

# interRAI Data Quality Report

## July 2019 to June 2020



### Executive summary

The quality of interRAI data collected in New Zealand remains high. This report updates the quality checks to validate 2019-20 interRAI data. The previous data quality report concluded that interRAI assessment data is of an overall quality that can be trusted. High quality data means our stakeholders can make well informed and evidence-based decisions for service quality improvement, research, planning and service delivery.

- Two quality measures (invalid NHI and missing height & weight) have shown considerable improvement over time. There were only 2 invalid NHIs across the three assessments types in 2019-20 compared to 12 in 2018-19. LTCF assessments have seen the largest improvement, less than 7% of assessments without height and weight information in 2019-20.
- Trends in population characteristics remain steady over the five years as do the examined clinical characteristics.
- Trends in service intensity were examined. This includes 7 clinical categories into which Resource Utilisation groups (RUGs) are categorised. The trends in service intensity are largely consistent over the 4 years.
- A new methodology was used to measure the strength of the association between two interRAI variables. In the past, Pearson's R correlation coefficient was used. We reviewed this methodology and decided to perform an ordinal Chi-square test instead of the Pearson's test. It is more appropriate applying ordinal Chi-square on ordinal data. Although a new methodology is applied, the results are like what we reported previously. The convergent validity between outcome measures examined are mostly consistent over time.
- The Kotahi project was successfully implemented in May 2020. This project brought together the Taranaki and Canterbury data host sites to one site in Canterbury DHB. Bringing the sites together helps improve the data consistency and data quality.

# Glossary

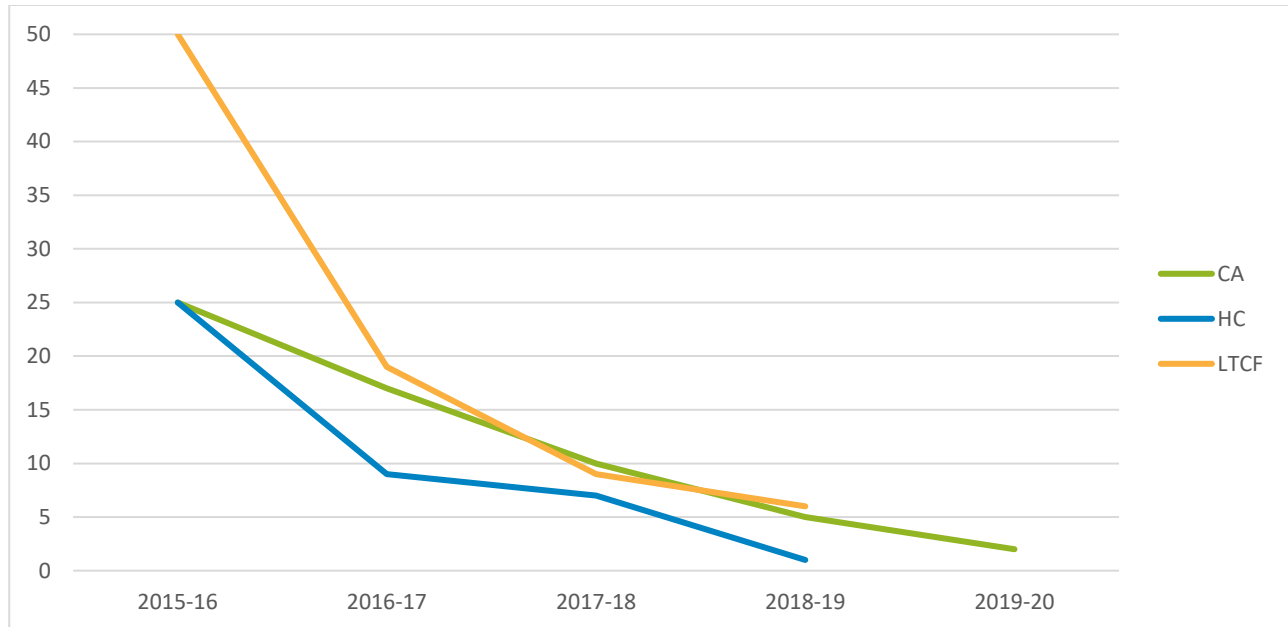
ADLH	Activities of Daily Living Hierarchy
CA	Contact Assessment
CAPs	Clinical Assessment Protocols
CHESS	Change in Health, End-stage Disease, Signs and Symptoms
CPS	Cognitive Performance Scale
DHB	District Health Board DRS
IADL	Instrumental Activities of Daily Living LTCF
LTCF	Long term care facility assessment
MAPLe	Method for Assigning Priority Levels
NHI	National Health Index
RUGs	Resource Utilisation Groups

# interRAI data quality overview

## Invalid NHIs

The previous report detailed how invalid NHIs were introduced and how the interRAI services team worked together to monitor and improve business processes to minimise these errors. Figure 1 illustrates the diminishing number of invalid NHIs introduced to interRAI assessments by assessment type over time.

**Figure 1: Counts of invalid NHIs by assessment type over time**

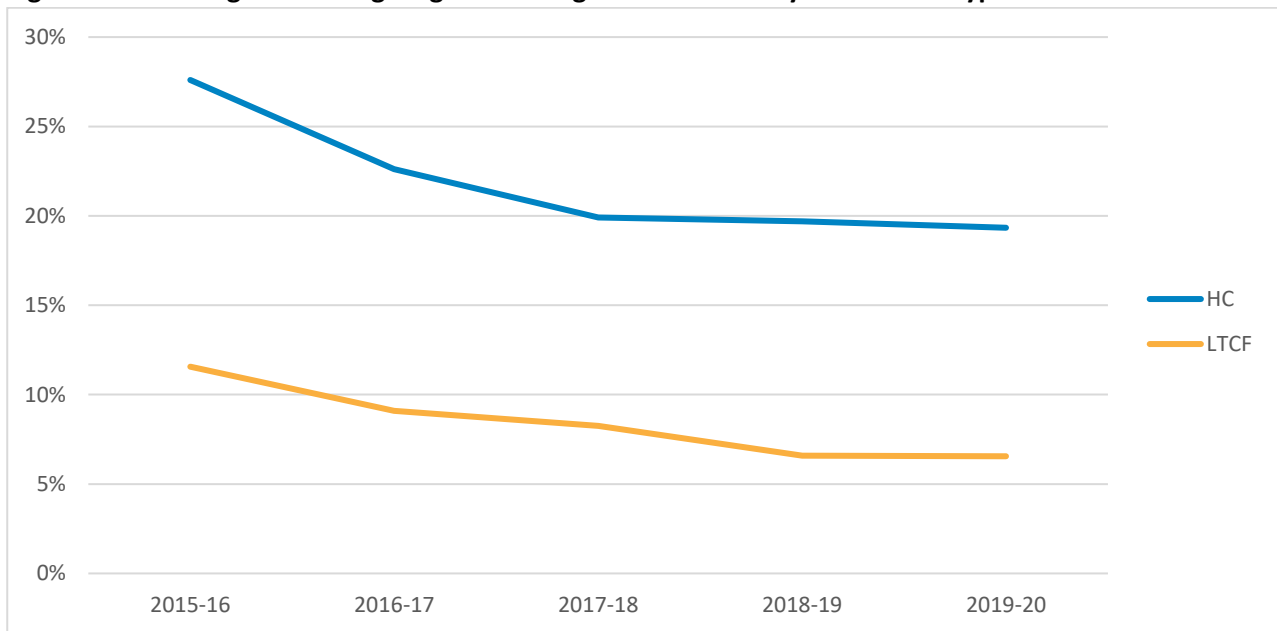


## Missing height and weight information

The previous report highlighted the importance of height and weight information and suggested opportunity areas for improvement. Figure 2 illustrates that there has been further improvement for Long Term Care Facility (LTCF) assessments in the most recent year.

Assessments for people with high health instability (for example, a CHES score of 4 or 5), who are bed bound; unable to move self to a standing position, have end-stage disease or receive palliative care are excluded from this height and weight analysis.

**Figure 2: Percentage of missing height and weight information by assessment type over time**



## Trends in population and clinical characteristics

**Table 1** shows that trends are consistent for both HC and LTCF assessment types across selected demographic characteristics over the last four years.

**Table 1: Trends in demographic characteristics**

Assessment type	Year	Female %	Māori %	Married %	Under 65 %	Over 85 %	Dementia %	Heart failure %
HC	2015-16	60%	7%	38%	5%	42%	24%	17%
	2016-17	60%	7%	39%	5%	42%	25%	16%
	2017-18	59%	7%	39%	5%	42%	25%	16%
	2018-19	59%	8%	39%	6%	41%	26%	16%
	2019-20	59%	8%	39%	6%	42%	28%	16%
LTCF	2015-16	66%	4%	25%	4%	54%	49%	17%
	2016-17	66%	4%	24%	4%	54%	48%	16%
	2017-18	65%	5%	25%	4%	54%	48%	16%
	2018-19	65%	4%	24%	4%	54%	49%	16%
	2019-20	65%	5%	25%	4%	53%	49%	16%

**Table 2: Trends in clinical characteristics**

shows the trends in selected clinical characteristics for HC and LTCF assessments. Overall, the clinical characteristics point to an increasing client complexity in long term aged care as expected. The trend remains stable over time. IADL (Capacity) and IADL (Performance) scales are not shown for HC after 2017-18 as they are no longer calculated post the May 2019 software upgrade.

Assessment type	Year	CPS 3+ %	DRS 3+ %	ADLH 3+ %	MAPLe 3+ %
HC	2015-16	21%	17%	20%	78%
	2016-17	22%	18%	21%	80%
	2017-18	22%	18%	21%	80%
	2018-19	23%	19%	20%	81%
	2019-20	23%	20%	21%	84%
LTCF	2015-16	45%	20%	44%	
	2016-17	44%	21%	44%	
	2017-18	44%	21%	43%	
	2018-19	44%	22%	44%	
	2019-20	44%	24%	44%	

There is an increase in MAPLe 3+ % in 2019-20, however this is related to changes in the MAPLe algorithm and IADL capacity and performance no longer being used in HC.

## Trends in service utilisation

Table 3 shows trends in service utilisation measures including the receipt of any physical therapy time or occupational therapy time for both HC and LTCF assessments.

HC assessment specific measures are:

- any home support services (this includes physical therapy, occupational therapy, home health aide, home nurse and homemaking services)
- any informal care
- median hours of informal care in the past 3 days
- median hours of home support services for HC clients in the past 7 days.

Of people who received a HC assessment in 2019-20 the median hours of formal home support services in the last 7 days was 5.5 hours. This means that half received 5.5 or more hours, and half received less than 5.5 hours.

**Table 3: Trends in service utilisation**

Assessment type	Year	Any physical therapy %	Any occupational therapy %	Any home support services %	Any informal care %	Median hours of informal care in the past 3 days	Median hours of formal home support services in the past 7 days
HC	2015-16	13%	10%	50%	70%	3	5.2
	2016-17	13%	10%	50%	71%	3	5
	2017-18	11%	8%	51%	71%	3	5
	2018-19	10%	7%	51%	72%	4	5
	2019-20	10%	7%	48%	71%	4	5.5
LTCF	2015-16	9%	1%				
	2016-17	8%	1%				
	2017-18	8%	1%				
	2018-19	8%	1%				
	2019-20	7%	1%				

## Trends in service intensity

There has been increasing interest in the use of interRAI Resource Utilisation Groups (RUGs) to derive case-mix funding. Table 4 shows trends in the clinical categories into which RUGs are grouped. The clinical categories are ordered from lowest clinical complexity (physical function) to highest clinical complexity (rehabilitation). The trends in service intensity are largely consistent over the four years for HC except for rehabilitation which has been decreasing. For LTCF trends are consistent for the four years from 2016-17 to 2019-20. The distribution between the clinical categories of cognitive impairment and behaviour problems were slightly different in 2015-16.

**Table 4: Trends in service intensity**

Assessment type	Year	Increasing clinical complexity →						
		Physical function	Cognitive impairment	Behaviour problems	Clinically complex	Special care	Extensive services	Rehabilitation
HC	2015-16	44%	10%	3%	32%	3%	1%	7%
	2016-17	43%	11%	3%	32%	3%	1%	6%
	2017-18	45%	11%	3%	32%	3%	1%	5%
	2018-19	44%	12%	3%	32%	3%	1%	4%
	2019-20	44%	12%	3%	32%	3%	1%	4%
LTCF	2015-16	45%	10%	6%	30%	6%	1%	2%
	2016-17	43%	15%	3%	31%	5%	1%	2%
	2017-18	43%	16%	3%	30%	5%	1%	2%
	2018-19	43%	16%	3%	30%	5%	0%	2%
	2019-20	43%	16%	3%	30%	6%	0%	2%



## Trends in convergent validity

**Table 5** reports on trends in indicators of convergent validity over time by examining the correlations between the following variables: ADLH and CPS; Pain and DRS; Pain and CHESS; Pain and CPS; MAPLe and CPS.

In the past, Pearson’s R correlation coefficient was used to measure the strength of the association between two interRAI variables. This methodology was used by Hirdes, Poss, Caldarelli, Fries, Morris, Teare & Jutan (2013) in one of their data quality research articles<sup>1</sup>.

This year, we reviewed this methodology and decided to perform an ordinal Chi-square test instead of the Pearson’s test. It is more appropriate applying ordinal Chi-square on ordinal data. Ordinal data, for example interRAI CPS scores, are categorised and ordered from 0 to 6, based on the level of cognitive impairment. Polychoric correlation coefficient is used to measure the degree of correlation between two ordinal variables.

Although a new methodology is applied, the results are similar to what we reported previously. Table 5 shows the convergent validity between outcome measures examined are mostly consistent over time.

MAPLe and CPS have the highest correlation (0.8 across all years), while the following have the weakest correlation; pain and DRS, pain and CHESS, pain and CPS. The negative value for the latter reflects a relationship between the two variables whereby they move in opposite directions. The correlation for ADLH and CPS is moderate for LTCF and weaker for HC.

**Table 5: Trends in convergent validity (Polychoric correlation coefficient using ordinal Chi-square test) between interRAI outcome measures over time**

Assessment type	Year	ADLH & CPS	Pain & DRS	Pain & CHESS	Pain & CPS	MPALe & CPS
HC	2016-17	0.424	0.129	0.149	-0.237	0.805
HC	2017-18	0.425	0.132	0.155	-0.245	0.806
HC	2018-19	0.404	0.127	0.142	-0.255	0.8
HC	2019-20	0.395	0.133	0.143	-0.24	0.79
LTCF	2016-17	0.606	0.193	0.191	-0.176	
LTCF	2017-18	0.593	0.196	0.21	-0.181	
LTCF	2018-19	0.581	0.199	0.208	-0.184	
LTCF	2019-20	0.57	0.208	0.208	-0.181	

<sup>1</sup> Hirdes, J. P., Poss, J. W., Caldarelli, H., Fries, B. E., Morris, J. N., Teare, G. F., ... & Jutan, N. (2013). An evaluation of data quality in Canada’s Continuing Care Reporting System (CCRS): secondary analyses of Ontario data submitted between 1996 and 2011. BMC medical informatics and decision making, 13(1), 27.

## 2-1 host sites (Kotahi) project

The Kotahi project brought together the two data hosting sites in Taranaki and Canterbury to one host in Canterbury DHB. The software at each site was identical, and each site had its own help desk, trained staff and maintenance schedule. Bring the host sites together allowed for a more streamlined and rationalised delivery to improve agility and be able to respond to changes and enable opportunities to adopt different delivery modes in future. A single help desk ensured better maintenance of the host sites, more responsive troubleshooting, a more flexible maintenance schedule and simplified upgrade process.