



HHIP Quantitative Evaluation

A Quantitative Evaluation of Care Assess' HACC
Home-based Independence Program (HHIP)

Final Report – 30 June 2013

Acknowledgements

Care Assess' HACC Home-based Independence Program (HHIP) is supported by funding provided by the Commonwealth and Tasmanian HACC Programs. Care Assess also acknowledge the funding and other support provided by the Tasmanian Department of Health and Human Services for the evaluation of this project.

Disclaimer

Although funding for HHIP is provided by the Commonwealth and Tasmanian Governments through the HACC Program, the material contained herein does not necessarily represent the views or policies of the Commonwealth and Tasmanian Governments.



© Care Assess, 2013

Care Assess is a Tasmanian state-wide organisation, specialising in needs-assessment, care-coordination and service-contracting of home and community care.

Table of Contents

1. Executive Summary	4
2. Introduction	6
2.1 Program Objectives and Description	6
2.2 Scope of this Study	8
2.3 Evaluation Objectives	8
2.4 Independence of this Study	8
2.5 Methodology	9
Sample Group Selection	9
2.6 Highlighting and Units in this Report	10
2.7 Summary of HHIP Demographic and Activity Data	10
Age Distribution	10
Gender Attributes	11
Geographic Distribution	11
Referral Source	12
Initial Assessment Score Attributes	13
HHIP Activity Over Time	14
3. Functional Assessment Outcomes	15
Description of Functional Assessment Tool	15
Overview of changes in Functional Assessment Outcomes	15
What practical difference has HHIP made?	15
Basic Change in Client Outcomes	15
Basic Change in Client Outcomes by Age	16
Average Change in Client Outcomes by Functional Assessment Domain	16
Average change in outcomes by Assessment Domains	18
Magnitude of Change in Client Outcomes	19
Average change in Client Outcomes by Initial Functional Assessment	20
Changes in Outcomes by Referral Source	20
4. HACC Service Hours Outcomes	22
Overview of Changes in HACC Service Hours Outcomes	22
Change in HACC Service Delivery Hours by Age	26
Change in HACC Service Delivery Hours by Service Type	27
5. Correlation between Changes in Client Outcomes and HACC Service Delivery Hours	29
Issues for further analysis	31
6. Conclusion	32
6.1 Issues for further analysis	33
7. Recommendations	34
8. Further Acknowledgements	35

1. Executive Summary

This Report outlines the key findings, details and recommendations arising from a Quantitative Evaluation conducted by Care Assess of its HACC Home-based Independence Program (HHIP) (“the evaluation”).

Key findings

- The evaluation demonstrated a statistically significant improvement in client independence outcomes: a total of 83% of sample clients demonstrated improved functional ability and 16% maintained their functional outcomes.
- The evaluation also indicated that HHIP is effective at reducing client service delivery hours for clients receiving prior HACC services: analysis excluding clients with no HACC service hours prior to HHIP revealed an 11% reduction in service delivery hours for this cohort, which was statistically significant.

HHIP demonstrated a statistically significant improvement in client independence outcomes with an average improvement in functional assessment scores of 5.2 points (± 0.6 points) per program.

HHIP also found no statistically significant increase in HACC service delivery hours after completing the program. Preventing increases in service delivery hours is a successful outcome considering referrals for a HHIP program are made in response to requests for increased services. However, analysis excluding clients with no HACC service hours prior to receiving a HHIP program revealed an 11% reduction in service delivery hours for this cohort, which was statistically significant, indicating that HHIP is effective at reducing client service delivery hours for clients receiving prior HACC services.

Key details

HHIP was more effective at improving domestic functioning outcomes than Self Care functioning. Over three quarters (80%) of the sample group reported improved domestic functioning while less than half (44%) reported improved Self Care functioning. The capacity of HHIP to improve domestic functioning resulted in minimal increases to Domestic Assistance hours (7%) compared to personal care hours (50%).

Each referral source with over five referrals reported a statistically significant improvement in outcomes for clients. No referral source reported functional outcomes that were statistically better or worse than the HHIP average.

Although overall there was no statistical difference between the amounts of HACC service delivery hours received before commencing HHIP and after completing the program, one referral source (Care Assess) reported a statistically significant reduction in service hours. Programs referred by Care Assess resulted in a 53% reduction in service hours compared to the program wide increase of 14%. It should be noted that the program wide increase in service hours was not statistically significant at the 95% confidence level. Care Assess was

the only referral source to demonstrate a statistically significant reduction in service delivery hours.

Changes in service delivery hours for the sample group was confounded by a proportion of clients (44%) who had received no HACC services before commencing HHIP. To address this issue, analysis was conducted for clients with at least some HACC service hours prior to commencing a HHIP program. This analysis revealed an 11% reduction in service delivery hours for this cohort, indicating that HHIP is effective at reducing client service delivery hours for clients who have received some level of HACC services before being referred.

Reductions in service hours were also observed for clients with an initial assessment between 45 and 50, indicating that HHIP may be more effective at reducing service hours for clients with high levels of functioning compared to those with moderate or low levels.

Key recommendations

- Further analysis should be undertaken to include the remaining data (70%) to be entered into the system to ensure all the real effects of HHIP upon client outcomes and HACC service hours are identified.
- Care Assess should provide training to other referrers on how to best identify clients that will benefit most from a HHIP program.
- Care Assess should screen clients referred to Care Assess for a HHIP program to ensure clients with greatest likelihood of receiving reduced service hours after a HHIP program are given priority access to this service.
- Consideration should be given to establishing a control group to determine what increase in service hours could be expected if a HHIP program were not provided as an intervention.

2. Introduction

Care Assess' HACC Home-based Independence Program (HHIP) is a state-wide intensive reablement service in Tasmania aiming to maintain or improve suitable client's functional independence and thus reduce or limit their need for basic support services such as on-going home care in the Home and Community Care (HACC) Program.

A quantitative evaluation of HHIP was completed with the objective of assessing the effectiveness of the program in:

1. Increasing (or maintaining, where appropriate) an individual's independence outcomes; and
2. Decreasing (or maintaining, where appropriate) home care services received by the individual.

Changes in functional assessments and HACC service delivery hours were analysed along with client demographics and service specific characteristics to determine clients who were most likely to benefit from HHIP.

Out of the 779 clients that completed HHIP, 232 clients met the selection criteria for the evaluation sample group (30%). These criteria included the requirement to have assessment results recorded both before and after HHIP and having known HACC service hours recorded both before and after HHIP (including 0 hours if no HACC service hours were received). A major factor reducing the number of clients selected for the sample group was the significant amount data entry involved to collect this information. Considering 70% of clients did not have a complete set of data entry fields recorded electronically, it is recommended that data entry continue so that further, more detailed analysis can be completed at a later date. It should be noted that none of the functional assessment data for Northern clients and only half the functional assessment data for the North West clients had been entered electronically into Care Assess' system at the time of beginning this quantitative analysis.

Recommendation: Further analysis should be undertaken to include the remaining data (70%) to be entered into the system to ensure all the real effects of HHIP upon client outcomes and HACC service hours are identified.

Despite the data entry limitations, the characteristics of the sample group were similar to the total client group with the exception of the referral sources which saw an overrepresentation of Care Assess referrals.

2.1 Program Objectives and Description

HHIP is a program targeting suitable clients who are motivated to work with health professionals to increase their independence in their home and daily life. Clients must be HACC-eligible, being 60 years of age or over (or Aboriginals 50 years or over) unless experiencing advanced signs of ageing, and have a functional deficit. All HACC-eligible

clients are potentially suitable for HHIP, making motivation the key factor determining client suitability.

HHIP works with eligible and suitable clients for up to 12 weeks to give them:

- A comprehensive health assessment to assist clients to set goals to achieve independence and inform the development of a Care Plan, accompanied by regular review and refinement of goals.
- Demonstration of methods to simplify and make their daily tasks easier, utilising equipment to assist client's reduce their difficulty with Activities of Daily Living.
- Physical activity programs to improve their strength and balance
- Home assistance from support workers to assist with domestic help, personal care and exercise support.
- Provision of information on community services and social activities to develop their wellbeing.

While the 'Independence Model' should be understood to be a mode of practice that applies a reablement/wellness focus to all client services across all programs, HHIP is a specialist 'Independence Program' that provides a discrete episode of care for HACC clients assessed as having the motivation and capacity to improve (or maintain, where appropriate) their independence via an intensive reablement service as a targeted intervention, with the associated aim of reducing (or maintaining, where appropriate) the client's need for basic HACC services.

Since 2007 HHIP has provided short-term packages of home-based early intervention services, tailored to preserve and/or enhance client's independence. Individually planned HHIP programs aim to help clients achieve easier ways of doing household chores and personal care tasks, and assist clients increase their strength and balance, which enables them to remain independent in their home and active in their community for longer.

The program is coordinated by a team of multi-disciplinary health professionals including registered nurses and occupational therapists, who involve Exercise Physiology (not physiotherapy) in assessment, planning and consultation in order to incorporate an exercise component into each program of care. Occupational Therapy is a key element of the program which uses task-analysis to provide individual clients with skills and equipment that will enable them to continue living in their own homes as independently as possible. Registered nurses have formed the backbone of the care-coordination team, having been more likely to be suited to the functions of the care-coordinator role.

A pivotal feature of Care Assess' business model that enhances the effectiveness of HHIP is the separation of assessment and care-provision functions. Care Assess' assessment and coordination of care is independent of service provision. As well as needs-assessments and care-planning, our coordinators also undertake the service-contracting to external organisations who provide the direct-care (such as domestic assistance; personal care including exercise supervision; and social support including shopping assistance). Care Assess' coordinators also play an ongoing role during the program by conducting reviews and managing revised care with staff from provider organisations (subcontractors).

2.2 Scope of this Study

The scope of this evaluation project was limited by an established set of objectives, outlined below. Care Assess set a total budget of \$10,000 plus GST, including a total contribution from the Tasmanian Department of Health and Human Services to reimburse expenses of up to \$8000 plus GST. This budget included all direct expenses related to database development, data entry, external analysis and reporting and external quality assurance work. Care Assess' project management of this study was not included in these direct costs. Accordingly, the evaluation objectives, independence of this study and methodology were in part constrained by this limited budget.

2.3 Evaluation Objectives

This evaluation seeks to quantitatively evaluate Care Assess' HACC Home Based Independence Program to assess the effectiveness of the program.

This evaluation assesses the effectiveness of HHIP at improving clients' independence using two key criteria:

1. An increase (or maintaining, where appropriate) in the individual's independence outcomes as measured by the functional assessment instrument; and
2. A decrease (or maintaining, where appropriate) in the home care services received by the client.

An accurate quantitative assessment of the effectiveness of the program is needed to further the provision of a specific and local evidence-base around the benefits of this reablement program in order to assist the continual development of this service by Care Assess.

2.4 Independence of this Study

The quantitative analysis involved in preparing this evaluation was conducted using an internal process to maximise the objectivity and quality of this study. An independent (external) consultant was contracted to undertake data interrogation and analysis, and another independent (external) consultant was engaged to provide quality assurance assessment of that work. However, while every effort has been made to maintain the objectivity of the study methodology employed in this project, the analysis conducted and the findings published in this Report, the limited scope of this study required significant involvement by Care Assess in the design, implementation and publication of this Report.

2.5 Methodology

Approval for this project and its methodology was obtained from the Tasmanian Social Sciences Human Research Ethics Committee (Tasmania) Network (HREC), University of Tasmania (UTAS) (Ethics Ref: H0012241).

Changes to client independence outcomes were assessed by analysing the assessment score of participant's using the independence indicators as defined by the National HACC Functional Assessment Instrument, which provided a Self Care Functional Assessment (part 1) and a Domestic Functioning Assessment in Activities of Daily Living (part 2). Each HHIP participant was scored against this tool upon entry and exit from the program. These scores were compared to determine change, and aggregated statistics analysed and assessed for significance.

Changes to client needs for home care services were assessed by analysing participants recorded hours of HACC Domestic Assistance and Personal Care received on a *fortnightly*¹ basis before and after completing HHIP. Comparison of the hours of HACC services received by care recipients at the completion HHIP were contrasted with HACC service levels before commencing the program.

Sample Group Selection

Due to the large amount of manual data entry required to complete this evaluation, the outcomes for a significant proportion of clients could not be analysed as part of this evaluation. A total of **232 clients were included in the evaluation sample group**. This group completed HHIP at some stage during the 4 year period between October 2008 and June 2012.

The criteria used to select the sample group were as follows:

- An initial and a final functional assessment were recorded for the program in the database;
- A date was recorded in the database from which HHIP service hours were provided;
- A program completion date was recorded against the program in the database; and
- A record of HACC Hours (including 0 hours) for each program prior and post HHIP services was recorded in the database. This resulted in programs with an unknown number of HACC services hours being excluded from the sample.

The criteria used to determine the total cohort of HHIP clients were as follows:

- A date was recorded in the database from which HHIP services hours were provided; and
- A program completion date was recorded against the program in the database.

Final results from this evaluation based upon the sample group of 232 (30%) out of the total client group of 779.

¹ References to "Total Hours" within this Report are totals aggregated from client record data with units recording service hours received *per fortnight*.

2.6 Highlighting and Units in this Report

Red and blue highlighting is used within this Report to indicate the following:

- **Red** indicates that the results are statistically significantly worse than the average outcome for the total sample;
- **Green** indicates that the result is statistically significantly better than the outcome for the total sample.

The units of HACC Service Hours in this Report are “hours per fortnight”.

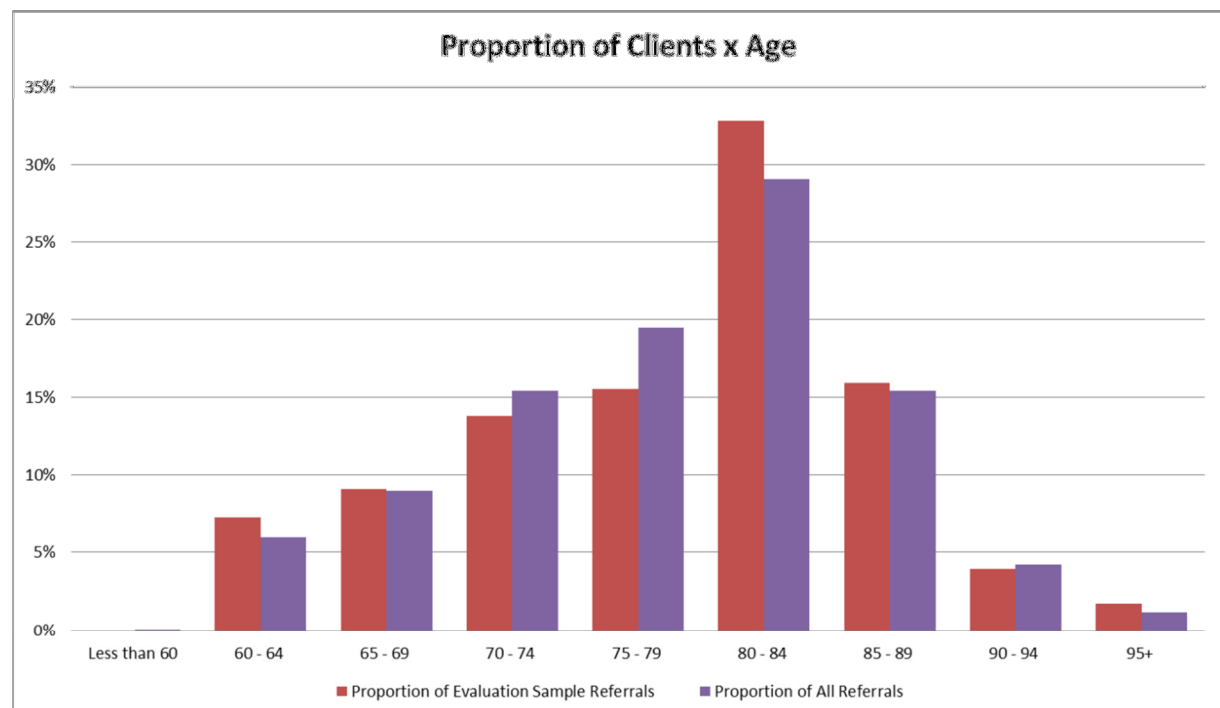
- All references in this Report to HACC Service “Hours” received by clients, and the grouping (or ‘aggregation’) of those hours and referred to as “Total Hours”, are derived from data recording the number of HACC Service Hours received by clients *per fortnight*.

2.7 Summary of HHIP Demographic and Activity Data

The evaluation sample group had similar characteristics to the total cohort of clients completing HHIP. The following section details the demographic characteristics of the sample group compared to all clients completing HHIP.

Age Distribution

Differences between the age profile of the sample group and the total cohort was minimal. The largest difference in the proportion of programs in each age group was less than 4%.



Age Group	Number of Programs in Evaluation Sample Group	Proportion of Programs in Evaluation Sample Group	Number of All HHIP programs	Proportion of All HHIP programs	Average Change in Outcomes Per Program	Proportion Change in Service Hours Per Program	Average Initial Functional Assessment Score
Less than 60	0	0.0%	1	0.1%	(+)		
60 - 64	17	7.3%	47	6.0%	4.7 (+2.0)	-34.2%	40.9
65 - 69	21	9.1%	70	9.0%	6.0 (+2.1)	50.0%	39.9
70 - 74	32	13.8%	120	15.4%	6.6 (+1.6)	-21.1%	40.5
75 - 79	36	15.5%	152	19.5%	4.2 (+1.3)	-7.7%	41.4
80 - 84	76	32.8%	227	29.1%	5.5 (+1.0)	38.8%	39.0
85 - 89	37	15.9%	120	15.4%	4.3 (+1.5)	41.7%	38.7
90 - 94	9	3.9%	33	4.2%	3.8 (+2.2)	-38.5%	36.2
95+	4	1.7%	9	1.2%	8.8 (+5.2) ²	-25.0%	35.8
Total	232	100.0%	779	100.0%	5.2 (+0.6)	13.7%	39.6

Gender Attributes

The ratio between males and females in the sample group was slightly higher than the total cohort. The sample group had a male female ratio of 1:4 compared to the total client group of 1:3. Considering females were more likely to report improved outcomes and reduced service hours than males, this may have resulted in a slight bias towards overstating the results of HHIP.

Gender	Number of Programs in Evaluation Sample Group	Proportion of Programs in Evaluation Sample Group	Number of All HHIP programs	Proportion of All HHIP programs	Average Change in Outcomes Per Program	Proportion Change in Service Hours Per Program	Average Initial Functional Assessment Score
F	186	80.2%	592	76.0%	5.3 (+0.6)	9.0%	40.1
M	46	19.8%	187	24.0%	4.8 (+1.5)	34.1%	37.6
Total	232	100.0%	779	100.0%	5.2 (+0.6)	13.7%	39.6

Geographic Distribution

The geographic distribution of the sample group was significantly skewed to the South due to data entry limitations. Approximately half the programs in the North West and minimal programs in the North were entered into the database. At the time of publication, it is not known if this had any affect upon the outcomes of the evaluation.

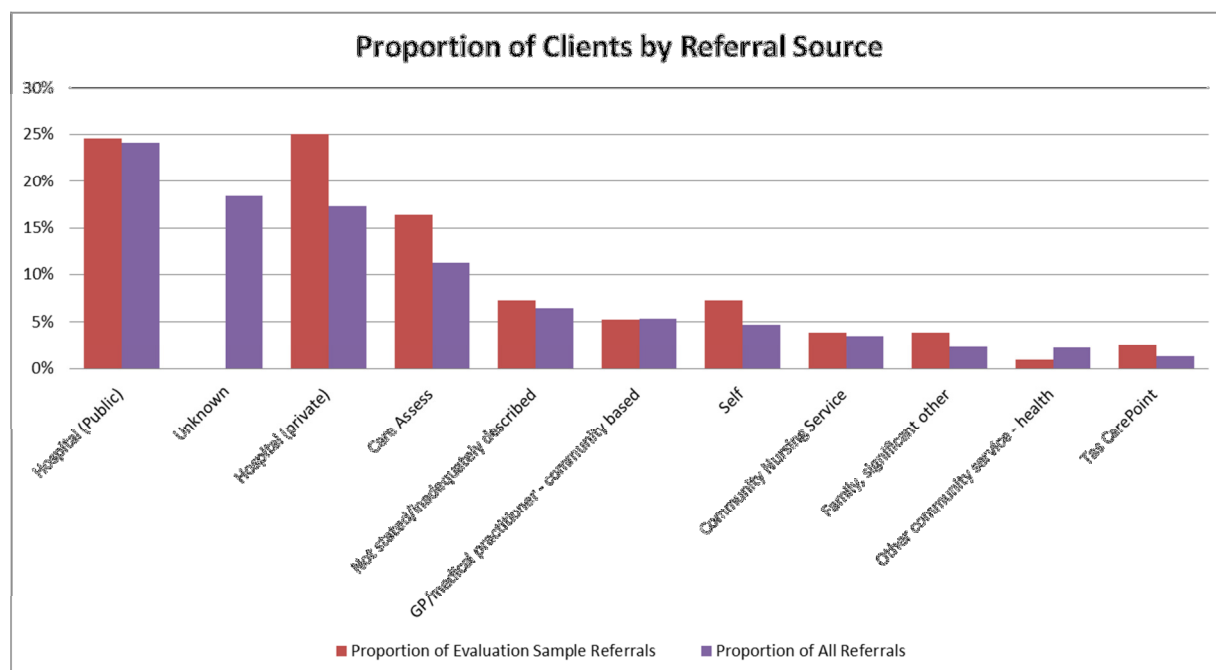
Region	Number of Programs in Evaluation Sample Group	Proportion of Programs in Evaluation Sample Group	Number of All HHIP programs	Proportion of All HHIP programs	Average Change in Outcomes Per Program	Proportion Change in Service Hours Per Program	Average Initial Functional Assessment Score
NRTH	2	0.9%	182	23.4%	8.5 (+4.9)	-66.7%	38.5
NRTHWST	46	19.8%	188	24.1%	3.9 (+1.5)	-7.1%	40.7
STH	184	79.3%	409	52.5%	5.5 (+0.6)	21.8%	39.3
Total	232	100.0%	779	100.0%	5.2 (+0.6)	13.7%	39.6

² The results for the Age Group 95+ is not discussed in this Report because the number of programs in the evaluation sample group who were 95 years or older was only 4 clients. Because of this the increase of 8.8 points (± 5.2) was not statistically significantly at the 95% confidence level.

Referral Source

There was a high proportion of unknown source referrals in the total HHIP client group making it difficult to compare the distribution of referral sources between the sample and the total cohort.

However, it is clear that the majority of referrals for both the sample group and the total cohort were received from Public Hospitals, Private Hospitals and Care Assess (66% of the sample and 52% of the total cohort). It appears as though both the Private Hospitals and Care Assess were over represented in the sample group with 7.7% and 5.2% more of the referrals compared to the total cohort.



Referral Source	Number of Programs in Evaluation Sample Group	Proportion of Programs in Evaluation Sample Group	Number of All HHIP programs	Proportion of All HHIP programs	Average Change in Outcomes Per Program	Proportion Change in Service Hours Per Program	Average Initial Functional Assessment Score
Tas CarePoint	6	2.6%	10	1.3%	7.3 (+-3.8)	200.0%	41.2
Hospital (private)	58	25.0%	135	17.3%	6.6 (+-1.0)	42.6%	37.0
Hospital (Public)	57	24.6%	188	24.1%	5.8 (+-1.3)	36.2%	38.3
Care Assess	38	16.4%	87	11.2%	5.0 (+-1.5)	-52.9%	42.2
Community Nursing Service	9	3.9%	27	3.5%	5.0 (+-2.4)	88.9%	40.9
Other community-based government medical/health service	...	...	...	...	...	...	...
Residential Aged care facility (NH or aged care hostel)	...	...	...	...	...	...	...
Not stated/inadequately described	17	7.3%	50	6.4%	4.4 (+-1.9)	39.3%	39.7
Family, significant other	9	3.9%	18	2.3%	3.7 (+-3.2)	20.0%	38.8
GP/medical practitioner - community based	12	5.2%	41	5.3%	3.3 (+-2.6)	120.0%	40.3
Other government medical / health service	...	...	...	...	...	...	...
Self	17	7.3%	37	4.7%	2.9 (+-1.7)	0.0%	43.9
Other community service - health	...	...	...	...	...	...	...
Psychiatric/mental health service or facility	...	...	...	...	...	...	...
GP Health Assessment	...	...	...	...	...	...	...
Government residential aged care facility	...	...	...	...	...	...	...
Specialist aged or disability assessment team/service (e.g. ACAT)	...	...	...	...	...	...	...
Other community service - non-health	...	...	...	...	...	...	...
-
Total	232	100.0%	779	100.0%	5.2 (+-0.6)	13.7%	39.6

Initial Assessment Score Attributes

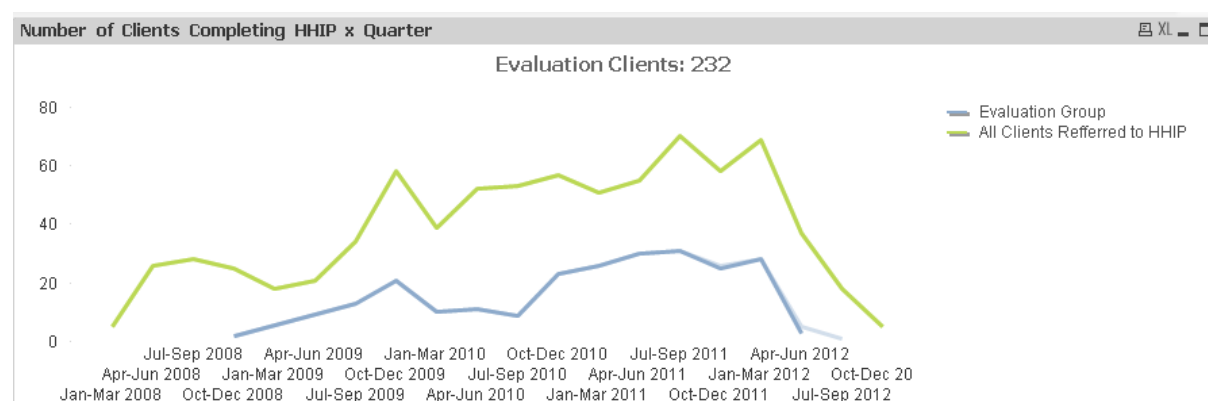
The average initial assessment score for the evaluation sample group was 39.6 out of 50 and the largest proportion of all initial assessments (32.3%) was in the range 35-39.

It should be noted that 48.7% of the total HHIP cohort did not have an initial assessment recorded in the database. This was due to data entry issues.

Initial Assessment	Number of Evaluation Sample Referrals	Proportion of Evaluation Sample Referrals	Number of All Referrals	Proportion of All Referrals	Average Change in Outcomes	Proportion Change in Service Hours	Average Initial Functional Assessment Score
Less than 30	8	3.4%	21	2.7%	9.0 (+-4.5)	60.0%	28.0
30 - 34	35	15.1%	72	9.2%	7.4 (+-1.7)	30.1%	33.0
35 - 39	75	32.3%	132	16.9%	7.2 (+-0.9) ³	4.1%	36.8
40 - 44	58	25.0%	86	11.0%	4.4 (+-0.9)	25.7%	41.5
45 - 50	56	24.1%	89	11.4%	1.6 (+-0.4)	-11.1%	47.1
-	0	0.0%	379	48.7%	(+-)		
Total	232	100.0%	779	100.0%	5.2 (+-0.6)	13.7%	39.6

HHIP Activity Over Time

Both the sample group and the total cohort of HHIP programs reported an increase in completed programs as HHIP became more established.



³ Green indicates that the result is statistically significantly better than the outcome for the total sample. I.e. The average change in outcomes for the total sample was an increase of 5.2 points (± 0.6 points). The change in outcomes for clients with an initial assessment score between 35 and 39 was an increase of 7.2 points (± 0.9) which was statistically significantly higher than the total sample by at least 0.5 points at the 95% confidence level: $(7.2 - 0.9) - (5.2 + 0.6)$. The reasons why scores between '30 - 34' or 'less than 30' are not statistically significantly better than the outcome for the total sample is because the numbers of referrals were not great enough to reduce the error bars to such a degree that they wouldn't overlap.

3. Functional Assessment Outcomes

Description of Functional Assessment Tool

The National HACC Functional Assessment Instrument was used to evaluate client outcomes. Comparing the difference in the scores upon commencement and completion of HHIP provided an indication of how HHIP was able to influence client outcomes.

The Functional Assessment Tool provides a total score out of 50 (20 for Self Care and 30 for Domestic Functioning). The areas covered by the tool are as follows:

- **Self Care Functional Assessment:** bowels, bladder, grooming, toilet use, feeding, transfer, mobility, dressing, stairs, bathing.
- **Domestic Functioning Assessment:** Telephone, Shopping, food preparation, housekeeping, laundry, transportation, responsibility for own medication, finances.

Overview of changes in Functional Assessment Outcomes

Out of the 232 clients assessed as part of the sample group:

- The majority had improved outcomes after completing HHIP (82.8%) and the average change in outcomes was an improvement of 5.2 points (± 0.6).
- A greater proportion of female clients showed improved outcomes (87%) compared to male clients (65%)
- Greater improvements in outcomes were observed in domestic functioning (+4.5 points per client) compared to Self Care (+0.8 points per client)
- Positive outcomes were consistently observed across all age groups
- The greatest improvements in single domain areas were in shopping (58.7%), Laundry (50.3%), Housekeeping (43.5%), Food Preparation (37.6%) and Mode of Transport (36.6%).
- Greatest declines in outcomes were for Laundry (4.3%) and Medications (3.7%)

What practical difference has HHIP made?

Independence outcomes for HACC clients are measured against a variety of sub domains. Analysis of these scores prior and post HHIP reveals a significant improvement in independence outcomes for clients. The most dramatic improvements were observed for domestic functioning includes areas such as shopping, laundry and housekeeping.

The average initial assessment score for shopping prior to HHIP was a score of 1.9. This means that clients needed to be accompanied on any shopping trip. However, the final assessment score for shopping after completing HHIP was 2.9. A score of 2.9 means clients were able to shop independently for small purchases.

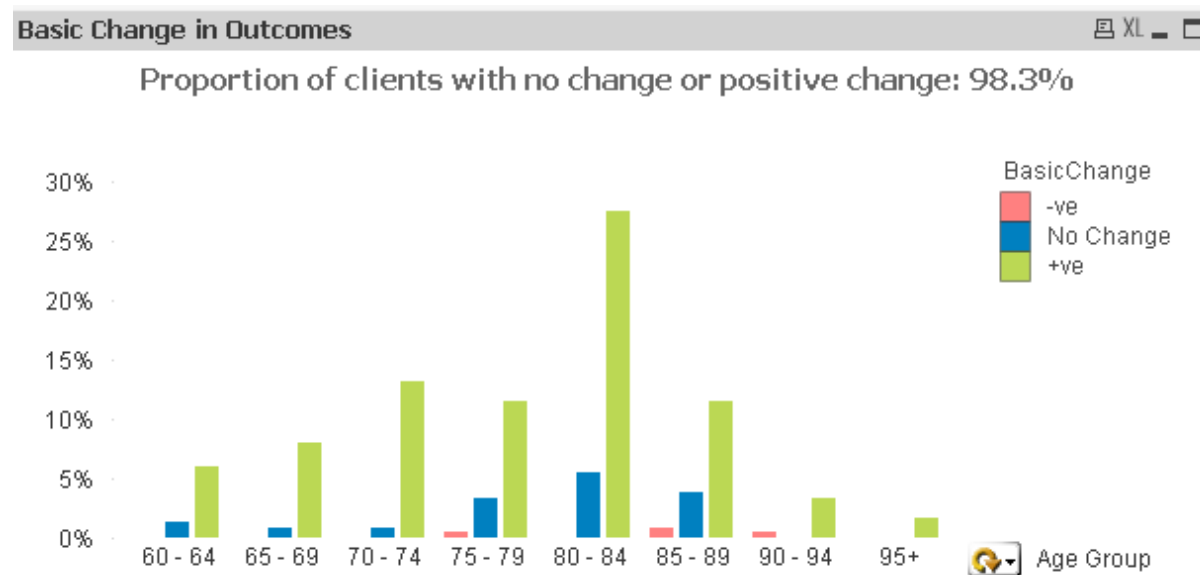
This improvement which is attributable to HHIP is just one example of how participation in HHIP has enabled clients to improve their independence outcomes.

Basic Change in Client Outcomes

A basic change in independence outcomes identifies if a client's outcomes have improved, stayed the same or decreased. This measure does not provide any detail about the magnitude of change experienced by clients.

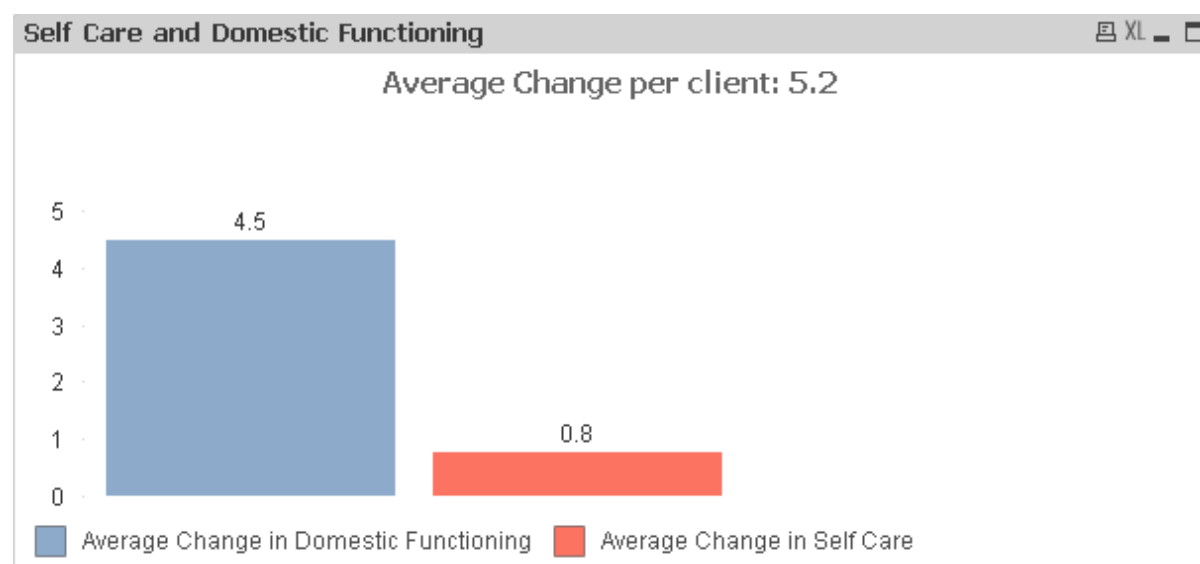
Overall, 82.8% of clients reported an improvement in outcomes, 15.5% did not have a change in outcomes and 1.7% had a decrease in outcomes. This means that despite being referred to HHIP due to requests for increased service delivery hours, 98.3% of clients were able to maintain or improve their functional outcomes.

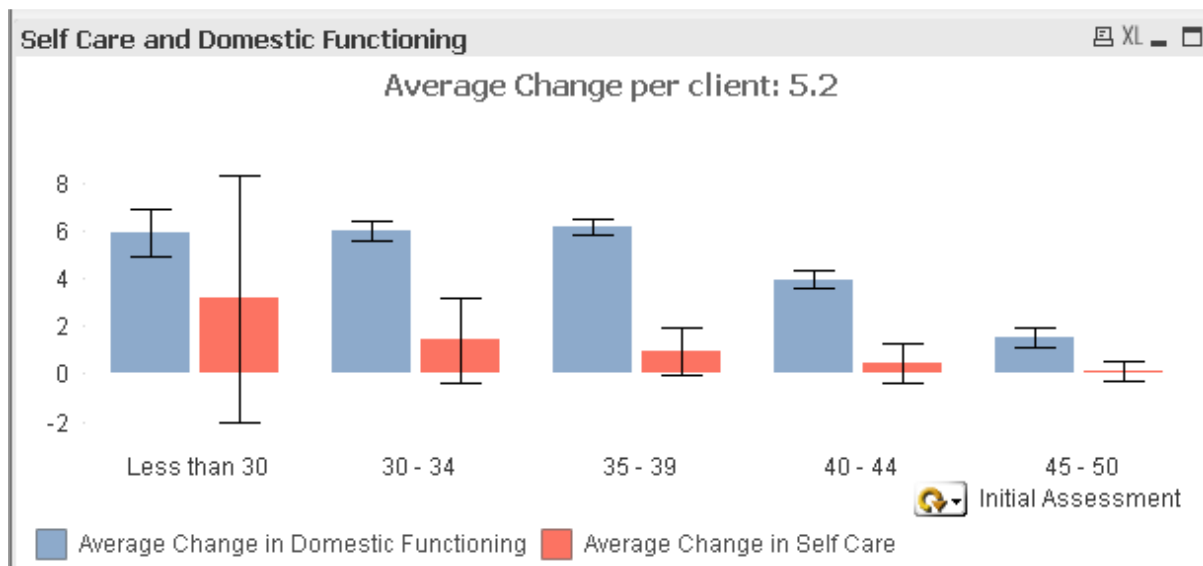
Basic Change in Client Outcomes by Age



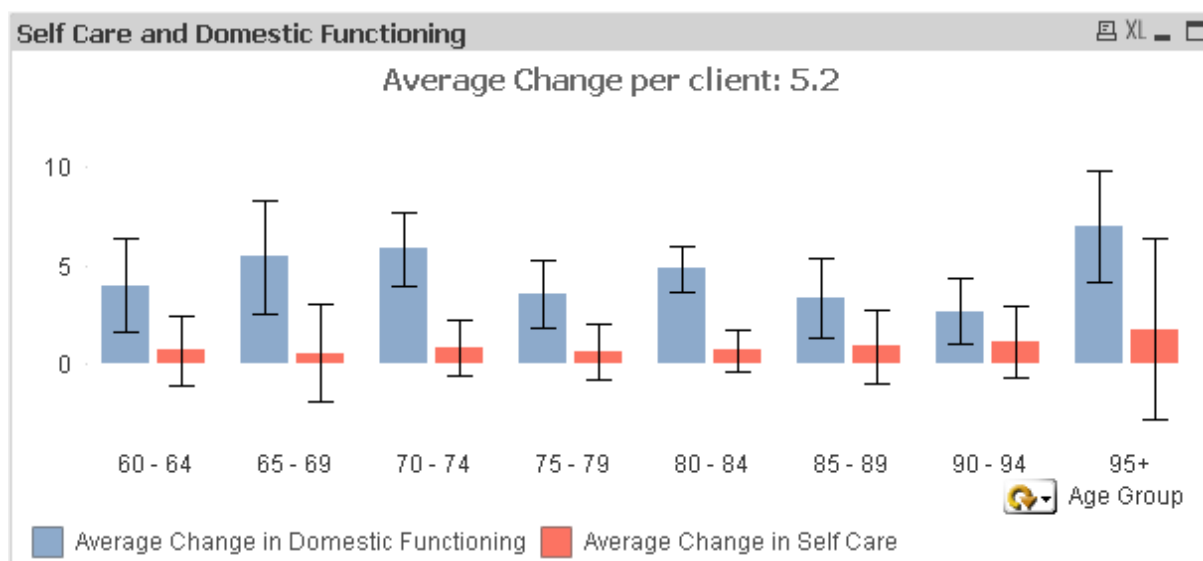
Average Change in Client Outcomes by Functional Assessment Domain

The average change in client outcomes was more pronounced for Domestic Functioning than for Self Care. On average, clients from the sample group showed an improvement of 4.5 points for Domestic Functioning and an improvement of 0.8 points for Personal Care.

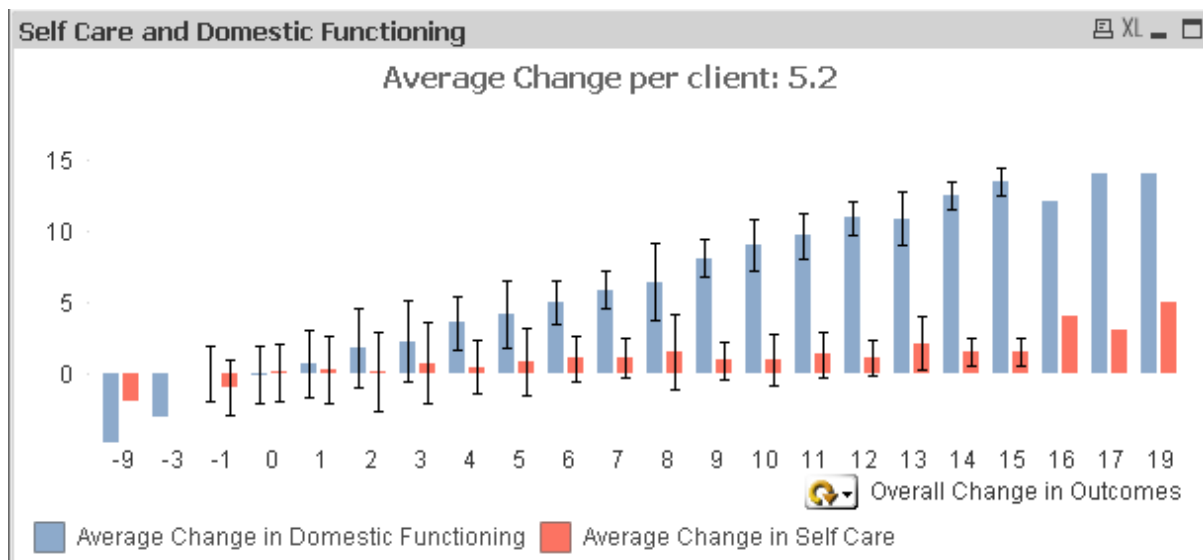




When analysing the average change in outcomes by initial functional assessment scores, we see that clients with an initial score less than 40 had the largest improvement in domestic functioning outcomes. No statistically significant improvements in Self Care outcomes were observed. Clients with initial scores between 45 and 50 only showed a small improvement in Domestic Functioning. It should be noted that changes in outcomes for clients with high initial assessment scores may be under reported due limitations with the assessment tool ie it is not possible to score greater than 50. A total of 14% of the sample group reported a maximum functional assessment score at the completion of HHIP.



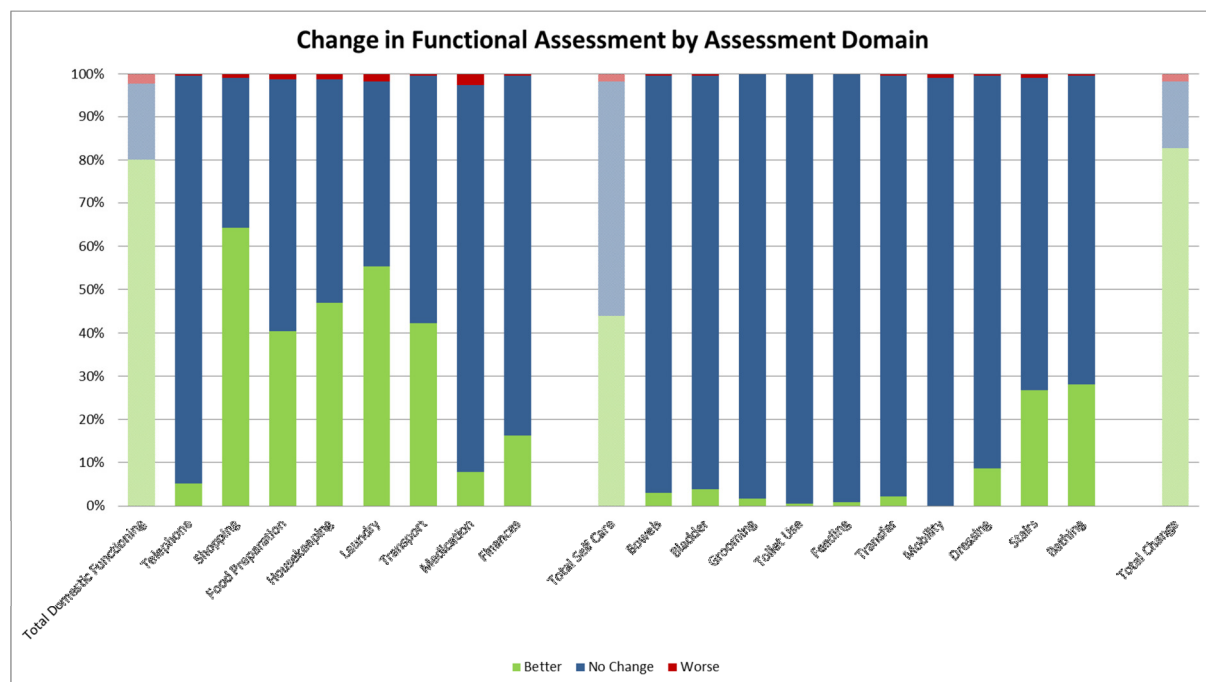
The differences in outcomes due to age were not substantial or indicative of a general association between age and changes in outcomes. Across all age groups it was apparent there was a greater improvement in domestic functioning compared to Self Care.



The above graph indicates that improvement in overall outcomes was largely driven by improvements in Domestic Functioning; i.e. the largest changes in overall outcomes were attributable to improvements in Domestic Functioning rather than improvements in Self Care.

Average change in outcomes by Assessment Domains

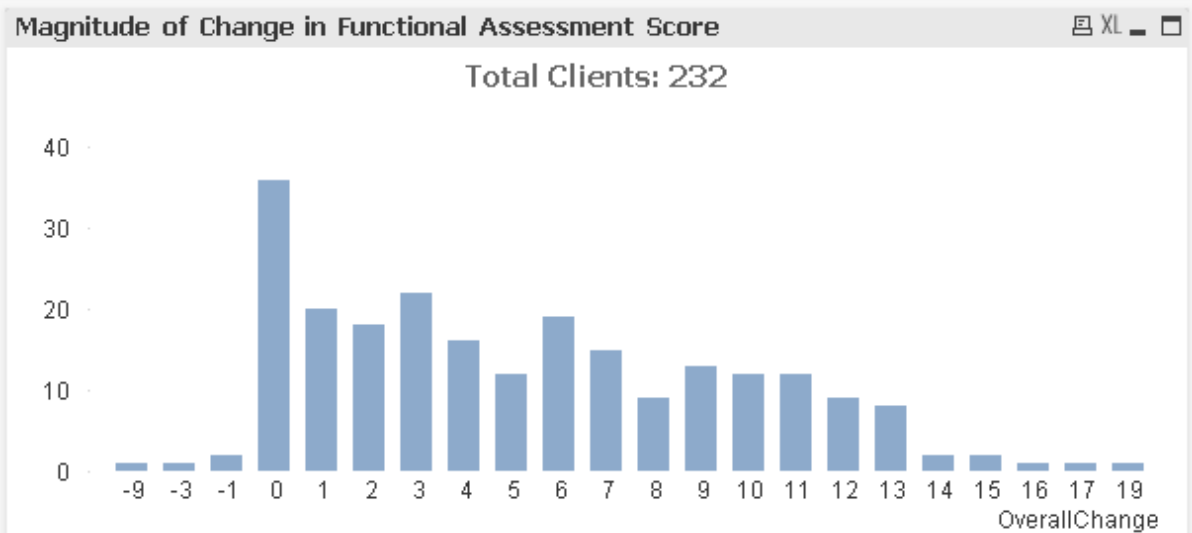
The Functional Assessment Instrument is comprised of a number of items or assessment domains classified as either Self Care or Domestic Functioning. The following changes in Functional Assessment scores by Assessment Domain were observed for the evaluation sample group:



Change in Functional Assessment x Assessment Domain						
Assessment Domain	Change in Outcomes (#)			Change in Outcomes (%)		
	Worse	No Change	Better	Worse	No Change	Better
Telephone	1	219	12	0%	94%	5%
Shopping	2	81	149	1%	35%	64%
Food Preparation	3	135	94	1%	58%	41%
Housekeeping	3	120	109	1%	52%	47%
Laundry	4	100	128	2%	43%	55%
Transport	1	133	98	0%	57%	42%
Medication	6	208	18	3%	90%	8%
Finances	1	193	38	0%	83%	16%
Total Domestic Functioning	5	41	186	2%	18%	80%
Bowels	1	224	7	0%	97%	3%
Bladder	1	222	9	0%	96%	4%
Grooming	0	228	4	0%	98%	2%
Toilet Use	0	231	1	0%	100%	0%
Feeding	0	230	2	0%	99%	1%
Transfer	1	226	5	0%	97%	2%
Mobility	2	230	0	1%	99%	0%
Dressing	1	211	20	0%	91%	9%
Stairs	2	168	62	1%	72%	27%
Bathing	1	166	65	0%	72%	28%
Total Self Care	4	126	102	2%	54%	44%
Total Change	4	36	192	2%	16%	83%

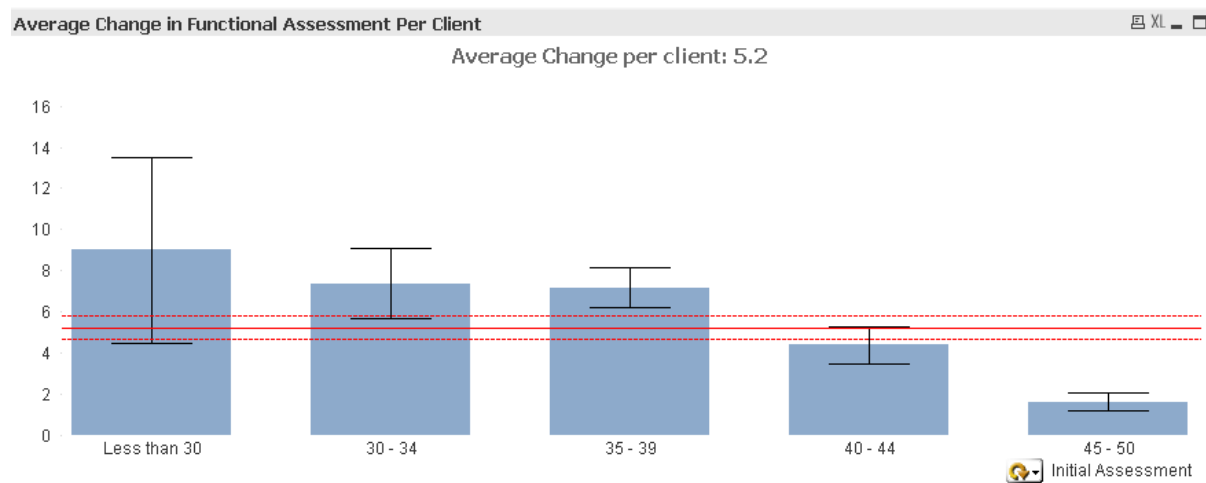
Magnitude of Change in Client Outcomes

When assessing change in client outcomes due to participation in HHIP, it is important to analyse the magnitude of change in outcomes in addition to analysing if any change occurred. It is encouraging to note that on average, each client had an improvement of 5.2 points on the functional assessment score after participating in HHIP.



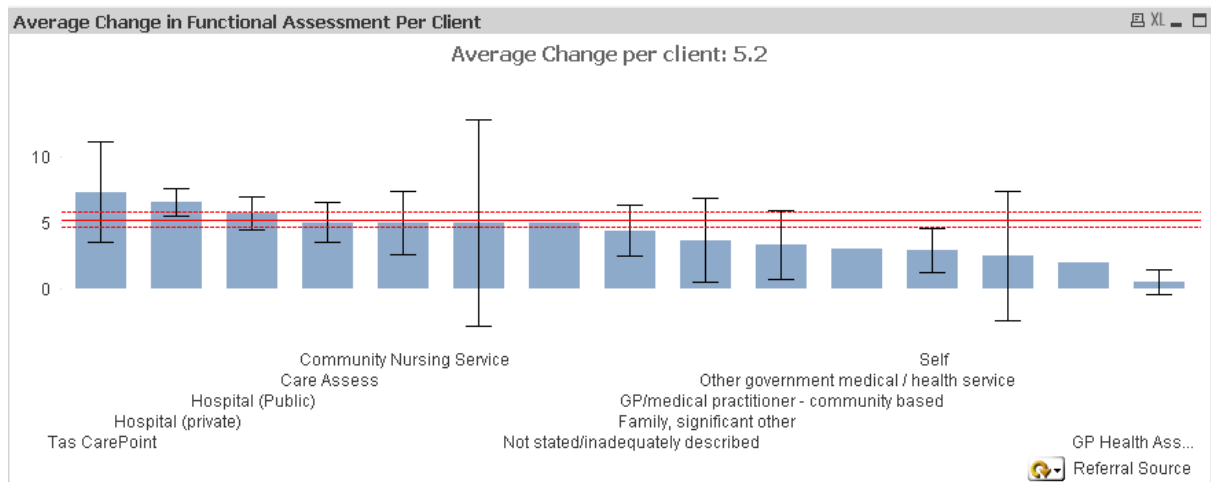
Average change in Client Outcomes by Initial Functional Assessment

The initial functional assessment score influenced how much improvement was observed in the outcomes of clients upon completion of HHIP. The smallest change in outcomes was observed for clients who had a functional assessment between 45 and 50. The change in client outcomes for this group was +1.6. This small change in functional assessment scores for clients entering the program with high levels of functioning is to be expected as the measurement tool does not measure beyond 50 as mentioned previously.



Changes in Outcomes by Referral Source

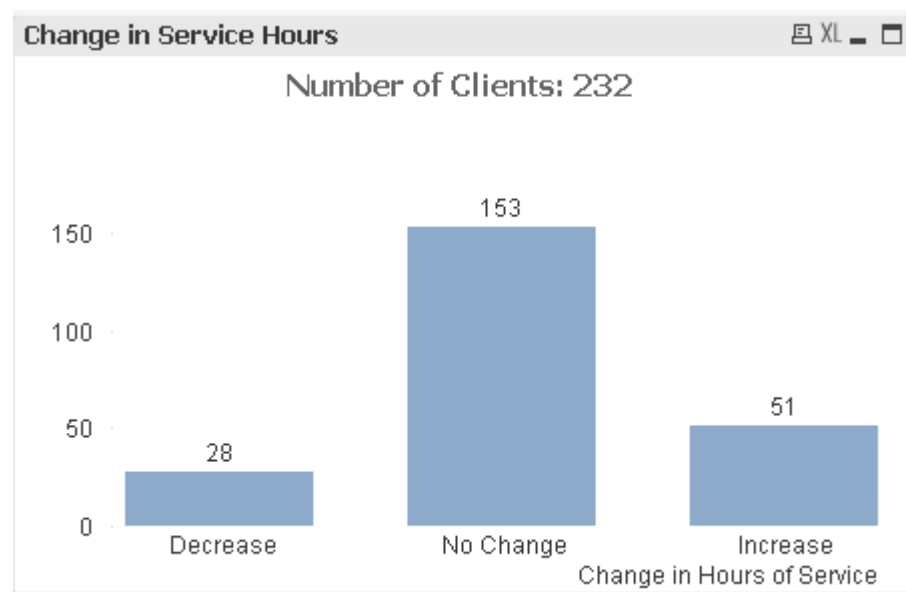
Improvements in outcomes were observed for programs from each referral source. However, there was a wide variety in the amount of improvement in outcomes by referral source with at least 5 referrals. The most significant improvement in outcomes was observed for the private hospitals. Self referrals resulted in the smallest improvement in client outcomes.



4. HACC Service Hours Outcomes

Overview of Changes in HACC Service Hours Outcomes

- There was no statistically significant change in service delivery hours after completion of HHIP compared to service hours recorded before commencing HHIP.
- Overall 66% reported no change in service delivery hours.
- Considering referrals are made to HHIP due to requests for increased services which the referral source identifies as being potentially avoidable, maintaining existing service delivery hours should be regarded as a positive outcome.



Recommendation: Consideration should be given to establishing a control group to determine what increase in service hours could be expected if HHIP were not provided as an intervention.⁴

- Clients referred from Care Assess showed the largest average reduction in service hours, however Care Assess clients were more likely to have a high initial functional assessment scores (40% of Care Assess clients had an initial functional assessment score greater than or equal to 45 compared to 24% for all other referral sources). It appears as though Care Assess referral procedures are the most effective at identifying clients likely to achieve improved independence outcomes and subsequent reduced need for service hours in response to a HHIP intervention.
- A number of clients (102, or 44%) commencing HHIP were not receiving any HACC service hours prior to being referred to and commencing HHIP. It is likely that a number of these clients had not accessed HACC services despite being eligible prior to referral. However, following referral, assessment and completion of HHIP, appropriate service hours for these clients would be assigned if necessary/appropriate. This issue introduces a potential bias, and to address this, a cohort of the sample which had hours prior to HHIP was compared to the total sample. The cohort of the sample with greater than 0 HACC hours before

⁴ The Home Care program client base would not constitute a suitable control group, which (for comparability with the sample group) would need to constitute a set of clients within the 'target population', who (for whatever reason) did not receive a HHIP intervention.

commencing HHIP was a total of 130 programs of the 232 programs used for the rest of the evaluation (56% of the evaluation sample). Analysis of the impact of HHIP upon the hours of service delivery received for cohort after HHIP compared to before was conducted, and revealed an 11% reduction in service delivery hours compared to the total sample. This finding was statistically significant². This implies that a number of clients entering HHIP may not have been accessing HACC services despite being eligible and thus masking some of the improvements made by HHIP.

	Total hours prior to engagement with HACC	Total hours after engagement with HHIP	% Change in hours after engagement with HHIP	Statistically significant?
Evaluation Sample	116.8	132.8	+13.7%	No ⁵
Cohort of Evaluation sample that had > 0 hours prior to HHIP	116.8	103.8	-11.1%	Yes ²

Bias caused by inconsistent service delivery hours

The following scenario illustrates how differing access to HACC service hours between analogous clients prior to HHIP can cause bias when interpreting the effectiveness of HHIP at maintaining or reducing service hours:

“Client A is receiving ‘0’ hours before the program because they simply have not accessed services they were eligible for, for many years. They reached 75 yrs of age without any HACC services which they were otherwise eligible for. Client B is in an analogous situation to Client A, and is comparable to them in every respect, however they have been receiving fortnightly domestic assistance for some years. How can we properly compare the impact of HHIP upon their hours of services received? Client A has a sharp decline in health and loss of functional independence, is at risk of going in to residential care, but requests significant HACC services. However instead they are referred to HHIP because they show potential over 12 weeks of regaining independence. A similar event occurs to client B triggering a referral to HHIP. At the end of both programs, both clients go on low level fortnightly Domestic Assistance. However HHIP has been successful for both in preventing higher levels of services, and also in preventing their loss of independence such as going into residential care. However the data looks quite different: Client A’s hours have gone up after the program, whereas Client B’s hours have stayed the same. However on the ground an observer can see within the context that HHIP has been successful from their perspective in preventing an escalation in services and the costs associated with their care.”

⁵ The reason why there was a statistically significant result for the smaller sample group (Cohort of sample group with HACC hours before commencing HHIP > 0 hrs: n = 130), while the result for the larger sample group (Evaluation sample group n = 232) was not statistically significant at the 95% confidence interval, is that the spread of results was smaller. This reduced the standard deviation, which in turn reduced the confidence interval. The effect of removing the confounding factor of ‘inaccurate’ starting hours (clients with 0 hours prior to HHIP) was that the results observe became more consistent. However, although the smaller sample group of 130 programs does show a statistically significant result, the size of the effect is small (the confidence intervals almost overlap with 0). Therefore, although the observed reduction in service hours after HHIP for the smaller cohort of the evaluation sample is a statistically significant difference in this study, the small effect size leaves open the question as to how important this difference is. Increasing the evaluation sample would be necessary to answer this question.

Proportion of clients receiving no HACC services after completion of HHIP

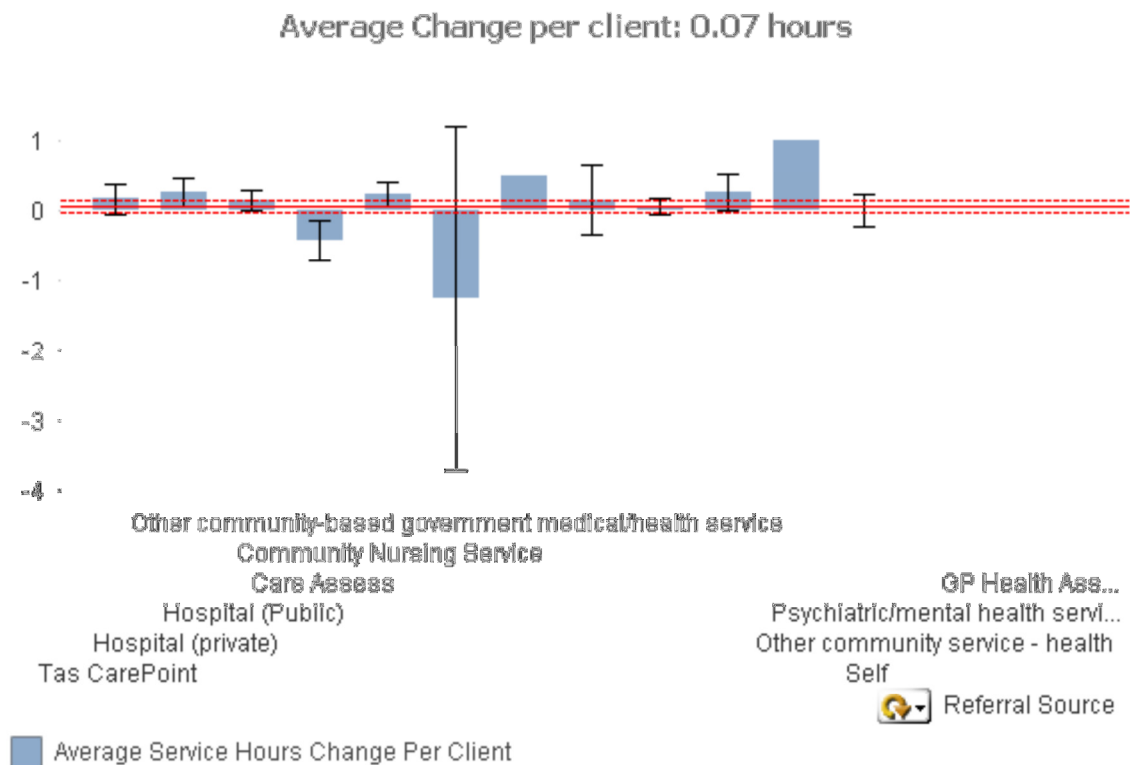
The following table provides the number and proportion of clients in the sample group who had 0 HACC service hours once they completed the program:

	Number of clients with no HACC service hours before starting HHIP	Proportion of clients with no HACC service hours before starting HHIP	Number of clients with no HACC service hours upon completion of HHIP	Proportion of clients with no service hours upon completion of HHIP
Original sample (n=232)	102	44%	80	35%
Refined sample (n=130)	0	0	15	19%

This means that there were 65 clients (28%) of the original sample who had no HACC hours before or after HHIP.

Change in HACC Service Delivery Hours by Referral Source

HHIP resulted in a minor average increase in service hours of 0.07 hour per client who completed the program. However, this increase was not statistically significant. Improvements in the hours of service provided after completion of HHIP varied depending upon the referral source. Referrals from Care Assess resulted in the most significant reduction in hours with an average reduction of 0.41 hours per fortnight.



Care Assess was the only referral source which referred clients that ended up with a statistically significant reduction in service hours. The total reduction in service hours for Care Assess referred clients was 15.8 hours (53%).

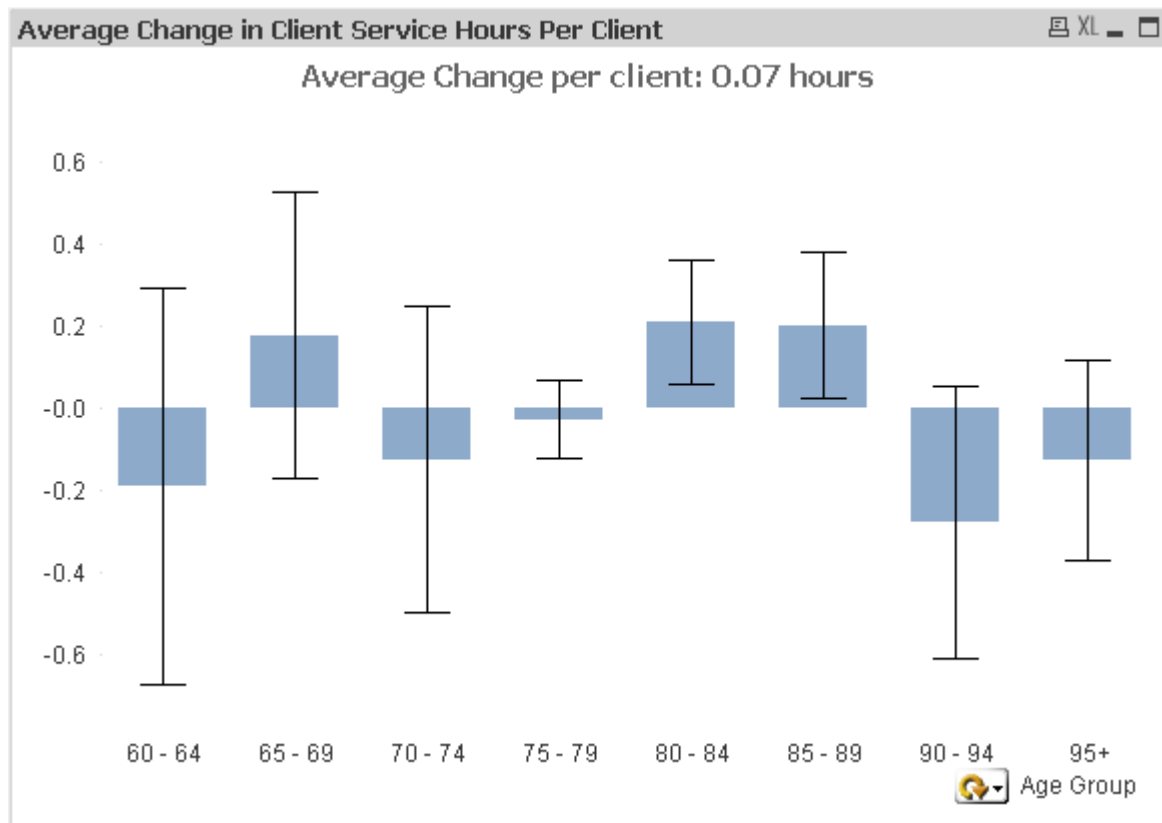
Recommendation: Care Assess should provide training and/or advice to other referral sources on how to best identify clients that will benefit most from HHIP.

Recommendation: Care Assess should screen clients referred to HHIP to ensure clients with greatest likelihood of receiving reduced service hours after a HHIP program are given priority access to this service.

Referral Source	Number of Evaluation Sample Referrals	Proportion of Evaluation Sample Referrals	Average Change in Outcomes	Total Hours Prior to HHIP	Total Hours Post HHIP	Proportion Change in Service Hours	Total Hours Change	Average Initial Functional Assessment Score
Tas CarePoint	6	2.6%	7.3 (+-3.8)	0.5	1.5	200.0%	1	41.2
Hospital (private)	58	25.0%	6.6 (+-1.0)	35.3	50.25	42.6%	15	37.0
Hospital (Public)	57	24.6%	5.8 (+-1.3)	23.5	32	36.2%	8.5	38.3
Care Assess	38	16.4%	5.0 (+-1.5)	29.8	14	-52.9%	-15.75	42.2
Community Nursing Service	9	3.9%	5.0 (+-2.4)	2.3	4.25	88.9%	2	40.9
Other community-based government medical/health service	...	...	...	...	...	...	...	...
Residential Aged care facility (NH or aged care hostel)	...	...	...	...	...	...	...	...
Not stated/inadequately described	17	7.3%	4.4 (+-1.9)	7.0	9.75	39.3%	2.75	39.7
Family, significant other	9	3.9%	3.7 (+-3.2)	2.5	3	20.0%	0.5	38.8
GP/medical practitioner - community based	12	5.2%	3.3 (+-2.6)	2.5	5.5	120.0%	3	40.3
Other government medical / health service	...	...	...	...	...	...	...	...
Self	17	7.3%	2.9 (+-1.7)	7.0	7	0.0%	0	43.9
Other community service - health	...	...	...	...	...	...	...	...
Psychiatric/mental health service or facility	...	...	...	...	...	...	...	...
GP Health Assessment	...	...	...	...	...	...	...	...
Total	232	100.0%	5.2 (+-0.6)	116.8	132.75	13.7%	16	39.6

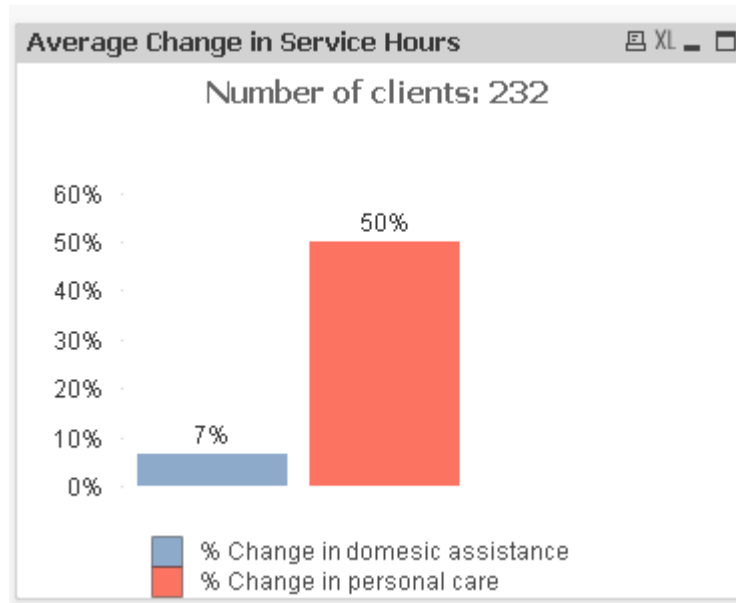
Change in HACC Service Delivery Hours by Age

There does not appear to be a correlation between the age of the client and the success of HHIP at maintaining service hours upon completion of the program. However, clients aged between 80 and 89 were more likely to have an increase in service delivery hours compared to other age groups.

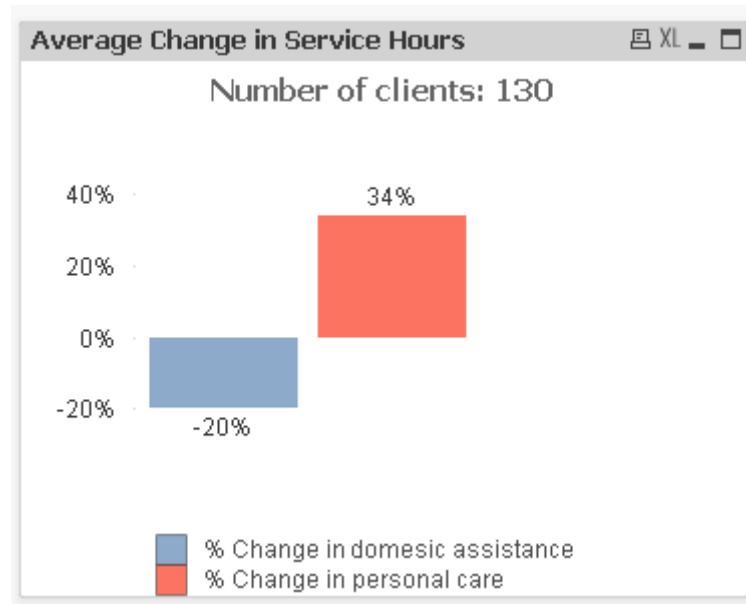


Change in HACC Service Delivery Hours by Service Type

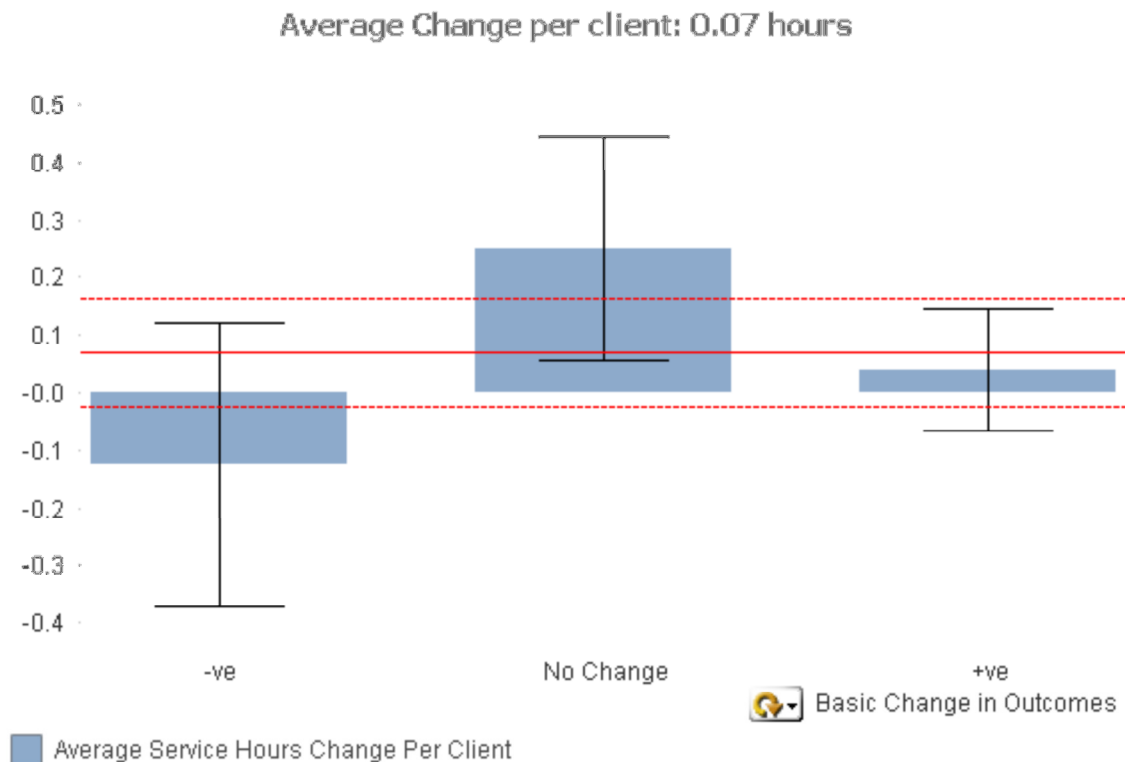
HACC provides services classified as either Personal Care or Domestic Assistance. The majority (84%) of service hours for clients commencing HHIP was for Domestic Assistance. However, the greatest change in service hours was an increase of 9.5 hours for personal care compared to an increase of 6.5 hours for domestic assistance. Proportionally, this resulted in a 50% increase for personal care and a 7% increase for domestic assistance. This implies that HHIP is particularly effective at limiting increases in the need for domestic assistance services.



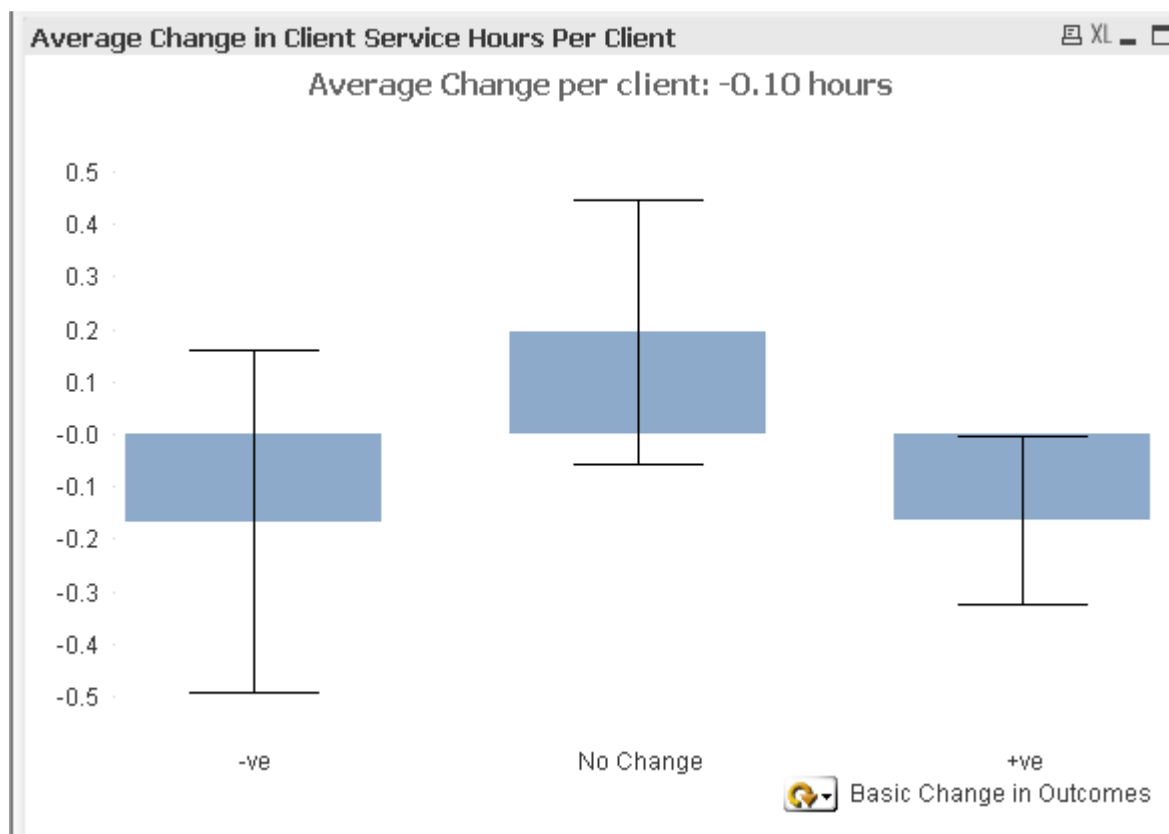
When only considering clients who received at least some HACC services prior to HHIP, we can see that there was a 20% reduction in domestic assistance and a 34% increase in personal care resulting in an total decrease of 13 hours per fortnight. This again highlights the effectiveness of HHIP at improving independence outcomes for domestic functioning and resultant reductions in domestic assistance service hours.



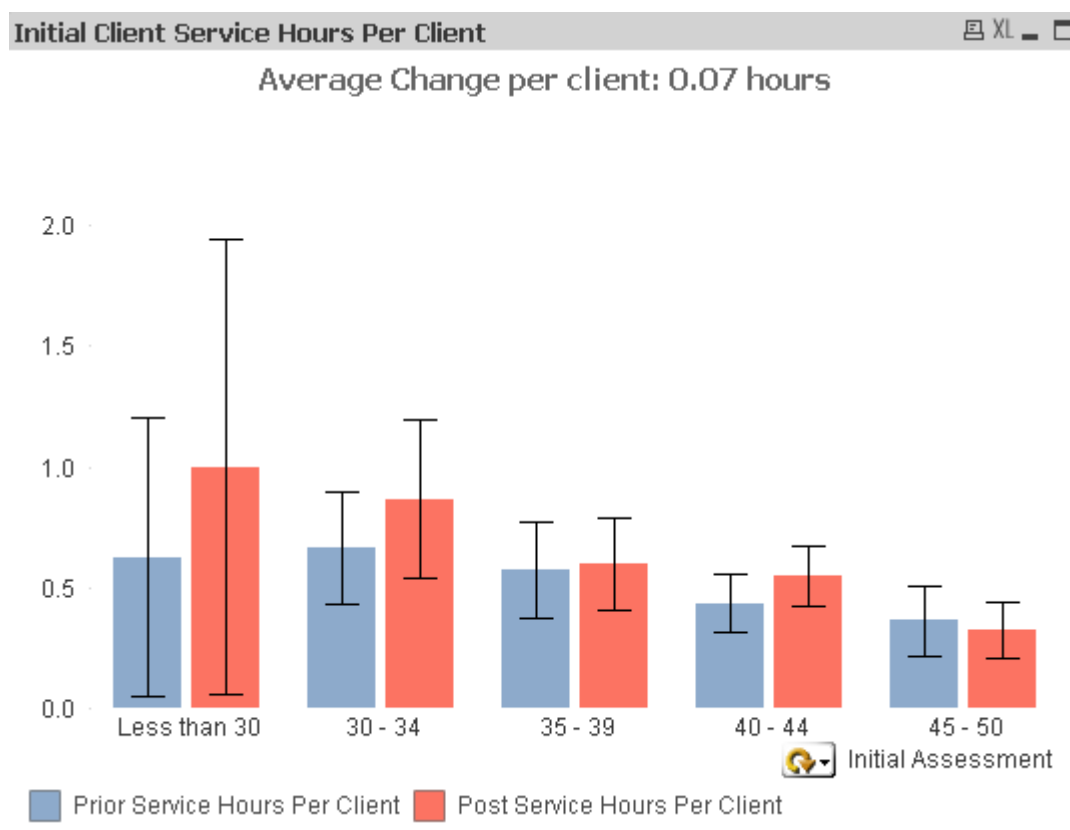
5. Correlation between Changes in Client Outcomes and HACC Service Delivery Hours



With the sample data available, it is not possible to ascertain what effect a change in client outcomes has upon client service delivery hours, except to say that if a client's outcomes don't change, it is likely that their service hours will increase. This confirms the fact that clients referred to HHIP do require increased services. Despite their outcomes remaining constant, increased services are required as was initially requested by the client.



When only including clients that received a HACC service prior to HHIP (n=130), it can be seen that where HHIP has contributed to an increase in client outcomes there has also been a small decrease in service hours.



This graph shows the relationship between initial functional assessment and the change in service hours as a result of HHIP. Further data is required to confirm any statistically significant result, however it appears likely that programs with a high initial assessment (45 to 50) are more likely to reduce or maintain service hours after completing HHIP.

Issues for further analysis

Considering the limited scope of this initial evaluation, it is recommended further analysis be undertaken once additional data entry has occurred to enable a larger sample group. Issues which could be undertaken if further analysis were possible include:

- Analysing client outcomes and service usage at 6 and 12 month reviews after completion of HHIP.
- Analysis of differences which may be attributable to geographic regions as well as accessibility issues attributed to geographic localities.
- Establishing a control group or data collection mechanism to estimate projected client service usage if referrals to HHIP were not made.
- Analysis of referrals to residential care after HHIP interventions.

6. Conclusion

An analysis of functional outcome assessments before and after the HHIP intervention as well as comparing HACC service hours before and after the HHIP intervention revealed HHIP was effective at improving client outcomes and preventing an increase in HACC service hours. This improvement in outcomes appears to have prevented the need for increased HACC services, which was often requested before the HHIP intervention. In addition, an analysis of service hours limited to clients receiving HACC services prior to HHIP found a small but statistically significant reduction in hours of services received by clients after the HHIP intervention.

HHIP was able to improve client outcomes by an average of 5.2 points on a scale of 50. The most significant improvements were for domestic assistance (+4.5 points) compared to personal care outcomes (+0.8 points). The improvement in domestic assistance outcomes was reflected in no statistically significant increase in domestic assistance service hours being observed (7%) compared to an increase in personal care service hours of 50%.

Limited analysis of program and client characteristics was possible due to the small sample size. Due to the limited sample size it is likely that a number of client and service delivery characteristics which had a real effect upon client outcomes and service hours were not detected. It is recommended that the inability to detect these effects (type II errors) be addressed through further analysis with a larger sample group in the future. However, at this time, the following client and service characteristics revealed statistically significant findings for the following:

- Initial assessments with a score between 35 and 39 showed the largest improvements in outcomes (+7.2 points) compared to initial assessments with a score between 45 and 50 which showed the smallest improvement (+1.6 points)
- Self-referrals did not report as large an improvement in client outcomes (+2.9 points) as the rest of the sample.
- Referrals from Care Assess resulted in a 53% reduction in service hours while referrals from the private hospital resulted in a 43% increase in service hours.
- Clients aged between 80 and 89 reported an increase in service hours; and
- Existing HACC clients (who experienced an increase in functional outcomes) experienced a decrease in HACC service hours (11%).

These findings reveal HHIP is successful at achieving its program aims. The findings of this evaluation support the strategic impact of HHIP as an intensive reablement service. However, further analysis of a larger sample group would enable more definitive conclusions to be drawn to help inform future planning and service delivery.

6.1 Issues for further analysis

Considering the limited scope of this initial evaluation, analysis which could be undertaken if further resources were available includes:

- Analysing client outcomes and service usage at 6 and 12 month reviews after completion of HHIP.
- Analysis of differences which may be attributable to geographic regions as well as accessibility issues attributed to geographic localities.
- Establishing a control group or data collection mechanism to estimate projected client service usage if referrals to HHIP were not made.
- Analysis of referrals to residential care after HHIP interventions.

7. Recommendations

Recommendation: Further analysis should be undertaken to include the remaining data (70%) to be entered into the system to ensure all the real effects of HHIP upon client outcomes and HACC service hours are identified.

Recommendation: Care Assess should provide training to other referral sources (particularly private and public hospitals) on how to best identify clients that will benefit most from HHIP.

Recommendation: Care Assess should screen clients referred to HHIP to ensure clients with greatest likelihood of receiving reduced service hours after a HHIP program are given priority access to this service.

Recommendation: Consideration should be given to establishing a control group to determine what increase in service hours could be expected if HHIP were not provided as an intervention.


8. Further Acknowledgements

Care Assess wish to thank all our HHIP coordinators and other staff who have worked with Care Assess to manage HHIP since 2007. In particular, Founding Director Merryl Lane was instrumental in designing and implementing the program and growing what is now a state-wide service since its first beginnings as a pilot in the South.

Care Assess also wish to acknowledge all our Service Providers across Tasmania who have worked with us in delivering domestic assistance and personal care for our clients in this program. Care Assess' business model is unique in completely separating the needs-assessment/care-coordination function provided by our staff from the direct-care service delivery, which is provided by the staff of independent organisations external to Care Assess. Thank you to the many providers of Care Assess who have subcontracted services on our behalf to HACC clients in this program across Tasmania.

We also thank all of our clients who completed and benefitted from a HHIP program; thank you for the privilege of working **with you** and **for you**.

Finally, Care Assess owes a debt of gratitude to Silver Chain in Western Australia for pioneering the approach that Care Assess used in adapting our model of service delivery in HHIP in consultation with them.



Joe Towns | Chief Executive Officer