbreaks had a significant impact on the RACCPS timelines and data capture by affecting participation and access to facilities and site sponsor response time. Future costing studies should carefully factor in the impact of COVID-19 and other outbreaks and be designed to mitigate this impact on participation and timeframes as much as practicable.

During the study, the project team encountered some delays in the provision of financial and workforce roster data, as well as being able to physically be on site to perform the technology set-up and training. Often this was driven by COVID-19 outbreaks, extreme weather events or workforce shortages. Considering IHACPA needs to continue conducting larger at-scale costing studies across the breadth of the residential aged care sector, recommendations have been made in relation to virtual set-up and data collection.

The data analysis of the RACCPS showed considerable variability in the time data being captured without an ability to properly validate this information with site sponsors who were supporting the project in addition to their normal workload. Understanding whether the drivers of this variability were due to differences in care delivery and rostering, the characteristics of different providers or due to varying uses of the technology is key to inform future price and classification development. In addition, refining future costing processes through the development of Relative Value Units (RVUs) requires a detailed understanding of the activities performed within an aged care facility.

The recommendations put forward in this report aim to address the challenges observed in the study and better understand these variations. Testing and refining these recommendations in a subsequent smaller costing study should be considered ahead of a larger scale costing study. There may also be significant benefit by performing a small number of physical time-in-motion studies, whereby the care staff activities can be physically observed and understood.

Recognising there is considerable reform occurring within this sector, with the move from Aged Care Funding Instrument (ACFI) to AN-ACC funding in October 2022, the introduction of mandatory care time standards and the ‘star rating system’ in 2023, it is expected that the data collected from costing studies over the next 2 – 5 years may continue to show volatility. Considering the changes expected to occur and acknowledging that this is the first costing study conducted by IHACPA on the residential aged care sector, it is important to plan and establish the foundations for future costing studies to help support a robust and mature residential aged care cost collection.

Sector engagement and incentivisation

During the study, we experienced a high attrition of participating facilities and heard concerns around the decision to commit resources for the study when there are, due to environmental factors such as COVID-19, influenza and flooding, staffing shortages and other competing operational priorities. As the sector continues to face these significant operational burdens, as well as experience substantial reform, it is recommended that support is provided by IHACPA to encourage and enable participation in future studies. The objective of this support is to establish a dedicated on-site role for the duration of the study, to encourage the correct use of the time collection technologies and to enable validation of the data collected. This may take the form of a financial incentive to enable roles to be backfilled or the provision of a dedicated project resource. It is believed that this incentivisation, together with an increase in sector engagement through the establishment of a working group will help address the participation hurdles experienced in the RACCPS.

Additionally, the project also highlighted that further education of the sector on the role of IHACPA, the importance of costing studies and their role in the AN-ACC funding model would be required as aged care reforms continue.

Data quality

There were a number of limitations experienced in the project with respect to collecting data, which ultimately had an impact on the quality of the data collected. These included:

- Challenges in completing the financial and workforce roster data templates, despite aligning the financial request to existing data reporting templates. This was likely due to the limited time availability of key site resources to complete the templates.

- Challenges in submitting these templates through the IHACPA data portal, often due to one staff member being provided access and frequent staff movements within a facility.
- The currency of AN-ACC shadow assessments at the time of conducting the RACCPS, where long delays since the assessments were performed may have led to different classification allocations for residents participating in the study.
- The time data collected throughout the study exhibited considerable variation, with limited ability to validate and understand this due to time availability of site sponsors.

Recommendations have been made to improve data quality outputs which include changing the financial data collected to rely on pre-existing quarterly reporting, utilising the support role to help validate the time data collected and working and incorporating the currency of AN-ACC assessments into the data sampling framework.

Recommendations

Theme	Recommendation

Future costing study design	**1.** Test RACCPS recommendations
	
	Due to the considerable variability in the time data captured from participating facilities, it is recommended that IHACPA conduct further testing of the recommendations outlined in this report before progressing to a larger national costing study.
	
	2. Conduct a traditional time-in-motion study to capture activity data
	
	A manual time in motion study, whereby project team members physically observe and document care staff activity, should be undertaken on a small sample of facilities. This is to enable more detail to be captured on the type of activities performed in both individual direct care time and residual shared care time which can be used to inform the development of Relative Value Units (RVUs).
	
	3. Develop an aged care costing roadmap
	
	IHACPA should consider developing a roadmap on how it will evolve the costing capability in the aged care sector. This could include the following recommendations:
	
	• IHACPA to continue conducting costing studies to understand the drivers and causes of variation in the data captured, which will improve the quality and robustness of costed data collection over time whilst further building understanding of costing in the sector.
	• The development of a sampling framework to determine the number of aged care facilities and residents required to achieve a representative sample of the sector, to improve data quality for informing pricing and classification development
	• Development of costing standards that are tailored to the residential aged care sector to improve costing maturity in the sector
	• Development of RVUs to utilise in a broader cost data collection across the sector to support the future expansion of costing capability in the sector. These could include:
	  ○ Preparation of medications
	  ○ Writing case notes
	  ○ Engagement with families
	
	It is likely that it will be at least 5 years before the aged care sector achieves sufficient maturity and understanding of costing and the AN-ACC model, such that residential aged care facilities may be able to undertake their own costing.
	
	4. Costing study timeline flexibility
	
	Flexible timelines should be considered when planning the timing of future costing studies to allow for periods of infectious disease or virus outbreaks. Costing studies should focus data collection periods outside peak holiday or winter period as much as practicable and allow for phased commencement so that facilities may be postponed or delayed, reducing the impact on participation rates in the project. Flexibility should also be included in future project timelines to accommodate challenges faced by RAC facilities as the sector implements government reforms.
	
	5. Enable remote set-up
	
	Technology set-up and participant training should be completed remotely as much as possible, reducing the need to visit each facility. Remote set-up capability will improve the scalability of future costing studies while also reducing the risk of infection for residents, staff and project team members.

Theme	Recommendation
	6. Whole site participation Facilities engaged by the RACCPS project team provided up to 30 residents to take part in the time data collection component of the study. It is recommended that future costing studies request the participation of all residents and staff members within each facility in order to overcome the following limitations: • Inability to utilise Quarterly Financial Report (QFR) data • Inability to account for all staff direct care time (if staff member is providing care to resident not participating in the study) • Reduced staff compliance if staff work across multiple wings of the facility • Inefficiency in reaching sufficient resident numbers to undertake comprehensive costing and inform pricing advice. . **7.** Costing study in the context of future reform The RACCPS was conducted under existing Aged Care Funding Instrument (ACFI) arrangements, which will be replaced by the AN-ACC funding model from October 2022. Furthermore, the introduction of mandatory care time standards and reporting will also impact the workforce rosters and hence costs for aged care facilities. It is recommended IHACPA should consider the timing of future reforms when designing future costing studies, anticipating volatility in the data collected which will need to be considered in developing future pricing. **8.** Site sampling framework The site sampling framework should be revised to consider the size of the sample to ensure representation across the desired facility and resident characteristics and currency of AN-ACC shadow assessments, noting that the site sampling framework should also consider the number of facilities to be engaged for this sample with the expected participation rates learned from the RACCPS.
Sector engagement and participation	**9. Facility support** It is recommended that IHACPA incentivise participation by providing means to establish a dedicated site sponsor as an additional resource for the participating site to support the costing study. The support could be provided in the form of: • Allocation of a project team member to work on-site as a site sponsor, or • Allocation of funds to engage an additional administrative role or support the backfill of a facility staff member who will perform the role of site sponsor for the duration of the costing study. The establishment of this dedicated role would afford IHACPA and the project team the following advantages: • Increase in facility's willingness to participate • Oversight of staff and resident technology usage • Knowledge of each facility's care approach • On-site troubleshooting capability and data validations • Single contact person for secure data portal access

Theme	Recommendation
	10. Sector education It is recommended that IHACPA develop and provide a range of simple educational resources to promote the understanding of the AN-ACC funding model, IHACPA's role in the aged care sector, and the purpose and process of conducting costing studies within aged care to help inform the pricing. Greater understanding by the sector of the relationship between costing and funding may contribute to increased facility involvement and participant comfort. Consultation with both the executive and local decision makers should be sought when seeking participation **11. Establish a project working group** A project working group should be established as part of the governance of future costing studies. In addition to contributing subject matter input, the working group will also improve engagement with peak bodies and aged care providers. The project working group would offer valuable insights into the capacity of the sector to take part in costing studies, while also providing the ability to leverage existing relationship channels to encourage participation.
Data collection and quality	**12. Utilise QFR data** It is recommended that future studies aim to utilise existing data collections to minimise the burden on aged care facilities, and to ensure consistent and accurate data is provided. The ACFR and the upcoming QFR that is/will be provided to the Department of Health and Aged Care (DoHAC) by aged care organisations incorporates the financial, workforce and occupied bed days data required for costing in a consistent and usable format without creating additional burden on facilities. It is recognised that the QFR has not been tailored towards data collection for costing studies and hence would require normal data cleansing and assessment for reasonableness for use. Whilst it has some limitations, it is recommended this replaces the manual data collection process undertaken in the RACCPS. The limitations include: • The QFR combines three months data into one quarter, and so a calculation will need to be made to pro-rata this for one month using calendar days and occupied bed days. • The current QFR template does not include all hotel costs; should these be included in the AN-ACC in the future, the template may need revision. • The template is due to be submitted approximately 5 weeks after the quarter end, which would result in a few months delay between the time data being collected and the financial data being provided. • The quality of the data provided by providers may vary and would benefit from a validation process. **13.** Refine QFR template As a potential key user of the QFR, it is recommended that IHACPA works with DoHAC to expand the QFR template to include all cost types and refine the processes surrounding the data collection in order to address some of the limitations outlined in recommendation 10. **14.** Currency of AN-ACC assessments Participation criteria should be developed to ensure the currency of AN-ACC assessments for participating residents. It is critical to the accuracy of the costing study that residents are classified to the correct AN-ACC class. Processes should also be developed to ensure visibility of AN-ACC assessment dates throughout the costing study planning phase. **15.** Regular verification of time data capture It is recommended that time data capture is regularly validated to ensure early and accurate identification of anomalies. To enable this validation to occur, the establishment of support to facilities is necessary as existing site sponsors were found to be consistently time poor throughout the RACCPS.

Theme	Recommendation
	16. Streamline data transfer process It is recommended that IHACPA explore alternative options for data collection and transfer. This may include setting up a separate portal for directly capturing data submissions to minimise the risk of facilities sharing protected information outside the SDMS. Any transfer process should be developed and implemented to meet IHACPA's data security specifications.

Contents

1. Background

1.1. Aged care reform

In October 2018, the Royal Commission into Aged Care Quality and Safety was established following numerous high-profile, investigative reports of non-compliance, insufficient care and safety concerns within aged care facilities. The final report was tabled in Parliament in March 2021. In response to this report, the Commonwealth Government (the Government) announced that the Independent Health and Aged Care Pricing Authority (IHACPA) would take on the role of providing advice to the Government on costing and pricing in aged care. IHACPA's advice is expected to inform Government decisions on pricing matters from 1 July 2023.

IHACPA's advice to Government will also inform the operation of the Australian National Aged Care Classification (AN-ACC) funding model, due to be implemented from 1 October 2022 as per the *Aged Care and Other Legislation Amendment (Royal Commission Response) Bill 2022.* This model was developed by the Australian Health Services Research Institute (AHSRI) at the University of Wollongong and introduces changes to the current Aged Care Funding Instrument (ACFI) funding model.

The Residential Aged Care Costing Pilot Study (RACCPS) was undertaken by IHACPA between October 2021 and July 2022 to understand how to best collect cost data on under the AN-ACC structure and how these costs may change over time, to support the ongoing operation of the AN-ACC model.

1.2. Purpose of the Residential Aged Care Costing Pilot Study

The primary objectives of the RACCPS were:

- Undertake a pilot costing study for residential aged care to collect cost and activity data related to the provision of care and related services
- Provide recommendations for the type of data to be collected in the subsequent broader Residential Aged Care Costing Study
- Consider a range of electronic time capture tools and technologies to collect care time data
- Describe how the collected data will be used
- Develop a Data Collection Tool to be used by facilities to collect the required cost and activity data
- Provide recommendations for the development and implementation of the broader study.

PwC was contracted by IHACPA to deliver the RACCPS in line with these objectives. StewartBrown supported PwC to provide sector expertise in reviewing the accuracy of financial data submitted throughout the study, and PowerHealth Solutions provided two of the time collection technologies and assisted in undertaking the costing.

The study included 23 facilities with different geographic, demographic, facility, and resident cohort characteristics. It focussed on collecting time data within Residential Aged Care (RAC) facilities using one of three data collection methods over a period of up to four weeks. The RACCPS also included the collection of one month of financial data that was used to determine the cost of care delivery. Operational information on worked hours and occupied resident bed days was also collected to support checking and validation.

1.3. Operating environment

The RACCPS project ran from October 2021 to July 2022, although originally scheduled to conclude in April 2022, the study was paused between early January 2022 and early April 2022 due to the impacts of the COVID-19 pandemic. February and March 2022 presented significant stressors to the aged care sector in the form of COVID-19 outbreaks and severe flooding along the east coast of Australia. As a result, many aged care facilities were forced to withdraw their participation. In December 2021 after an initial approach to the sector 32 facilities had confirmed their intention to participate in the study this reduced to 16 facilities in April 2022. Additional facilities were then invited to participate resulting in a total of 23 facilities participating in the pilot study.

facilities

The study was conducted across four tranches of data collection which were staggered as shown in the table 1 below:

Table 1: Outline of data collection periods

Tranche	Start period	End period	Number of participants
Tranche 1	Early may	Early June	3
Tranche 2	Mid May	Mid June	9
Tranche 3	Early June	Early July	4
Tranche 4	Early July	Late July	7

COVID-19 outbreaks affected 10 of the 23 participating facilities. These outbreaks had a significant impact on how facilities provided care for their residents. Facilities reported a reduction in lifestyle activities, allied health services and shared care during these periods, with the latter sometimes increasing the time carers spent supporting residents in their rooms. It is difficult to determine the definitive impact on care delivery as outbreaks often resulted in staff shortages and a reduction in staff compliance with time capture technology.

In December 2021, a short trial of the pilot study was conducted at one facility to test the data collection processes and technology in an operational setting. Learnings and feedback provided by this facility, particularly in relation to COVID-19 process management, were influential in shaping the processes and resources utilised in the RACCPS.

Recommendation

3. Costing study timeline flexibility: IHACPA should consider developing a roadmap on how it will evolve the costing capability in the aged care sector. This could include the following recommendations:

- IHACPA to continue conducting costing studies to understand the drivers and causes of variation in the data captured
- The development of a sampling framework to determine the sample size which is representative of the sector and is sufficient to inform pricing and classification development
- Development of costing standards that are tailored to the residential aged care sector
- Development of RVUs to utilise in a broader cost data collection across the sector. These could include:
    - Preparation of medications
    - Writing case notes
    - Engagement with families

It is likely that it will be at least 5 years before the aged care sector achieves sufficient maturity and understanding of costing and the AN-ACC model, such that residential aged care facilities may be able to undertake their own costing.

4. Data capture contingency plan: Flexible timelines should be considered when planning the timing of future costing studies to allow for periods of infectious disease or virus outbreaks. Costing studies should focus data collection periods outside peak holiday or winter period as much as practicable and allow for phased commencement so that facilities may be postponed or delayed, reducing the impact on participation rates in the project.

5. Enable remote set-up capability: Technology set-up and participant training should be completed remotely as much as possible, reducing the need to visit each facility. Remote set-up capability will improve the scalability of future costing studies while also reducing the risk of infection for residents, staff and project team members.

7. Costing study in the context of future reform: The RACCPS was conducted under existing Aged Care Funding Instrument (ACFI) arrangements, which will be replaced by the AN-ACC funding model from October 2022. Furthermore, the introduction of mandatory care time standards and reporting will also impact the workforce rosters and hence costs for aged care facilities.

It is recommended IHACPA should consider the timing of future reforms when designing future costing studies, anticipating volatility in the data collected which will need to be considered in developing future pricing.

2. Project set up

2.1. Governance and stakeholders

2.1.1. Governance

A RACCPS governance framework was established in the initial phase of the study to define roles and responsibilities, governance, and documentation processes, including project management, communication and risk management plans (Appendix A and B) Weekly status reports were established to provide updates on progress towards key project milestones, discuss emerging risks and provide a project snapshot against the project plan. All project risks, issues and decisions made throughout the study were captured in individual registers to ensure they were tracked and managed effectively. These governance processes allowed early identification and clear communication of project risks, such as the impact of COVID-19. The project was paused in December 2021 to ensure the safety of aged care staff and residents.

The establishment of an advisory committee comprised of aged care peak bodies, the Commonwealth Department of Health and Aged Care (DoHAC) and aged care providers was not implemented for this study however is to be established as an outcome of the *Aged Care and Other Legislation Amendment (Royal Commission Response) Bill 2022* has included this change to IHACPA's legislated requirements.

2.1.2. Stakeholders

A Stakeholder Engagement and Communications Plan was developed during the initial phase of the RACCPS. This document identified key external stakeholders, established guiding communication principles, and detailed a transparent approach to ensure all interested parties were informed throughout the study.

The key stakeholder groups identified for engagement in the RACCPS were:

- Residential aged care providers
- Residential aged care residents and representatives
- Federal government departments
- State government departments
- Public service agencies
- Peak industry bodies
- Consumer advocacy groups
- Unions

While this was not established for the RACCPS project it is recommended that a project working group is put in place for future costing studies.

The expansion of IHACPA's role to include residential aged care substantially increases the volume of relevant stakeholders. Where IHACPA's previously worked stakeholders related to public hospitals primarily jurisdiction health departments, it is now required to engage across over 2,700 aged care facilities. This increase may warrant consideration of customer relationship management (CRM) systems to maintain stakeholder contact information and track ongoing engagement activities.

Recommendation

11. Establish a project working group: A project working group should be established as part of the governance of future costing studies. In addition to contributing subject matter input, the working group will also improve engagement with peak bodies and aged care providers. The project working group would offer valuable insights into the capacity of the sector to take part in costing studies, while also providing the ability to leverage existing relationship channels to encourage participation.

2.2. Consent

The RACCPS collected 'time and motion' data from eligible staff and residents at 23 residential aged care facilities across Australia. All facility and individual participation in the pilot study was voluntary.

2.2.1. The requirement for ethics approval

It was necessary to consider whether Human Resource Ethics Committee (HREC) review was required under the National Statement on Ethical Conduct in Human Research due to the participations of residential aged care residents and staff. Upon review of the National Statement, it was determined that the work being undertaken during this study would not be considered research as it is within the organisation's regular business operations (on behalf DoHAC). As such the National Statement on Ethical Conduct in Human Research was not applicable.

2.2.2. Operational approach

Despite there not being a requirement for individual consent, consideration was given on how to best inform and coordinate participating staff and residents regarding the study.

For residents, the documentation signed on entering aged care provides authority for residents' data to be shared with the Government including IHACPA. Requesting additional consent from residents was considered a duplicative activity and would significantly increase the administrative burden on facilities. Therefore, it was decided that a confirmation that this documentation is in place would be sufficient for the RACCPS. All participating facilities were able to provide confirmation that the organisation's resident agreement contained the appropriate authority for data to be shared.

No specific consent was requested for staff, which is consistent with the approach taken when undertaking costing studies related to hospital services.

Details on the pilot scope, purpose, timing and data collection methodology was provided to all participants (see section 3.2 for the approach to stakeholder communication) and all data collected as part of the RACCPS was collected using non-invasive digital data collection tools which required minimal intervention from staff and residents. The small number of facilities reported instances of residents or staff declining to participate in the study were handled on a case-by-case basis, resulting in the exclusion of some participants.

2.3. Data specifications and security

2.3.1. Nature of data being captured from study participants

The types of data collected and utilised throughout this study are detailed in Table 2 below:

Table 2: Data inclusions and descriptions

Type of data	Inclusions	Nature of the data	Collection approach
Resident identifiers	• My Aged Care ID (AC-IDs) • System for the Payment of Aged Residential Care IDs (SPARC-IDs)	Sensitive (possibly protected data) – unique resident identifiers.	IHACPA data portal
Time data	All technologies captured, or allowed for the calculation of, the following fields: • Staff device identifier • Resident device identifier • Interaction start time • Interaction duration	Non-sensitive - all time data was deidentified and unable to be used for workforce profiling.	Data collected from devices and uploaded into secure cloud server. Data transfer through IHACPA data portal
Financial data	• Occupancy data (aggregated) • ACFI revenue • Expenses (by category) • Labour hours	Sensitive (possibly protected data) – commercially sensitive financial and operational information aggregated at the facility level. No individual staff/resident data.	IHACPA data portal

Type of data	Inclusions	Nature of the data	Collection approach
Workforce data	• Shift patterns, length and timing • Number of staff per role, per shift, per day	Non sensitive – all data provided at the role level. No personal information included.	IHACPA data portal
Occupied bed days	• AC-IDs/SPARC-IDs • Room/bed number • Number of occupied bed days	Sensitive (possibly protected data) – includes resident information	IHACPA data portal

The approach to data collection is detailed in section 4 of this report.

With the passing of the legislation and the expansion of IHACPA's role into aged care, IHACPA will need to update the definitions pertaining to "Protected Data" that bring it into alignment with the protected data requirements for aged care. Future costing studies should reference these new definitions, specifically the data elements presented above, with considerations on their collection and management under the relevant new definitions.

Additionally, IHACPA may want to seek access to additional data sources to support costing and analysis, including AN-ACC assessment information or Aged Care Financial Reporting (ACFR) and the future Quarterly Financial Report (QFR) information from the DoHAC. IHACPA should engage with relevant data custodians to understand what data is available and how to use this data in its functions.

2.3.2. Data management

Secure data transfer and storage processes were put in place throughout the study, centred around the IHACPA's existing Secure Data Management System (SDMS) and in alignment with IHACPA's Consultant Data Access Model. Some of the features of the data management process included:

1. IHACPA approval was required for all project team members seeking access to the SDMS and approved individuals were required to have received police clearance and attend data security training before being granted access.
2. All sensitive resident mappings were maintained on the SDMS and analysis undertaken within this environment. Any outputs developed using project data were de-identified, aggregated and assessed for sensitivity before being approved for release from the system.
3. Site sponsors for participating aged care facilities were given access to IHACPA's approved data portal and directed only to transfer data via this channel. Where participating facilities did not follow the prescribed process and emailed sensitive data to the project team, these communications were reported to IHACPA and deleted, and the data requested to be provided securely via the portal.

Considerations around the practicalities of the project infrastructure are detailed below in section 2.4 of this report.

2.4. Data portal and infrastructure

A central component of the data infrastructure utilised in this project was IHACPA's existing secure data portal, part of IHACPA's SDMS. This portal was made available to project team members and approved members from participating aged care facilities to securely transfer information throughout the project, including:

- Providing resident mappings to participating facilities pre and post set-up
- Submitting the completed financial data templates (section 4.1)
- Submitting the workforce roster and occupied bed days information for the study period (section 4.2 and 4.3)
- Transferring costing and analysis outputs

In most circumstances, only one representative from each organisation was granted access to the data portal which in some cases resulted in key person risk, especially as multiple site sponsors changed or were away due to illness.

Once the account was active, users would upload data into the portal. This study aimed to test the suitability of technologies used to collect, transfer and process time data from the residential aged care sector for costing studies. Feedback from facilities indicated that the current processes and portal were not an optimal method for collecting data. The issues

experienced throughout the RACCPS would increase proportionally with additional facilities and as such, would create significant challenges for a larger scale study.

Recommendation

16. Streamline data transfer process: It is recommended that IHACPA explore alternative options for data collection and transfer. This may include setting up a separate portal for directly capturing data submissions to minimise the risk of facilities sharing protected information outside the SDMS. Any transfer process should be developed and implemented to meet IHACPA's data security specifications.

3. Site selection and engagement

3.1. Site selection

The initial site selection process focused on identifying aged care facilities that would cover a broad range of characteristics which impact the delivery model, workforce and cost structures of a facility. The following characteristics were considered during site selection:

- Size – as measured by total bed capacity
- Location – categorised using the Modified Monash Model (MMM)
- Resident type – including facilities that indicated they provided service to, or had a focus on, a range of populations including Aboriginal and Torres Strait Island (ATSI), culturally and linguistically diverse (CALD), homelessness or at risk of homelessness and palliative care.
- Ownership structure – covering government run, not-for-profit, and privately owned facilities
- Respite care – facilities providing short term care.

Only facilities with completed shadow AN-ACC assessments were considered for the RACCPS. Shadow assessments assigned residents to one of 13 AN-ACC classes. These classes indicate care needs and costs based on the clinical and care requirements of each resident in relation to their level of frailty, cognition, behaviour, functional status, end-of-life care requirements and nursing needs. A list of these facilities was provided by IHACPA in November 2021 from DOHAC. Further updates on facilities that had completed shadow AN-ACC assessments were provided throughout the course of the project for consideration in later tranches. Facilities were then filtered to eliminate those who were not compliant with the submission processes for the ACFR by cross-checking those submissions from the relevant data custodians.

Selected candidate facilities were facilities approached to participate in the study via an Expression of Interest (EOI), with a target participation level of 30 facilities. The approach to communication is detailed in section 3.2 of this report.

The EOI was initially sent to 50 facilities in recognition that not all the selected facilities would choose to participate. Over 30 facilities confirmed interest in participation in late 2021, however when the project recommenced in April 2022 after a three month pause this number fell significantly due to ongoing operational challenges across the sector stemming from COVID-19 and influenza. As a result, an additional 52 facilities were identified for inclusion in the study in early 2022.

In the first quarter of 2022, facilities were forced to withdraw from the study and the project team approached and engaged additional facilities to participate. To enable these facilities sufficient time to prepare for the study, the data collection process was staggered and extended. Participating facilities were allocated into one of four tranches of one month each between May and July 2022. In total, 23 facilities participated in the study.

3.1.1. Challenges and incentives

Despite contacting more than 100 facilities to invite them to participate in the study, the overall participation rates were lower than anticipated. Multiple reasons contributed to this outcome, including:

- The EOIs were addressed to senior members of each provider organisation, targeting the CEO where possible. However, due to outdated contact information in a dynamic sector, direct engagement with senior decision makers was not always achievable. Where providers did not respond to the EOI (and could not be reached via other channels) it was difficult to determine the reason for not responding, inspite of multiple attempts of contacting them.
- Providers cited other priorities, including responding to COVID-19, as reasons for not having the capacity to participate in the study.
- On several occasions facilities that previously agreed to participate had to subsequently withdraw after being impacted by COVID-19, flu outbreaks, or natural disasters.
- In some cases, despite an appetite to participate at the CEO or senior executive levels, there was a reluctance to participate at the regional or local level due to staff shortages and competing priorities.

As a result of this, and the lower participation rates of regional and rural facilities, the final study comprised a higher proportion of privately-owned metropolitan facilities than the initial EOI sample.

The study highlighted the challenges that aged care facilities had in being able to participate. A common theme heard from respondents was a lack of capacity due to widespread staff shortages across the sector. It was reported on multiple occasions that care staff were already struggling to manage their existing workloads without the additional responsibilities of participating in a voluntary study, especially as the site sponsor was drawn from existing nursing or care management staff.

Recommendations

8. Site sampling framework: The site sampling framework should be revised to consider that size of the sample to ensure representation across the desired facility and resident characteristics and currency of AN-ACC shadow assessments, noting that the site sampling framework should also consider the volume of facilities to be engaged for this sample with the expected participation rates learned from the RACCPS.

9. Facility support: It is recommended that IHACPA incentivise participation by providing means to establish a dedicated site sponsor as an additional resource for the participating site to support the costing study. The support could be provided in the form of:

- Allocation of a project team member to work on-site as a site sponsor, or
- Allocation of funds to engage an additional administrative role or support the backfill of a facility staff member who will perform the role of site sponsor for the duration of the costing study.

The establishment of this dedicated role would afford IHACPA and the project team the following advantages:

- Increase in facility's willingness to participate
- Oversight of staff and resident technology usage
- Knowledge of each facility's care approach
- On-site troubleshooting capability and data validations
- Single contact person for secure data portal access

11. Establish a project working group: The recommendation to establish a project working group, as mentioned in section 2.1.2 of this report, will also contribute to incentivising participation in future costing studies.

3.2. Communications

The project team established a central email account as a single point of contact and a straight-to-voicemail support line to manage seamless facility communications. These were created to facilitate single points of contact and ensured that communication was responded to IHACPA also created a central RACCPS email which ran in parallel and was used for formal IHACPA communications. Contact details of potential participants were requested from DoHAC. The information provided required manual validation as contact details were not always complete or up to date. It would be beneficial for IHACPA to work with DoHAC to maintain a current list of contact details for aged care providers and facilities.

EOI letters for the selected aged care facilities were emailed to the identified contacts in late November 2021. The initial response was low, and the project team was required to follow up with provider contacts via phone calls and further emails. The facilities that provided a negative response to the EOI sighted the following reasons the December/January holiday period, accreditation, refurbishments, and other competing priorities. These communications also identified confusion regarding the study purpose and the linkage between costing studies and funding models.

Following the project deferral into the second quarter of 2022, many of the original facilities withdrew from the study citing COVID-19 and flu outbreaks, and other ongoing operational challenges. Some facilities withdrew formally, others were uncontactable when the project recommenced. As a result, the EOI process was repeated three times between April and June 2022. During this period a considerable amount of time was spent identifying, contacting, and following up with new and existing facilities to confirm and reconfirm participation of the final 23 facilities. On multiple occasions there was support for the study from senior management, but the facility was unwilling to participate due to their existing operational commitments. In these cases, local decision makers overruled executive direction and the facilities did not join the RACCPS.

Once the participating facilities were confirmed an acceptance email was sent to each outlining the next steps and providing letters to share with their staff, residents and union representatives. Where facility level contact details had not yet been provided, communications were sent to senior executives to forward onto local representatives. In these circumstances it often took several days for the facilities to receive the information, and this required significant input from the study team to track the progress of communication. Consultation with both the executive and local decision makers should be sought when seeking participation.

Following confirmation of participation, facilities were asked to nominate 'site sponsors' to be the primary contact and hold important responsibilities over the course of the study. Their role included the selection of participating residents, confirmation of staffing and weekly check-ins with the project team. The site sponsor was often the general or facility manager at the facility. In some instances, this individual was a regional manager however local resources were often more effective site sponsors as they had first-hand knowledge of staff and resident movements and could assist the project team with any issues on site. It was valuable to talk to the site sponsor about any planned leave during the costing period and to identify another contact if this was for an extended time. A small number of organisations also identified a second sponsor from their centralised finance team to be responsible for the submission of financial data.

To ensure organisations and facilities understood the purpose of the RACCPS and what was required from them, their staff and their residents, the project team held Q&A sessions, provided a detailed information pack and shared letters for local stakeholders.

Communication type	Summary	Content
Q&A sessions 	Three Q&A sessions were run via Webex over two weeks. Site sponsors from each facility were invited, as well as senior members of their managing organisations. The sessions were hosted by the project team, with an IHACPA representative also present to answer questions. All three sessions were well attended and received positive feedback.	• An introduction to IHACPA • Objectives of the RACCPS • Benefits of participation • Project timeline • Data request specifics • Time data collection process and technologies
Information pack 	Detailed information packs were provided to site sponsors and organisational executives following the Q&A sessions. The information packs were created as a central point of reference for everything site sponsors would need to know about the study.	• Project overview • Timeline of key activities • Facility preparation • Data collection protocols • Costing study wrap up • Completion checklists
Stakeholder letters 	Short letters were prepared for staff, residents and local union representatives to inform them of the RACCPS and provide an avenue for them to contact the project team directly via email or the support line with any questions or concerns. The letters were tailored for each audience and technology and were provided to the site sponsor distribution to the relevant individuals.	• High level project overview • Confirmation of site participation and potential for individual participation • Participant requirements • Privacy information

Recommendation

10. Sector Education: It is recommended that IHACPA develop and provide a range of simple educational resources to promote the understanding of the AN-ACC funding model, IHACPA's role in the aged care sector, and the purpose and process of conducting costing studies within aged care to help inform the pricing. Greater understanding of the relationship between costing and funding may contribute to increased facility involvement and participant comfort. Consultation with both the executive and local decision makers should be sought when seeking participation

3.3. Resident selection

Approximately 30 residents were sought from each facility to participate in the RACCPS. Residents were required to have had an AN-ACC assessment to participate in the study as care classifications were required for costing.

In the earlier tranches of the study, participating facilities did not yet have access to the AN-ACC shadow assessments on the My Aged Care portal. As a result, the project team utilised the System for the Payment of Aged Residential Care Identifications (SPARC-IDs) for the purposes of identifying residents, as is currently used in the National Aged Care Data Clearinghouse. IHACPA provided access to the following information which was used to help support participating facilities with resident selection:

- Data extracts of completed AN-ACC shadow assessment information from DoHAC as of November 2021, March 2022 and May 2022, containing the AN-ACC class and AC-IDs
- A mapping file from DoHAC which linked the AC-IDs to the SPARC-IDs as of February 2022.

Mapping spreadsheets containing the SPARC-IDs for eligible residents were prepared and provided to each facility through IHACPA's secure data portal for completion by the site sponsors. For Tranche 4 a mapping spreadsheet containing AC-IDs was provided instead, as facilities were able to directly access their residents' assessments.

Facilities were directed to select their participating residents from the available SPARC-IDs/AC-IDs, identifying a wing or section of the site with an appropriate number of eligible residents rather than having them spread out across the site. This was done to ensure the greatest overlap between participating residents and the staff providing their care, as staffing was in most cases managed by wing(s). Site sponsors then completed the mapping spreadsheets by including the SPARC-IDs/AC-IDs, room numbers and/or bed numbers of residents nominated to participate in the study. This information was used to allocate and label devices for each technology ahead of the site visit.

The timely completion of AN-ACC assessments and provision of AN-ACC assessment data will be important for future costing studies. Some participating facilities had their shadow AN-ACC assessments completed as far back as May 2021 with the costing study performed in June 2022, 13 months later. Normal resident attrition and possible changes in care needs mean that the AN-ACC assessment information may not be the most reflective of the resident population during the study if there is a large time lag since it was last done. It is recommended that IHACPA work with DoHAC to understand the timeline and process for completing and updating the AN-ACC assessment information and consider this when scheduling future costing studies.

Recommendations

6. Whole site participation: Facilities engaged by the RACCPS project team were requested to provide up to 30 residents to take part in the time data collection component of the study. Requesting the participation of only a portion of the residents at each facility would not be effective for future, larger costing studies due to:

- Inability to utilise QFR data
- Inability to account for all staff direct care time (if staff member is providing care to resident not participating in the study)
- Reduced staff compliance if staff work across multiple wings of the facility
- Inefficiency in reaching sufficient resident numbers to undertake comprehensive costing and inform pricing advice.

It is recommended that future costing studies capture time and, if feasible, activity data for all residents and direct care staff at participating facilities to overcome the above limitations.

14. Currency of AN-ACC assessments: Participation criteria should be developed to ensure the currency of AN-ACC assessments for participating residents. It is critical to the accuracy of the costing study that residents are classified to the correct AN-ACC class. Processes should also be developed to ensure visibility of AN-ACC assessment dates throughout the costing study planning phase.

3.4. Staff selection

Staff in the below roles were selected to participate in the time data capture component of the RACCPS if they were responsible for providing direct care to residents involved in the study:

- Care Managers (CM)
- Registered Nurses (RN)
- Enrolled Nurses (EN)
- Personal Care Assistants / Assistants in Nursing (PCA/AIN)
- Allied Health professionals (AH)
- Lifestyle Staff

These categories were also defined in the financial data submission template so that staff time could be aligned to the financial data.

Site sponsors provided the RACCPS project team with the number of staff of each designation assigned to the care of the participating residents throughout each shift (AM, PM, overnight). Sufficient devices were provided to each facility to cover both the AM and PM shift simultaneously. This ensured that staff were able to record time data during any overlapping handover period and manage technology charging requirements. As overnight staffing levels are consistently below the AM and PM shifts, additional technology was not allocated unless there was a unique staff designation (for example, if a facility only rosters ENs overnight).

Agency staff were also requested to participate in the time-data capture component of the study to ensure the appropriate costs could be captured and analysed. This was possible as additional devices were left for agency staff in the first three tranches and facilities were requested to provide their own workforce data, including agency information, in a purpose-built template.

3.5. Site set-up and training

3.5.1. Prior to site visit

A date and time were agreed with the site sponsors for the project team to conduct the site set-up. It was preferrable for the site set-up time to align with a staff handover period, so personnel across two shifts could be present for training. The attending project team member(s) were required to be up to date with all COVID-19 vaccinations in-line with recommendations and have had a seasonal influenza vaccination before visiting any aged care facilities. Attending team

members were also required to return a negative rapid antigen test result on the day of set-up and wear personal protective equipment in-line with facility requirements.

Tailored site set-up checklists, sign-in/sign-out sheets to record device use, and quick reference guides (QRG) (Appendix C) were created for each data collection method. Printed copies of these documents were arranged in advance of the site set-up date and provided to the site-sponsor during set-up. The sign-in/sign-out sheets were used for operational oversight only and completed sheets were not shared with the IHACPA or the project team to ensure that staff anonymity could be maintained.

Technology mapping and labelling for staff roles and resident rooms numbers were undertaken utilising the spreadsheets completed by site sponsors. In the event the mapping spreadsheet was not returned to the project team prior to the site visit, this was required to be completed on-site.

To assist in the collection of devices at the conclusion of the data collection period, site specific collection checklists and pre-paid envelopes (cards) or archive boxes (stationary beacons and wearable beacons) were prepared for each facility.

3.5.2. Site visit and training

The site sponsors, or appointed proxies, were met upon arrival to the facility. If required, a supervised RAT was undertaken, and facility specific health and safety mandates were complied with.

Site sponsors were given a detailed overview of the technology and operational processes, and any outstanding questions were answered. If device mapping, configuration or labelling had not been finalised prior to arrival, site sponsors worked with the project team to complete the required tasks. In most cases, the project team then accompanied the site sponsor to deliver the technology to participating residents. The site sponsor generally assumed responsibility for reminding residents of the purpose and requirements of the study, leveraging their existing relationships.

A central location was chosen by the site sponsor for the device sign-in/sign-out sheet, a copy of the reference guide and staff devices that were not in use. The site sponsor was then responsible for gathering as many staff as possible (ideally morning and afternoon staff during handover) to attend the technology training. The training topics included:

- Introduction of the project & general project information
- Introduction of technology, premise of usage and required processes
- Assurance to staff that no personal information was being collected throughout the study
- Request to handover all information presented at this training to the subsequent shift

Following the staff training, the site sponsor was responsible to ensure staff and residents used devices as indicated.

While on site, a day and time was agreed with the site sponsors for recurring 30 minute virtual weekly check-ins for the duration of the study.

3.5.3. Post site visit

An email containing electronic copies of the sign-in/sign-out sheet, reference guide and de-identified device mapping spreadsheet was sent to site sponsors no later than two working days after site set-up. The body of this email also provided inventory information on the number and type of devices that were left in each facility and contact details for support should they require it.

3.5.4. Disparities between methods

Each data collection method had unique steps involved in its set-up and configuration. Based on this study, the indicative time required to complete the set-up of each method is as follows:

- Wearable card method: 30-60 minutes
- Wearable beacon method: 45-90 minutes
- Stationary beacon method: 4-6 hours

Detailed steps of the unique set-up processes are available in section 5 of this report.

3.6. Site check-ins

Weekly 30 minute check-ins were held for the duration on the time data collection period. Depending on the preference of the site sponsor these were conducted via phone or video conference. Check-ins were structured as follows:

- Site temperature check
    - Feedback on staff and resident attitudes towards the study and overall compliance
    - Significant events occurring within the facility (for example, COVID-19 outbreaks)
    - Other feedback from the facility
- Resident movements
    - Confirmation that all participating residents remained within the facility for the preceding week
    - Requests for the timing and duration of hospital stays or extended social outings
    - Request for the date of death in instances where participating residents were noted as passing away
- Data validation
    - Site level trends and the validation of this information against operational performance
        - Spikes in resident care across all participants on particular days
        - Drops in resident care across all participants on particular days
    - Resident insights and the validation of this data against known care requirements
        - Insights for three residents with the highest care minutes for the previous week
        - Insights for three residents with the lowest care minutes for the previous week
    - Anomalies
        - Query of any data anomalies that were found in the analysis of the previous week (for example, residents with unexpectedly high care episodes or gaps in data across one or more days)
    - Staff insights
        - Insights into staff compliance or missing staff data for devices or roles

Discussing the above topics in detail requires the site sponsor to have granular knowledge of the participating residents and day-to-day facility operations. In some cases, site sponsors working in regional management roles across a portfolio of facilities did not have the necessary information on hand, slowing down the data validation process.

Despite the scheduling of standing weekly appointments, site sponsors were often uncontactable at the agreed time. Where site sponsors could not be reached, check-ins were rescheduled to a time later in the week. In some cases, site sponsors remained uncontactable for extended periods of time and the appointment was unable to be rescheduled within the same week. This meant that some data anomalies were unable to be validated or understood. The predominant reasons for not attending were emerging resident care and COVID-19 outbreak management (both direct and indirect). There were also multiple instances where site sponsors left their role or organisation during the study without informing the project team or nominating a replacement. In these situations, there were delays between a site sponsor ceasing the role and another individual being on-boarded.

Recommendation

9. Facility Support: The recommendation to provide facility support, as mentioned in section 3.1.1 of this report, will also contribute to the efficiency and reliability of site check-ins in future costing studies. This may include a different approach to the facility check.

3.7. Feedback

Feedback on the project, technology and staff and resident sentiment was collected throughout the study via the weekly check-ins with site sponsors. In addition, at the completion of the study a feedback template was sent to facilities to share their experience on what worked well and what could be improved with a particular emphasis on the data collection technology and validation process. Examples of sentiments received from site sponsors regarding the study are as follows:

“...residents and staff were very happy to participate in the Pilot Study and thank you for choosing our facility...”

“People were happy to participate as they feel it is an important study...”

"Residents were happy to know that there was a trial in place to support staff and resident care."

While the response rate was low, the feedback identifies several improvements required to the processes around accessing their IHPA portal account and the completion of the staff templates. The below table provides the average response rating (out of 5) and examples of the prevailing commentary:

Question	Average rating (x/5)	Commentary
Q1) Quality of supporting materials	4.5	The information pack and stakeholder letters were very useful.
Q2) Quality of Q&A sessions	4.4	The information provided was useful and well presented, attendance should be limited to smaller numbers to ensure everyone has an opportunity to ask questions.
Q3) Accessing and submitting data via the SDMS	3.3	Gaining access to the portal for the first time was difficult and took a significant amount of time. The team were very helpful in resolving any issues.
Q4) Quality of set-up and on-site training	4.5	Training and set-up were professional and well explained.
Q5) Ease of use of technology	4.5	Technology was light and easy to use, some roadblocks were experienced with iPod usage, but the team were very responsive and helpful.
Q6) Staff perspective of technology	N/A	Staff occasionally forgot to utilise the technology due to competing priorities. Otherwise quite simple.
Q7) Resident perspective of technology	N/A	Some residents hid their cards or refused to wear them. Most residents were happy to be a part of a study relating to their care.
Q8) Were there any issues with the technology? If so, how was the accessibility and quality of the project team response?	4.3	Some cards ran out of battery, the team were quick to respond and provide guidance on what to do. The wearable beacons were easy to use but sometimes taken home by mistake.
Q9) How valuable were the weekly check-in calls?	3.9	These were valuable but sometimes difficult to fit in with other operational demands in the current climate.
Q10) How easily were the workforce and OBD templates completed?	3.5	These were very time consuming.
Q11) Would you participate in future costing studies?	N/A	Yes, from all facilities.
Q12) Other study feedback	N/A	Simplify the information transfer process for templates. Most people (residents and staff) are happy to be part of a costing study as they believe it is important.

3.8. Facility data packs

The wearable card method and wearable beacon method facilities were provided with data insight summaries from the analysis completed for their facility. The packs provided deidentified information on categories such as:

- Approach and methodology
- Average daily minutes per resident by week
- Average daily minutes captured per resident by staff role
- Average daily minutes captured by day of the week and staff role
- Total interaction minutes captured by shift category
- Average daily minutes per resident by shift category
- Average daily minutes by shift category – carers
- Average daily minutes by shift category – other roles

Where there was not enough information available to deidentify a certain category, this information was omitted completely to maintain the anonymity of staff and residents.

Meaningful data insights into the cost of direct care for residents were unable to be produced for facilities that utilised the stationary beacon method. This is because of usability issues and that stationary beacons were not able to capture data outside of resident rooms.

Instead, these facilities were provided with insights which represented an aggregation of the wearable card data showing how the care minutes varied across residents of different AN-ACC classes in the study.

3.9. Technology retrieval

Two collection methods were trialled for collecting technology from the facilities: in-person and remote. Collection checklists were created for each facility, detailing the amount and type of technology that was allocated to them during the study.

The in-person method of collection required a project team member to travel to the facility to conduct the technology check and collection on-site. The remote method of collection involved sending pre-paid padded envelopes to facilities for the technology to be packaged into or leaving boxes with facilities during the set-up process. These were then posted or couriered back to the project team, where the devices were checked for damage and completeness.

4. Data collection process

A range of data was collected directly from participating facilities. This included time data collected from the technologies deployed at each facility (see section 5 for details), financial information and other supporting data collected through structured collection templates. A small number of organisations nominated a member of their centralised finance team to manage the preparation and submission of financial and occupied bed days data.

4.1. Financial data

4.1.1. Financial data collection template

One month of financial data was requested from 16 of the 23 participating facilities to support the costing process and enable the time and costs associated with care delivery to be analysed by resident and facility. Financial data was not requested from the seven facilities in the last tranche (all allocated the wearable beacon method) as these were not costed.

Facilities were provided with a data collection template built using Microsoft Excel. This template was aligned with the ACFR submission, with minor modifications to split out agency staff information and combine some other categories for ease of use. Financial data for the month of March 2022 was requested for each site, recognising that this was prior to the time data collection period. This ensured financial data was available for costing but resulted in a misalignment between the financial data period and the time data collection period which needed to be accounted for in the costing process. This template captured the following information:

- total approved places and bed days for the month
- total care revenue
- total expenses, including care staff and other care expenses, hotel expenses, administration expenses, accommodation expenses and other non-recurrent expenses
- total worked hours and other hours (e.g. leave, training) by staff category.

Facilities were requested to submit their financial information during May and June 2022 through IHACPA's secure data portal to upload completed financial templates. Although aligned to the ACFR, this template required the most input and usually needed to be completed by the finance teams who were disconnected from the project. As a result, the collection took significantly longer than anticipated.

It is recommended that future studies aim to utilise existing data collections to minimise the burden on aged care facilities, and to ensure consistent and accurate data is provided. The annual ACFR and QFR provided to DoHAC by aged care organisations already captures financial, workforce and occupied bed days data required for costing in a consistent and usable format without creating additional burden on facilities.

Utilising a more frequent collection such as the QFR would be preferable to the annual ACFR, though the current QFR template does have some limitations:

- The current QFR template does not include all hotel costs; should these be included in the AN-ACC in the future, the template may need revision.
- The QFR combines three months data into one quarter, and so a calculation will need to be made to pro-rata this for one month using calendar days and occupied bed days.
- The template is due to be submitted approximately 5 weeks after the quarter end, which would result in a few months delay between the time data being collected and the financial data being provided.

Whilst it has some limitations, it is recommended that this replaces the manual data collection process undertaken in the RACCPS. Additionally, it is recommended that IHACPA works with the Department to improve the QFR to address some of the limitations where possible.

4.1.2. Review of financial data

Completed templates were reviewed by members of the project team, with queries provided back to participating facilities to address and resubmit if required. The review of the financial templates involved assessing the financial data for the month of March 2022 for internal consistency and completeness (e.g., missing data), reasonableness against industry wide benchmarks and prior ACFR submissions provided by IHACPA.

This review identified that although the information collection was designed to be very similar to that requested through the ACFR, there were still inconsistencies which required further follow up and, in some cases, resubmission. This added to the delays in data collection and the costing process.

4.2. Workforce

Facilities were asked to provide information on rostered headcount for staff, split by staff type, for the four-week data collection period in May/June 2022. This information was collected in a template provided to the site sponsors via the SDMS.

The purpose was to use this information to validate the staff roles and time captured using the technology against time expected from rostered staff levels. It was also intended for calculating the proportion of staff participating in the costing study for comparison against the financial data template.

The project team requested facilities provide this data via the SDMS by the end of the first week of the time data collection period for their allocated tranche. However, over the course of the study, the completed template was often not returned in time, or early enough to enable valuable comparisons to the collected data. The weekly site check-ins often acted as the more effective opportunity to qualitatively understand any staff variations. It was observed that while staff rosters were generally quite stable over a four-week period, operational staffing regularly deviated from the roster, particularly due to staff shortages resulting from COVID-19.

Based on the delayed receipt of this information from facilities during the earlier tranches, workforce data was not requested for tranche 4 (all wearable beacon facilities). This was feasible as there was no costing of these facilities. The formal collection of rostered workforce information would not be required for future costing studies where entire facilities are participating in time data collection.

4.3. Occupied bed days

All facilities were asked to provide information on the number of occupied bed days during their time data collection period for:

- residents that participated in the pilot study; and
- all residents in the aged care facility (aggregated total).

This information was used to calculate the proportion of residents participating in the costing study and pro rata the financial data. Additionally, this was used to validate the time captured in the study against what was expected (for example if a resident was away from the site during the period, validating that data is adjusted for the days that they were absent). A template with detailed instructions on the requested occupied bed days data for the time data collection period was provided to each facility. This information was submitted using the same secure data submission portal as the financial data template (see section 4.1.1).

As with the other data templates, it was often challenging to capture this information in a timely way, especially as it needed to be collected at the end of the four-week collection period. For future studies, occupied bed days for each resident in the study will still be required as a means of validating absences and as an input into the costing process. Future costing studies should consider the use of the proposed administrative role to support with occupied bed days data collection in order to improve the data quality and reduce the burden on staff.

Recommendations

9. Facility support: The recommendation to provide facility support, as mentioned in section 3.1.1 of this report, will also contribute to the efficiency and reliability of providing OBD data to the project team.

12. Utilise QFR data: It is recommended that future studies aim to utilise existing data collections to minimise the burden on aged care facilities, and to ensure consistent and accurate data is provided. The ACFR and upcoming QFR provided to the Department of Health and Aged Care (DoHAC) by aged care organisations incorporates the financial, workforce and occupied bed days data required for costing in a consistent and usable format without creating additional burden on facilities. It is recognised that the QFR has not been tailored towards data collection for costing studies and hence would require normal data cleansing and assessment for reasonableness for use. Whilst it has some limitations, it is recommended this replaces the manual data collection process undertaken in the RACCPS. The limitations include:

- The QFR combines three months data into one quarter, and so a calculation will need to be made to pro-rata this for one month using calendar days and occupied bed days.
- The current QFR template does not include all hotel costs; should these be included in the AN-ACC in the future, the template may need revision.
- The template is due to be submitted approximately 5 weeks after the quarter end, which would result in a few months delay between the time data being collected and the financial data being provided.
- The quality of the data provided by providers may vary and would benefit from a validation process.

13. Refine QFR data: As a potential key user of the QFR, it is recommended that IHACPA works with DoHAC to expand the QFR template to include all cost types and refine the processes surrounding the data collection in order to address some of the limitations outlined in recommendation

5. Time collection technologies

One of the primary objectives of the RACCPS study was to evaluate the strengths and weaknesses of different time collection technologies within aged care facilities. Three different technologies were evaluated throughout the RACCPS study:

- Wearable cards
- Stationary beacons
- Wearable beacons

It is important that project team members have an intricate knowledge of the configuration and capabilities of the technologies to enable appropriate positioning of the devices and interpretation of the data fields, and train site sponsors accordingly

The allocation of time collection technology to facilities was dependent on several factors:

- Preference of facility
- Availability of technology
- Facility location
- Timing

In the event where a facility indicated a preferred method between the wearable cards and stationary beacons, they were allocated their preference.

The wearable beacon method was introduced later in the RACCPS to maximise the learnings from the study given the smaller number of participating facilities, it was not included as an option for tranches 1-3. The tranche 4 facilities were not given the option of the other two methods.

The wearable card method was requested by several facilities over stationary beacons due to the perception of higher data capture potential. Site sponsors believed this technology would be more effective at recording time for mobile residents that spent considerable time outside their rooms.

The stationary beacon method was requested by select facilities with focus on psychogeriatric care due to the clinical and behavioural characteristics of their residents. Site sponsors indicated their preference was for residents not to carry a wearable device as it would likely be lost or broken and may cause distress.

Devices were attributed to staff positions based on the information provided by the site sponsor. Devices were clearly labelled with the intended role and a unique number to differentiate within staff cohorts. At the beginning and end of each shift staff were required to collect the appropriate device and populate a technology sign-in/sign-out sheet which was provided to facilities to assist in tracking devices in the event they are misplaced. This sheet was the responsibility of the site sponsor and not collected by the project team at the completion of the study to ensure data could not be linked back to individual staff. The insights shared with site sponsors were not granular enough to be matched with specific personnel.

5.1. Wearable card method

5.1.1. How it works

The wearable card method utilised Bluetooth cards (and small number of Bluetooth bracelets) to record the amount, and duration, of interactions between staff and residents. The wearables were configured to capture any instances when a staff member came within two metres of a resident for greater than 30 seconds. The data captured throughout each shift was uploaded by staff to a Wi-Fi enabled Samsung Tablet. Once uploaded to the tablet, the data was then available from the cloud for analysis by the project team.

At the beginning of each shift staff were required to collect and sign-out a staff card aligned to their role from a central collection point and carry the card for the duration of their workday. At the end of the shift, staff were required to sign the card back in at the central collection point and press a button on the card to begin a data upload process to the Samsung tablet. The card was then left at the central collection point to be utilised by oncoming staff. The cards did not require charging and could be used on back-to-back shifts.

Residents were allocated a card (or bracelet) at the beginning of the study and required to always keep the card near them (within two metres) for the data collection period. Cards were labelled with each resident's room number so that they could

be returned if lost. Where carrying the card was not feasible, cards were attached to the resident's mobility device (four-wheely-walker, wheelchair, princess chair) or placed in the resident's wallet or handbag. The decision as to how residents wore or carried the cards was left to the discretion of the resident and their care staff.

5.1.2. Technology specific considerations

The set-up process for the wearable card method runs as per the process outlined in section 3.5 of this report. The below table details the unique requirements of this technology.

Technology requirements	Considerations and learnings
Location of central collection point	Cards needed to be returned, unless individual cards were allocated to each staff member, and their data submitted at the end of each shift. Staff were more likely to remember to collect, return and submit data from the devices if the central collection was located where staff visited at the start and end of their shift (e.g. a nurses' station). In a small number of situations, the collection point was located within two metres of a common area and resident care minutes may have been artificially inflated due to data capture between residents and spare staff devices.
Connection of tablet to Wi-Fi or SIM set-up	Success of this technology was reliant on the tablet having a strong and stable internet connection. It was important to have a discussion with the site sponsor about access options ahead of set-up as access to site Wi-Fi was highly variable and, in certain cases, required approval from central IT teams. Use of mobile SIM cards was the most effective way to mitigate risk of Wi-Fi connectivity however this still required a discussion with site sponsors as reception in some areas was limited to specific providers.

5.1.3. Usability and effectiveness

Technology usage by staff and residents was monitored through data analysis and weekly check-ins with site sponsors. Overall, the usability of the wearable card method was considered high by all site sponsors that were allocated this method. Feedback and observations on the use of this technology are as follows:

- **Device physicality (cards):** the size and weight of the cards was of minimal inconvenience to staff and residents. The light colour made them inconspicuous which was beneficial for residents with cognitive impairment but did make them more susceptible to visible dirt. Devices are not waterproof but did appear to withstand minor splashing. Small clips with no sharp edges allowed for easy connection to staff and resident clothing or resident mobility devices. The cards do not require charging, a practical attribute in an aged care setting.
- **Device physicality (bracelets):** the size and weight of the bracelets was of minimal inconvenience to residents. The noticeable nature of this wearable device was not appropriate for all residents and in some cases the site sponsor recommended it be attached to resident's ankles to minimise confusion. The technology can last up to 60 days per charge and is waterproof and dustproof, practical attributes in an aged care setting.
- Staff usage: while staff acknowledged the simplicity of using this technology, there were still instances of non-compliance. There were multiple reports of staff forgetting to wear a card while on shift or forgetting to upload data when returning their card. Risk associated with the data upload process can be mitigated by automating this process with specific card configuration and provision of an upload trigger device, which is possible with this technology. It was evident that on some occasions staff collected and carried a card that was not aligned with their role (e.g. a carer carrying an allied health card). This was only identified after the event had occurred through data analysis and site check-ins.
- **Resident usage:** resident compliance was heavily reliant on the support of local staff. Most residents were amenable to carrying the card or having it clipped onto their mobility device however there were some reports of residents refusing to wear/carry the cards or hiding them intentionally. There were also instances where residents "stole" other residents' cards, risking inaccurate data capture for the affected devices. As the devices do not

require charging, they can be positioned near residents at all times. The wearable nature of these devices allowed for time collection during all care activities across the facility.

- **Tablet usability:** the Samsung tablet acted as an obstacle to the data upload in some circumstances. Two facilities had difficulty with the tablet freezing and a third site had an issue with Wi-Fi connectivity. These issues were identified by the site sponsor or in the data analysis and were able to be resolved over the phone. No data was lost as the data storage capability of the cards was sufficient to continue capturing across multiple days.

The quality of the data gathered by the wearable beacon method was sound, as was its effectiveness and usability. It had minimal impact on staff and residents and was able to capture accurate and meaningful data.

5.2. Stationary beacon method

5.2.1. How it works

The beacon method utilised stationary Bluetooth 'beacons' and a mobile application on Apple iPods to record the amount, and duration, of interactions between staff and residents. The stationary beacons were small, white, square devices configured to capture all interactions that occurred within each resident's room. Staff were required to carry iPods with the mobile application running, allowing for time data to be automatically recorded when an iPod was in the proximity capture radius of a beacon. Due to the beacons being positioned in resident rooms, this technology was unable to capture interactions that occurred in any other settings. Staff were required to manually submit the data captured during their shift via a short process within the mobile application. Once staff had uploaded the data, it was then available from the cloud for analysis by the project team.

At the beginning of their shift staff were required to collect and sign-out an iPod from a central collection point where the devices were charging. Staff were then instructed to open the nominated mobile application and check the allocated staff role (RN, EN, etc.). If the role of the previous user did not align with their own, staff were required to configure the iPod to match their role by scanning a QR code. Staff were then asked to put the iPod into a small plastic sleeve, clip this to their clothing and wear it for the duration of their shift. Alternative iPod carriers could be sourced to be more user-friendly for staff. At the end of each shift, staff were required to upload their data via the application, sign the iPod back in and plug it into a charger. The iPod was then left at the central collection point to be utilised by a staff member in two shifts time. The battery capacity of the iPods meant they could not be used on two sequential shifts.

Residents were each allocated a beacon at the beginning of the data collection period and required to have the beacon in their room for the duration of the study. Placement of the beacon within the resident room was determined by the site sponsor in conjunction with the project team.

5.2.2. Technology specific considerations

The set-up process for the stationary beacon method runs as per the process outlined in section 3.5 of this report. The below table details the unique requirements of this technology.

Technology requirements	Considerations and learnings
Beacon placement and configuration	Beacons were required to be individually positioned in resident rooms, with their placement accounting for known cognitive and behavioural characteristics. Each beacon needed to be individually configured based on device positioning and room size, so this task was always completed on site. Most devices were placed on high shelves or cupboards to minimise risk of them being disturbed during the study.
Charging station set-up	A central station was required to charge staff iPods (up to 20 per site for this study). Staff were more likely to remember to collect, return and submit data for their devices if this station was somewhere they visit at the start and end of their shift (e.g. a nurses' station). This could impact the space available in the common staff area.
Connection of iPods to Wi-Fi	All iPods required an internet connection to submit data. It was important to have a discussion with the site sponsor about access options ahead of set-up as access to site Wi-Fi was highly variable and, in certain cases,

Technology requirements	Considerations and learnings
	required approval from central IT teams. Use of portable modems was the most effective way to mitigate risk of Wi-Fi connectivity however this also required a discussion with site sponsors as reception in some areas was limited to specific providers.
Set-up of portable modem (if required)	If poor facility Wi-Fi connectivity was indicated by a site sponsor prior to, or during, set-up then a Wi-Fi modem was set-up. Back-up modems were sometimes required even when a site had previously indicated Wi-Fi would be available. Portable modems usually have device limits, the modems selected for use had to be capable of connecting all iPods on site simultaneously. Most prepaid data plans are for 30 days, a period exceeded if tech set-up occurs more than two days prior to commencement of a four-week study.

5.2.3. Usability and effectiveness

Staff technology usage was monitored through data analysis and weekly check-ins with site sponsors. Overall, the usability of the stationary beacon method was considered poor by all site sponsors that were allocated this method. Feedback and observations on the use of this technology are as follows:

- **Device physicality (beacons):** the size and colour of the beacons made them inconspicuous. They utilise 4 x AA batteries which lasted the duration of the study. The beacons were not moved after the initial placement and while they can be affixed to different surfaces, this was not utilised in the RACCPS. There were no reported instances of device breakage occurring during the data collection period.
- **Device physicality (iPods):** the iPods were worn in plastic sleeves clipped to clothing as their configuration was not compatible with being kept in pockets. Staff commented on this being impractical due to the weight of the iPods and positioning on clothing. The devices required charging after every shift.
- **Staff usage:** staff hesitancy was evident during site set-up due to the inability of this technology to capture care delivered outside of resident rooms. There were many instances of non-compliance reported by site sponsors. These included staff forgetting to collect an iPod at the start of their shift, forgetting to start the data capture by pressing ‘play’ on the mobile application, carrying it in their pocket or forgetting to upload data at the conclusion of their shift. There were also instances where battery life of the iPods did not last for a complete shift, possibly due to incomplete charging, preventing the ongoing capture and submission of data. Staff reported difficulty when assigning roles in the mobile application, sometimes the incorrect barcode would be scanned and the incorrect role assigned, or the role would not be adjusted from the previous user without checking its ongoing alignment.
- **Resident usage:** very few instances of resident non-compliance were reported. Some residents expressed discontent at the presence of a beacon in their room on the day of technology set-up. There were no reported instances of resident non-compliance once the technology had been deployed.
- **Process:** the time cost for the site sponsor and project team members (2-3 personnel) on the day of set-up was significant (4-6 hours). Some residents expressed frustration at the project team and site sponsor needing to enter their room on multiple occasions to configure the stationary beacons.

Data capture via stationary beacon method was considered insufficient, primarily because it failed to capture time spent between carers and residents outside the residents’ rooms.

5.3. Wearable beacon method

5.3.1. How it works

The wearable beacon method utilised devices with proximity sensors powered by Bluetooth and ultra-wide-band (UWB) radio to record the number, and duration, of interactions between staff and residents. The wearables were configured to capture any instances when a staff member came within 2 metres of a resident. The devices automatically uploaded data to the cloud multiple times per day using in-built LTE (mobile internet), it was then available for analysis by the project team.

At the beginning of each shift staff were required to collect and sign-out a staff device aligned to their role from a central charging station and wear the device in their pocket or clipped onto their clothes for the duration of their shift. At the end of the shift, staff were required to sign the device back in at the same central point and connect it to a charger. The battery capacity of the devices meant they could not be used on two longer sequential shifts, so enough devices were provided that back-to-back usage was not required.

Residents were allocated a wearable beacon at the beginning of the study and required to always keep the device near them (within 2 meters) for the data collection period. Devices were labelled with each resident's room number so that they could be returned if lost. Where carrying the device was not feasible, they were clipped to the resident's mobility device or placed in the resident's handbag. The decision as to how residents wore/carried the devices was left to the discretion of the resident and their care staff.

The wearable beacons were configured ahead of time to ensure that devices did not need to be manually turned on or off during the study. They were programmed to:

- Automatically switch on once connected to a charger and stay on until the battery was completely drained.
- Capture interactions while charging, to ensure overnight care is captured.

Staff devices were inhibited by a disablement beacon while attached to the staff charging station to prevent the capture of extraneous interactions while not in use.

5.3.2. Technology specific considerations

The set-up process for the wearable beacon method runs as per the process outlined in section 3.5 of this report. The below table details the unique requirements of this technology.

Technology requirements	Considerations and learnings
Resident charger set-up	Individual chargers were placed in each resident's room. Staff took on the responsibility of connecting resident devices to chargers at the end of each day, disconnecting them in the morning and ensuring they were being worn by residents. In many cases it was valuable to provide the facility with a double adapter for the charger so as not to reduce the number of power points accessible in the room. Not all rooms had available power points within 2 metres of the resident's bed which limited overnight data capture and increased the importance of devices being removed from charger during the day, even for bedbound residents.
Staff charging station set-up	A charging station was required to charge staff devices (up to 25 per site for this study). Staff were more likely to remember to collect, return and charge their devices if this station was somewhere they visit at the start and end of their shift. All devices were able to capture data while plugged into a charger, so a separate disablement beacon was placed near the staff charging station to minimise excess capture. This station has the potential to impact on the space available in common staff areas.
Cellular connectivity	Success of this technology was reliant on the devices having access to one or more cellular networks to upload the data. While the devices can alternate between local networks, it was useful to understand from the site sponsor whether there were any known dead spots within the facility that may impact the syncing process.

5.3.3. Usability and effectiveness

Staff and resident technology usage were monitored through data analysis and weekly check-ins with site sponsors. Overall, there was positive feedback on the usability of the wearable beacon method by site sponsors that were allocated this method. Feedback and observations on the use of this technology are as follows:

- **Device physicality**: there was no feedback on the weight of these devices however some participants commented that they were larger than expected. The bright yellow colour makes them fairly conspicuous, with a preference for

a lighter colour. Devices are not waterproof but did appear to withstand minor splashing. Small clips with no sharp edges allowed for easy connection to staff and resident clothing or resident mobility devices. Devices required daily charging which was at times challenging in an operational setting.

- Staff usage: while staff acknowledged the simplicity of using this technology, there were still instances of non-compliance. There were instances where staff forget to collect a device or selected a device that was low on battery and did not last the duration of their shift. It was identified through retrospective data analysis and site check-ins that there were occasions when staff collected and carried devices that were not aligned with their role. One site informed the project team that staff initially had low compliance out of a concern for being liable if the devices were lost or damaged. Once reassured this was not the case, compliance increased.
- Resident usage: resident compliance was heavily reliant on the support of local staff to charge devices and oversee usage. Staff noted that being responsible for charging resident devices was sometimes challenging due to competing operational priorities. Majority of residents were amenable to carrying the device or having it clipped onto their mobility aid. There were reports of some residents hiding or not wanting to carry the device, for reasons including not trusting them and not wanting to damage them.
- Data syncing: the automatic data upload process from the wearable beacons to the cloud is reliant on cellular connectivity. There were instances of facilities with limited mobile reception experiencing a delay in the syncing process. The risk of data lag or loss is mitigated by the configuration of the devices whereby both staff and resident devices capture interactions and sync independently.

The quality of the data gathered by the wearable beacon method was sound, as was its effectiveness and usability. It had moderate impact on staff and residents and was able to capture accurate and meaningful data.

6. Costing Process

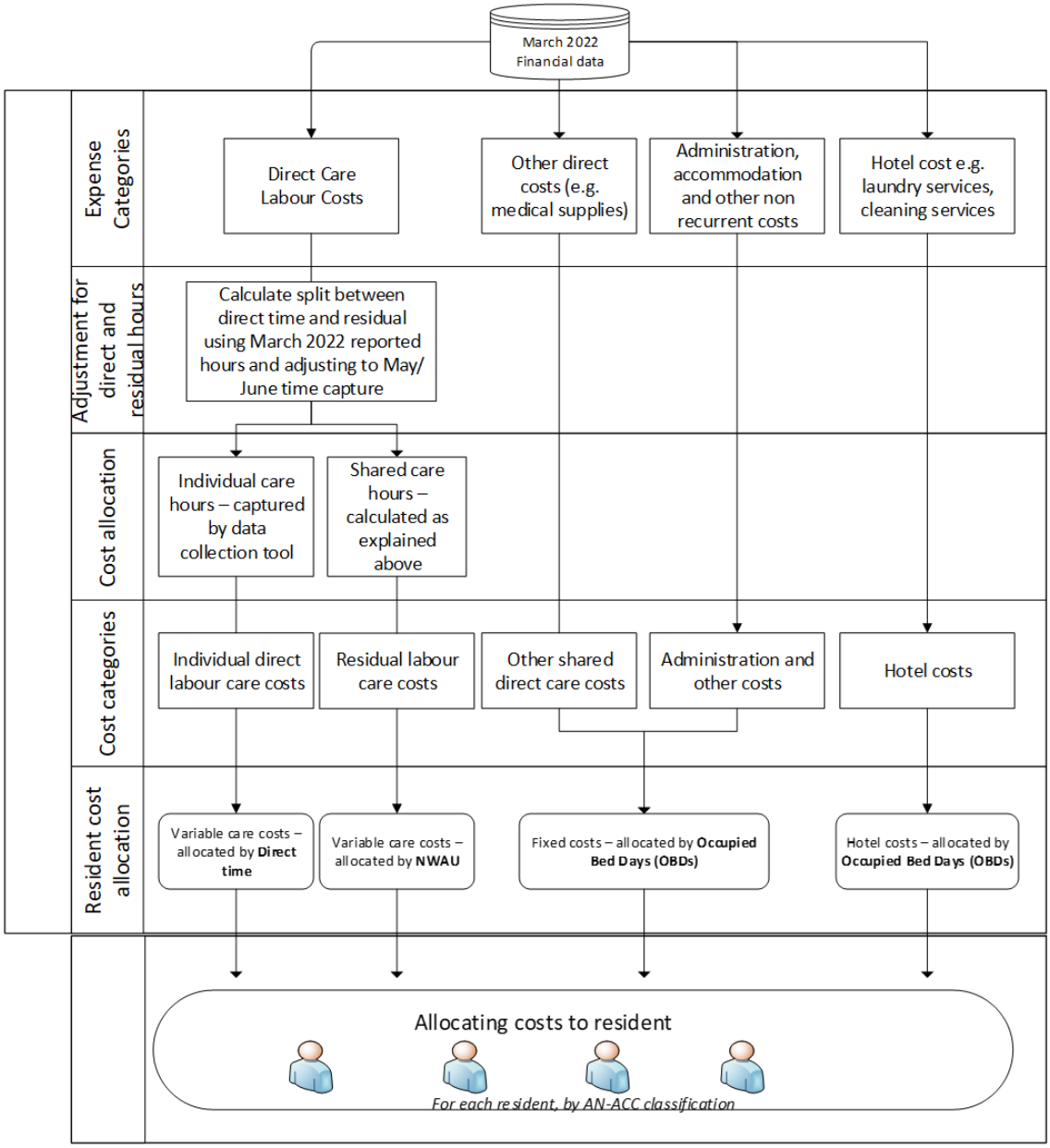
A costing process was undertaken for facilities where the relevant financial and time data was received in order to understand the split of different cost components by resident and identify areas where the proposed costing process could be refined.

6.1. Costing methodology

Costing is the process by which the cost and mix of resources used to provide care is allocated to individuals. This costing information is critical for understanding the total costs involved in care delivery, developing classifications and for providing valuation information for pricing.

A draft costing methodology document (Appendix D) was developed at the start of the project and provided to IHACPA. This document set out the data elements required for costing, how the data would be used to allocate costs to residents and what outputs would be considered. An overview of the costing process is presented in Figure 1.

Figure 1:Overview of costing process



Key features of this methodology are presented below:

Costing element	Description and approach
Data and time period used	The following data was used for the costing process: • Financial data for the month of March 2022 (section 4.1) • Time data for participating site collected using technology over May and June 2022 • Occupied bed days data collected from facilities (section 4.3) • NWAU weightings under the AN-ACC funding model as at July 2022 Data was cleansed prior to costing. See section 6.2 below.
Costing Unit	Cost per resident per bed day

Expense categories in-scope for costing	The following groups of costs were included for costing:
	• Care expenses, including:
	  ○ Labour costs – staff costs by role including registered nurses, enrolled nurses, personal care staff, allied health, lifestyle and care management
	  ○ Resident expenses – medical supplies, incontinence and nutritional supplements and other consumables
	  ○ Other direct care expenses
	• Administration expenses – e.g. corporate recharge costs, admin employee labour costs, insurances
	• Accommodation expenses – e.g. depreciation, interest, refurbishment and other accommodation costs
	• Hotel expenses – e.g. cleaning, catering, laundry and other hotel expenses
	• Other expenses

Allocation methodology	The following approaches were used to allocate the costs to residents: • Labour costs (individual direct care time) – resident time data captured from the technology devices was analysed against the hours reported in the financial template to determine the component allocated as direct time. This was performed by care role (e.g. RNs, ENs, personal care staff) • Labour costs (residual shared care time) – staff cost (hours) that were not allocated by direct time were allocated by the NWAU for the resident AN-ACC class. • Administration and allocation expense – allocated by OBD • Hotel expense – allocated by OBD
Cost system and cost outputs	The PowerPerformance Manager2 (PPM2) system was used to carry out the costing, performed by PowerHealth Solutions.

Costing element	Description and approach
	This generated a cost per resident day as well as breakdowns of costs into direct and indirect costs and 30 cost outputs (cost buckets).

One key challenge in the study was the limited ability to validate the time captured and the activities being performed, due to COVID-19 and the impacts on the availability of site sponsors and staff in general.

As a result, an assumption was needed for allocating the residual shared time for labour. This represents care staff time, which is not spent in contact with residents and could include documentation, care planning, preparation activities (e.g. food or medicine) or other activities. The use of NWAUs is a reflection that some of this time should vary by resident acuity, represented by the AN-ACC class.

This assumption should continue to be refined in future costing studies, where the use of more traditional time in motion studies on a select number of facilities could be used to validate and refine the costing process, possibly through the development of Relative Value Units (RVUs).

6.2. Data cleansing principles

Prior to costing and further analysis, the financial data and time data captured by the time capture technology was cleansed to remove outliers and anomalies. After analysing the data six cleansing rules were developed and agreed with IHACPA.

The data cleansing rules and adjustments applied to the time data were:

- Removing time data on the first day only for facilities which had set up delays, leading to incorrect data capture on the first day
- Where advised by a site sponsor, removing time data for the period after a resident passed away
- Where advised by a site sponsor, removing time data captured by the devices for days where a resident was away from the site during the study or not participating (e.g. leave, in hospital, ceased participation)
- Trimming outliers that met a threshold based on the difference between consecutive ranked observations for a resident – for each resident, all observations were sorted in ascending order and if an observation was four times higher than the previous observation, that observation (and all subsequent higher observations) was removed as outliers.
- Removing all time data for residents where the average time captured across the study was greater than 9 hours per day – 9 hours was selected as it exceeds the shift length of care staff and was deemed an unlikely representation of time spent with a resident
- Removing individual care days with more than 12 hours of time captured for an individual resident in a 24 hour period – 12 hours was selected as it exceeds what is considered be an outlier amount of care minutes to be provided to a single resident in a 24 hour period

In some cases, adjustments were required to the financial data prior to costing. Examples included:

- Pro-rata adjustments to align the financial data and hours worked as reported in the data template
- Staff groups that could not be mapped were reassigned to the most appropriate cost group (the carer role that had the highest minutes)

In future costing studies further validation in the time data capture will refine these rules.

6.3. Costing outputs

An output file was prepared for each site with the results of the costing process summarised by direct and indirect costs across 30 cost outputs (cost buckets) (Appendix E). The list of the cost outputs is provided in Appendix B. Direct costs were categorised as labour costs, resident expenses, catering and laundry costs. All other cost categories were classified as indirect costs.

Financial data was requested from 16 facilities. Due to the late receipt and poor quality of some financial and time data returned by some of the facilities, costing could only be completed for seven of the 16 facilities. As a result of the low sample size, actual costs have not been published but the analysis was performed showing cost weight relativities.

The individual cost output files were combined and analysed to understand the total and average costs captured for the study by AN-ACC class, with a cost weight calculated for each AN-ACC class. The cost weight represents the relativity between the average cost for that AN-ACC class against a reference, which was selected as Class 13. For example, if the average daily cost per resident for an AN-ACC class was half of the average daily cost per resident for Class 13, then the cost weight relativity for that class would be 0.5. The cost weight relativity for Class 13 would always be 1.0.

Figure 2 shows cost weight relativities for each AN-ACC class, calculated using the average direct cost from the costing process. Overall, there is a direct relationship between the AN-ACC class and the cost relativity, with higher care needs classes having a higher direct cost. However, due to the low sample size of costed facilities, there is also considerable volatility as shown for some of the classes (particularly, Classes 8, 9 and 12 which had five residents or fewer).

Figure 2: Cost weight relativities by AN-ACC class – Direct cost

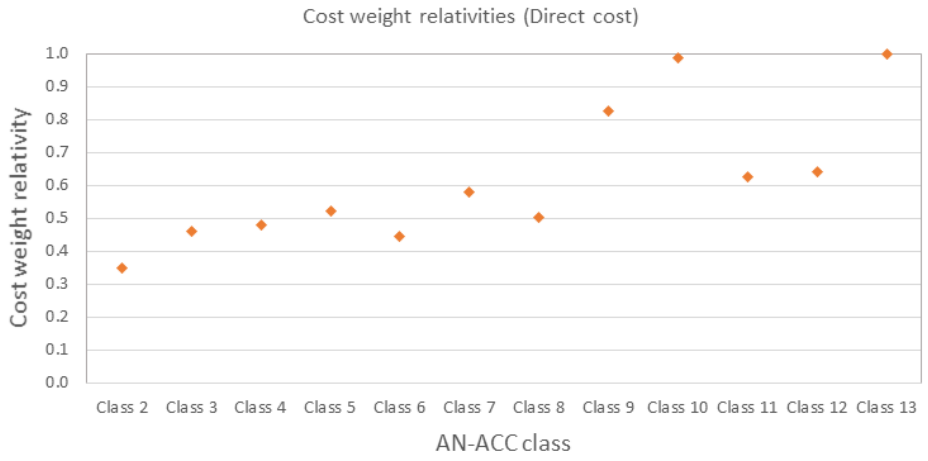
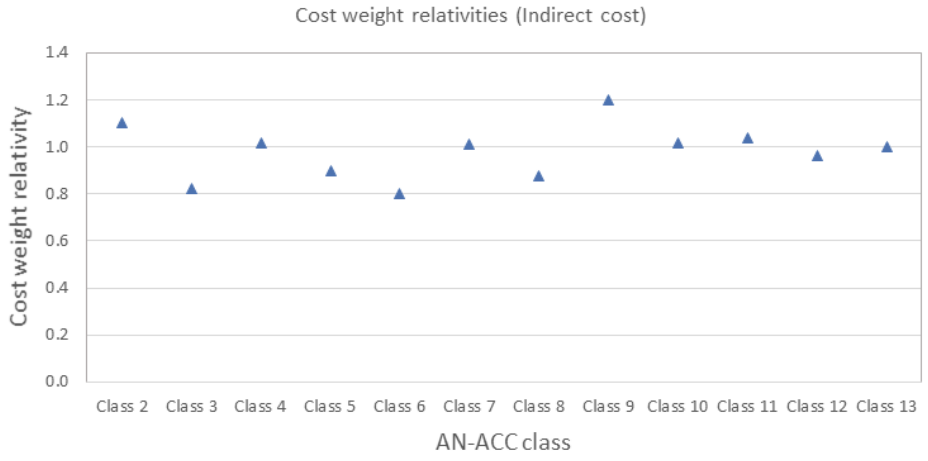


Figure 3 shows the cost weight relativities for the average indirect costs' component, which were allocated by occupied bed days. Hence, there is more consistency between the AN-ACC classes, with variations driven by differences in the number and mix of residents by site in each class.

Figure 3: Cost weight relativities by AN-ACC class – Indirect cost



Recommendation

3. Develop an aged care costing roadmap: IHACPA should consider developing a roadmap on how it will evolve the costing capability in the aged care sector. This could include the following recommendations:

- IHACPA to continue conducting costing studies to understand the drivers and causes of variation in the data captured
- The development of a sampling framework to determine the sample size which is representative of the sector and is sufficient to inform pricing and classification development
- Development of costing standards that are tailored to the residential aged care sector
- Development of RVUs to utilise in a broader cost data collection across the sector. These could include:
    - Preparation of medications
    - Writing case notes
    - Engagement with families

It is likely that it will be at least 5 years before the aged care sector achieves sufficient maturity and understanding of costing and the AN-ACC model, such that residential aged care facilities may be able to undertake their own costing.

7. Data insights

A key objective for the study was to test the feasibility of the technologies for use in an aged care setting to capture interaction time between staff and residents. Whilst data analysis was critical to understand and validate the captured data, the analysis of the data itself was not an objective of the study. The following sections present some of the data observations and insights from the time capture. It considers:

- How did the study function – what did the pattern of data capture look like over the course of the study and what were the learnings
- What were the trends in average minutes – were there any observed differences between different residents or types of aged care facility participating in the study.

The sections below consider only the data captured by the **wearable card** method and the **wearable beacon** method. The data captured by the stationary beacons was limited due to the reasons previously presented and hence are not comparable to the results captured by the other two technologies. As a result, the data presented is drawn from the remaining 19 facilities. Although some observations could be drawn from the data, the small sample size means that the results should not be considered representative of what is appropriate for pricing development.

7.1. Observations from the study

7.1.1. Total minutes captured in a day

Figure 4 shows the total care minutes across all facilities and residents split by staff role e.g. registered nurse, enrolled nurse, personal care staff. Participating facilities had different rostering levels which will influence the mix of time by staff role. The data aggregates the total minutes by 30 minute blocks (spanning a 24 hour period from midnight) across the entire study. The observed pattern of time captured by shows:

- Most of the time captured is between the 7am and 8pm, with significantly less time captured outside these hours. Broadly, this shows the technology is picking up time that is expected given these are the times when residents are awake and require the most care. Additional time was generally captured in the morning shift which aligned with the staff rosters from the participating facilities.
- There are peak time data capture times between 7am to 9am, 11:30am to 1pm and 4:30pm 6:30pm. This was expected, aligning with support needed for activities of daily living in the morning and around mealtimes.

Examining the pattern of care minutes captured by staff roles shows that:

- Most care minutes were captured by those in carer roles, with the next highest minutes captured from nursing staff (registered nurses and enrolled nurses) which is to be expected.
- Carer and nursing time can be observed across the entire day, including the overnight shift, which typically included a registered nurse and smaller number of carers.
- Other care types such as the care manager, allied health and lifestyle/diversional therapy staff are typically rostered for the entire day, and this is also reflected in the time captured where the bulk of time for these staff is between 8am and 6pm.
- An agency carer card was provided to some facilities, and the time data captured showed that there was some agency staff required during the day across facilities, in line with information gathered from the site sponsor check-ins. However, facilities also commented that agency staff typically did not always remember to carry their devices. Consequently, the observed minutes are of lower accuracy.

Figure 4: Care minutes by time of day, split by staff role – all wearable card and wearable beacons facilities.

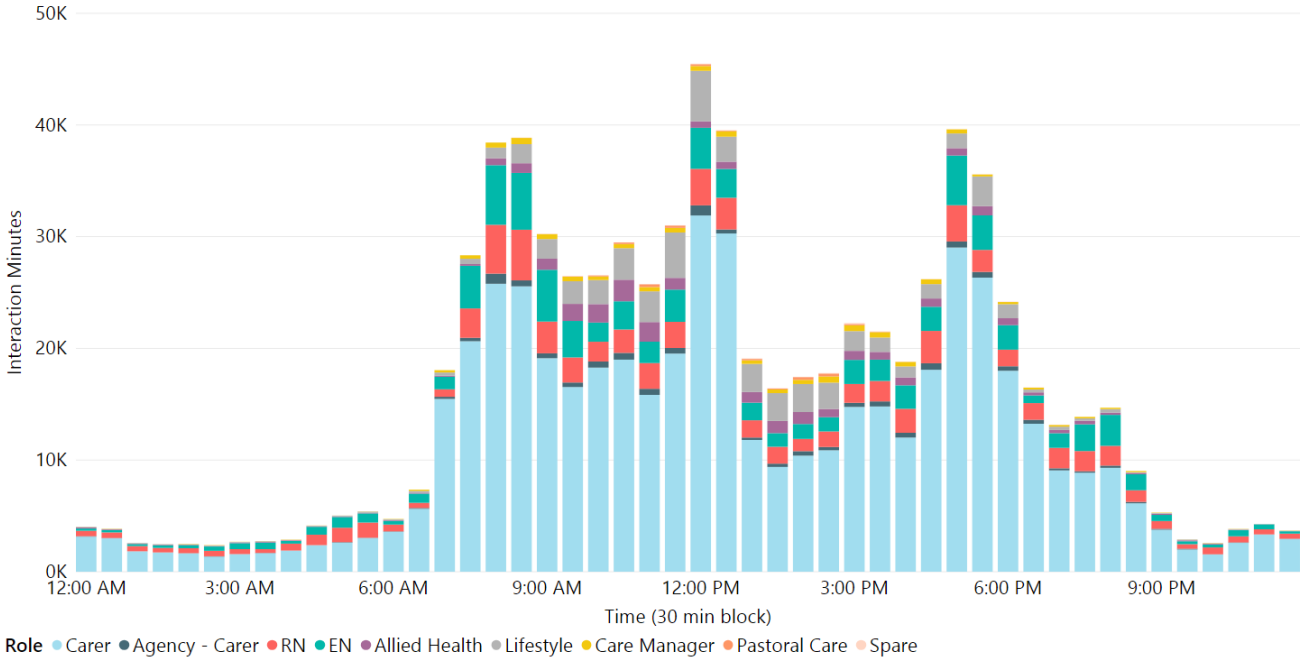
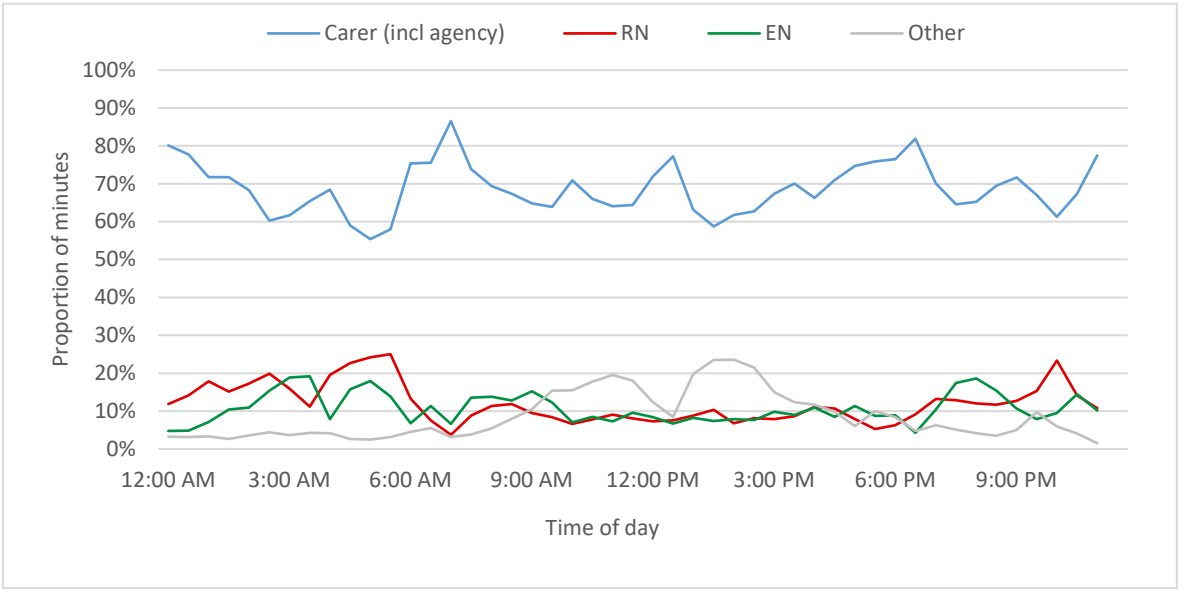


Figure 5 shows the proportion of staff time captured over the day by carer role for all facilities (wearable cards and beacons).

- Across the day, carer time (including any agency carer time captured) made up approximately 70 per cent of the total time on average and is consistently higher than the other staff types as expected.
- Nursing staff were the next highest staff role, with time captured from registered nurse and enrolled nurse devices being similar across the day at approximately 10% to 11%.
- All other staff roles made up 11% on average, though this proportion is higher during the day time hours as expected.

Figure 5: Proportion of time captured by staff role – all facilities



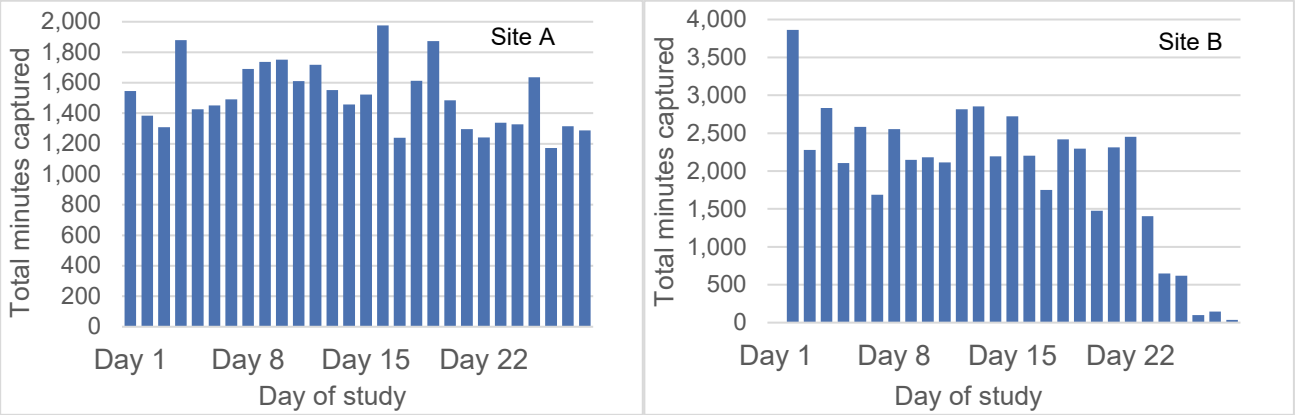
Overall, the aggregate time capture shows that the technology captured time which reflects the patterns of care delivery that are expected at in an aged care facility.

7.1.2. Time captured over study period

In addition to understanding time capture over the course of the day, the study also wanted to understand how time capture varied over the course of a four-week study.

Figure 6 shows the total daily minutes captured across two facilities across the four-week period, with each column representing one day of captured time (from day 1 to day 28). The axes are shown on different scales as the purpose is not to compare the aggregate minutes between facilities, but rather how level of captured time changed over the study.

Figure 6: Total minutes captured by day over the course of the study – site A and site B



Across the study, varying levels of consistency were observed between facilities. Some facilities returned stable data collection across the entire study (such as site A). Others such as site B exhibited a clear drop off in the number of minutes captured over the course of the study which could be an indication of study fatigue.

Feedback from the site sponsor check-ins also indicated varying experiences, with some facilities able to encourage staff to use the devices while other facilities found it hard to maintain compliance through the study. Two factors may also contribute to this:

- COVID-19 impacted many of the participating facilities, resulting in staff shortages, use of agency staff and changes in care patterns that may have disrupted the use of devices.
- Some facilities saw changes in site sponsor throughout the study, impacting the levels of compliance and the project team's ability to validate data that was being collected.

Study fatigue is something that should be considered in the design of future costing studies, especially if a longer time period is to be considered. Furthermore, a consistent and engaged site sponsor would be a key factor for success to encourage and maintain participation.

7.2. Trends and insights by resident and site characteristics

The average daily minutes per resident captured using the technology was also analysed by various resident and site characteristics to identify any trends or differences observed. The results of the analysis are presented in the sections below.

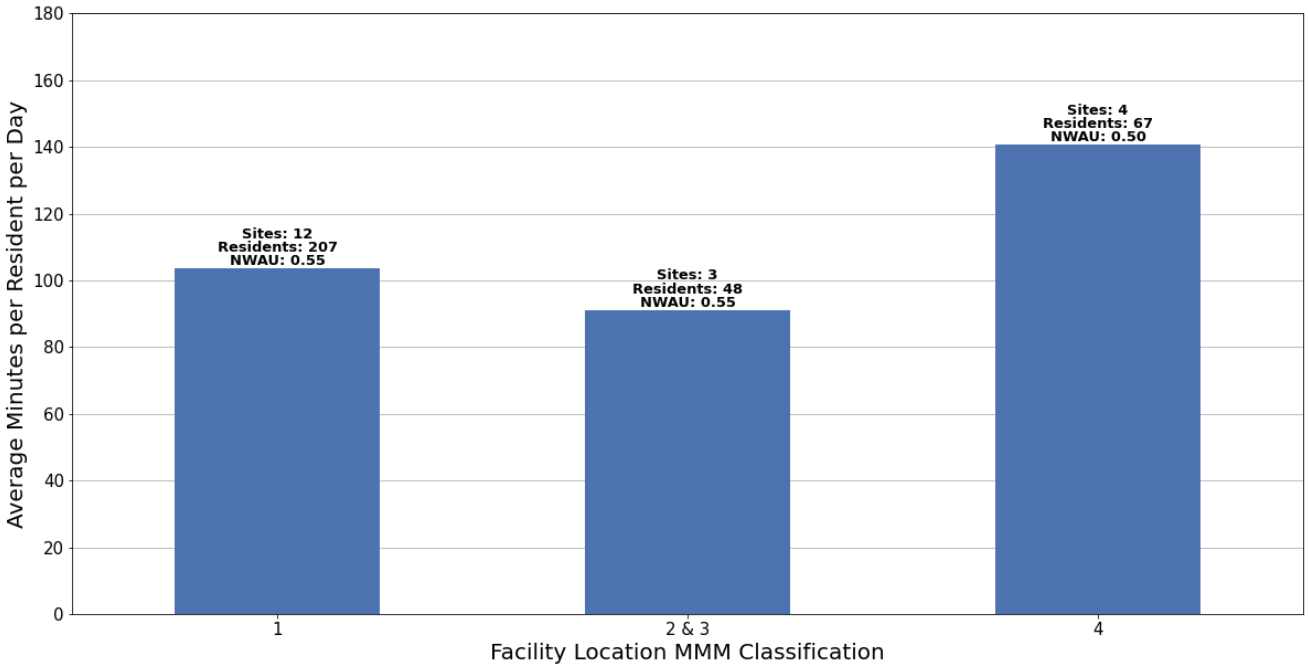
Overall, there was considerable variation between facilities observed in the average minutes captured per resident per day, ranging from 41 minutes (10th percentile) to 182 minutes (90th percentile). Variation between facilities would be expected due to differences in staffing models and resident profile. However, despite applying data cleansing and outlier removal rules, challenges in contacting site sponsors meant that some data anomalies were unable to be validated or understood and hence contributed to the level of variation observed.

The sections below show the results of one-way analysis across several site characteristics. The true differences between categories cannot be picked up using one-way analysis alone, due to the interaction of various factors on the average daily minutes by resident. However, more granular analysis was not possible due to the small sample size in the study and has previously state, should not be considered representative of what is appropriate for pricing development.

7.2.1. Analysis outputs by site characteristics

Figure 7 shows the average daily minutes captured per resident for aged care facilities in each facility location classification group based on the Monash Modified Model (MMM) [1]. Due to the low number of facilities in MMM groups 2 and 3 participating in the study, these groups were aggregated for the purposes of this analysis

Figure 7: Average daily minutes per resident by facility location classification (Monash Modified Model)



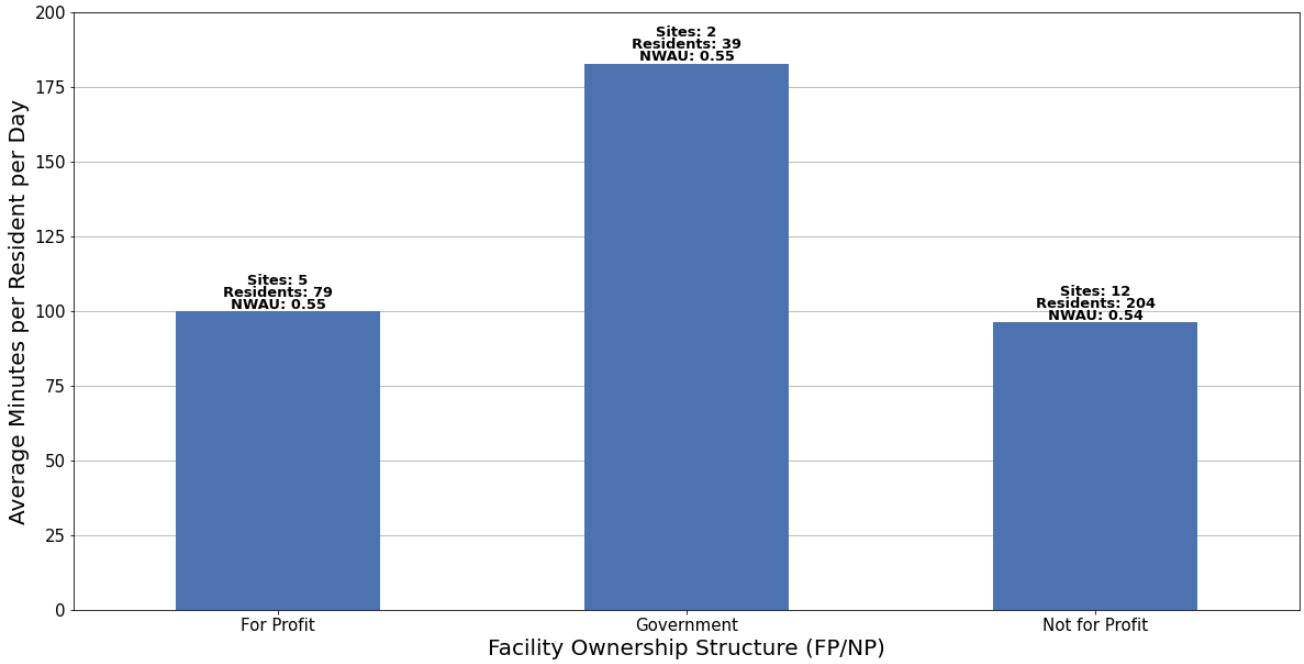
From the study sample:

- Facilities in more regional areas with MMM Classification 4 captured the highest daily average minutes per resident (141 average daily minutes per resident) whilst other facilities in regional areas with MMM Classification group 2 and 3 captured the lowest (91 average daily minutes per resident).
- Facilities located in the major cities (MMM Classification 1) captured lower minutes (104 average daily minutes per resident) on average compared to facilities in the more remote areas (MMM Classification 4).
- Despite similar class complexities based on the average resident National weighted activity unit (NWAU) across facilities for all three groups, there is a difference in average minutes captured between the metropolitan and more rural facilities. However, MMM groups 2 and 3 and MMM 4 have a low resident and site numbers, which would lead to higher variation in the result.

Figure 8 shows the average daily minutes captured per resident for aged care facilities by facility ownership type, comparing for-profit, not-for-profit and Government owned facilities. There were only two Government owned facilities that participated in the study and hence the data is more volatile due to the low sample size and should be considered when interpreting the analysis.

[1] MMM 2 = Areas categorised ASGS-RA 2 and ASGS-RA 3 that are in, or within 20km road distance, of a town with a population greater than 50,000.
MMM 3 = Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 and are in, or within 15km road distance, of a town with a population between 15,000 and 50,000.
MMM 4 = Areas categorised ASGS-RA 2 and ASGS-RA 3 that are not in MM 2 or MM 3 and are in, or within 10km road distance, of a town with a population between 5,000 and 15,000.

Figure 8: Average daily minutes per resident by facility ownership type

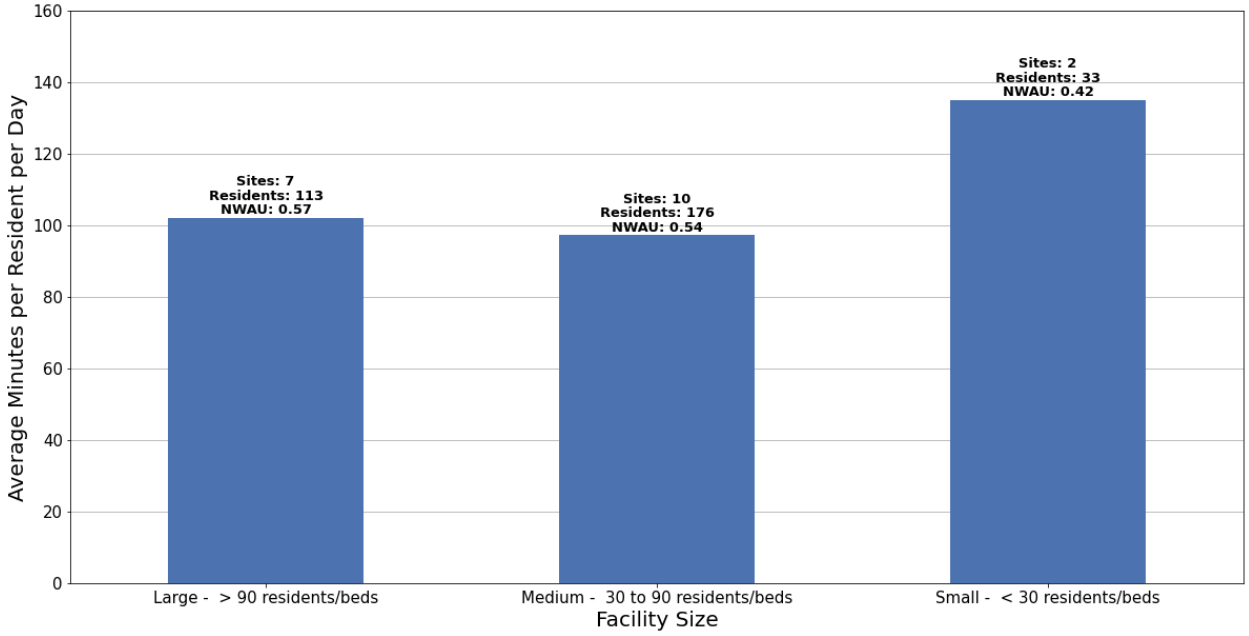


From the study sample:

- Government facilities captured the highest daily average minutes per resident (183 average daily minutes per resident) compared to for profit and not for profit participants.
- Participating for-profit facilities captured similar levels of daily average minutes of care to facilities to not-for-profit facilities (98 and 97 average daily minutes per resident respectively) and had a similar average resident NWAU.

Figure 9 shows the average daily minutes captured per resident for aged care facilities by facility size as measured by total bed capacity. Facilities were grouped into three categories small (< 30 beds), medium (30 to 90 beds) and large (> 90 beds). There were only two facilities in the small (< 30 beds) grouping and hence the data is more volatile due to the low sample size and should be considered when interpreting the analysis.

Figure 9: Average daily minutes per resident by facility size



From the study sample:

- Small facilities captured the highest daily average minutes per resident (135 average daily minutes per resident) compared to medium and large facilities.
- Large facilities captured similar levels of daily average minutes of care compared to medium sized facilities with (101 and 98 average daily minutes per resident respectively).

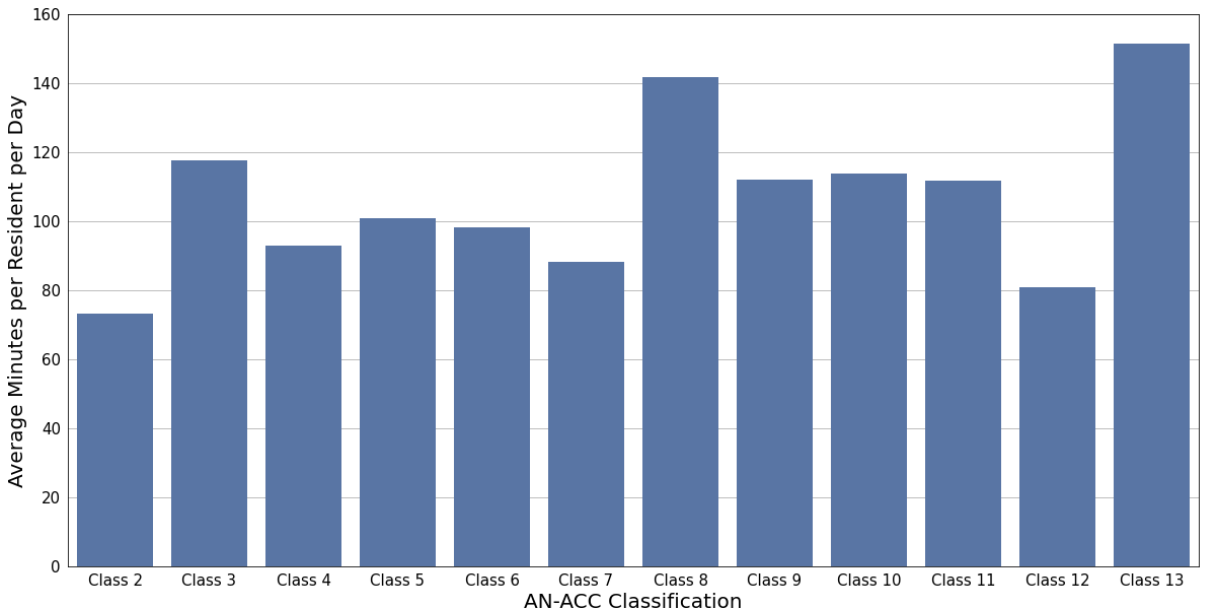
7.2.2. Analysis outputs by AN-ACC classification

The average daily minutes per resident was analysed at an AN-ACC class level to identify any trends or differences observed for how the number of minutes captured varied between residents of different AN-ACC classes.

For this analysis AN-ACC classes with fewer than five residents were removed to avoid misrepresentation due to low sample size. Furthermore, there were relatively low numbers of residents in AN-ACC classes 2, 3, 8 and 12 (fewer than 15 residents) and therefore there will be higher volatility in the results for those respective classes. As previously discussed, a larger number of facilities and residents need to participate in future costing studies to observe a more representative sample and reduce data variability.

Figure 10 shows the average daily minutes captured per resident for each AN-ACC classification, from the lowest complexity residents in Class 2 to the highest in Class 13. There were no residents in the palliative care class (Class 1) in the study, which reflects the challenges of the time delay when AN-ACC assessments were completed and the timeframe for the costing study discussed in section 3.3.

Figure 10: Average daily minutes per resident by AN-ACC class



From the study sample:

- Residents in AN-ACC Class 13 captured the highest average daily minutes per resident (149 average daily minutes) and residents in AN-ACC Class 2 captured the lowest average daily minutes per resident (73 average daily minutes).

- Overall, residents in more complex AN-ACC classes receive a higher amount of care on average compared to residents in less complex AN-ACC classes. However, there is still a large degree of variability of average daily minutes captured across all AN-ACC classification which is impacted by the lower resident sample sizes in some classes.

Figure 11 shows the level of variability by AN-ACC class through boxplots of average daily minutes per resident. Boxplots give an indication of the range of results, with the bottom and top of the box representing the 25th percentile and 75th percentile of observations respectively. The ends of the 'whiskers' represent the 10th and 90th percentile observations.

Example of how to interpret a boxplot

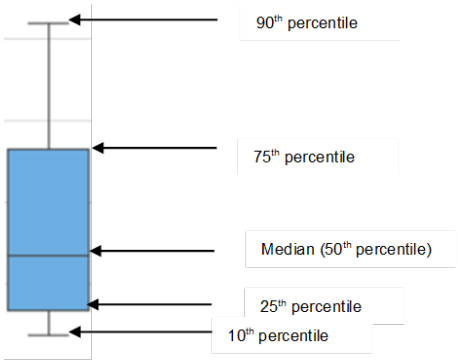
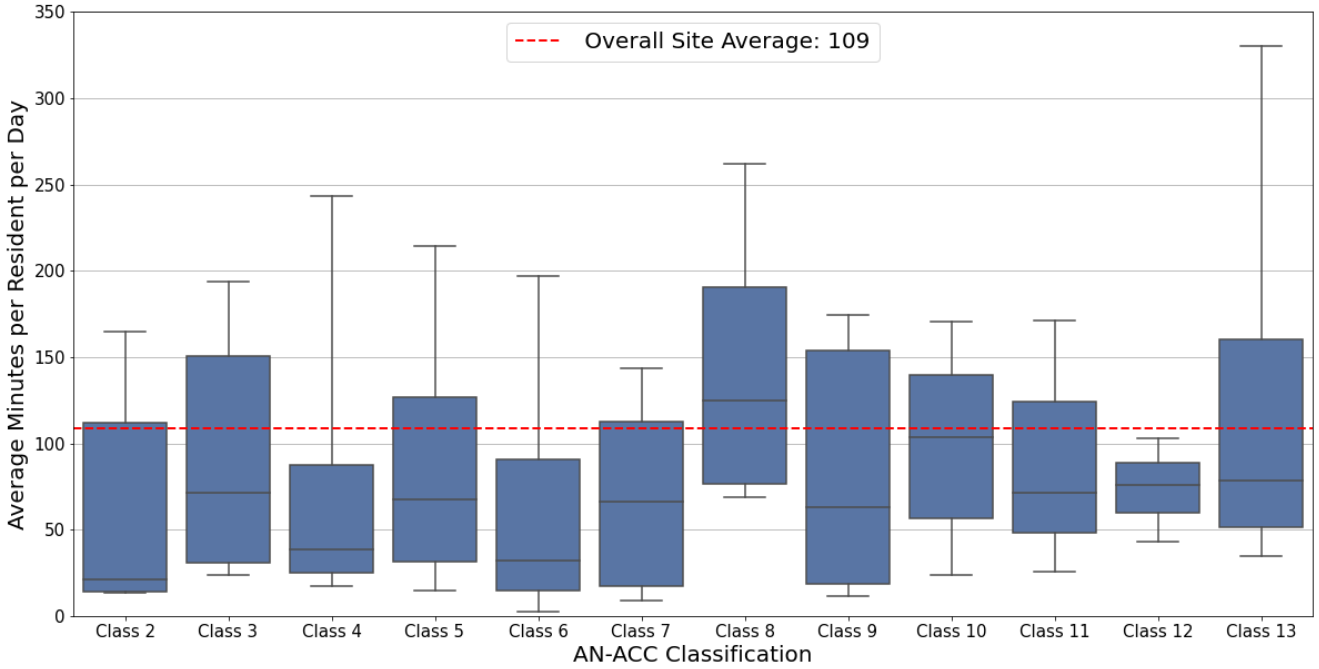


Figure 11: Boxplot of Average Minutes by AN-ACC class



Overall, there is considerable variability in average minutes per resident in each AN-ACC, as evidenced by the size of the boxes. The larger the box, the greater the interquartile range (difference between the 25th and 75th percentile) and hence the greater the variability.

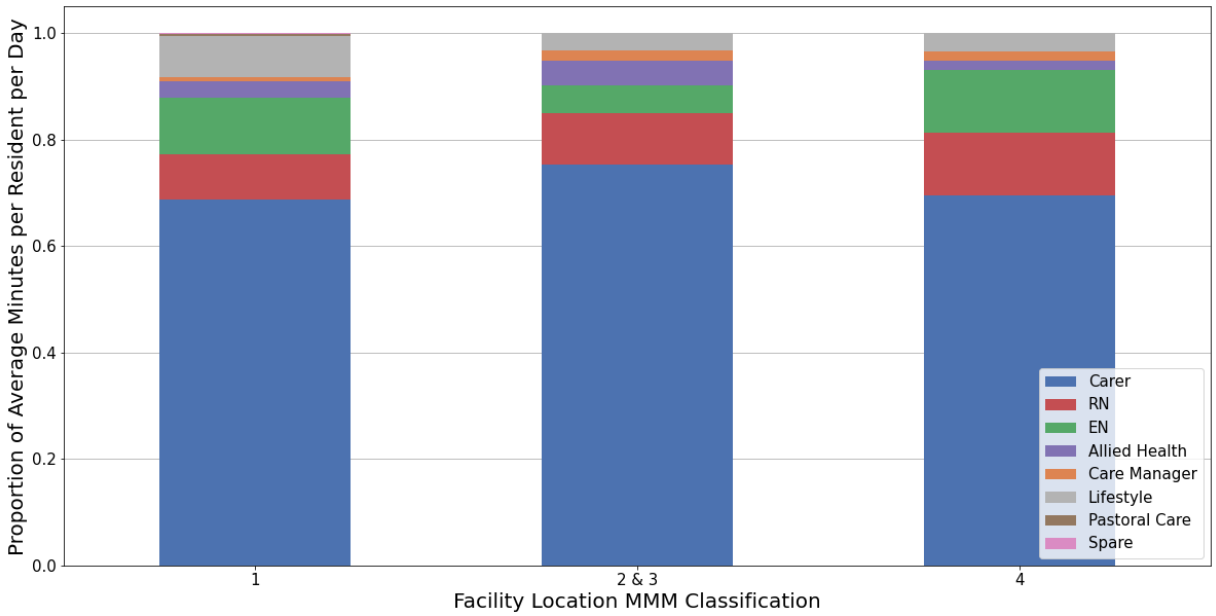
- Additionally, many of the classes had a long upper 'whisker', indicating that the distribution of average daily minutes is positively skewed, with some residents having significantly higher average daily minutes. This is particularly true for Class 4, 6 and 13.
- Class 8 and 12 had fewer than 15 residents, which contributes atypical distribution of average daily minutes captured with respect to their AN-ACC class relative to their adjacent classes.

7.2.3. Analysis split by staff type

The average daily minutes captured per resident was broken down by staff type to identify any trends or differences observed for various site characteristics and AN-ACC class. For the analysis, the Carer staff role includes assistants in nursing (AINs) and personal care assistants (PCAs).

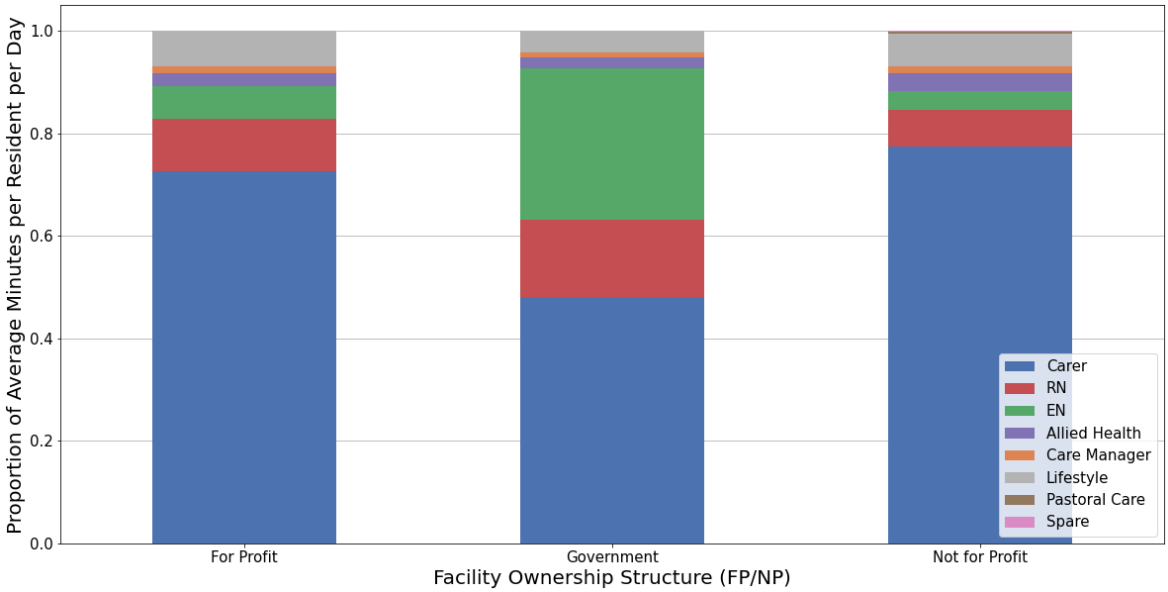
Figure 12 shows the proportion of average daily minutes captured by staff type for facilities in each facility location classification group based on the Monash Modified Model (MMM). As with the previous analysis, MMM groups 2 and 3 were grouped due to low sample size.

Figure 12: Proportion of average minutes by staff role and facility location classification (Monash Modified Model)



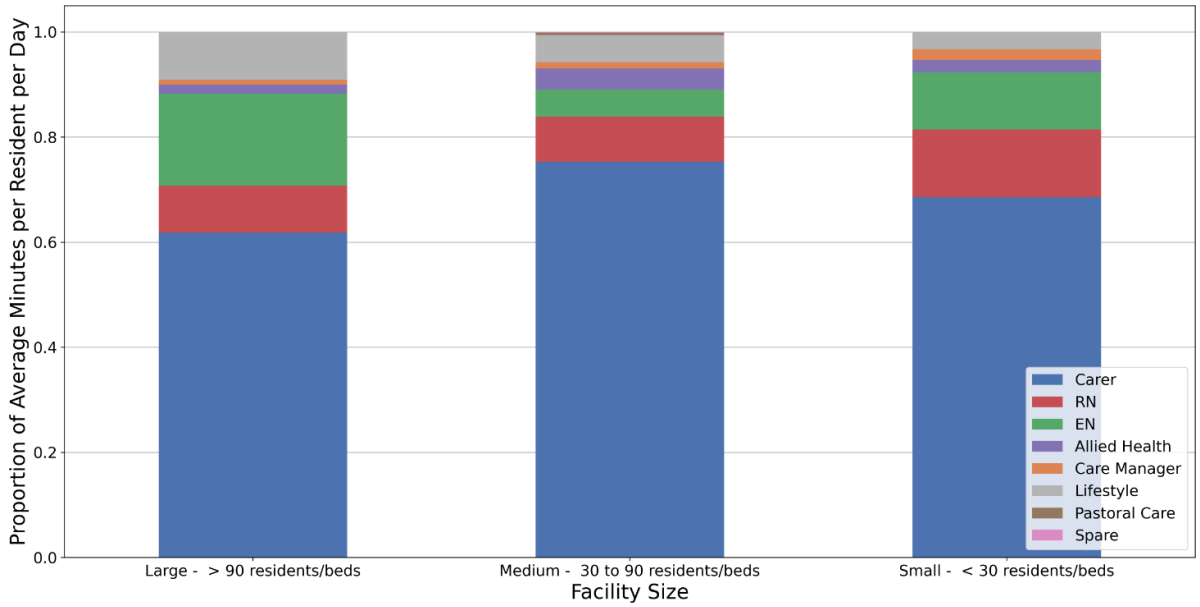
- Overall, there is relatively similar proportion of time and staff mix captured across the various MMM groups.
- MMM Classification Group 2 & 3 captured a slightly higher proportion of Carer time (75 per cent of average daily minutes per resident) compared to Groups 1 and 4 (69 and 70 per cent of average daily minutes per resident respectively).
- Facilities located in the major cities (MMM Classification 1) captured higher proportion of Lifestyle care (8 per cent of average daily minutes per resident) compared to site locations in more remote and rural areas.

Figure 13 shows the proportion of average daily minutes per resident captured by staff type and facility ownership type. Figure 13: Proportion of average minutes by staff role and facility ownership type



- Government owned facilities capture a different proportion of staff type captured on average compared to facilities that have a for-profit and not-for-profit. ownership structure. These facilities captured higher proportions of registered nurse (RN) and enrolled nurse (EN) care minutes over the study (15 and 30 per cent of average daily minutes per resident respectively).
- This is line with expectations as the operating model of Government aged care site facilities utilise a different care resourcing model, often with a higher ratio of staff to residents and a higher mix of nursing staff, though noting that there were only two Government facilities in the sample.
- The proportion of minutes by staff role is similar between for-profit and not-for-profit facilities with most daily minutes of care being captured by carer staff roles (73 and 77 per cent of average daily minutes per resident respectively).

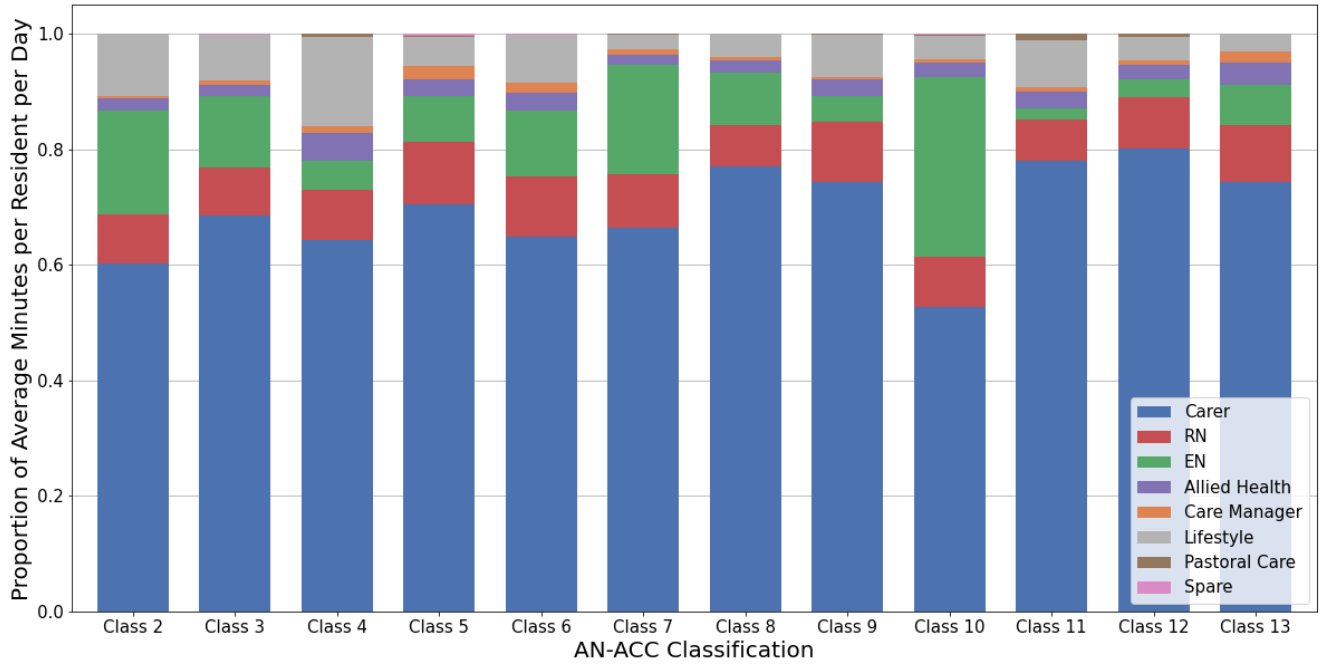
Figure 14 shows the proportion of average daily minutes per resident captured by staff type and facility size. Figure 14: Proportion of average minutes by staff role and facility size



- Medium sized facilities captured a higher proportion of carer care (75 per cent of average daily minutes per resident) compared to Large and Small sized facilities (62 and 69 per cent of average daily minutes per resident respectively).
- Conversely, small and large facilities captured higher proportion of RN and EN care minutes (24 and 26 per cent of average daily minutes per resident respectively) compared to medium sized facilities (14 per cent of average daily minutes per resident).
- Large facilities also captured a higher proportion of Lifestyle care (9 per cent of average daily minutes per resident) compared to medium and small facilities which had 5 and 3 per cent of average daily minutes per resident respectively.

Figure 15 shows the proportion of average daily minutes captured for residents in each AN-ACC classification.

Figure **15**: Proportion of average minutes by staff role and AN-ACC class



- Overall, there is significant variation in the proportions of average daily minutes when comparing across AN-ACC class, which makes identifying meaningful trends difficult.
- There was a higher proportion of EN time observed for residents in Class 10 compared to other AN-ACC classes (31 per cent of average daily minutes per resident). This is likely due to the higher proportion of residents within the Class 10 group that were from a Government owned site, highlighting the limitations of the one-way analysis alone.

7.3. Further analysis considerations

The data analysis showed considerable variability in the time data being captured, some of which could not be properly validated with site sponsors due to their unavailability with COVID-19 and other priorities. The development of Relative Value Units (RVUs) is a useful process to support costing of the full residential aged care sector without the need to have all facilities participate in collecting time. These RVUs could be developed at a cost bucket level, e.g. individual care per carer category per AN-ACC class or at an interaction level e.g. supporting with activities of daily living. The additional benefit of the more granular interaction level needs to be considered alongside the additional cost and effort of capturing this information.

Suggested levels of cost buckets where an RVU could be developed include:

- Labour costs for direct individual care activities, split by carer type e.g. an RVU for RN, allied health practitioners
- Residual shared care activities split by carer type e.g. an RVU for RN, allied health practitioners

Suggested levels of interactions where an RVU could be developed could include:

- Direct individual care activities, including:
    - Support with activities of daily living – including personal care and hygiene, assistance with mobility and assistance with nutrition and hydration
    - Pressure area/skin care
    - Medication delivery
    - Mobility and physical activities
    - Behavioural management
    - Technical nursing activities
- Residual shared care activities, including:
    - Time preparing medication
    - Clinical documentation and care planning
    - Engaging with families

Both the direct individual care cost and residual shared care activities vary by AN-ACC class. Further detailed studies and analysis could support:

- Greater confidence on the consistency of the trends and relativities of individual direct care time between different resident groups.
- Better understanding of the level of variation in residual shared care activities that are not captured through individual direct care time.

The development of RVUs could be achieved through another pilot costing study, implementing the learnings from the RACCPS. A more traditional time in motion study, even if only for a small number of facilities, could be used to identify the type of activities undertaken by care staff in both individual direct care time and residual shared care time.

Recommendations

1. Test RACCPS recommendations: Due to the considerable variability in the time data captured from participating facilities, it is recommended that IHACPA conduct further testing of the recommendations outlined in this report before progressing to a larger national costing study.

2. Conduct a traditional time-in-motion study: A manual time in motion study, whereby project team members physically observe and document care staff activity, should be undertaken on a small sample of facilities. This is to enable more detail to be captured on the type of activities performed in both individual direct care time and residual shared care time which can be used inform the development of Relative Value Units (RVUs).

15. Regular verification of time data capture: It is recommended that time data capture is regularly validated to ensure early and accurate identification of anomalies. To enable this validation to occur, the establishment of support to facilities is necessary as existing site sponsors were found to be consistently time poor throughout the RACCPS.

8. Appendices

Appendix A. RACCPS Governance Framework

RACCPS Governance Framework

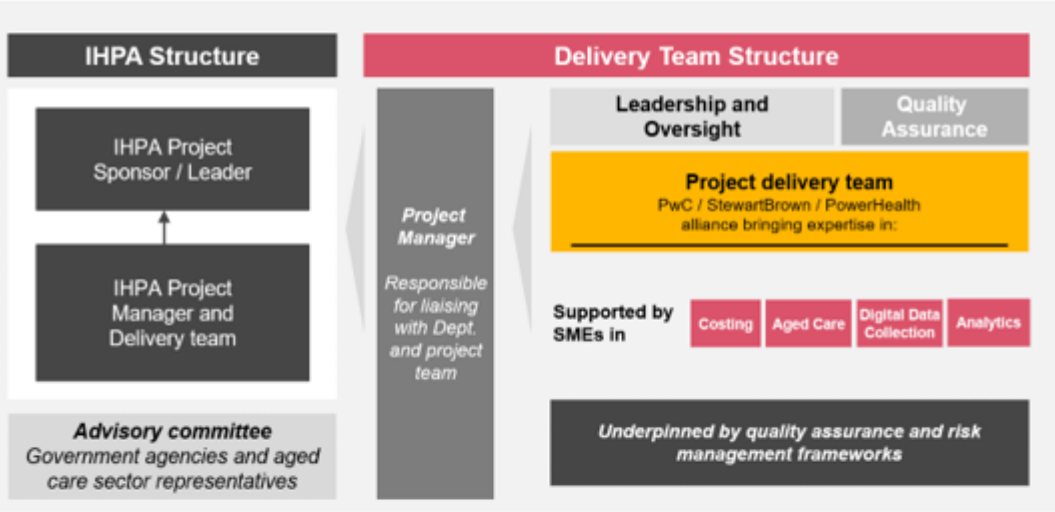
This document sets out the approach to governance for the Residential Aged Care Costing Pilot Study (RACCPS). It specifies:

- Clear roles and responsibilities for the Independent Hospital Pricing Authority (IHPA) and the delivery team (led by PwC)
- The appointment of an Advisory Committee for the project
- The governance processes and documentation that will be used to support IHPA having oversight throughout the delivery of the project

The governance structure is underpinned by regular (weekly) project reporting meetings (refer to **Section 2.0 Reporting and cadence**) to facilitate informed decision making.

1. Project governance structure

The RACCPS project governance structure consists of key IHPA stakeholders and the project delivery team.



1.1 Roles and responsibilities

Role	Responsibility
IHPA Project Sponsor / Leader	• Define the vision and objective for the RACCPS project • Oversight and decision-making for the RACCPS project • Provide IHPA context and direction to the project delivery team • Key point of contact with the Department of Health
IHPA Project Manager	• Act as a conduit between IHPA and the project delivery team • Work in collaboration with the PwC Project Manager to facilitate timely completion of milestones • Participate in status meetings and management of project risks

Delivery team Project Manager	• Work closely with the IHPA Project Manager to ensure clear communication between project delivery team and IHPA
	• Manage all ongoing project collateral:
	  o Weekly Status Report
	  o Risk and Issue Register
	  o Project Plan
	• Organisation of key project meetings
	• Management of key project activities

Delivery team	• Development of project deliverables • Identification and mitigation of risks and issues • Design and carrying out costing study • Stakeholder engagement planning and execution • Analysis of costing study findings • Development of final report including outcomes, learnings and recommendations.

2. Advisory committee

2.1 Purpose of the advisory committee

We understand that IHPA may require the establishment of an Advisory committee to inform future work in the AN-ACC pricing and classification development (including the RACCPS). This committee is likely to include representatives from the Department of Health (DoH) and Aged Care Sector representatives spanning public, private and Not-For Profits. Terms of reference for this committee will be developed setting out their role.

3. Delivery team document governance

3.1 Status reporting

The project team and IHPA will establish a dedicated weekly meeting to discuss the status of the RACCPS project. These meetings will aim to provide clear and thorough project updates to IHPA and will be centred around a written status report provided by the project team.

The project team will provide the written status report to IHPA prior to the meeting. It will include:

- A high-level timeline to graphically represent the current stage of the project
- A weekly meeting agenda – including any action items from previous meetings
- A project snapshot – providing a brief commentary of the project status and any key focuses
- The activities completed in the last week and the activities due to be delivered in the next week
- Any new or emerging risks or issues for discussion
- Key milestones that are identified from the project plan for discussion
- Other information that may require the attention of IHPA

Appendix B. RACCPS Stakeholder Engagement and Communication Plan

Residential Aged Care Costing Pilot Study Stakeholder Engagement and Communications Plan

1. Overview

As part of the 2021-22 Budget, the Australian Government announced that the Independent Hospital Pricing Authority (IHPA) would be expanded and take on the new roles of advising the government on costing and pricing issues in aged care. As a first step towards understanding the costs incurred by providers in residential aged care (RAC), their drivers and the way these costs change over time, IHPA (backed by the Commonwealth Department of Health) is undertaking a Residential Aged Care Costing Pilot Study (RACCPS). The goal of the RACCPS is to inform the future, larger broader costing study to be conducted across the sector in 2022 which will be refine the AN-ACC classification development.

The purpose of this stakeholder engagement and communications plan is to identify the stakeholders relevant to the RACCPS and outline how to engage with them throughout this pilot study. Successful engagement throughout the RACCPS will not only underpin the success of this project, but also support IHPA to build longer-term relationships with the sector that will be critical to the organisation in its expanded capacity.

2. Stakeholder engagement objectives

Throughout the RACCPS, stakeholder communication and consultation will focus on aligning with the following engagement objectives:

1. Provide a transparent approach to keep all stakeholders informed and involved as appropriate.
2. Actively seek opportunities to consult with relevant stakeholders, establish productive relationships and build IHPA's understanding of the aged care sector.
3. Provide support throughout the implementation at pilot sites to ensure an understanding of the objectives of the study and capture honest participant feedback.

3. Communication principles

The principles that will guide this communication plan include:

1. Transparent and sensitive communication – stakeholders will be briefed on the objectives of the RACCPS and given the opportunity to share feedback as appropriate. All communication will be sensitive to the dynamic environment in which the sector has been operating recently.
2. Consistent messaging – formal communications, stakeholder briefing documents and Frequently Asked Questions (FAQs) are to be aligned in messaging.
3. Accessible support – a helpdesk will be established to provide participating care home staff with accessible support throughout the RACCPS.
4. Confidentiality and security - all principles of IHPA's protected data will be followed.

4. Stakeholders

Establishing a clear understanding of the stakeholders impacted by the RACCPS and their interests will be vital to the success of this pilot study and future costing studies.

The table below sets out stakeholders that we may engage with throughout this project and the approach to communications for each. A separate site implementation plan for the RAC homes participating in the RACCPS will be developed. IHPA may establish a new advisory committee for the purpose of governing this project. Should this proceed the engagement and communication approach will be covered in a separate governance document.

See Appendix A for the detailed assessment of the stakeholders listed below.

Table 1: Summary level Stakeholder communication approach

Stakeholder group	Stakeholders	Communication approach				
		WC	IC	GC	FC	Comments
Care recipients	• Residents • Family members, representatives and advocates	✓				Providers will act as the conduit between the project and residents/families. A site implementation plan will be developed to support these interactions.
Residential aged care providers	• RACCPS participants	✓	✓		✓	A site implementation plan will be developed to manage interactions with participating providers. Direct consultation not applicable for RAC providers outside of the RACCPS.
Federal government departments	• Commonwealth Department of Health (DOH)	✓	✓		✓	
State government departments	• Department of Health Victoria • South Australia Health • Queensland Health • Western Australia Health • Australian Capital Territory Health • Department of Health Tasmania • Northern Territory Health • New South Wales Department of Health	*	*	*	*	Interactions with state government departments to be managed by IHPA through the Jurisdictional Advisory Committee (JAC).
Public service agencies	• Aged Care Quality and Safety Commission • Residential Aged Care Funding Reform Working Group	✓	✓			The National Aged Care Advisory Council will be considered for consultation once it is established.

Stakeholder group	Stakeholders	Communication approach				
		WC	IC	GC	FC	Comments
	• National Aged Care Advisory Council					
Peak industry bodies	• Aged & Community Services Australia (ACSA) • Leading Age Services Australia (LASA) • Aged Care Collaboration • Aged Care Reform Network	✓		✓		Assemble representatives from all these stakeholders for the initial group consultation.
Consumer advocacy groups	• COTA • Carers Australia • Combined Pensioners and Superannuants Association • Older Persons Advocacy Network	✓				
Unions	• Australian Nursing and Midwifery Federation • Health Workers Union • United Workers Union • Health Services Union	✓		✓		Assemble representatives from all these stakeholders for the initial group consultation.

WC – written communication; IC – individual consultation; GC – group consultation; FC – follow-up consultation/s

5. Communications approach

Written communication

A formal letter will be sent to most stakeholders via email introducing the RACCPS. This letter will contain a high-level summary of the study objectives, process, and benefits to inform relevant parties of the upcoming study. It will be drafted by PwC, approved by IHPA and sent from IHPA to select stakeholders in the initial stages of the project.

Initial Consultations

Stakeholders that will be directly impacted by the RACCPS or have a high degree of interest in the project will be consulted in small groups or one-on-one. Consultations allow stakeholders to share their perspectives, ask questions and voice concerns in a safe environment, creating an opportunity to develop relationships underpinned by open communication. These sessions will be held in the initial stages of the project following the dissemination of written communications and where practicable will include a representative from IHPA.

Individual consultations – stakeholders with targeted interests will be consulted with one-on-one to allow for more in-depth discussions of the RACCPS from a particular perspective.

Group consultations – stakeholders with similar focus areas will be consulted with in small groups to allow for questions and concerns to be voiced and ideas to be tested within comparable cohorts. Group sessions foster collaboration, encourage transparency and maximise the value that can be realised within a short time frame.

Follow-up consultations

Follow up discussions may be held with stakeholders to allow them to provide input into the direction and progression of the pilot study beyond the initial consult. Building strong relationships with these stakeholders

will be beneficial to the outcomes of this study and the longer-term future of costing in RAC. These sessions will be held following the costing stage of the project and where practicable will include a representative from IHPA.

Appendix A – Detailed stakeholder assessment

Stakeholder	Reason for engagement	Communication approach			
		WC	IC	GC	FC
Care recipients					
Residents	Resident engagement will be essential in helping individuals understand and feel comfortable with the RACCPS. The participating sites will be empowered to engage with residents/representatives on the purpose of the study and provide them with the opportunity to opt out of the process.	✓			
Resident families, representatives and advocates	Families and representatives will have a vested interest in the privacy (personal and data), comfort and care of residents and engagement with these individuals will be critical to garnering their support for the project. The participating sites will be empowered to engage with residents/ representatives on the purpose of the study and provide them with the opportunity to opt out of the process.	✓			
Residential aged care providers					
RACCPS participants	The success of the study relies on close collaboration with providers. Positive engagement with providers will support a more effective implementation and data collection process, leading to deeper learnings and more useful outcomes as a result. An implementation plan will be developed for participating sites. Broader consultation with providers outside of the pilot study will be achieved through engagement with the peak industry bodies.	✓	✓		✓
Federal government departments					
Commonwealth Department of Health (DOH)	The DOH commissioned the RACCPS. It has a material interest in how the outcomes of the study will shape funding and operations of the sector over the long term as well as a more immediate interest in how the implementation of the study will impact market sentiment. Engagement with multiple areas within DOH will be necessary throughout this project.	✓	✓		✓
State government departments					
Department of Health Victoria	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. The Department of Health Victoria has many state-run RAC services and has a vested interest in being involved in the RACCPS. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
SA Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. SA Health has many state-run RAC services and has a vested interest in	-	-	-	-

Stakeholder	Reason for engagement	Communication approach			
		WC	IC	GC	FC
	being involved in the RACCPS. Any engagement with this department will be managed by IHPA through the JAC.				
Queensland Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
WA Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
ACT Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
Department of Health Tasmania	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
NT Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
New South Wales Department of Health	State health departments will be interested in the RACCPS outcomes and the long-term implications for the aged care funding model. Any engagement with this department will be managed by IHPA through the JAC.	-	-	-	-
Public service agencies					
Aged Care Quality and Safety Commission (ACQSC)	The ACQSC has taken over all regulatory aged care functions from the DOH and therefore is responsible for various reform activities that are impacted by the development of a new costing model. The commission is highly influential and well positioned to provide insights into the sector.	✓	✓		
Residential Aged Care Funding Reform Working Group	Responsible for advising the department on various reform activities, this group will be able to provide useful sector experience and context that can help foster alignment between this study and the sector's existing projects.	✓	✓		
National Aged Care Advisory Council	The proposed purpose of this council is to provide expert advice on key matters relating to the aged care sector and lead the reform agenda. The government plan for aged care stated that the new council would	-	-	-	-

Stakeholder	Reason for engagement	Communication approach			
		WC	IC	GC	FC
	be established from July 2021 however while this has not yet happened, they are likely to be an interested party in the future. **Consider consulting with this council following its establishment.*				
Peak industry bodies					
Aged & Community Services Australia (ACSA)	Transparency with the sector is key to establishing and maintaining support for the RACCPS. As a provider advocate, ACSA will be interested in how the pilot study and its eventual impact on costing and funding processes will affect their members (primarily not for profit, church and charitable providers).	✓		✓ *Group #1*	
Leading Age Services Australia (LASA)	Transparency with the sector is key to establishing and maintaining support for the RACCPS. As a provider advocate, LASA will be interested in how the pilot study and its eventual impact on costing and funding processes will affect their members. In the case of LASA this represents a balance of for profit and not for profit providers with a small representation of public providers.	✓		✓ *Group #1*	
Aged Care Collaboration	The Aged Care Collaboration brings together ACSA, LASA, Catholic Health Australia, UnitingCare Australia, Anglicare Australia and Baptist Care Australia, representing over 1000 organisations & 70% of all services delivered. Engaging with these influential parties provides a valuable opportunity to gain sector support for the RACCPS.	✓		✓ *Group #1*	
Aged Care Reform Network	Transparency with the sector is key to establishing and maintaining support for the RACCPS. This network brings together large private and not for profit operators (Ability, Bolton Clarke, Estia, HammondCare, Opal, Regis and Uniting NSW/ACT) that will have a vested interest in the study's impact on reform activity.	✓		✓ *Group #1*	
Consumer advocacy groups					
COTA	COTA will be concerned with how the study will influence the long-term direction of the sector regarding the quality and affordability of services within aged care. This group has strong ties to government and sector leaders and the ability to influence the stakeholders for or against the RACCPS.	✓			
Carers Australia	Carers Australia will have an interest in how the study and its results impact the sector's workforce.	✓			
Combined Pensioners and Superannuants Association	This group will have an interest in how the study influences the funding model in the medium- to long-term and any resulting effects on social welfare.	✓			
Older Persons Advocacy Network	This group will have an interest in the long-term implications of the study on residents, particularly those relating to the funding support services they provide.	✓			

Stakeholder	Reason for engagement	Communication approach			
		WC	IC	GC	FC
Unions					
Australian Nursing and Midwifery Federation	An inclusive approach to unions representing workers in the aged care sector will be essential in achieving and maintaining alignment between the objectives of the costing study, the aged care workforce, and subsequent funding model reform.	✓		✓ *Group #2*	
Health Workers Union	An inclusive approach to unions representing workers in the aged care sector will be essential in achieving and maintaining alignment between the objectives of the costing study, the aged care workforce, and subsequent funding model reform.	✓		✓ *Group #2*	
United Workers Union	An inclusive approach to unions representing workers in the aged care sector will be essential in achieving and maintaining alignment between the objectives of the costing study, the aged care workforce, and subsequent funding model reform.	✓		✓ *Group #2*	
Health Services Union	An inclusive approach to unions representing workers in the aged care sector will be essential in achieving and maintaining alignment between the objectives of the costing study, the aged care workforce, and subsequent funding model reform.	✓		✓ *Group #2*	

WC – written communication; IC – individual consultation; GC – group consultation; FC – follow-up consultation/s

Appendix C. Quick Reference Guide

IHPA

Residential Aged Care Costing Pilot Study

Wearable Card Method

Quick Reference Guide

At the start of your shift:

1. **Go to the designated card pick up/drop off point**
2. **Collect a card aligned to your role** – all cards will be labelled
3. **Populate your name and card details on the paper register maintained by the site sponsor**
4. **Carry card with you throughout your shift**

The cards should stay on you throughout your shift while you are performing any care activities.
During your shift you should also check to see if residents have their cards nearby while you are providing care.

At the end of your shift:

1. **Return card to designated pick up/drop off point**. Must have a Wi-Fi connected tablet to upload the data.
2. **Upload card data**
   - Unlock the tablet and open the app (if not already open)
   - Hold card above tablet and press the icon on the card so that you feel it click (like a button)
   - Monitor the tablet screen for your card number to be visible and await completion of data upload
3. **Wipe down card and return it to agreed location**
4. **Write down the time your device was returned on the paper register.**

Appendix D. Costing Methodology

Residential Aged Care Costing Pilot Study

The Residential Aged Care Costing Pilot Study (RACCPS) is being undertaken by IHACPA to inform the future development of the AN-ACC classification system and a pricing framework for residential aged care services. As part of this role, IHPA is required to understand the costs incurred by providers in residential aged care, changes in these costs over time and the drivers of costs, in order to provide advice to Government on pricing issues.

What output is required?

The AN-ACC model was developed as part of the Resource Utilisation and Classification Study (RUCS) which includes three components in the funding model:

- A **variable** component reflecting the casemix classification of residents, determined by an AN-ACC assessment of each resident's care needs.
- A **fixed** component reflecting the costs of care that are shared equally by residents, which may vary by location and other characteristics of a residential care facility.
- A **one-off adjustment** payment for new residents, in recognition of the additional resources that are required in the time immediately following a person's admission into residential care.

To identify the variable and fixed components, the main cost driver is time spent between aged care facility staff and residents with a need to differentiate between individual and shared care time and activities.

As such, the study involves the collection of cost and time/activity data from participating sites and follows an activity-based costing method of allocating costs. Due to the approach of staff and residents opting-in to participate, the Study will not capture the full population of all facilities. As a result, adjustments will need to be made based on the sample of data that is collected noting that it may be from a small sample. The data limitations will be clearly documented in the final report.

Data Collection

The following data will be collected from the sites for the purpose of the costing:

A. **Financial Data** – Sites will provide one month of financial information for October 2021 in a standard template aligned to the Aged Care Financial Report. This template captures several expense categories including labour costs broken down by workforce category, other direct care costs (e.g. medical supplies), hotel costs, accommodation and administration costs. The template was aligned to the ACFR to enable ease of completion and to drive consistency with data definitions.
B. **Time Data –** Time and Activity data (jointly referred to as service utilisation data) will be captured through the use of electronic data capture tools and will provide the duration of time facility staff spend with individual residents and the workforce category of the staff. This will be captured using the PPM mobile app and beacons or the proximity time collection cards.
C. **Activity Data -** PPM mobile will be utilised to capture the type of activity performed by facility staff, broken down into the following 6 categories: Support with activities of daily living, pressure area/skin care, Medication – preparation, delivery, and management, re-ablement therapies, behavioural management, and Technical - nursing and clinical activities
D. **Resident Data** – Resident data collected from participating sites will include AN–ACC classification shadow assessments and the available days that residents were present in the facility during the 4 week data collection period (Occupied Bed Days (OBD)).
E. **Staff hours -** Sites will also be asked to provide information on staff hours worked and headcount for salaried and agency staff for the 4 week data collection period and October 2021 to align to the financial data collected.

Due to practical delay in providers closing out general ledger information, this pilot study will use financial information for the month of October 2021 and time and activity data collected over 4 weeks in January/February 2022 during the pilot study collection period.

Costing Process

The costing will be performed in PowerPerformance Manager (PPM) through the following stages:

Stage 1: The October 2021 financial data provided by the sites will be loaded into the PPM system and be categorised into different *expense categories*.

Stage 2: The *expense categories* will be rolled into *cost categories (or cost outputs)*: individual direct care costs, shared direct care costs, administration and accommodation costs, and hotel costs. (Costed data will be available at a more granular level than these cost outputs).

Stage 3: The methodology for determining *workforce costs* to be allocated to residents is set out below:

1. October 2021 costs will be applied to hours worked in October to obtain a cost per hour per staff category.
2. The October 2021 cost per hour per staff category will be applied to the hours worked during the 4 week January/February 2022 pilot study to obtain workforce costs for January 2022.

Stage 4: The methodology for allocating workforce costs between *individual and shared care hours* to residents is set out below:

1. Total hours worked per workforce category will be collected from participating sites.
2. These hours will be adjusted with consideration of the overall mix of resident classifications for that facility to reflect the data being collected. (For example, if only 30% of residents participate, the hours will be adjusted to better reflect the time for these 30%).
3. Individual care hours and activities will be collected from the electronic data collection tools.
4. The pro-rated hours per staff member will be split into individual care hours (based on point 3 above) and shared care hours (being the remainder).
5. The individual care hours per workforce category will be used to allocate staff costs to a resident.
6. The shared care hours per workforce category will be allocated based on Occupied Bed Days (OBD) across all participating residents in the facility.
7. An adjustment may be required to reflect the ratio of workforce to residents, as staff would still be required to work when there are reduced OBD for a particular resident.

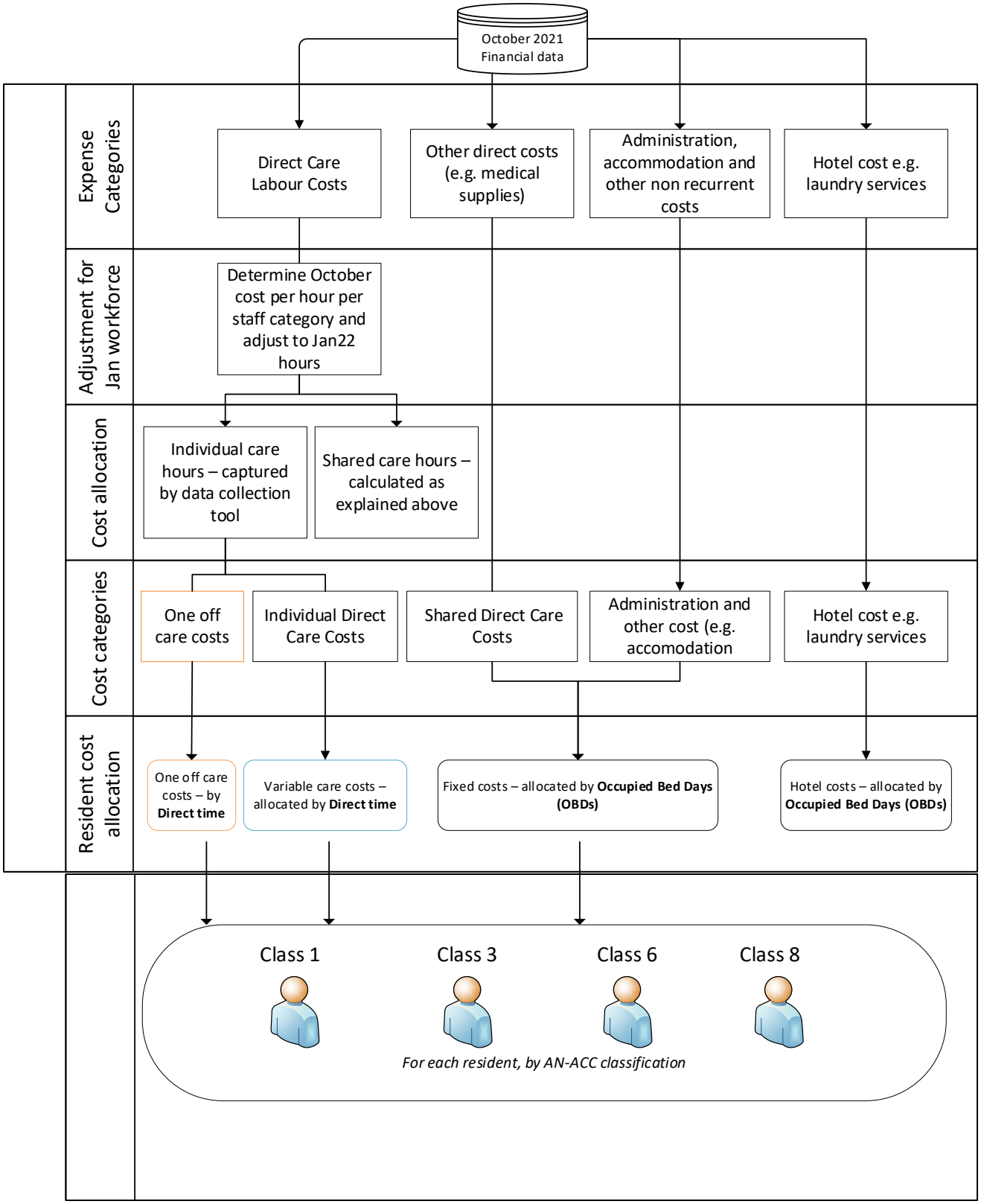
Stage 5: *Other direct care costs* will be obtained from the October 2021 financial data provided. These will be allocated to participating residents based on the residents' OBDs as a proportion of total OBDs for the 4 week trial period.

Stage 6: *Administration, accommodation and other non-recurrent cost*s will be regarded as corporate overhead expenses and will obtained from the October financial data provided. These will be allocated to participating residents based on the residents' OBDs as a proportion of total OBDs for the 4 week trial period.

Stage 7: *Hotel costs* will be allocated to participating residents based on the residents' OBDs as a proportion of total OBDs for the 4 week trial period. These costs will be shown separately to enable them to be extracted.

An illustrative example of this process is set out in Figure 1 below.

Figure 1: Example of costing process for individual direct care costs and shared direct care costs



Appendix E. List of costing outputs

Cost category	Description
Labour costs	
S&W_RN	Labour costs for registered nurses (including Agency staff)
S&W_RN	Labour costs for enrolled nurses (including Agency staff)
S&W_PCS	Labour costs for personal care staff (including, AIN, Agency staff)
S&W_Other	Labour costs for other direct care staff types, including care management, allied health and diversional therapy/ lifestyle
Resident expenses	
G&S_Medical	Medical supplies
G&S_Incontinence	Incontinence supplies
G&S_Nutritional	Nutritional supplements
G&S_Other	Other resident services and consumables
Other direct care expenses	
DirCare_Other	Other direct care expenses including agency fees, Workcover premium, quality, compliance and training external costs
DirCare_Pastoral	Chaplaincy / Pastoral Care
Tax_DirCare	Payroll tax (care employee labour)
Hotel Services expenses	
Hotel_Catering	Catering related expenses, including labour, consumables and contract services
Hotel_Cleaning	Cleaning related expenses, including labour, consumables and contract services
Hotel_Laundry	Laundry related expenses, including labour, consumables and contract services
Hotel_Utilities	Utilities expenses
Hotel_Maintenance	Routine maintenance related expenses, including labour, consumables and contract services
Hotel_MV	Motor vehicle expenses
Hotel_Other	Other hotel expenses including Workcover premium, quality, compliance and training external costs

Cost category	Description
Tax_Hotel	Payroll tax (hotel services employee labour
Administration Expenses	
Admin_Recharge	Corporate recharge
Admin_Other	Other administration costs including labour, Workcover premium and insurances
Admin_Quality_Training	Quality, compliance and training external costs
Tax_Admin	Payroll tax (aged care facility admin employee labour) and fringe benefits tax
Accommodation Expenses	
Accom_Other	Other administration costs including labour, refurbishment costs, rent and Workcover premium
Depreciation	Depreciation
Interest_Accom	Interest paid
Tax_Accom	Payroll tax (accommodation employee labour)
Non recurrent expenses	
NRE_Other	Other non recurrent expenses including fair value loss on financial assets and other losses
NRE_COVID	Covid-19 Outbreak expenses
Interest_NRE	Interest paid

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