



# **FEROS CARE'S SMART HOME MODIFICATIONS**

**Designing connected homes of the future for Australian Seniors**

## **EVALUATION REPORT**

Evaluation by Southern Cross University | January 2021

# ACKNOWLEDGMENTS

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WE WISH TO ACKNOWLEDGE THE 61 SENIORS AND THEIR FAMILIES WHO ENTHUSIASTICALLY PARTICIPATED IN THIS PILOT.

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**NOTE.** Throughout this report the clients in this program are referred to as “clients” of Feros Care.

**NOTE.** While case studies presented detail the true stories of real clients all names provided are fictitious.



# EXECUTIVE SUMMARY

## INTRODUCTION

This report details the findings of the evaluation of Feros Care’s Smart Home Modification program. The program was funded by the Australian Government’s Department of Health and Ageing Commonwealth Home Support Program (CHSP) Innovations Grant. In correlation with emerging technologies, Feros Care aimed to support the health and wellbeing of seniors and their capacity to remain independent in the home.

With an aging population, concerns surrounding longevity, increasing health care costs and the preference for older people to remain living independently for as long as possible, emerging Smart Homes and assistive technology presents an exciting opportunity to mitigate the impact of an aging population by supporting seniors to remain independent in the home. In addition, the Smart Home technology may support seniors to maintain social connection to the neighbourhood and community, social inclusion and community engagement, reducing the impacts of social isolation and loneliness. Therefore, this pilot project was designed to explore the effectiveness of Smart Home technologies to support seniors’ to remain in the home by promoting wellbeing and psychological health, independence, safety and control over their lives.



The initial target population for the pilot included CHSP clients from the Gold Coast QLD, Far North Coast, and Mid North Coast, NSW. Criteria for eligibility to enrol in the program included Feros Care clients who were over the age of 65 or 55 if Aboriginal or Torres Strait Islander, living in their own homes, and who wished to increase their confidence in using Smart Home technologies. The program was suited to clients who had functional limitations that made living independently in the community difficult, however, this was not a requirement for inclusion in the program. People ineligible for the program were seniors not eligible for the CHSP.

The project was implemented during COVID-19 which affected the lives of our most vulnerable communities. This presented a unique opportunity to address the health challenges of COVID-19 restrictions by providing an automated domestic service in a time where social isolation was enforced, including digital communication, exercise platform and a connected home that supported entertainment options when social activities were restricted.

The Smart Homes Modification (SHM) program involved installing a suite of smart devices catered to the client’s individual needs. Devices were simple to use but high-tech and included voice enabled technology. Support visits were provided to guide clients in a reablement setting and increase their digital capacity and therefore confidence using new technology.

## AIMS AND OBJECTIVES

The aim of the SHM program was to create a scalable program that provides assistive technology to clients in supporting their health, safety, quality of life, and capacity to reside independently in their own homes.

The project objectives aligned to supporting:

- independence
- safety and security
- confidence using technology
- social connectedness
- health and wellbeing





EVALUATION METHODOLOGY

The evaluation framework involved testing a series of propositions that were developed from the evaluation objectives. The overall purpose of the program objectives were to explore the extent to which the SHM program supported senior’s perceived:

- 1. Independence.
- 2. Safety and security in the home.
- 3. Confidence in using technology.
- 4. Social connectedness
- 5. Health and wellbeing.

Multiple sources of data were used to address the objectives, specifically:

- a) Detailed activity-based audit data, including: participation data, IT service request data, number of home visits, referral statistics, timeframes recorded for new installations, client specific data i.e., Smart Home technology received and how they were used.
- b) Quantitative data, including: the SHM Questionnaire (measures of independence, social connectedness, safety and security and confidence, the Personal Wellbeing Index (PWI) and a modified version of the Unified Theory of Acceptance and Use of Technology (UTUAT)), Client Experience Questionnaire (CEQ; developed from interviews with clients).
- c) Qualitative data, including: interviews with clients representing all stakeholder groups and case studies of exemplars of client experiences of the SHM program, literature review to underpin each of the propositions

REFERRAL SOURCES

In order to determine if there was a demand for this service, Feros Care sent out direct marketing to clients in the Far North Coast, Mid North Coast NSW, and the Gold Coast QLD, advising them of the SHM program that was being offered. Clients were given the opportunity to express their interest in the program by either phoning the Feros Care team or returning their expression of interest via a reply-paid envelope.



RESULTS

Clients

Sixty-one clients were enrolled in the SHM pilot between the 17th of January and the 17th of April 2020, creating 61 Smart Connected Homes. Clients were aged between 68 and 90 years old (M = 80.11, SD = 5.91).

Most clients were female (70.5%), born in Australia (73.8%), lived in NSW (57.4%), had a current spouse/partner (52.5%), were non-indigenous (98.4%) and were of Australian ethnicity (80.3%). All clients reported English as their first language (100%). Approximately half of the clients lived alone (47.5%), and the other half lived with a partner (47.5%). The largest proportion of clients reported that their highest level of education was some years of high school (31.1%), followed by others who had completed a Bachelor Degree (21.3%). The majority of clients were receiving the Age Pension as their current source of income (80.2%).

Outcomes of participating in the SHM program

The SHM CEQ indicated that the most common reason clients participated in SHM program was to be able to use new technology (16.1%). In particular, clients participated in the pilot because:

- 45.9% WANTED TO LEARN HOW TO USE AND KEEP UP WITH TECHNOLOGY
- 29.7% WANTED TO LEARN HOW TO USE TECHNOLOGY AS IT SOUNDED EXCITING
- 10.8% WANTED SOMETHING THAT WOULD HELP WITH MOBILITY ISSUES
- 6.5% THEIR FAMILY THOUGHT IT WAS A GOOD IDEA



The above expectations were largely achieved – case studies and interviews highlighted clients’ experience of participating in the SHM pilot program.

Client reported benefits of participating in the program included:

- 93.4% HELPED WITH COMMUNICATION
- 72% SUPPORTED THEIR DAILY ROUTINES AND ACTIVITIES OF DAILY LIVING
- 49.2% MORE SOCIALLY SUPPORTED
- 83.3% MADE A DIFFERENCE IN THEIR LIFE DAILY
- 92% INCREASED THEIR CONFIDENCE USING TECHNOLOGY
- 36.3% MADE THEM FEEL LESS ALONE
- 91.9% INCREASED THEIR INDEPENDENCE IN THE HOME
- 86.5% THEIR FAMILY THOUGHT IT WAS A GOOD IDEA





The clients also reported that the program exceeded their expectations (91.9%) and they were extremely likely to recommend this program to a friend (68%).

The outcomes of participating in the SHM program are discussed briefly below. For a comprehensive review of the results please refer to Section 5 of this report.

### Independence

Client's feelings of control over their daily affairs increased significantly after participation in the SHM program ( $p < .001$ ) and this improvement was sustained at the 6-week follow-up. Additionally, client's feelings of independence when performing activities of daily living was significantly greater after participation in the SHM program ( $p = .001$ ) and this was also sustained at follow-up.



### Confidence using technology (and technology acceptance)

Clients confidence using technology in general and Smart Home specific technology increased significantly after participation in the SHM program ( $p < .001$ ) and these improvements were sustained at the 6-week follow-up. The majority of clients (92%) reported that the SHM program improved their confidence to use their devices.

Client's acceptance of technology was significantly greater after participating in the SHM program ( $p = .001$ ). Significant improvements were observed on all domains of the extended UTAUT; perceived usefulness, perceived ease of use, social influence, facilitating conditions, trust, resistance to change, technology anxiety, and behavioural intention ( $p < .002$ ).

### Social connectedness

Clients' satisfaction with social support did not change across the program period. Baseline social satisfaction at pre-program was high and this high level of social satisfaction was maintained across all testing periods. Despite a non-significant increase in satisfaction with social support, most clients reported that the SHM program had assisted with communication (93.4%) and nearly half with social support (49.2%). Most clients were using the Smart Home technologies for voice commands (98.4%). Qualitative data indicated that simply being able to talk to the Smart Home technologies made the clients feel less alone.



### Health and wellbeing

Clients personal wellbeing significantly increased after participation in the SHM program ( $p = .008$ ). Client's sense of "Achieving in Life", a domain of personal wellbeing, was also significantly greater after participation in the SHM program ( $p = .029$ ). In addition, most clients (93.3%) reported that the program increased their quality of life.

## PRICING AND SUSTAINABILITY

Clients described the Smart Home technologies as integral in their daily routine with 100% of clients reporting that they would like to continue using the technology. The preferred package of delivery was one initial visit for installation and assessment capture, and two support sessions of one hour in length from their Technical Support Officer (TSO). At the conclusion of the program, 100% of clients were using the whole standard kit supplied by Feros Care and reported they were using all the devices in their daily life more than once a day.

At the time of preparing this report the cost of delivery of the SHM program was \$93 per hour for the TSO to attend each session and \$478.16 for the total cost of the standard kit.

The potential cost saving benefits for clients include:

- **using automations to make sure all electronic devices are turned off at night or during the day when not in use;**
- **medication reminders potentially illuminating costly side effects or health service use;**
- **mitigating transport costs associated with exercise classes;**
- **security measures mitigating cost associated with possible crime and theft.**



## CONCLUSIONS

The findings of this study indicate that the SHM program was easy to use and well received by clients. The SHM program improved client's communication and social support, feelings of control and independence, safety and security in the home, confidence using technology and their overall health and quality of life.

The large response rate and qualitative feedback indicated that clients were interested and invested in the program. The SHM program was at capacity within seven days of the program marketing campaign, and had a wait list after two weeks, highlighting a large demand for this type of service in the community. Due to the positive response from clients and their families, Feros Care is proud to commit to the scaling of the program and aims to achieve service sustainability with a reasonable operating cost model.

Feros Care has the planning capacity, research and commitment, not only significant for our aging populations but for all Australians. Through collaboration and innovation, Feros Care will spearhead the achievement of longevity; it is Feros Care's goal to inspire the government and health industries to adopt these revolutionary changes and innovative thinking.



## RECOMMENDATIONS

### RECOMMENDATION ONE:

That the SHM program become embedded into the mainstream component of service delivery for all seniors. This would involve changes to current health care and aged care funding guidelines and models to ensure the SHM program and its utilisation of emerging technologies are considered a standardised service option. In addition, it is recommended that this program is regarded as an approved mainstream intervention to support the independence and health of Australian seniors.

### RECOMMENDATION TWO:

The introduction and continuous inclusion of a national policy agenda appointed to drive a more strategic and coordinated approach to funding, research and deployment of emerging and smart technologies as modern solutions within aged care delivery, primarily in the areas of safety, security, social connection and independent living.

### RECOMMENDATION THREE:

Future SHM programs should seek to integrate the use of telehealth and health monitoring technologies within the Smart Home Technology suite, to enable holistic monitoring of the seniors Safety, Health and Wellbeing. Work with technology suppliers and clients to co-develop and pilot emerging technologies that will enable the integration of Telehealth into a SHM program for Seniors.

### RECOMMENDATION FOUR:

Further research is recommended that uses robust randomised controlled trials to support the evidence base for SHM programs. Additionally, it is recommended that future research implement a longer follow-up period that would provide support for the long-term sustainability of Smart Home technologies to support the independence and health of seniors.

### RECOMMENDATION FIVE:

Technical Support Officers providing the SHM service requires specific skills, knowledge and attributes for successful delivery of the program. Ideally, knowledge and skills in aged care, adult learning principles, empathy and the general understanding of risk factors in relation to the potential client cohort. Although Technology based skills are an essential capability for the role, additional target aged care related competencies should be included with orientation and ongoing staff development.

### RECOMMENDATION SIX:

Work with Smart Home technology suppliers and technology start-ups to further research, co-design, co-develop and pilot customised smart home solutions for specific disability types to support their unique challenges and opportunities. Including challenges associated with hearing, sight and speech impairment.



LIST OF ABBREVIATIONS

<b>SHM</b>	Smart Home Modifications	<b>CEQ</b>	Client Experience Questionnaire
<b>VSC</b>	Virtual Social Centre	<b>PWI</b>	Personal Wellbeing Index
<b>CHSP</b>	Commonwealth Home Support Programme	<b>UTAUT</b>	Unified Theory of Acceptance and Use of Technology
<b>TSO</b>	Technical Support Officer	<b>IBM SPSS</b>	Statistical Package for Social Sciences

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1. INTRODUCTION

Quality of life, as defined by the World Health Organisation, is “an individual’s perception of their position in life in the context of their culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (The Whoqol Group, 1995). It is this value system and defined quality of life that Feros Care’s mission strives for; for every client.

When discussing the concept of longevity, the predominant area of focus is remaining independent in the home for longer. Homes are a physical construct, yet operate on a social and symbolic level in multiple and interconnected ways (Wiles et al., 2011).





Research in environmental gerontology suggests that the long-term emotional attachments to environmental surroundings contribute to well-being in old age and are linked to independence and control (Wiles et al., 2011). As a continuous and ever evolving area of research, the ecology of aging is described as a field or study dedicated to understanding the dynamic relations between older adults and the environments that they inhabit (Wiles et al., 2011). It is this dynamic relationship that needs to be unpacked and nurtured to promote independent living for our aging populations and promote positive longevity in the home.



Feros Care is a not for profit, community owned people care organisation which has been providing quality care and support since 1990. Feros Care’s mission is to support people to live bold lives, partnering with clients to achieve their individual goals for independence, wellbeing, and social connectedness. To support this mission and holistic approach to care, Feros Care in conjunction with Google, aimed to implement and evaluate the next generation of innovative “Smart” or assistive technologies into the homes of senior clients. Using Google Assistant, Google Smart Hub and a range of smart connected devices, their goal was to work with clients to implement an individualised suite of 21st century solutions to support their goals for health, wellbeing, safety, independence, and social connection.

In 2019, Feros Care tendered for the Department of Health’s CHSP Innovation funding, specifically focussed on new innovative approaches to meeting client’s needs and challenges through technologies and new business models. The Department received 599 applications; Feros Care’s SHM Program was one of 59 successfully funded initiatives.



### 1.1 LIVING LAB APPROACH

Continuously working in collaboration with clients and at the forefront of evidence-based research, Feros Care develops and deploys programs based on the Living Lab approach to co-design and under the Meso or community level of analysis. The Living Lab is an ecosystem based on open innovation that is developed in a co creation approach, placing their clients at the centre of research. Utilising the quadruple helix model, as described by the leading research body the European Network of Living Labs (European Network of Living Labs 2020), various stakeholders were engaged to co create, test and evaluate innovations in a collaborative, open and real-world setting.



FIGURE 1: Feros Care’s application of the ENoLL Living Lab Pyramid

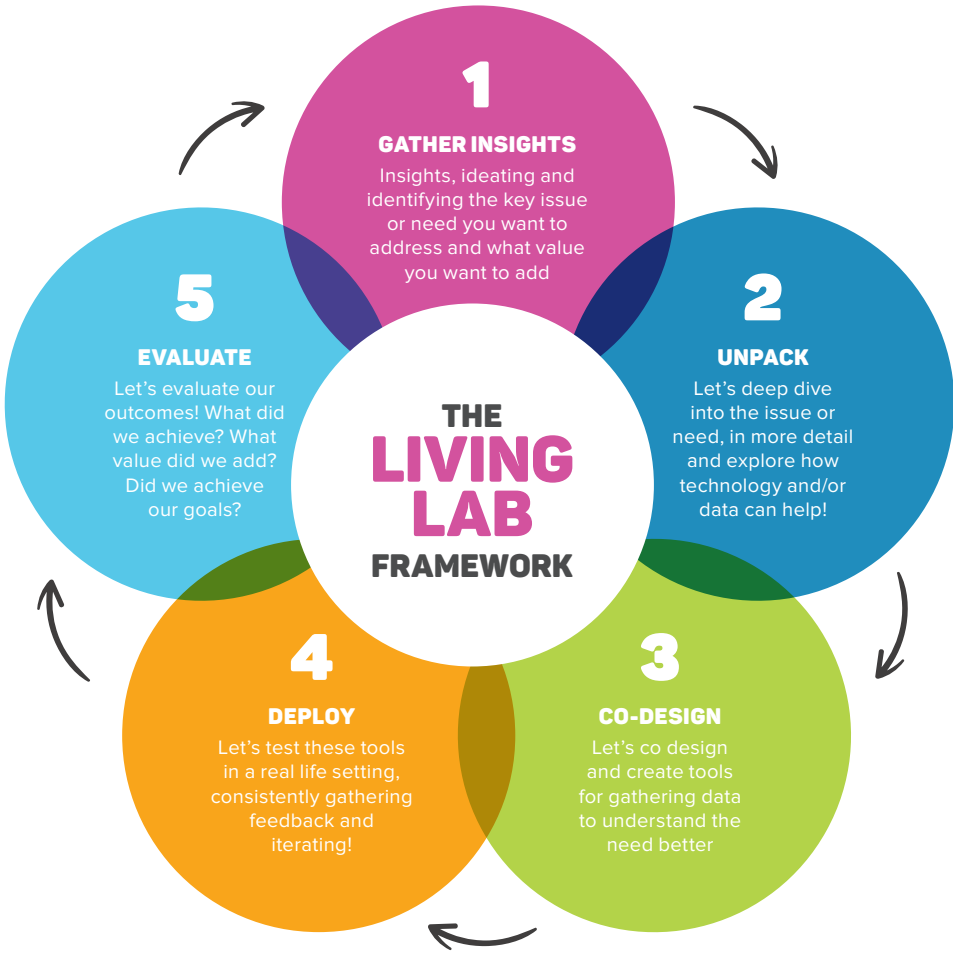


FIGURE 2: Feros Care’s Living Lab Framework



Utilising this approach and methodologies, Feros Care endeavour to pave the way in transitional research and innovative ageing. Previously, Feros Care have implemented a number of research projects including the Virtual Social Centre (VSC), My Health Clinic at Home (MHCAH) Telehealth Program and the Let's Get Technical (LGT) program. These programs reported a measurable success at equipping seniors with the tools to independently manage their own chronic illness and decrease strain on the health care system. The pilot programs demonstrated a strong relationship between the use of technology to support online social activities and client self-reported holistic well-being and quality of life (Nancarrow et al. 2014). The key to the success of these programs was the client centred co-design and engagement of a variety of stakeholders, and their enthusiasm and willingness to participate and embrace technology.

Considering previous reports and research and the existing evidence base on Feros Care's client cohort using Living Lab methodologies, it was recognised that technology could have a significant impact on longevity and aging in place. However, more robust evidence on technology-based services for older clients is required. To address this gap, Feros Care implemented an innovative SHM program that aligns with the organisation's mission to promote independence in the home and empower clients to regain control over their own lives.

The vision of the SHM program was to provide the next generation of assistive technologies to clients to support their health and quality of life, and capacity to reside independently in their own homes. It was envisaged that the SHM program would support a cost effective and preferable alternative to institutional care and positively impact on carers and families.

## 1.2 PROGRAM OBJECTIVES

The aim of this project was to implement and evaluate a range of smart technologies that support independence, wellbeing, safety and social connection. Just as important was the aim to build client's confidence and acceptance of technology so that they would continue to use and experience the benefits of technology.

Our primary objectives were to:

- **Support independence** – Provide personalised and specific solutions to achieving individual's goals for independence, reducing reliance on formal and informal carer supports. Simple to use assistive technologies can build feelings of independence and control in managing activities of daily living, safety and social connection.



- **Support safety and security in the home**

– Provide the latest generation of Smart Home technologies that improve the security of home environments through Smart locks, security and voice activated technology. Smart Home technologies such as automated lights can increase safety in the home for activities such as getting up in the middle of the night.

- **Support confidence in using technology**

– Provide personalised face to face training with clients on the purpose and use of the Smart Home technologies. The goal was to enable the client to confidently and independently use the technologies and develop a basic level of troubleshooting knowledge. Building the confidence and acceptance of interacting with the SHM program would maximise the use of the Smart Home technologies in day to day living.

- **Support social connectedness**

– Provide SHM, training, and support to enable clients to engage online and maintain regular contact with family and friends and building social networks through facilitated online social programs.

- **Support health and wellbeing**

– Support activities to improve health and wellbeing through automated reminders, social communication, and assistance through voice active Smart Home technologies. Smart Home technologies would enable clients to seek health information using voice commands, encouraging the development of health knowledge, monitoring and maintenance. Technology such as Chromecast would allow clients to engage in positive health behaviours such as physio, yoga or Pilates. Further, Smart Home technologies would aid clients with health conditions such as arthritis reducing the pain they might normally experience when performing daily activities.

- **Create a service model to enable mainstream delivery**

– Build an understanding of the systems, processes, structures, and pricing for scaling and mainstream of services to enable products to be a standard offering to all clients.







### 1.3 RESEARCH AND CONTEXT

Globally, the population is ageing, and with continuing advances in health care further growth in the life expectancy of the aging population is projected (Majumder et al., 2017). It is also anticipated that in the future older people will exceed the population of children (Méndez et al., 2020). In Australia, people over the age of 65 accounted for 15% of the population in 2017 (Australian Institute of Health & Welfare, 2018). In comparison to the past, more people are living longer with increased prevalence of chronic illness and associated morbidities, disability, and functional impairment (Maresova et al., 2019). Despite an increased need for care, research consistently highlights a strong preference of seniors to remain living independently in their own homes (Kendig et al., 2017; van Hoof et al., 2011). Evidence based research has highlighted multiple health benefits of aging in the home. Such benefits include greater independence and level of freedom, greater feelings of satisfaction and fulfillment in their lives, a healthier and safer living environment, greater comfort pertaining to the emotional value of their home, remaining integrated in the community and engaging in their social network (Chen & Schulz, 2016; Kendig et al., 2017; Majumder et al., 2017).

To meet the increasing health and wellbeing needs of seniors there is a need for research supporting interventions that address the challenges of the aging population. Smart Home technologies and assistive technology are significant interventions that have emerged with increasing interest over the past decade to support seniors to live independently (Morris et al., 2013). In many developed countries, assistive technology has shown considerable evidence of supporting independently living seniors to cope with their multiple physical, mental and social issues (Song & van der Cammen, 2019).

According to the Australian Digital Inclusion Index, over three million Australians are not online, let alone have the digital capacity or confidence to accept and adopt new technology (Thomas et al., 2019). In order to meet the increasing health needs of seniors and alleviate pressure on the health care system there is a need for research that investigates senior's use of emerging Smart Home technologies.

However, high quality studies that evaluate the effectiveness of this technology is minimal (Khosravi & Ghapanchi, 2016). The majority of Smart Home technologies research to support seniors has been conducted in Europe (Morris et al., 2013). A recent systematic review (Liu et al., 2019) on the use of Smart Home technologies by seniors with chronic disease shows that only one significant study (out of 14) was conducted in Australia. Similarly, another recent systematic review (Turjamaa et al., 2019) shows no studies have been undertaken in the Australian context investigating how Smart Home technologies are used to empower seniors. To the best of our knowledge, no recent research investigating Smart Home technologies to support seniors to remain in the home has been conducted in Australia.

It is clear that despite growing interest, evidence supporting Smart Home technologies and assistive technology use to support the independence and health of seniors is still developing. Therefore, there remains a critical need for quality research that evaluates the efficacy of SHM programs and assistive technology use by seniors, including those with functional limitations (Majumder et al., 2017).



### 1.4 STRUCTURE OF THIS REPORT

This report will present practical information and insights into the implementation and evaluation of the SHM program. Sharing with industry stakeholders the achievements, insights, lessons learned and outcomes, this report includes details of the technology, implementation approach, the experiences from service users, service providers and an analysis of the costs. The report is structured as follows:

- **Section 2** Smart Home Modification program overview
- **Section 3** Evaluation Methodology and Approach
- **Section 4** Literature Review
- **Section 5** Results of the Evaluation
- **Section 6** Discussion
- **Section 7** Conclusions
- **Section 8** Recommendations



## 2. SHM PROGRAM OVERVIEW

The SHM program, was designed to support clients in the home using the next generation of integrated smart home and assistive technologies. Feros Care collaborated with seniors, Google and various stakeholders in a Living Lab framework, to create a dynamic home environment with the installation of Smart Home technologies combined with an extensive support system that adapted to the ever-changing needs of people as they live and age. Feros Care created a network of over 60 Smart and connected homes, empowering clients to improve their confidence in the use of technology solutions to build their independence, safety, wellbeing and social connection.



### 2.1 INSIGHTS – MAKING THE CLIENT THE HERO OF THE PILOT'S SUCCESS

Back in 2016, Feros Care engaged a human centred design organisation to gather insights from clients, on their current and future needs. One of the most profound findings among their client portfolio was a growing need and interest in learning and adopting new technology. Specifically, there was an interest in receiving support from Feros Care to achieve this.

To further understand, research, develop and deploy a successful and innovative program for seniors, in accordance with Living Lab methodologies, a series of further insights were explored. These included:

- Community Support Workers were asked to participate in an online survey to describe their first-hand experience and interactions with clients, particularly in regards to level of digital capability, capacity and learning needs, and physiological environments to support new technologies.
- Information Technology specialists were engaged to explore the various automations the SHM program could provide. To understand the various functions and the ability of the technology to integrate with other devices a series of routines and automations were ideated that could complement the functionality of the Smart Home technologies. A routine or automation, in terms of Smart Home technologies can be defined as an operation that occurs with minimal human interaction (Alam et al., 2020). For example, a bedtime routine was ideated whereby the client could simply say “Hey Google. Goodnight” and numerous devices would be turned off.

- Client insights were explored to understand anxieties and perceptions surrounding technology, including motivators and current level of engagement with technology.
  - o In addition to a client experience questionnaire, a series of phone interviews explored client’s feelings and anxieties surrounding technology, including, their first experience with technology, current devices used, how the technology was acquired, internet connection and interest in any specific technology. Understanding socioeconomics and financial constraints were also explored.

The client’s functional limitations, morbidity and/or disability were assessed and categorised to determine the type of Smart Home technologies and automations that could be applied to support the client.

- o A series of focus groups and face to face interviews, further explored client’s perception of Smart Home technologies.
- Research and engagement with other key suppliers / stakeholders including Google Sydney, Phillips, Xiaomi, iRobot, Ring, Yale, TP-Link, Sony and Arlo.

Insights depicted a lack of trust and increased anxiety surrounding smart Technology. Utilising this information and acknowledging the client’s fear around adoption of this technology, a key strategy of the SHM program was to develop and implement resources that would empower and equip the senior with information and full disclosure as to how the devices operate.

Utilising Living Lab methodologies and the iteration process, customer journey maps (see Appendix X) were also developed. Customer journey maps being a visual representation of the client’s journey with the Smart Home Modifications program across all touch points. This exercise was critical to ensure the success of the program and a strategic approach to better understanding the customer expectations and the optimisation of the customer experience.

A client centred focus underpinned the SHM program. Client insights including functional limitations, intentions, motivations, anxieties, and goals were at the forefront of the SHM program design, implementation and evaluation.





2.2 BETA TESTING

In accordance with the methodologies of the Living Lab approach, to develop and test the devices productivity, ease of use and accessibility; a beta test group was established utilising the project team as the testers. Meeting at regular intervals, the beta test group was able to test and score products based on their useability, reliability, usefulness, value for money, and functionality in the home. It also provided a basis on which a trouble shooting strategy and guide could be developed and deployed in a senior friendly designed handbook.



2.4 BRING YOUR OWN DEVICE (BYOD)

As part of the caveats for participating in the pilot SHM program, clients were required to own a piece of technology that the Smart Home technologies could be connected (tablet or smart phone). Acknowledging that people own a variety of digital devices and therefore have various digital needs, this pilot aimed to support those clients with their own personal devices.

2.3 CLIENT ACQUISITION AND GAUGING DEMAND

To develop and gauge the level of interest in the program a marketing campaign was performed in areas such as the Mid North Coast and Far North Coast NSW, and Gold Coast, QLD. The mailout consisted of 700 direct marketing letters to Feros Care clients funded under the CHSP. Within seven business days the 60 pilot SHM program placements were filled, and a waitlist was developed and placed onto a customer relationships manager platform. The respondent rate of reply within such a short time frame depicted the need and perceived usefulness of the program.

2.5 INTERNET CONNECTIVITY

To eliminate any exclusion in our community, wireless internet data dongles were provided to clients who were not connected to the internet. Clients who indicated that they wanted to continue access to the internet at the completion of the program were provided with internet connection support. By the end of the project 100% of users were connected to the internet.



2.6 TECHNICAL SUPPORT OFFICERS – PEOPLE SUPPORTING PEOPLE

A key feature of the SHM program was the personalised support provided to the clients. To ensure the success of the program and create a connected supported environment, Feros Care ran a recruitment drive to hire Technical Support Officers (TSOs) who were skilled in the use and trouble shooting of consumer technology, and empathetic, respectful and compassionate, and with strong interpersonal, communication and emotional support skills.



A small cohort of two female and three male TSOs ranging in age were hired as compassionate companions to accompany the client on their journey of learning and discovery of Smart Home technologies. The client’s preference as to who would be their TSO was acknowledged.

Before being deployed in the field the TSOs were engaged not only in corporate training; adopting Feros Cares core values and standards but were also orientated in the new client centred role of TSO. The training involved technical skills, instruction on coaching, goal setting, managing client interactions and communication skills.



A dedicated Technical Support Coordinator provided the TSOs with consistent and relevant guidance and support and an avenue in which they could refer if the client had advanced technical questions or devices that were unique. The Technical Support Coordinator also liaised with clients, managing problem solving and providing an additional support network. The multiple resource personnel ensured the client was supported by people supporting people, a core value in the Feros Care community.

2.7 SMART HOME TECHNOLOGIES – THE CONNECTED HOME

The Smart Home technologies installed into client’s homes consisted of a standard kit and extra assistive peripherals offered as an option to interested clients based on their needs, goals and individual circumstances.

The standard kit consisted of:

GOOGLE HUB



A visual touchscreen-based interface designed to be a foundation or centre for other devices. The Google Nest Hub provides a visual display of the information that Google is also speaking, which can be beneficial to those with hearing impairments. Easy to use with simple voice commands the Google Hub can be used for information requests, following recipes, making calls and for commanding other connected Smart Home technologies.

A GOOGLE NEST MINI



With similar functionality as the Google Hub, the Nest Mini is a compact extra addition or can be used by itself to control Smart Home technologies but without the visual display screen and a smaller speaker size.

TP SMART PLUGS



A Smart Home wall plug allows for full automation controlling appliances such as lighting, fans, or lamps, fully controlled by the Google hub or voice commands. This device has several benefits to seniors through the ease of being able to switch devices on and off through voice control. For example, assists a client with mobility issues to turn a lamp on and off without getting up.

CHROMECAST



Developed to control the television with simple voice commands, this easy to use dongle is also capable of casting or streaming direct from the Smart Home technologies owned by the seniors. This technology enables wide participation in activities that provide clients with an increased sense of wellbeing through participation in meaningful activities.

SMART LIGHTING OPTIONS



A series of Smart Home lighting options were offered based on the client’s home and hardware requirements. Smart Home lighting technology can improve senior’s independence and function within their home. For example, motion sensor lights allowing a client to be independent and safe in using the bathroom during the night.

Extra specific peripherals optionally tested included:

AUGUST SMART LOCK



The August Smart Lock is a Smart device that has the capability of unlocking or locking doors that may have been hard to manage previously. This smart device also has the option of providing time limited access for contractors or family members that request access to the property. This Smart Home technology has been utilised to promote a sense of safety in the home using Door Sense technology that reports entry or exit information from the door being physically opened or closed. Another key feature of the technology is the automatic locking feature that is activated 30 minutes after departure from the property or residence. Again, upon return, the device can detect the smart watch or smart phone technology and automatically unlock the door that is in the vicinity.

For seniors who are struggling to maintain independence in the home or who are in cognitive decline, utilising such devices can provide a sense of emotional and physical security. In addition, this device may serve to empower clients who have functional limitations to virtually open and close their physical door, placing the control back in their hands and decreasing reliance on family members or carers.

THE RING PRO DOORBELL



The Ring Pro is a Smart device capable of two-way audio capability, customisable motion sensors and an infrared night vision feature. The Ring Pro is a key feature in the promotion of safety and security in the home by providing complete visibility of visitors at the door. Due to the advancing technology seniors are able to converse with visitors, contractors or family with ease, either by using their voice or simply by using the application on their Smart Home technology.

AUTO MOWER



The Robo mower, is a state-of-the-art lawn mower that is GPS, Bluetooth and cellular enabled. Allowing clients to remain independent in their home where concerns around looking after or maintaining their gardens may have been an issue.

SCHLAGE SMART LOCK



The Schlage Smart lock is a Smart Wi-Fi enabled Deadbolt that connects to a Smart device to allow direct entry to the property without the use of any adapters or accessories. It seamlessly connects and pairs with a wide range of automation and alarm systems and can be remotely monitored and controlled via an app or the physical touchpad on the device.





### INDOOR MOTION SENSORS

The Phillips Hue system is a motion sensor that detects minimal movement in the senior's home to instantly turn on the lights in the area detected and induce an autonomous response to promote safety in the home.



### INDOOR LIGHT STRIPS

The Philips light strip is a durable and flexible light source, spread up to ten meters, that can be shaped and flexed to any areas needed. It can also be incorporated with music devices or other automations that requires an area to be lit up for safety reasons.



### ROOMBA SMART VACUUM

The Roomba Smart Vacuum is a vacuum that is self-driven, self-propelled and self-cleans. Supporting clients with functional limitations in the home who have difficulties in managing their daily affairs such as cleaning, the Roomba adapts to the home and builds a map that reflects the senior's home to incorporate a whole clean connected home. Integrated into an autonomous routine, the Roomba will clean the seniors home removing any allergens and dirt from any pets in the home or areas of high traffic.



### ROOMBA SMART MOP

In conjunction to the Smart vacuum, the mop works in parallel to cleaning principles of the aforementioned. When combined with the vacuum, the mop can be integrated into a routine whereby cleaning can commence in succession.



### GOOGLE NEST PROTECT FIRE ALARM

An integrative home alarm that includes a split spectrum sensor and can test itself automatically. This fire alarm promotes safety in the home whereby seniors with dementia or Alzheimer's may leave appliances on.



### GOOGLE NEST SECURITY CAMERA

Promoting a sense of safety in the home, these products are highly beneficial for clients who; are concerned about their safety, live alone, live in an unsafe area, experience anxiety about security, or are vulnerable to intruders (e.g. poor mobility, poor hearing, poor sight).

## 2.8 SENIOR FRIENDLY SERVICE DESIGN

### 2.8.1 INSTALLATIONS

The installations sessions, which also included getting to know the client and their dynamic home environment, was delivered over a period of 2.25 hours to maximise client engagement and retention of information and learning.

The TSOs delivered the support services in a friendly, supportive, and nonjudgmental approach. The TSOs did not use any technology jargon and related different terms to familiar everyday occurrences. Relating back to familiar terms systematically building on known concepts is a proven learning strategy that enhances, encourages and enables learning, especially in seniors (Duay & Bryan, 2006).

Working in collaboration with the client, the Smart Home technologies were installed according to where the client had identified they spent most of their time or had any functional limitations, goals and needs. A strong client centred approach to promote sustainability of the products, and a co-design environment were employed to ensure the client felt in control and comfortable with the new Smart Home technologies.

At Ferros Care there is an emphasis on an enablement style of support where services adopt a 'doing with, not doing for' approach of enablement. For the SHM program, this same method of delivery was employed so that clients were actively engaged with the learning and devices, had enough time for reflection during the session, and could easily manage the devices independently. TSOs went at a pace determined by the client, their capability and confidence level. The senior friendly service design was developed in response to the client's needs and wants, being an individual and personalised one on one service was a point of difference compared to other services offered in the community. The benefits of this style of service has been evidenced in previous research to show positive correlations between increasing independence, building confidence and supporting the move through the cycle of change (Duay, & Bryan, 2006, Mitzner at al., 2008).

Having a face to face and one on one learning style adopted a sense of comfort and familiarity for the client. The familiar setting of the home provided a natural and relaxed environment. Installing the devices into the home of the client depicted how natural and functional the devices were in the home no matter what kind of environment it was.

The SHM program service design was created with seniors in mind to promote positive aging in the community. The initial installation and information session were completely client driven and based on their goals, learning styles, personal desires, and dynamic relationship with their environment.







Furthermore, acknowledging COVID-19 social distancing restrictions and recommendations that mandated seniors and vulnerable communities socially isolate in their home, the service continued where clients could adhere to restrictions and feel completely safe.

## 2.8.2 THE SMART HOME HANDBOOK

A SHM program handbook was developed that included an informal introduction to the devices and numerous prompts to help with engagement and interactions. The handbook included full disclosure surrounding data captured by Google and information pertaining to any associated fears or misinformation clients had described in the insight information sessions. The handbook also featured a section on password protocols and cybersafety, ensuring and empowering the client to understand and be aware of cyber threats. A multiple support contact list was detailed in the handbook, consistently reinforcing support if needed.

The Handbook was designed so that it was interactive and engaged the client. Consistent in appearance it was designed in house at Feros Care to be user friendly with plenty of whitespace, large font with easy to read sections and simple instructions indicating how to navigate every step.

The initial client handbook was Beta tested with a small sample of clients before deployment. This allowed for a co design approach and guaranteed client usability. The handbook was consistently reviewed and updated based on clients and the Beta test group's recommendations and feedback from the TSOs.



## 2.8.3 AUTOMATIONS & ROUTINES

A key feature implemented by TSOs was the Google Home routines which allowed for several Google Home actions to be executed with one command or automatically at scheduled times. The aim of this feature was to reduce the quantity of direct interaction or touch points required between the senior and the Google Home technology, and decrease feelings of anxiety or confusion that could potentiate when using high level technology. Each automation or routine was completely individualised to the client and the relationship and interactions that they had with their home.

Such automation examples included saying "Goodnight Google" which would result in all of the Smart lighting to turn off, any appliances running would automatically be switched off with Smart switches, an alarm would be set for the following day and soothing nature noises would be played for relaxation and deep sleep. Another example of an automation routine, particularly relevant for vision impaired client included the turning on of lights after a certain time at night for security reasons, or playing music that was familiar to the client to indicate a certain time. An important routine that was adopted by the majority of clients was the medication reminders and appointment setting in their calendar. The reminders automation was particularly implemented for clients who suffered from dementia.

## 2.8.4 GRADUATION

At the completion of the 12-week SHM program, clients were presented with a graduation certificate acknowledging their efforts, continuous progression and successful adoption of Smart Home technologies. Presented with pride by their TSO, clients were also photographed with their certificate and this was uploaded to their profile. With client consent, client's photographs were also posted to Feros Care's Intranet page highlighting and acknowledging their achievements. The sense of pride and positive reinforcement provided by the graduation certificate was well received by the clients, who reported that getting the certificate was a tangible piece of evidence, to show off to family and friends.





2.9 PRACTICE GUIDES

A key deliverable based on the Feros Care values of knowledge sharing and reforming aged care, was the creation of the practice guides. Developed for use not only by Feros Care employees supporting the program, but will also be made available to broader industry stakeholders. The practice guides were co designed with various stakeholders, to inform and promote the benefits of the SHM program and integration of technology in aged care. It is intended that the practice guides will promote knowledge sharing between Assessment Agencies, Service providers and other community stakeholders to support the promotion, referral, and scaling of the SHM program.

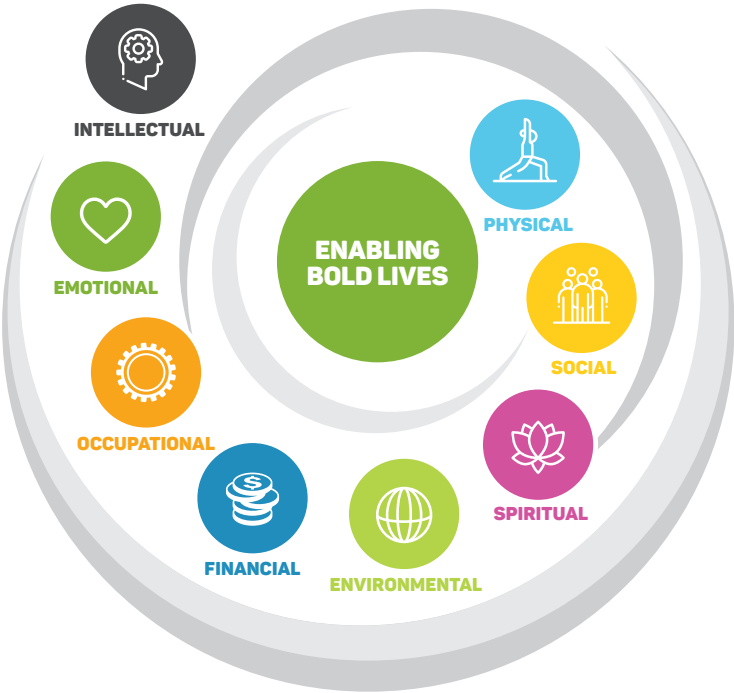


FIGURE 3: Feros Care's Eight Domains of Wellbeing

The practice guide is designed to provide information about the SHM program. Valuable for CHSP providers, the Regional Assessment Service, the Aged Care Assessment Team and Case Managers, the practice guide provides key information about program delivery, benefits, limitations, the referral pathway, outcomes and direct examples of how to identify seniors that would achieve positive outcomes from participation in the program.

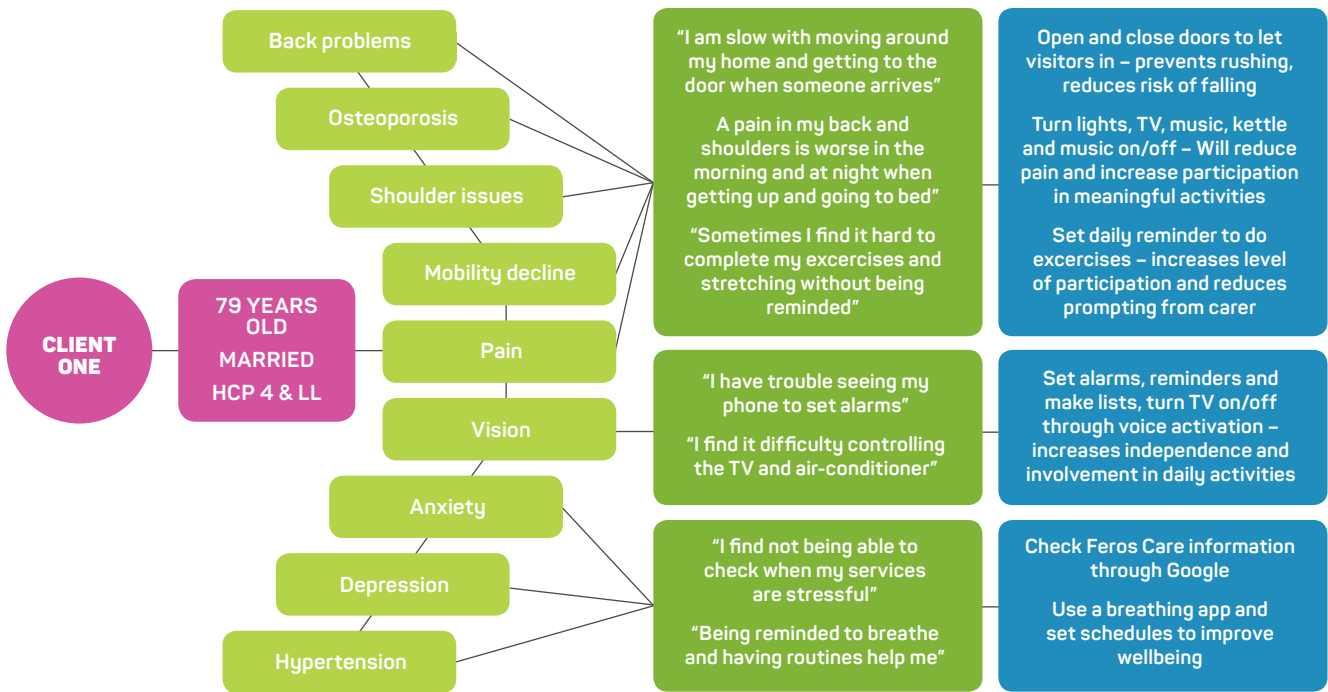
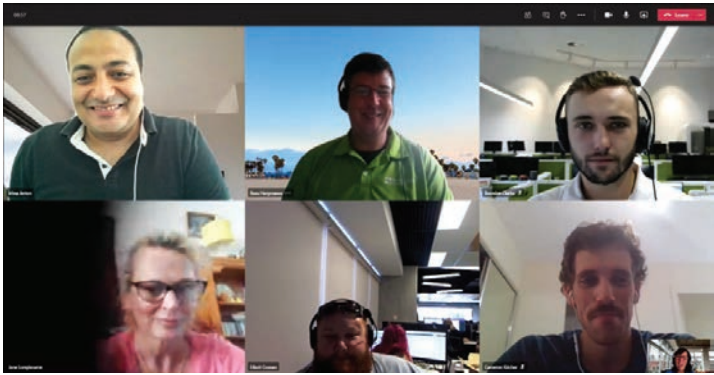


FIGURE 4: SHM Client Persona



2.10 COVID-19 RESPONSE

COVID-19, forced all ages into varying levels of isolation and impacted on the implementation of the SHM program. Unfortunately, due to anxiety and state-wide border closures, some clients were required to put a hold on their SHM program support sessions or were discharged early from the program. Enforced social isolation, reduced physical therapies, treatments and social interaction, however has seen a greater reliance on communication technologies.





### 3. EVALUATION METHODOLOGY

In 2019, Feros Care engaged Southern Cross University to evaluate the innovative SHM program.

The overall purpose of the evaluation was to explore the extent to which the SHM program supported seniors’ independence, social connectedness, confidence, safety and security and health and wellbeing.



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#### 3.1 OBJECTIVES

The evaluation objectives were derived from the study protocol and have been restated as propositions as outlined in column 2 (Table 1).

**TABLE 1:** *Evaluation objectives and propositions*

OBJECTIVES	PROPOSITIONS
1. To support independence	P1. Smart Home technologies support independent living capacity of seniors by providing technology that can assist in daily tasks.
2. To support safety and security	P2. The SHM program provides technology which supports the safety and security of seniors living at home by improving both the physical and perceived safety of the home environment.
3. To support confidence using technology (including acceptance and adoption)	P3. Seniors who receive SHM program training and support will become confident in using Smart Home technology which will increase technology acceptance and adoption.
4. To support social connectedness	P4. Smart Home technologies support social connectedness and engagement through technology that allows for video calling and messaging to build and maintain social connections.
5. To support health and wellbeing	P5. Smart Home technologies support activities to improve health and wellbeing, through automated reminders, social communication, and assistance through voice active Smart Home technologies.
6. The overall effectiveness of the services provided by the SHM program	Formative question – no proposition
7. Any barriers to the uptake of the services of the SHM program and ways in which this could be or were overcome	Formative question – no proposition



### 3.2 METHODS

For the purpose of evaluating the effectiveness of the SHM program, a series of testable propositions were developed based on the literature underpinning the introduction and the objectives of the program stated above.

The stages of the evaluation were as follows:

**1. Developing testable propositions that addressed the research objectives**

For example, the first objective was that the SHM program would “support independence”. The matched proposition was “Smart Home technologies support independent living capacity of seniors by providing technology that can assist in daily tasks”.

**2. Mapping of data sources to the propositions**

Each proposition was tested using appropriate quantitative and/or qualitative data sources that provided evidence to either support or refute the proposition. The data sources are outlined fully in the appendices and included:

- a. Detailed activity-based audit data, specifically;
  - Participation data
  - IT service request data
  - Number of home visits
  - Referral statistics
  - Timeframes recorded for new installations
  - Client specific data i.e., Smart Home technologies received and how they were used
- b. Quantitative Data;
  - SHM Questionnaire (including measures of independence, social connectedness, safety and security and confidence, the PWI and an extended version of the UTAUT)
  - CEQ (developed from interviews with clients)
- c. Qualitative Data;
  - Group interviews with clients representing all stakeholder groups
  - Case studies of exemplar examples of client experiences of the SHM program drawing on the data collected above
  - Literature reviews to underpin each of the propositions

Detailed data were collected by Feros Care on an ongoing basis for the duration of the project. At the conclusion of the project the retrospective deidentified data was provided to Southern Cross University to be analysed descriptively to address the research questions and project objectives.

**FIGURE 5:** *Smart Home Modifications – Initial Assessment in Passport*

The SHM Questionnaire was administered to all clients at three separate time points, 1) prior to commencing the program “pre-program”, 2) after completion of the program “post-program” and 3) at 6-week follow up “follow-up”. This was done to measure changes in outcomes after participating in the program and the long-term impacts of the program.

Interviews and case studies were used to supplement the SHM questionnaire data and further explore seniors’ perspectives and experience of the program and provide insight into program barriers and enablers.

The SHM Questionnaire incorporated a number of reliable and psychometrically sound tools that are valid for use with Australian Seniors (see Table 2).

The CEQ was developed by Feros Care to identify the motivations for participating in SHM program e, any barriers and previous experience with technology. In addition, it aimed to “quality check” the performance of the TSOs and devices and to identify any areas or goals missed during the session that may influence the success of the program. For installation and learning purposes, having the opportunity to reflect on the installation of the devices provided insights into the potential difficulties the client may have.

The CEQ was administered to all clients at three separate time points, 1) prior to commencing the program “pre-program”, 2) in the middle of their journey and 3) after completion of the program “post-program”.

**3. Analysis, collation and synthesis of data**

All questionnaire data was manually entered into an excel spreadsheet and then transferred into IBM SPSS Statistics 26 for analysis. The data was analysed descriptively to produce client demographic data that included age, gender, ethnicity, past/current education, support and health characteristics. Measures of independence, social connectedness, safety and security, confidence and personal wellbeing were analysed pre and post intervention and at 6-weeks follow-up using a within subject design. Differences across time between paired continuous data were compared using repeated measures one-way ANOVA or Friedman’s and Wilcoxon signed rank tests for non-parametric data. Categorical data was paired across time points and analysed using McNemar’s chi square test.

**4. Presentation of case studies**

A series of case studies were selected to highlight specific aspects of the use of SHM program, and to provide an illustration of client’s personal experience of the program and their perceived benefit.

### 3.3 ETHICS APPROVAL AND RESEARCH GOVERNANCE

Low risk ethics approval was obtained from Southern Cross University Human Research Ethics Committee with Approval Number 2020/101. The evaluation data was collected by Feros Care and the analysis was conducted by Southern Cross researchers and discussed internally through regular team meetings with the Feros Care implementation teams.





3.4 SUMMARY OF DATA SOURCES

TABLE 2: Summary of data sources used for program evaluation

DATA SOURCE	MEASUREMENT TOOL	DETAILS
Smart Home Modification Questionnaire	Demographic data	Age, gender, ethnicity, past/current education, and health characteristics. IT service requests, number of homes visits, and referral statistics.
	Technology Information	Frequency data and indicators of satisfaction in regard to independence, social connectedness, safety and security, and Smart Home technology use and confidence.
	Personal Wellbeing Index (PWI)	A 7-item measure of satisfaction across 7 life domains (standard of living, health, personal achievements, relationships, safety, community connectedness, and future security) providing a validated measure of subjective wellbeing (International Wellbeing Group, 2013). The PWI is measured using a 10-level Likert scale ranging from 0 “no satisfaction at all” to 10 “completely satisfied”. The PWI has previously been used with samples of seniors in Australia (Bennett et al., 2015; De San Miguel et al., 2017) including in the context of technology use (De San Miguel et al., 2017). The PWI has been psychometrically tested with community dwelling seniors and found to be of sound reliability (Cronbach’s α = .88; Rodriguez-Blazquez et al., 2011).
	Unified Theory of Acceptance and Use of Technology (UTAUT)	Measures the four key constructs of performance expectancy, effort expectancy, social influence, and facilitating conditions to predict the adoption of technology (Venkatesh et al., 2016). This tool was modified to consider the study context and measure direct determinants of clients’ behavioural intention, use, and adoption of SHM program. The final modified UTAUT was a 34-item questionnaire with a 7-level Likert scale ranging from “entirely disagree” to “entirely agree”. Previous research has shown that effort expectancy, performance expectancy, social influence (Hoque & Sorwar, 2017; Quaosar et al., 2018) and facilitating conditions (Boontarig et al., 2012) positively influence the adoption of m-health technology by seniors. Specifically, performance expectancy and effort expectancy have been shown to positively predict the acceptance of Smart Home technology by seniors (Pal et al., 2017).

DATA SOURCE	MEASUREMENT TOOL	DETAILS
Client Experience Questionnaire		The CEQ explored the clients’ previous experiences of Smart Home technology before the implementation of the SHM program and any program barriers real or perceived.  On conclusion of the SHM program the questionnaire was performed to explore the seniors’ experiences with the technology and their TSO.
Interviews, Case Studies		Opportunities to participate in an interview were offered to clients at the completion of the program. Interviews and case studies further explore clients’ perspectives and experience of the program, and provide insight into program barriers and enablers.





# 4. LITERATURE REVIEW

A literature review was undertaken to examine the published evidence in relation to each of the propositions. Key points are presented here.

## 4.1 PROPOSITION 1:

The SHM program will support independent living capacity of seniors by providing technology that can assist in daily tasks.

- Despite an increased need for care, research consistently highlights a strong preference for seniors to remain living independently in their own homes (Kendig et al., 2017; van Hoof et al., 2011).
- Preferences to remain living in the community or ageing in place is closely linked with a sense of independence and autonomy and the maintenance of social connections through community living (Wiles et al., 2011). Thereby interventions that support ageing in place will concurrently support feelings of independence and social connectedness.
- There is evidence that Smart Home technologies have the potential to enable seniors or people with disabilities to stay in their homes and remain independent longer, by actively or passively monitoring or mitigating the impact of health, mobility, sensory, or cognitive factors on quality of life (Majumder et al., 2017; Nurse Next Door., 2020; Pirzada et al., 2019; Rus et al., 2020).
- Digital assistants such as Amazon Alexa, Google Home, Google Assistant, Apple Siri, and Microsoft Cortana can work in conjunction with Smart Home technologies to enhance the quality of life of disabled people (Mtshali & Khubisa, 2019).
- Some functional benefits of Smart Home technologies include supplanting mobility (e.g. remotely controlling appliances), memory (e.g. automated reminders to take medicine, brush teeth, etc.), sense function (e.g. voice activation), or health and home safety (e.g. monitors that can detect adverse incidents such as falls, or environment events such as fires; Kyriakopoulos et al., 2020; Majumder et al., 2017; Sharma & Wong, 2020; Wilson et al., 2015).
- Additionally, automated appliances such as lawn mowers support the capacity for seniors with reduced mobility to maintain their properties (Carnemolla, 2018).
- There is some evidence that seniors who receive Smart Home technology interventions are able to manage day-to-day living independently at home for longer (Choi, Lazar et al., 2019). However, there is limited longitudinal evidence for the benefits of Smart Home technologies to support ageing in place (Carnemolla, 2018).



## 4.2 PROPOSITION 2:

The SHM program provides technology which supports the safety and security of seniors living at home by improving both the physical and perceived safety of the home environment.

- There is research to suggest that Smart Home technologies have the potential to support the safety and security of seniors in several ways (Majumder et al., 2017). In addition to health monitoring which can detect adverse health events and trigger an alarm for intervention by health professionals (Majumder et al., 2017; Suryadevara et al., 2013), Smart Home technology is capable of detecting changes in the residents' home environment (Majumder et al., 2017; Ransing & Rajput, 2015; Sovacool & Del Rio, 2020; Yu et al., 2019).
- Some studies have found that sensors are able to detect water and electricity usage, where abnormal use may indicate that the resident has left the tap or an appliance on, triggering a notification to the resident or a family member for intervention (Yu et al., 2019). Similarly, heat sensors can register temperature and humidity information and detect or alert users if an appliance (e.g. stove or heater) has been left on, thus reducing fire risk (Yu et al., 2019). In the event of an adverse environmental incident such as flood or fire in the home, flood, heat, and smoke detectors can alert residents, family members, and appropriate emergency services (Ransing & Rajput, 2015; Yu et al., 2019).
- Smart Home technologies have the potential support home security by detecting the opening of doors and windows at times that might indicate an intruder, triggering alarms (Ransing & Rajput, 2015, Yu et al., 2019).
- Research suggests that these technologies are beneficial in reducing fear and anxiety in seniors (Pal et al., 2017), increasing perceptions of safety and security, as well as easing concerns of family members by alerting them in a timely manner (Yu et al., 2019).
- Carnemolla (2018) case study analysis found that automatic light sensors installed in the bedroom and bathroom of a falls risk senior improved the safety of night time bathroom visits. Reported outcomes included increased feelings of confidence and safety when going to the bathroom at night and reduced family member concerns.
- Despite benefits to users physical and home safety, Smart Home technologies come with their own security risk as they are vulnerable to cyber-attacks (Sivaraman et al., 2015). Concerns regarding privacy and security and a lack of trust in technology have been identified as a barrier to the uptake of Smart Home technology (Wilson et al., 2015; Zeng et al., 2017).





### 4.3 PROPOSITION 3:

Seniors who receive Smart Home technology training and support will become confident in using Smart Home technologies which will increase technology acceptance and adoption.

- Seniors generally show a lack of readiness in using new technology, thereby they use new technologies less frequently, and often their preference for new technology use differs from younger people (van Houwelingen et al., 2018).
- Research has found that seniors have higher levels of anxiety and lower levels of self-efficacy when using technology (Chung et al., 2010). The higher the level of technical anxiety, the more hesitant the use of Smart Home technologies; computer anxiety was found to inhibit the use of Smart Home technologies by the elderly in particular (Kim et al., 2020).
- Confidence in their capacity to use technology has been identified as a predictor of senior's acceptance and subsequent use of technology (Lee & Coughlin, 2015). Whereby lack of confidence in using technology can reduce the perceived benefits, satisfaction with, and continued use of technology. Therefore, senior acceptance of technology can be supported by increasing user confidence (Lee & Coughlin, 2015).
- In supporting senior users' confidence, the research suggests that technology should be intuitive and easy to use (Lee & Coughlin, 2015), so as to prevent feelings of confusion, stress, and anxiety (Tsertsidis et al., 2019). Additionally, it is important that seniors are provided with training and support when learning to use new technology (Lee & Coughlin, 2015).
- While senior's confidence in using technology has been found to predict their acceptance and use of technology (Chung et al., 2010; Lee & Coughlin, 2015), evidence is lacking in the context of Smart Home technologies.
- Previous research suggests that learning to use Smart Home technology can be difficult, frustrating and time consuming (Hargreaves et al., 2018). Given the general lack of readiness and exposure to technology (van Houwelingen et al., 2018), seniors are particularly vulnerable to the learning difficulties associated with Smart Home technology. Complicated Smart Home technology is a barrier to the successful adoption of this type of technology as users preventing them from experiencing the full benefits of the system. It is suggested that greater support is provided to improve confidence in using Smart Home technology (Hargreaves et al., 2018; Maresova et al., 2020). This research explores Smart Home technology users generally, with little understanding of how senior's confidence to use Smart Home technology might be supported.



### 4.4 PROPOSITION 4:

Smart Home technologies support social connectedness through technology that allows for video calling and messaging to build and maintain social connections.

- Seniors have an increased risk of loneliness and social isolation (Chen & Schulz, 2016; Nicholson, 2012), which can have a profound negative impact on their physical and psychosocial health and wellbeing (Nicholson, 2012).
- There is evidence that digital technology can be useful in supporting social connection for seniors (Chen & Schulz, 2016; Seelye et al., 2012).
- A meta-analysis found that information communication technology (ICT) use such as phones, computers, or social networking sites was effective in allowing the seniors to build and maintain social connections with others (Chen & Schulz, 2016). However, it is often difficult for seniors to learn to use ICT, and they often require assistance with its use (Guner & Acarturk, 2020). More intuitive communication technology is needed that allows for ease of use by seniors with minimal need for assistance. A user evaluation assessing the acceptance and fear of new technology conclude that the elderly users prefer using a voice interface when compared to other intrusive solutions (Pal et al., 2020).
- A systematic review found some potential for Smart Homes to benefit social connectedness of seniors (Morris et al., 2014). However, findings were inconsistent with the large majority of studies failing to determine the effectiveness of Smart Home technology to improve social connectedness (Morris et al., 2014). The review concludes that further research is required to determine the efficacy of Smart Home technology for supporting social connectedness and how this technology might be used to facilitate social engagement among seniors.
- While there is emerging evidence for technology use to support social connectedness and increasing interest in the potential of Smart Home specific technology to support seniors with social communication and activities, there is limited understanding of how seniors might maintain their social relationships using Smart Home technology (Turjamaa et al., 2019).
- Smart Home and assistance, for example, Alexa, Google Home, Apple HomePod, and many cheap IoT devices successfully can alleviate elderly loneliness, makes them feel safer and cared about (Curumsing et al., 2019).





4.5 PROPOSITION 5:

Smart Home technologies support activities to improve health and wellbeing, through automated reminders, social communication, and assistance through voice activation.



- Aging is associated with multiple and complex health conditions and chronic diseases that often produce complicated medication regimes that need to be strictly adhered to in order to effectively manage health (Pejner et al., 2019). Non-adherence to medication can have serious consequences for seniors including reduced health, quality of life and increased healthcare costs (Dasgupta et al., 2017; Tan, Tan & Liang, 2018).
- Seniors generally do not take medication on a regular basis or at the right time points (Tan et al., 2018). A number of studies have shown technology with features such as automatic reminders and medication tracking can improve medication self-management in seniors, including those with dementia and increase feelings of wellbeing (Dasgupta et al., 2017; Pejner et al., 2019)
- Further, research has identified the benefit of using technology to support health promoting activities such as exercise (Feng et al., 2019; Jahangiry et al., 2017; Joseph et al., 2014). Physical activity is critical to good health and wellbeing (Feng et al., 2019). Digital or online based physical activity interventions have been effective in promoting physical exercise due to increased convenience and access of at home exercise programs (Jahangiry et al., 2017; Joseph et al., 2014).
- A recent systematic review highlighted the potential for voice activated technology to promote self-management and healthy lifestyle behaviours (Sezgin et al., 2020). Voice activated technology could be used to obtain health information or assistance such as medical queries or tasks. Voice activated technology was also beneficial for emergency tasks such as calling an ambulance.
- Despite potential, research that integrates Smart Home technologies or assistive technology into health interventions and evaluates its efficacy for use by seniors is still developing.

5. RESULTS

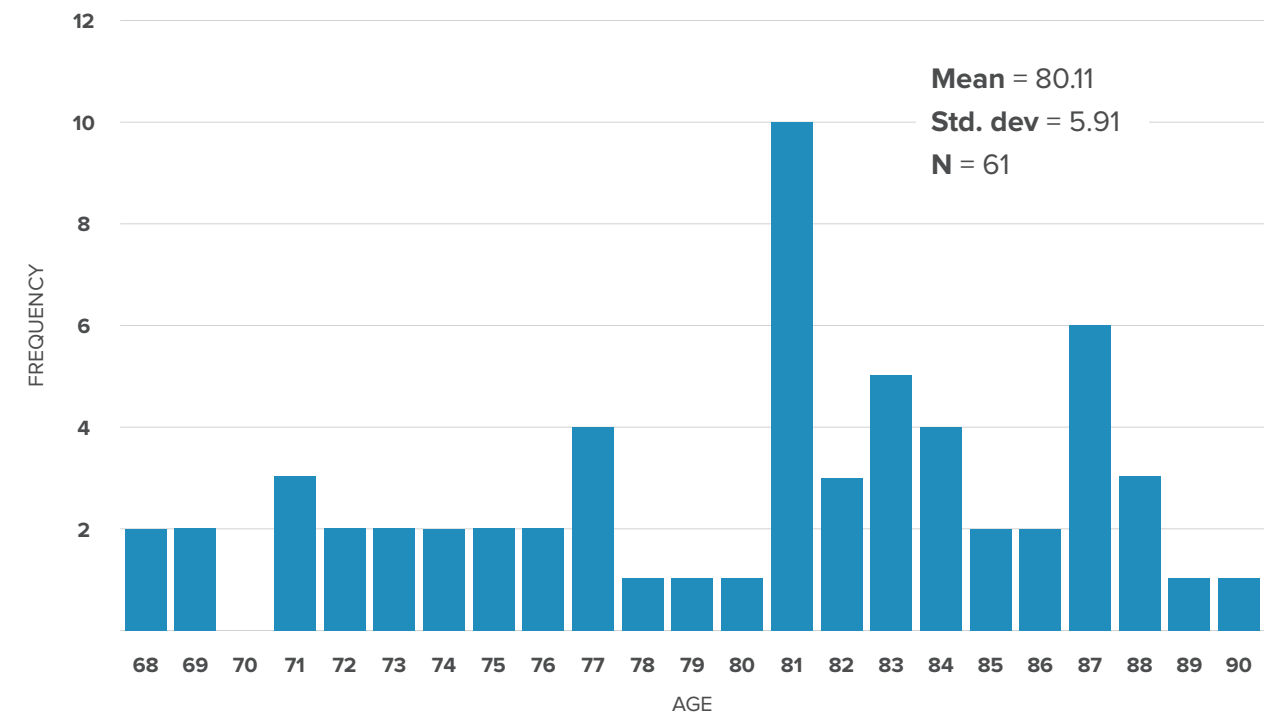
5.1 CLIENTS AND RATES OF RECRUITMENT

Feros Care recruited 61 clients to participate in the evaluation of the SHM program between the 17th of January and the 17th of April. The data for the program analysis included clients who had provided data that could be matched across all three time points (pre, post and follow-up). Pre, post and follow up data were provided by 55 (90.1%) clients for all outcome measures except the PWI, which included data from 56 (91.8%) clients.

Clients were aged between 68 and 90 years old (M = 80.11, SD = 5.91) (Figure 1). Demographics for SHM program clients can be found in Table 3.

Most clients were Female (70.5%), born in Australia (73.8%), lived in NSW (57.4%), had a current spouse/partner (52.5%), were non-indigenous (98.4%) and were of Australian ethnicity (80.3%). All clients reported English as their first language (100%). Approximately half of the clients lived alone (47.5%), and the other half lived with a partner (47.5%). The largest proportion of clients reported that their highest level of education was some years of high school (31.1%), followed by others who had completed a Bachelor Degree (21.3%). The majority of clients were receiving the Age Pension as their current source of income (80.2%).

FIGURE 6: Age distribution of SHM program clients.



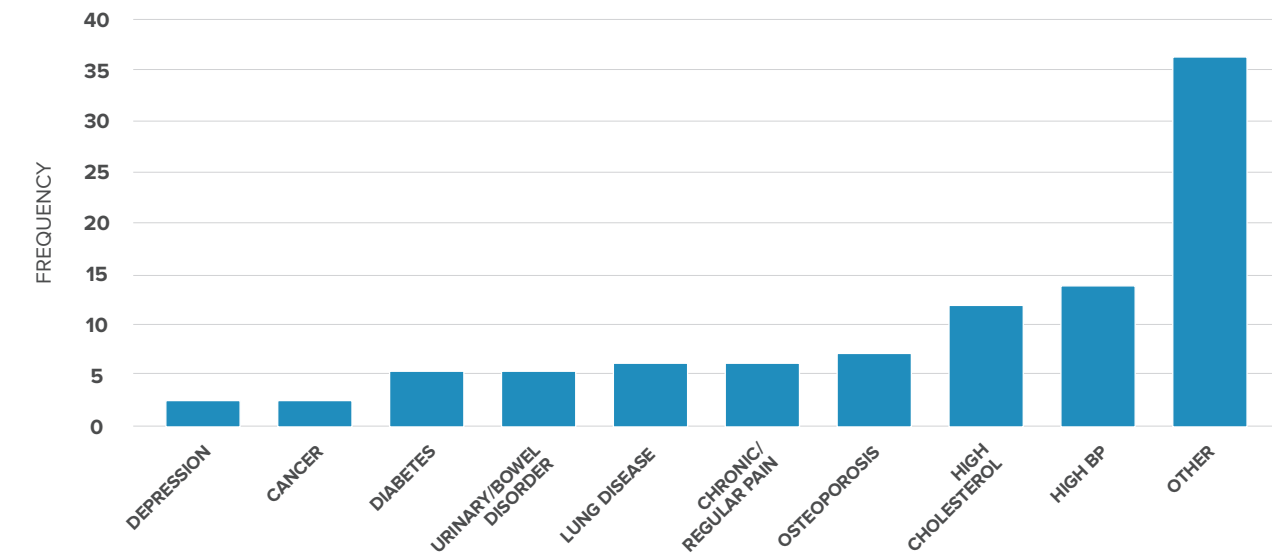


**TABLE 3:** Demographic characteristics of clients (N = 61)

	CHARACTERISTIC	N	%
Gender	Female	43	70.5
	Male	18	29.5
State	NSW	35	57.4
	QLD	26	42.6
Country of birth	Australia	45	73.8
	Other	16	26.2
Language	English	61	100.0
Aboriginal Torres Strait Islander status	Non-Aboriginal	60	98.4
	Aboriginal	1	1.6
Ethnicity	Australian	49	80.3
	Other	12	19.7
Highest level of education	Primary School	4	6.6
	Some High School	19	31.1
	Year 10	11	18.0
	Year 12	4	6.6
	Trade Certificate	3	4.9
	Diploma	4	6.6
	Bachelor Degree	13	21.3
	Postgraduate Degree	3	4.9
Current income details	Employed	1	1.6
	Self-funded	9	14.8
	Age Pension	50	80.2
	Other	1	1.6
Relationship status	Current spouse/partner	32	52.5
	Widow	23	37.5
	Divorced	4	6.6
	Single	1	1.6
	Other	1	1.6
Current living arrangements	Lives alone	29	47.5
	Living with partner	29	47.5
	Living with children	1	1.6
	Other	2	3.3

The most frequently reported health condition was high blood pressure, followed by high cholesterol (Figure 2). clients reported having from zero up to as many as six different health conditions with an average of two health conditions per client. Most clients reported between one and two health conditions (51.7%) (see Table 4).

**FIGURE 7:** Frequency of health conditions.



**NOTE.** Other conditions included vision and hearing difficulties, heart conditions, arthritis, asthma and other respiratory and neurological conditions.

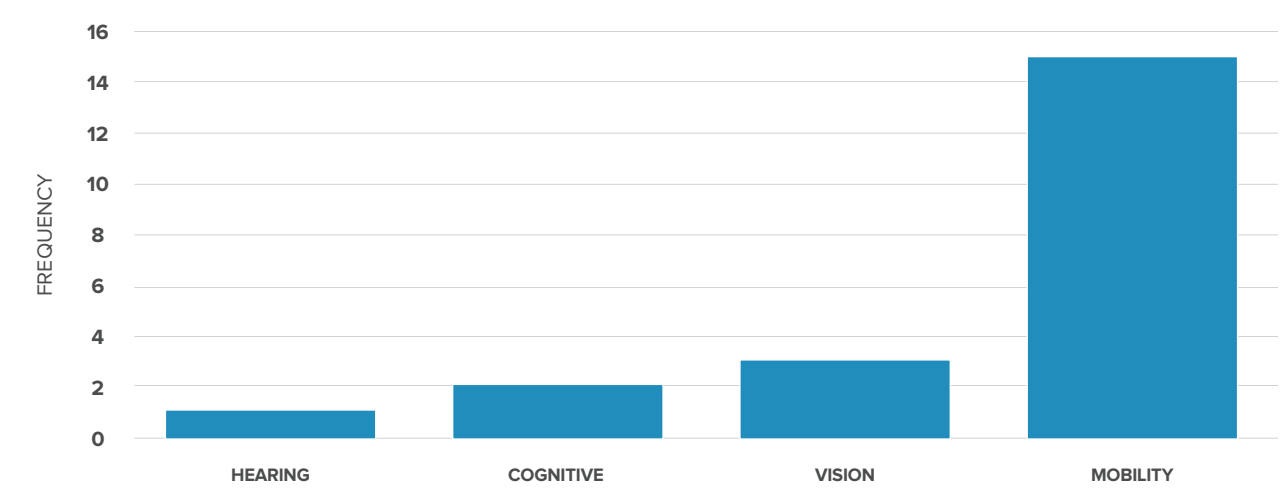
**TABLE 4:** Number of health conditions among clients (N = 60)

NUMBER OF HEALTH CONDITIONS/ILLNESSES	N	%
0	8	13.3
1	15	25.0
2	16	26.7
3	8	13.3
4	8	13.3
5	3	5.0
6	2	3.3

Of the clients enrolled in the SHM program, 18 (29.5%) were living with a disability. The most prevalent disability was mobility (83.3%) (Figure 3). Clients with a disability reported having up to three different disabilities, however, the majority of clients had only one disability (88.9%).



**FIGURE 8:** Frequency of types of disability.



Most clients had an internet connection with the majority connected via Wi-Fi/NBN (73.8%) (Table 5). Only three clients had no internet connection. A dongle was supplied to seven clients either because they had no internet connection or there were issues with data allowances. Clients used a variety of operating systems with most using a mixture of Apple and Android systems (39.3%).

**TABLE 5:** Client technology information pre-program (N = 61).

TECHNOLOGY INFORMATION		N	%
Internet connection	Not connected	3	4.9
	Wi-Fi/NBN	45	73.8
	Dongle/device	6	9.8
	Hotspot	1	1.6
	ADSL	1	1.6
	Other	5	8.2
	Dongle supplied	7	11.5
Operating system	Apple	16	26.2
	Android	21	34.4
	Mix	24	39.3

5.2 SERVICE DATA

Working under Living Lab methodologies and consistently gathering feedback, a total of 229 phone calls were placed for the questionnaires and client experience feedback opportunities.

Between the start of January 2020 and the end of August, a total of 170 face to face sessions in the home with a technical support officer were conducted to install the devices and support the learnings and digital capacity surrounding the devices. Based on the individual learning needs of the client, further support was offered by means of virtual sessions, phone calls and extra face to face one on one training sessions in the home.

5.2.1 EXTRA SMART HOME SERVICES PROVIDED

All clients participating in the SHM program received the base Smart Home technology package. This package included a Google Hub, Google Nest Mini, TP Smart switches, Chromecast and Philips Hue Smart lighting. Interested clients were given the opportunity to receive extra Smart Home technologies (peripherals).

A large percentage of clients opted to receive extra peripherals (N = 23, 37.7%). Of those clients who received extra peripherals, the safety themed peripheral was the most popular (65.3%) (see Table 6).

**TABLE 6:** Themes of extra peripherals received (N = 23).

EXTRA PERIPHERALS RECEIVED	N (%)	%
Domestic peripherals	10	43.5
Safety peripherals	15	65.3
Security peripherals	10	43.5

Most clients who received extra peripherals received smart lock technology (43.5%), followed by the Roomba smart vacuum (34.8%) (Table 7).

**TABLE 7:** Extra peripheral technology received (N = 23).

EXTRA SMART HOME TECHNOLOGY RECEIVED	N	%
Google protect	1	4.3
Smoke detector	1	4.3
Smart lighting	6	26.1
Light strips	3	13.0
Smart vacuum	8	34.8
Smart mop	3	13.0
Smart lock	10	43.5
Smart doorbell	4	17.4
Motion sensor	7	30.4
Security camera	4	17.4



5.3 PROCESSES: CLIENT RECRUITMENT INTO SHM PROGRAM

5.3.1 SOURCES OF RECRUITMENT OF CLIENTS IN SHM PROGRAM

The majority of clients in the SHM program reported they had recieved direct marketing mail including brochures for two Feros technology based programs; The Let’s Get Technical digital literacy building program and the SHM program.

The marketing campaign initially consisted of:

- 700 brochures distributed to CHSP clients in the targeted regions.
- Outbound calls to clients whose interest to learn more about technology was identified in a previous client survey.
- Emails to existing clients in the regions.
- Advertisements on Feros Care’s MyFeros Portal; a self service online tool that allows the user to access, control and manage their services in addition to being able to communicate with Feros at the touch of a button.
- An on hold message played in the call queue when phoning Feros Care.

Due to the overwhelming reponse to the initial brochures distributed, Feros Care was not required to deploy the entire marketing plan.

There was a large sample who indicated they would like to participte in both programs, Let’s Get Technical and SHM program in parallel.

There was a smaller cohort who heard about the program through their TSO when receiving the Let’s Get Technical program. One client reported that she had heard about the program through her sister and used the brochure to make further enquiries about the program.

5.3.2 CLIENT REASONS FOR PARTICIPATING IN SHM PROGRAM

The CEQ (Table 8) reported most clients were interested in the program to learn how to use and keep up with changes in technology (45.9%), followed by clients who were interested because it sounded exciting (29.7%).

TABLE 8: CEQ, what made you become interested in the program? (N = 37).

ANSWER	RESPONSE COUNT	%
It sounded exciting	11	4.3
Wanted to learn how to use and keep up with technology	17	4.3
That FEROS would provide support as that made it feel achievable	2	26.1
I wanted something that would help with mobility issues	4	13.0
My family thought it was a good idea	2	34.8

Other reasons clients were interested in the program included:

- Well I just thought I’d see what happens, I live on my own and if I just have the devices it might help.
- I’ve got a couple of things through Feros before and I really wanted to be able to turn the lights on easier.
- I’ve been using Apple for a long time and then this was offered and so I decided.
- I’ve been interested in automated technology for a long time since nursing. We wondered if these kinds of things would help with my rheumatoid arthritis.
- Well I saw the information about Google Home and so I thought I’d like to see if I can manage it really.
- I got the lovely letter.
- I want to be more secure online and safety in the home for my husband and I.

The most common goals reported by clients included the ability to use new technology (16.1%), followed by being able to watch Netflix/TV/Entertainment (12.9%) (Table 9).

TABLE 9: CEQ, what Goals do you hope to achieve by participating in the SHM program? (N = 31).

ANSWER	RESPONSE COUNT	%
To save time	2	6.5
Watch Netflix/TV/entertainment	4	12.9
Not worry about getting up during the night	2	6.5
Be able to use new technology	5	16.1
Play music	2	6.5
To gather information/be more knowledgeable	3	9.7
To use Smart Home lighting	2	6.5
Be able to contact family/friends	3	9.7
Become more independent	3	9.7

Other goals clients had included:

- Convenience.
- Achieve confidence taking photos and using Instagram.
- To keep the mind active.
- Home safety.
- Make life easier.



5.3.3 Barriers to recruitment

Clients reported some barriers to recruitment. In initial client insight groups, there were concerns about the technology surrounding privacy. Therefore an information sheet to address concerns (listed below) was developed. Other barriers included family members who felt that the devices were too high level and to costly. For example, Feros Care staff reported receiving the following feedback from one client:

- “My family think that the devices are a huge waste of taxpayers money.”
- “I have a friend whose daughter went in and ripped all of the devices out of her mothers room saying it was ridiculous.”

CEQ, week 1: Reported concerns included:

- Concerned about Google technology interfering with current technology.
- Security concerns.
- Concerned that the Wi-Fi will go off at night when the phone is on aeroplane mode.
- Concerned that the program will be too challenging.
- Concerned about their memory.
- Concerned about having computers everywhere.

Other barriers to recruitment were feelings toward Big Tech companies and the Health industry. One client reported that if she was to support the program and buy further devices she would be worried where the money and profits would go. Furthermore, during COVID-19, barriers to recruitment included the social distancing measures, quarantine measures and limits of number of people in the home.

In terms of technology barriers, there was a small cohort of clients (n = 2) that could not participate once they had signed up to the program as their device designated to be driver or connection to devices was not compatible with the devices. This incompatibility was due to age of the model in both cases.

Other barriers to recruitment involved not being in the targeted region and not being CHSP’s eligible.

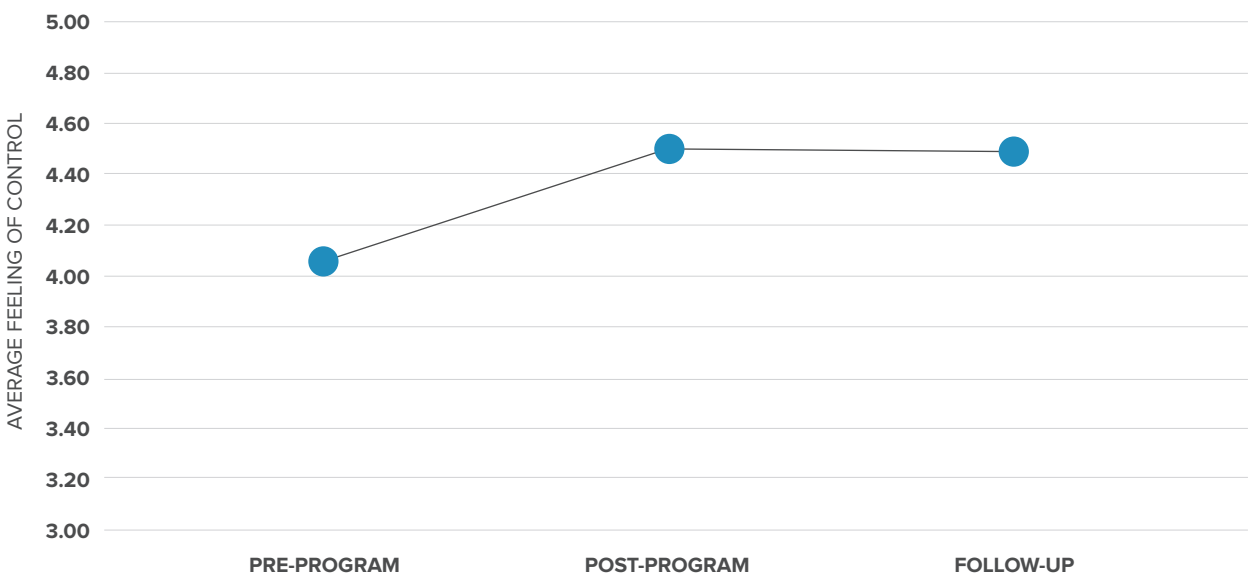
5.4 PROGRAM OUTCOMES

Evaluation of the impact and outcomes associated with participating in the SHM program were based on a range of descriptive data measuring change over time. Findings were supported by qualitative data from the CEQ.

5.4.1 INDEPENDENCE

To capture clients’ level of independence, the SHM questionnaire asked clients to rate their control over managing their daily affairs on a 5-point scale from 1 “no control” to 5 “high control”. There was a significant change in feelings of control over daily affairs across time points,  $F(2, 108) = 10.91, p < .001, \eta^2 = .17$ . Post-hoc analysis revealed that control over daily affairs was significantly greater post-program ( $M = 4.51, SD = .79, p < .001$ ) and at follow-up ( $M = 4.49, SD = .72, p = .001$ ) than pre-program ( $M = 4.05, SD = .87$ ). There was no difference in control over daily affairs between post-program and follow-up ( $p = .811$ ).

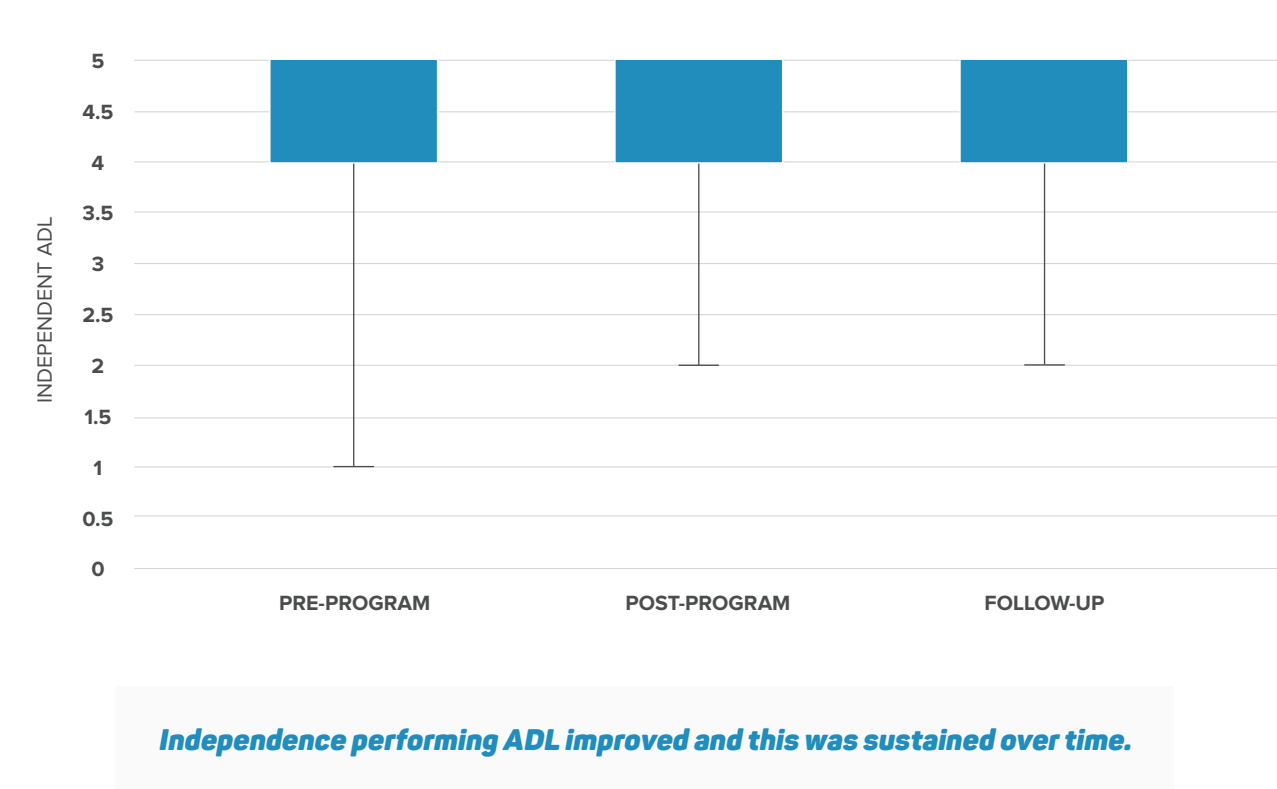
FIGURE 9: Change in feelings of control over daily affairs across time points



Feelings of control increased and this was sustained over time.

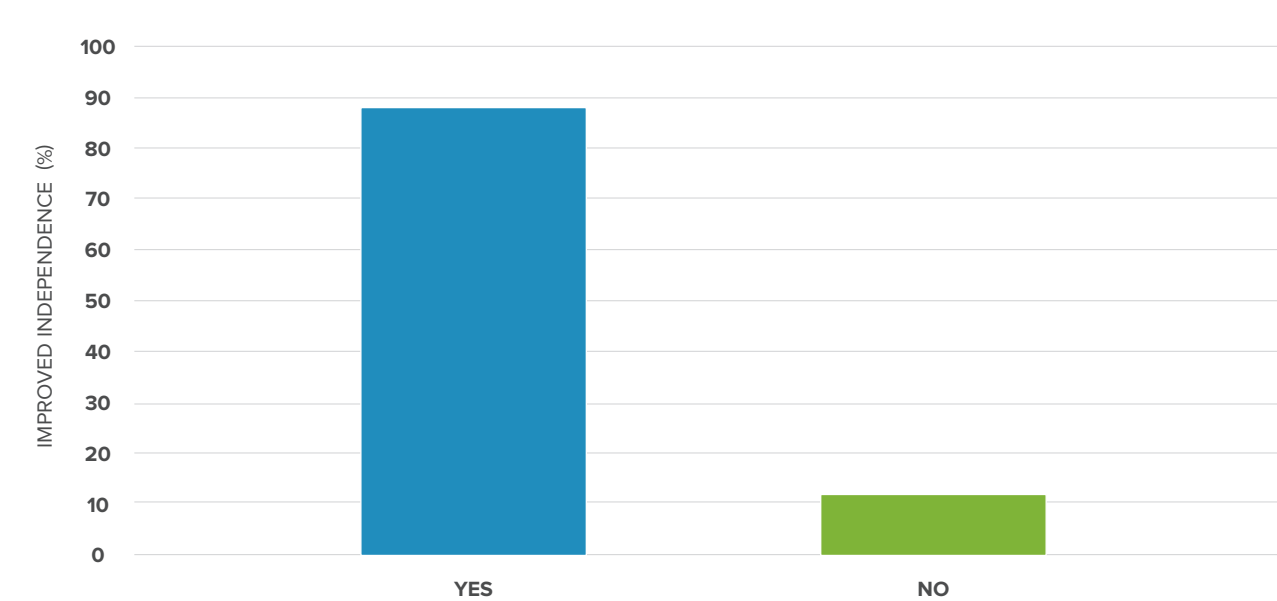
Clients were also asked to rate their ability to independently perform activities of daily living (ADL) on a 5-point scale from 1 “no ability” to 5 “high ability”. There was a significant change in independence when performing ADL across time points,  $\chi^2(2) = 12.13, p = .002$ . This finding was followed up with Wilcoxon signed rank tests. Independence when performing ADL was significantly greater post-program ( $Mdn = 5.00, Z = 3.48, p = .001, r = .32$ ) and at follow-up ( $Mdn = 5.00, Z = 2.24, p = .025, r = .21$ ) than pre-program ( $Mdn = 4.00$ ). There was no difference in independence when performing ADL between post-program and follow-up,  $Z = 1.30, p = .193, r = .12$ .

**FIGURE 10:** Change in feelings of independence performing ADL across time points.



At the conclusion of the program clients were asked if the program had increased their independence when managing daily affairs. Data was available for 60 clients with 53 clients reporting that the program had increased their independence (Figure 6). This is supported by the CEQ in which 34/37 clients said that the SHM program had increased their independence in the home (Table 10).

**FIGURE 11:** Percentage of clients who reported improved independence.



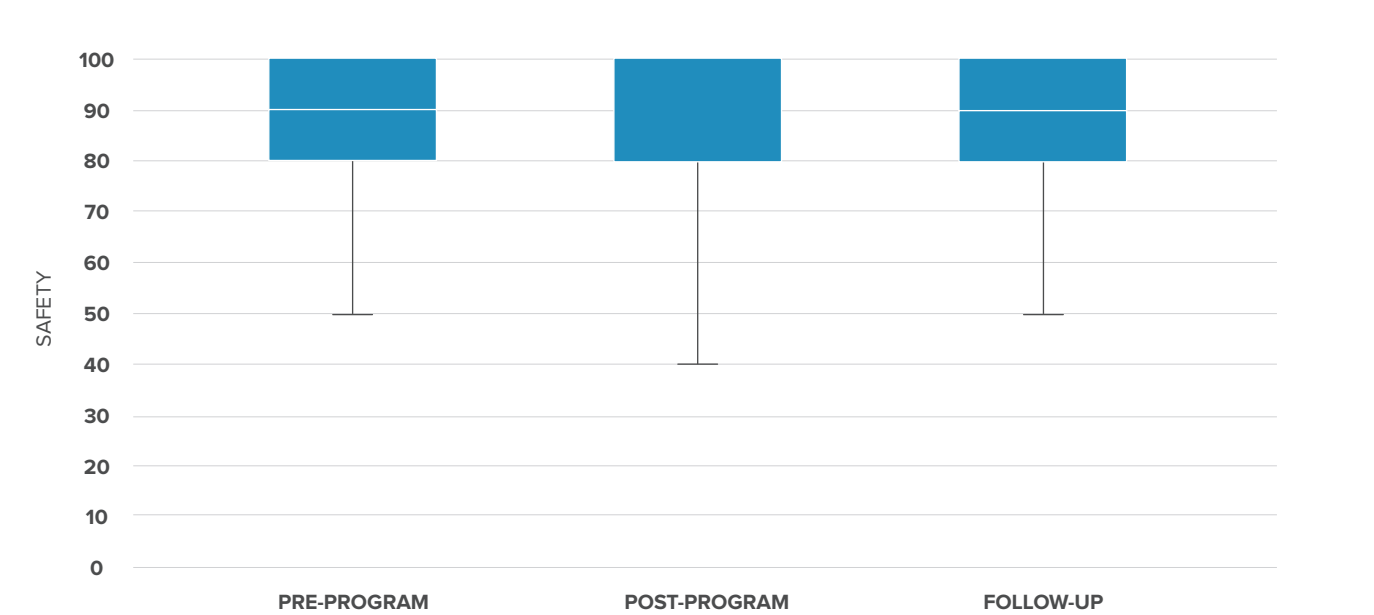
**TABLE 10:** CEQ Do you think this product increases your independence in the home? (N = 37)

ANSWER	RESPONSE COUNT	%
Yes	34	91.9
No	3	8.1

5.4.2 Safety and security

Changes in clients’ safety and security were captured through the PWI domains of Safety and Future Security. There was no change in Safety across time,  $\chi^2(2) = .99$ ,  $p = .609$ .

**FIGURE 12:** Change in Safety (PWI) across time points



On a separate measure of safety clients were asked if the program had increased their feelings of safety in the home, with 83% reporting increased feelings of home safety (Figure 8).





**FIGURE 13:** Percentage of clients who reported improved safety in the home



There was a significant change in Future Security across time,  $\chi^2(2) = 6.04$ ,  $p = .049$ . This finding was followed up with Wilcoxon signed rank tests. Future Security was significantly greater post-program (Mdn = 90,  $Z = 2.76$ ,  $p = .006$ ,  $r = .25$ ) and at follow-up (Mdn = 90,  $Z = 2.03$ ,  $p = .042$ ,  $r = .19$ ) than pre-program (Mdn = 80). There was no difference between Future Security post-program and at follow-up,  $Z = .38$ ,  $p = .702$ ,  $r = .04$ .

**FIGURE 14:** Change in Future Security (PWI) across time points



**CASE STUDY**

**HOW TECHNOLOGY AIDS WITH COGNITIVE DISABILITY**

Ernest is a 73-year old grandfather who, seven years ago, had a severe stroke, followed by a seizure. As a result of the stroke, he was diagnosed with a mild cognitive disorder. There is not enough blood going through his brain, and the connections in his brain continue to slowly deteriorate.

When Ernest received the offer to join the Google Smart Home service, he and his wife were excited about the improvement it could have on their lives.

***“We thought it could be handy, especially with the lights and for answering all the questions we have, but we now use Google Smart Home for so many other things.”***

Ernest and his wife use Google Smart Home to stay up to date with the news and look for recipes. They have found the device to be particularly useful for controlling the lights at night.

***“We use Google every day. It is so useful at night when it is dark, and you cannot see anything,” he said. “I would just say ‘Hey Google, please turn on the living room lamp’, and it prevents us from falling and stepping on our dogs”***

Google Smart Home also supports peace of mind when leaving the apartment. ***“We did not feel comfortable leaving our dogs alone, as we just moved here and it’s all new to them,” Ernest says. “We got the***



***Furbo Dog Camera, which is connected to Google Smart Home that allows us to have an eye on our dogs when we’re gone, but also captures the door. So, when the dogs start barking, we get a notification and can see if someone tries to come in”. “We can even say something through the Furbo and give our dogs treats.”***

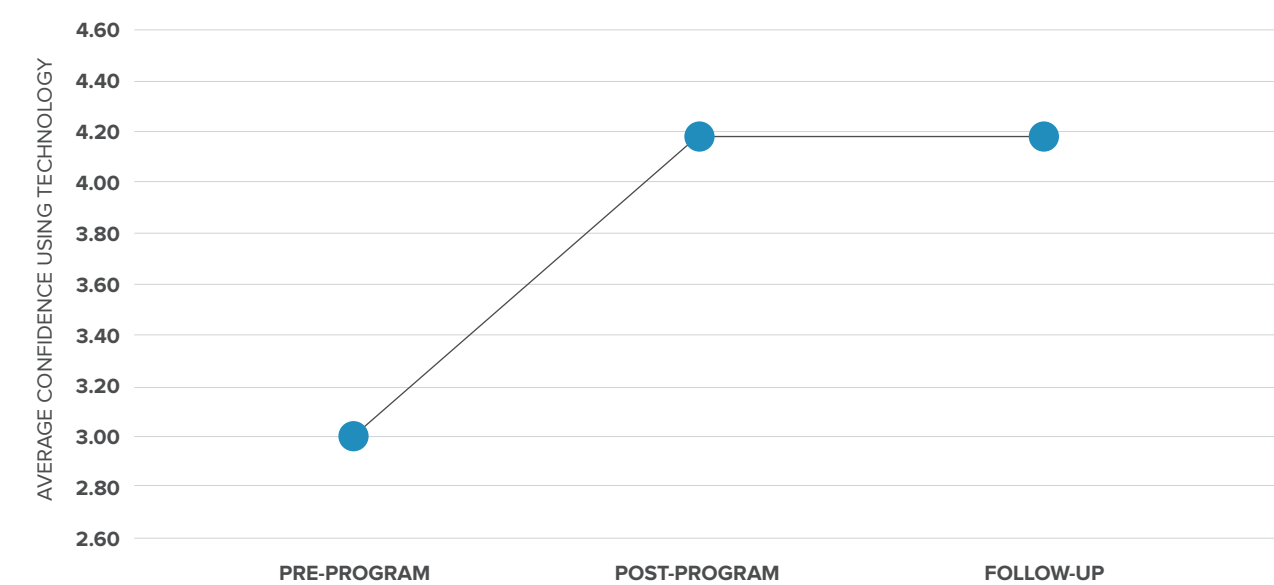
This husband and wife duo love their Google Smart Home, and his wife wants to further enhance their home with more technology. “I know that we can add more devices to Google Home as we need them. The next one will be an electronic blind lifter that we can voice control through Google Smart Home”.

***“On Anzac Day we could not go to a parade, so we were standing outside the balcony, and I suddenly heard the Last Post playing. I had no idea where it was coming from” Ernest’s wife said. “I didn’t realise he’d went inside to ask Google to play it for us. It was very meaningful and emotional.”***

5.4.3 CONFIDENCE USING TECHNOLOGY (AND TECHNOLOGY ACCEPTANCE)

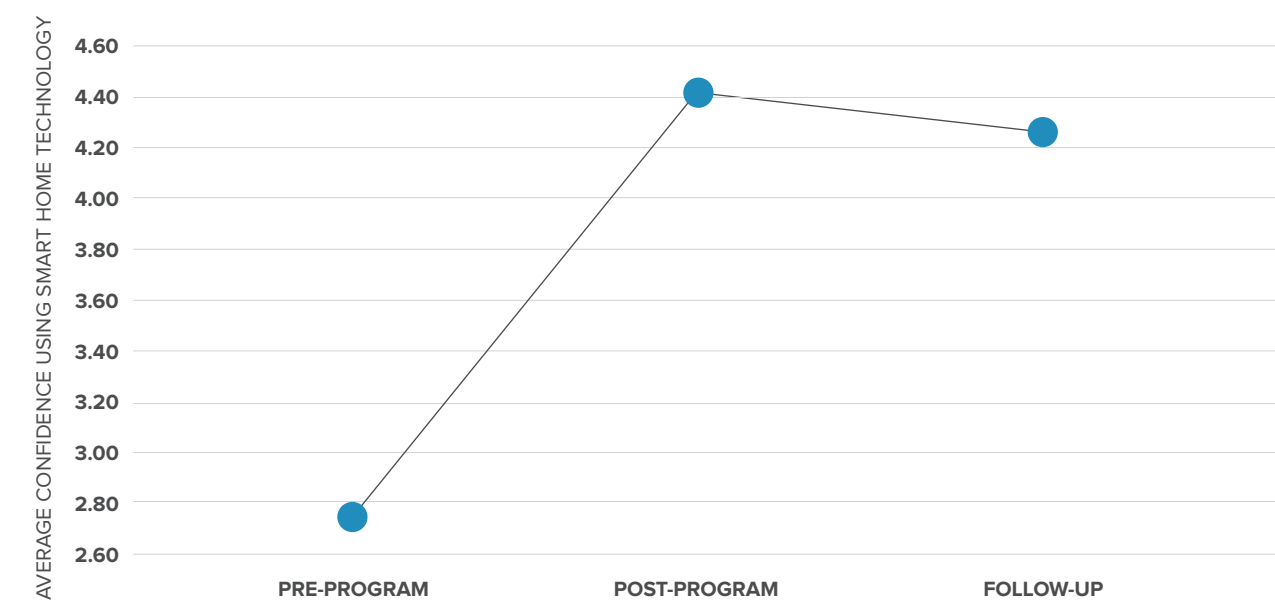
There was a significant change in client confidence using technology across time points,  $F(2, 108) = 39.82, p < .001, \eta p2 = .42$ . Post-hoc analysis revealed that confidence in using technology was significantly greater post-program ( $M = 4.18, SD = .75, p < .001, d = 1.19$ ) and at follow-up ( $M = 4.18, SD = .75, p < .001, d = 1.19$ ) than pre-program ( $M = 3.00, SD = 1.18$ ). There was no difference in confidence scores between post-program and follow-up ( $p = 1.000, d = .00$ ). These results suggest that the SHM program improved clients' confidence to use technology which was sustained over time.

FIGURE 15: Change in confidence using technology across time points.



Confidence in using Smart Home specific technologies was also evaluated. Change in client confidence using Smart Home technology across time points,  $F(2, 108) = 78.26, p < .001, \eta p2 = .59$ . Post-hoc analysis revealed that confidence in using Smart Home technologies was significantly greater post-program ( $M = 4.44, SD = .66, p < .001, d = 1.75$ ) and at follow-up ( $M = 4.27, SD = .71, p < .001, d = 1.55$ ) than pre-program ( $M = 2.73, SD = 1.21$ ). There was no difference in confidence using Smart Home technologies between post-program and follow-up ( $p = .140, d = .25$ ). These results suggest that the SHM program improved clients' confidence using Smart Home technologies and this was sustained over time.

FIGURE 16: Change in confidence using Smart Home technology across time points.



Confidence using technology and Smart Home specific technology increased and was sustained over time.

These results are supported by the CEQ at week six in which 23/25 clients reported that their confidence to use their device has improved (Table 11).

TABLE 11: CEQ Do you think your confidence to use your devices has improved? (N = 25).

ANSWER	RESPONSE COUNT	%
Yes	23	92
No	2	8

Comments regarding confidence using their devices included:

- Feeling very confident with the technology, but does occasionally get frustrated.
- The more you use it the easier it is.
- I definitely hope to continue the program when it finishes and can already see a benefit.
- I definitely feel a lot more confident.
- I don't have to call my kids so much to ask them what to do.
- My husband knows it better than I do but we help each other a lot.
- Not confident with SH device at all and as such doesn't use it.
- No longer scared of technology.
- Using computers for 20 years and was already confident.
- I'm pretty slow with things but getting there gradually.



The Extended Unified Theory of Acceptance and Use of Technology (UTAUT) was used to determine clients' acceptance of Smart Home technologies. Total UTAUT scores and scores on each of the UTAUT domains; Perceived Usefulness, Perceived Ease of Use, Social Influence, Facilitating Conditions, Trust, Resistance to Change, Technology Anxiety and Behavioural Intention were compared across three time points (pre-program, post-program and follow-up) (Table 12).

TABLE 12: Scores on the UTAUT for each time point (N = 55).

UTAUT FACTOR	STAGE	MEDIAN	90TH PERCENTILE	MINIMUM	MAXIMUM	P VALUE
Perceived usefulness	Pre	5.20	7.00	2.00	7.00	< .001
	Post	6.60	7.00	2.00	7.00	
	Follow-up	6.40	7.00	1.00	7.00	
Perceived ease of use	Pre	5.75	6.85	3.00	7.00	< .001
	Post	6.75	7.00	2.00	7.00	
	Follow-up	6.75	7.00	2.00	7.00	
Social influence	Pre	5.00	7.00	2.00	7.00	.001
	Post	7.00	7.00	2.00	7.00	
	Follow-up	6.75	7.00	1.00	7.00	
Facilitating conditions	Pre	4.75	7.00	2.00	7.00	<.001
	Post	7.00	7.00	3.00	7.00	
	Follow-up	6.50	7.00	4.00	7.00	
Trust	Pre	5.00	7.00	1.00	7.00	<.001
	Post	7.00	7.00	1.00	7.00	
	Follow-up	7.00	7.00	1.00	7.00	
Resistance to change	Pre	4.00	6.33	1.00	7.00	.002
	Post	6.00	7.00	1.00	7.00	
	Follow-up	4.33	7.00	1.00	7.00	
Technology anxiety	Pre	6.00	7.00	1.00	7.00	<.001
	Post	7.00	7.00	5.00	7.00	
	Follow-up	7.00	7.00	5.00	7.00	
Behavioural intention	Pre	7.00	7.00	4.00	7.00	<.001
	Post	7.00	7.00	6.00	7.00	
	Follow-up	7.00	7.00	5.00	7.00	
UTAUT total	Pre	5.40	6.23	4.00	7.00	<.001
	Post	6.60	6.97	4.00	7.00	
	Follow-up	6.33	6.94	4.00	7.00	

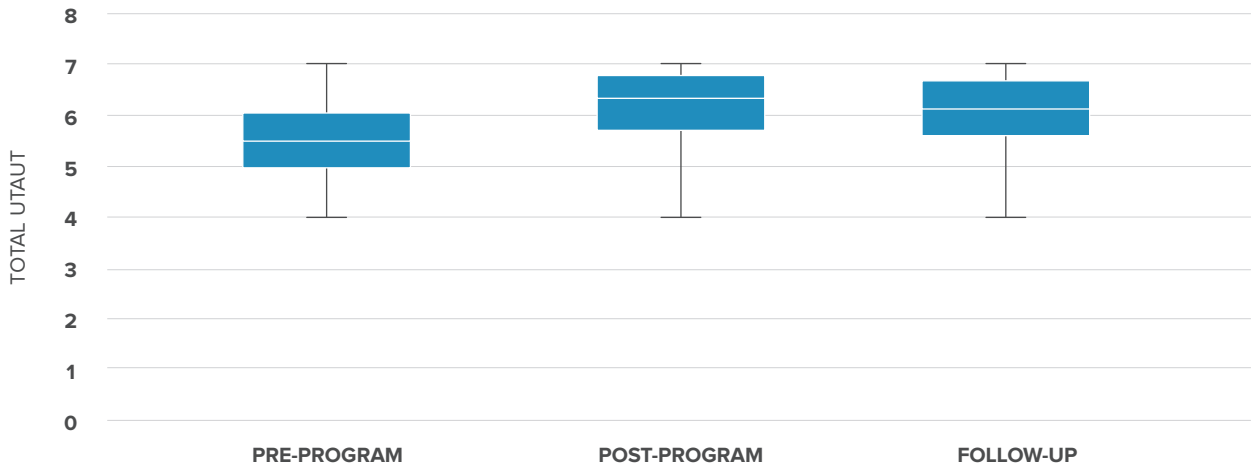
Note. Resistance to Change and Technology Anxiety were reverse scored for analysis, higher scores indicate less Resistance to Change and Technology Anxiety. Significance at  $p < .05$ .

Total UTAUT

There was a significant change in clients' acceptance of Smart Home technologies across time points,  $\chi^2(2) = 43.74$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Acceptance of Smart Home technologies was significantly greater in post-program (Mdn = 6.60,  $Z = 6.29$ ,  $p < .001$ ,  $r = .57$ ) and at follow-up (Mdn = 6.33,  $Z = 5.52$ ,  $p < .001$ ,  $r = .51$ ) than pre-program (Mdn = 5.40). Smart Home technologies acceptance was lower at follow-up than post-program,  $Z = 2.68$ ,  $p = .007$ ,  $r = .26$ . Acceptance and readiness to adopt Smart Home technologies remained significantly greater than pre-program level, however, this was significantly less than at post-program. Therefore, increased acceptance to adopt Smart Home technology was partially sustained at follow-up.



FIGURE 17: Change in UTAUT across time points.

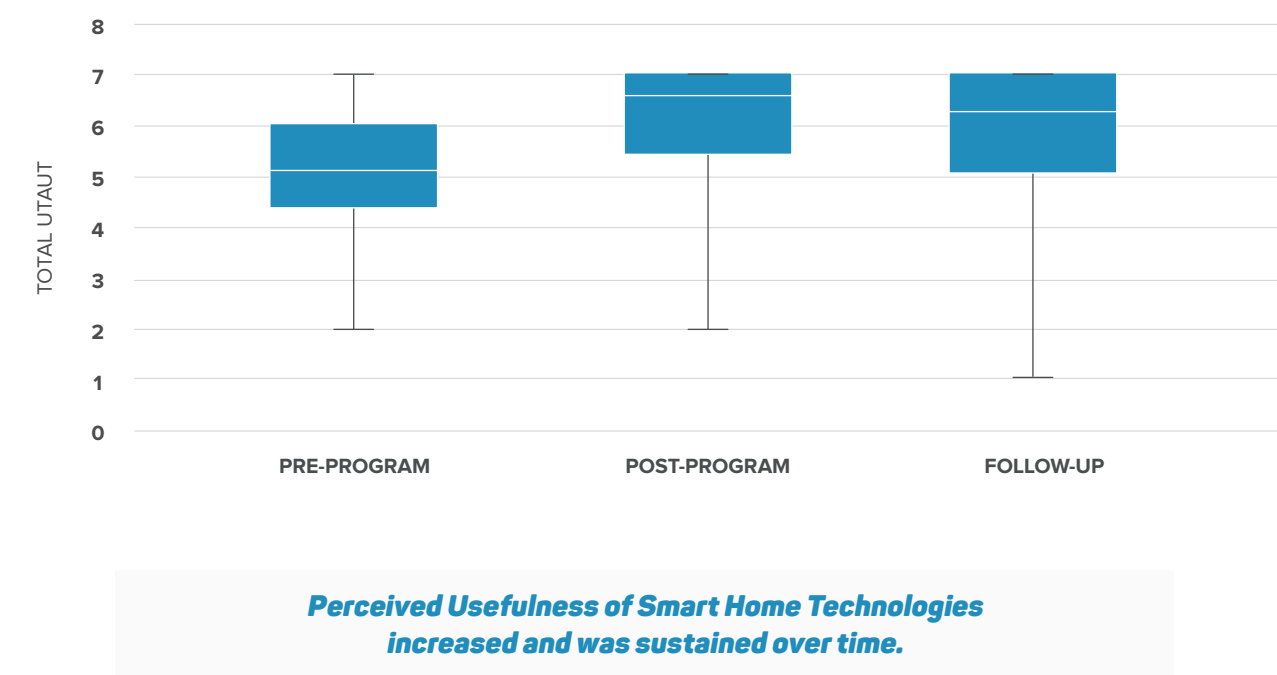


Acceptance and readiness to adopt Smart Home technologies increased and was partially sustained over time.

Perceived Usefulness

There was a significant change in clients Perceived Usefulness of Smart Home technologies across time points,  $\chi^2(2) = 29.79$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Perceived Usefulness was significantly greater post-program (Mdn = 6.60,  $Z = 4.14$ ,  $p < .001$ ,  $r = .38$ ) and at follow-up (Mdn = 6.40,  $Z = 3.72$ ,  $p < .001$ ,  $r = .35$ ) than pre-program (Mdn = 5.75). There was no difference in Perceived Usefulness between post-program and follow-up,  $Z = 1.77$ ,  $p = .077$ ,  $r = .17$ .

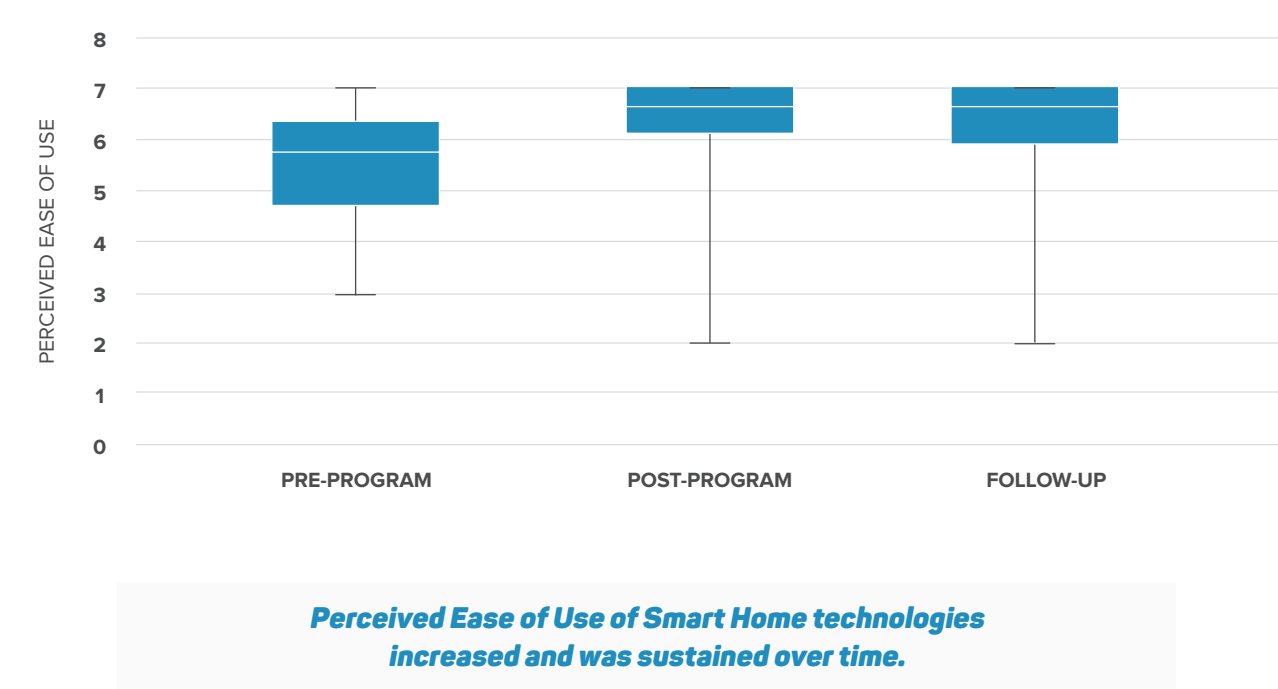
FIGURE 18: Change in Perceived Usefulness across time points.



Perceived Ease of Use

There was a significant change in clients Perceived Ease of Use across time points,  $\chi^2(2) = 33.31$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Perceived Ease of Use was significantly greater post-program (Mdn = 6.75,  $Z = 4.56$ ,  $p < .001$ ,  $r = .42$ ) and at follow-up (Mdn = 6.75,  $Z = 4.49$ ,  $p < .001$ ,  $r = .43$ ) than pre-program (Mdn = 5.75). There was no difference in Perceived Ease of Use between post-program and follow-up,  $Z = 1.65$ ,  $p = .098$ ,  $r = .16$ .

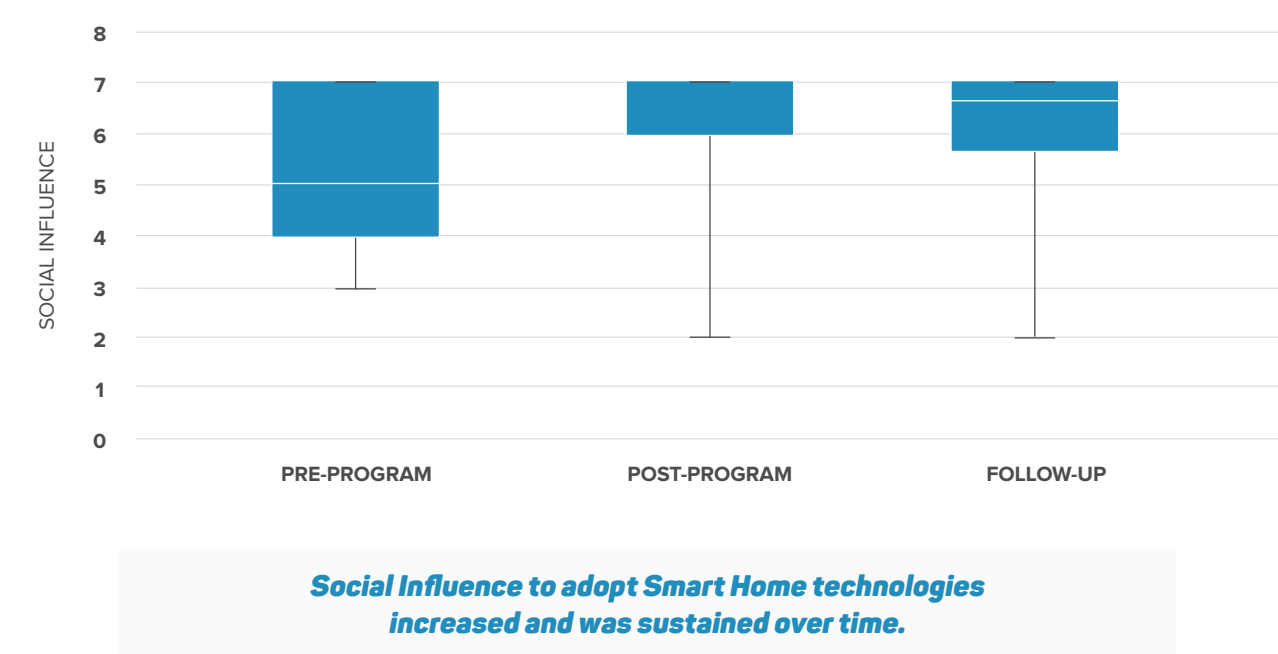
FIGURE 19: Change in Perceived Ease of Use across time points.



Social Influence

There was a significant change in clients Social Influence to use Smart Home technologies across time points,  $\chi^2(2) = 13.30$ ,  $p = .001$ . This finding was followed up with Wilcoxon signed rank tests. Social Influence was significantly greater post-program (Mdn = 7.00,  $Z = 3.84$ ,  $p < .001$ ,  $r = .35$ ) and at follow-up (Mdn = 6.75,  $Z = 2.82$ ,  $p = .005$ ,  $r = .27$ ) than pre-program (Mdn = 5.00). There was no difference in Social Influence between post-program and follow-up,  $Z = 1.28$ ,  $p = .200$ ,  $r = .12$ .

FIGURE 20: Change in Social Influence across time points.

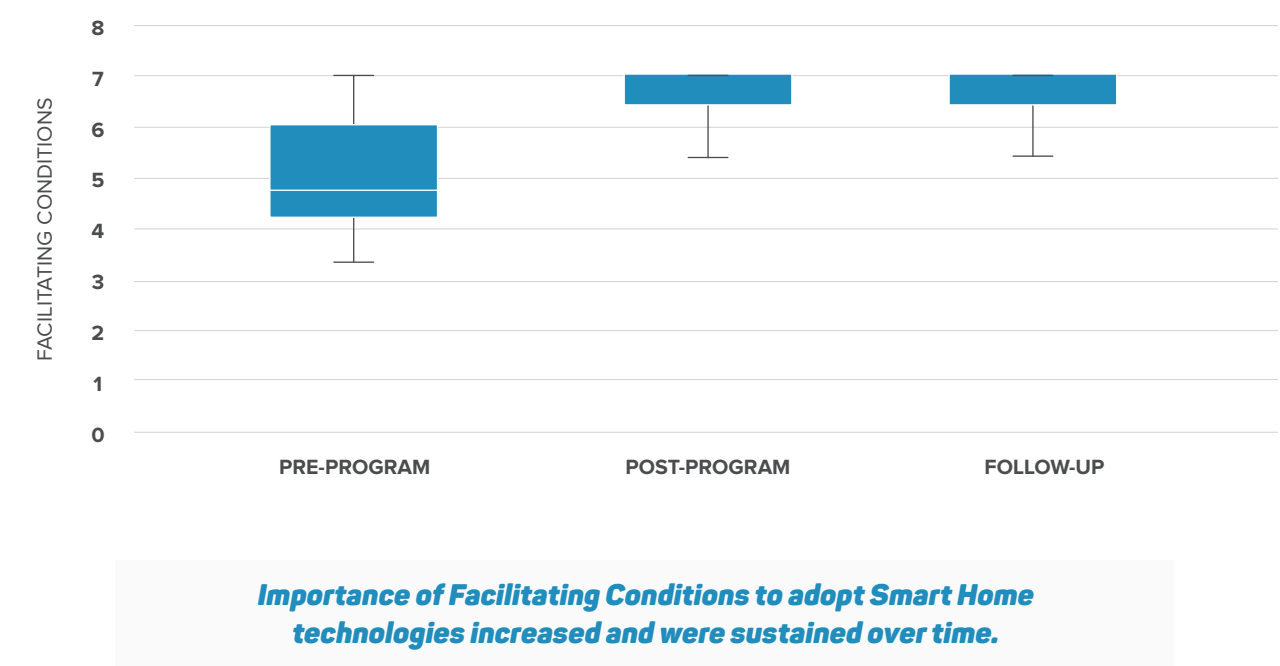




Facilitating Conditions

There was a significant change in clients perception of Facilitating Conditions to use Smart Home technologies across time points,  $\chi^2(2) = 57.42$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Facilitating Conditions were significantly greater post-program (Mdn = 7.00,  $Z = 5.45$ ,  $p < .001$ ,  $r = .50$ ) and at follow-up (Mdn = 6.50,  $Z = 5.74$ ,  $p < .001$ ,  $r = .55$ ) than pre-program (Mdn = 4.75). There was no difference in Facilitating Conditions between post-program and follow-up,  $Z = 1.44$ ,  $p = .150$ ,  $r = .14$ .

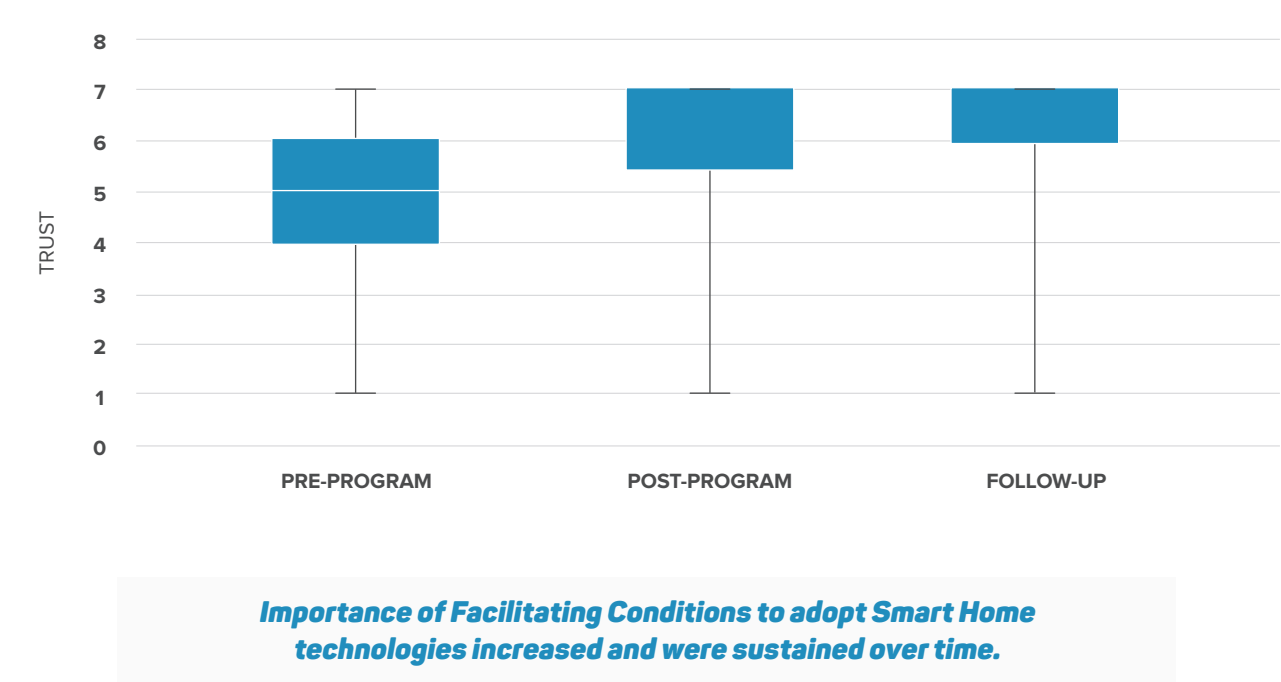
FIGURE 21: Change in Facilitating Conditions across time points



Trust

There was a significant change in clients Trust in Smart Home technologies across time points,  $\chi^2(2) = 38.50$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Trust was significantly greater post-program (Mdn = 7.00,  $Z = 4.94$ ,  $p < .001$ ,  $r = .45$ ) and at follow-up (Mdn = 7.00,  $Z = 5.25$ ,  $p < .001$ ,  $r = .50$ ) than pre-program (Mdn = 5.00).

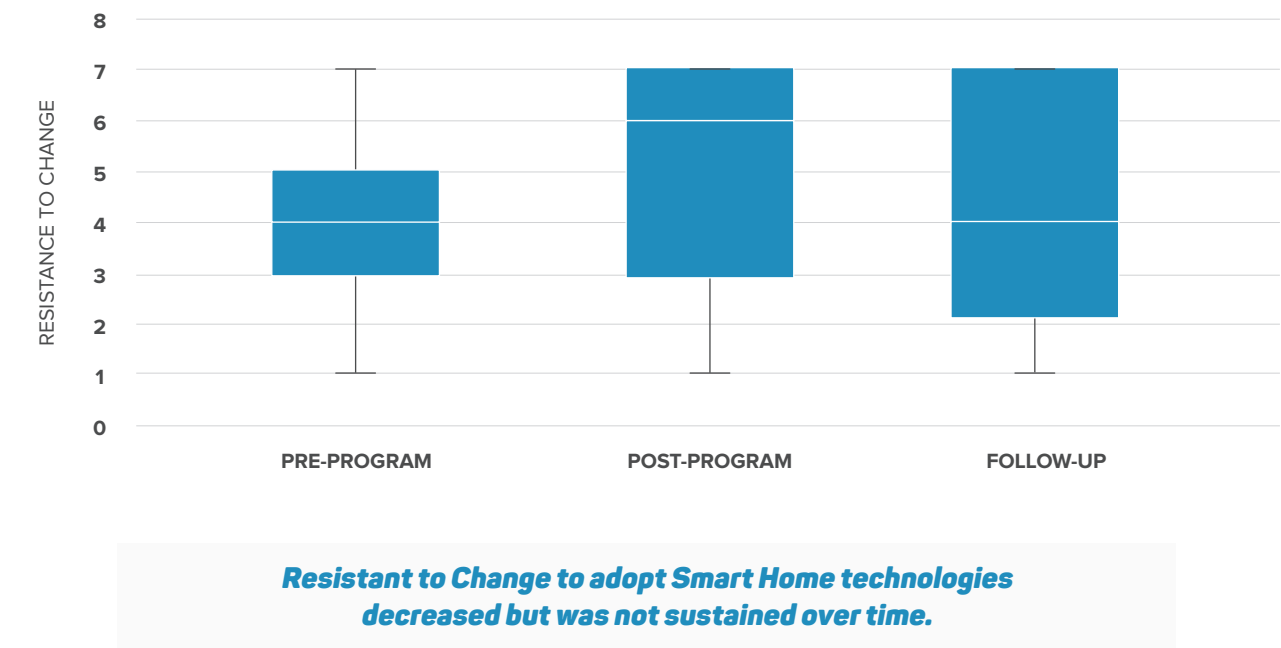
FIGURE 22: Change in Trust across time points



Resistance to Change

There was a significant change in clients Resistance to Change across time points,  $\chi^2(2) = 12.84$ ,  $p = .002$ . This finding was followed up with Wilcoxon signed rank tests. Resistance to Change was significantly lower post-program (Mdn = 6.00\*) than pre-program (Mdn = 4.00\*),  $Z = 2.96$ ,  $p = .003$ ,  $r = .27$ . Resistance to Change was also significantly lower post-program than at follow-up (Mdn = 4.33\*),  $Z = 2.23$ ,  $p = .026$ ,  $r = .21$ . There was no difference in Resistance to Change between pre-program and follow-up,  $Z = 1.52$ ,  $p = .128$ ,  $r = .14$ .

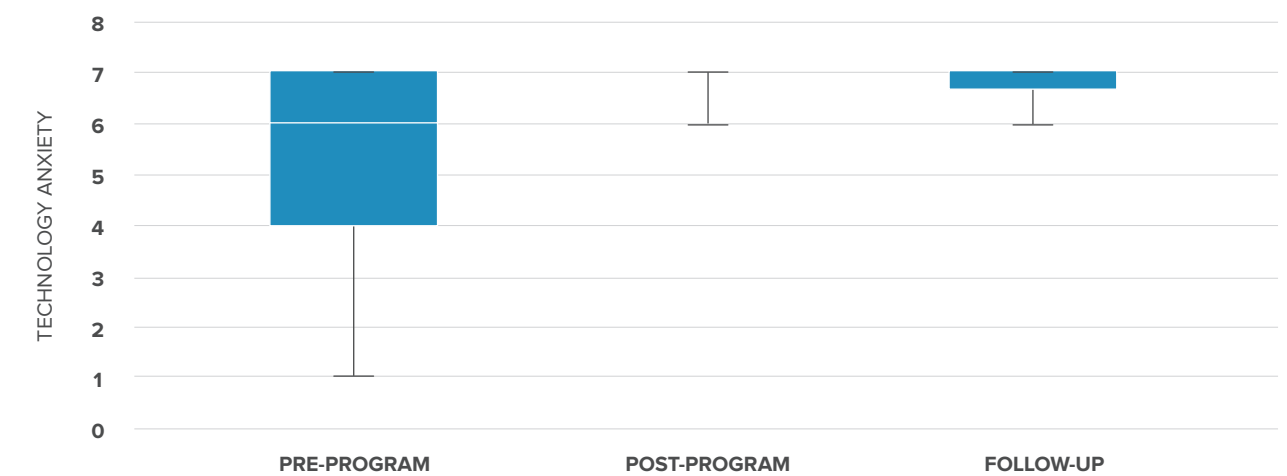
FIGURE 23: Change in Resistance to Change across time points.



Technology Anxiety

There was a significant change in clients Technology Anxiety across time points,  $\chi^2(2) = 43.91$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Technology Anxiety was significantly lower post-program (Mdn = 7.00\*,  $Z = 5.22$ ,  $p < .001$ ,  $r = .48$ ) and at follow-up (Mdn = 7.00\*,  $Z = 4.64$ ,  $p < .001$ ,  $r = .44$ ) than pre-program (Mdn = 6.00\*). There was no difference in Technology Anxiety between post-program and follow-up,  $Z = 1.73$ ,  $p = .083$ ,  $r = .16$ .

FIGURE 24: Change in Technology Anxiety across time points.



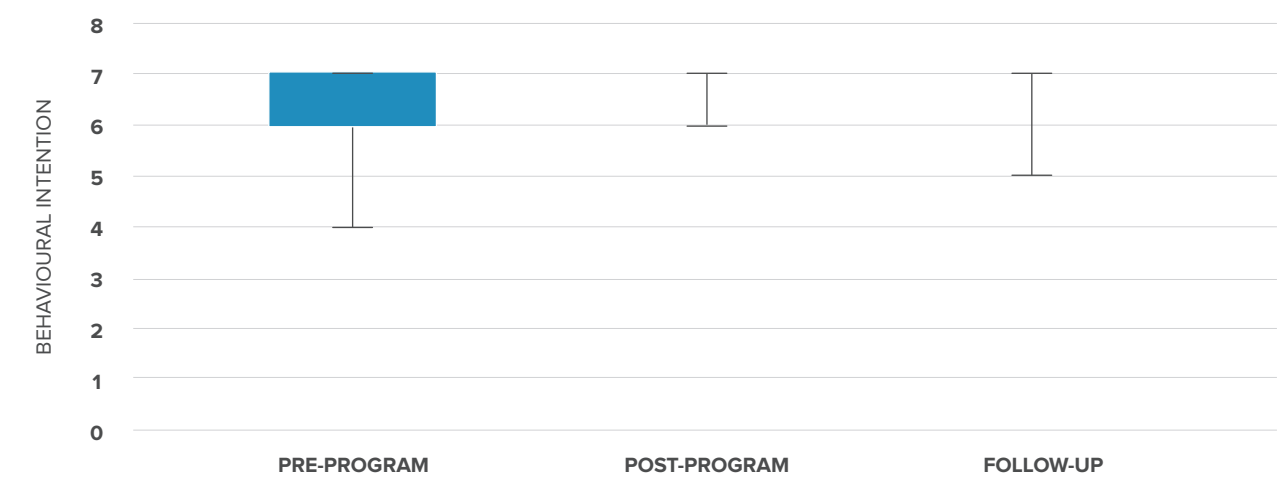
\*Technology Anxiety items were reverse scored for analysis, higher scores indicate less Technology Anxiety

**Technology Anxiety of using Smart Home technologies decreased and was sustained over time.**

Behavioural Intention

There was a significant change in clients Behavioural Intention to use Smart Home technologies across time points,  $\chi^2(2) = 17.61$ ,  $p < .001$ . This finding was followed up with Wilcoxon signed rank tests. Behavioural Intention was significantly greater post-program (Mdn = 7.00,  $Z = 3.97$ ,  $p < .001$ ,  $r = .36$ ) and at follow-up (Mdn = 7.00,  $Z = 2.20$ ,  $p = .028$ ,  $r = .21$ ) than pre-program (Mdn = 7.00). Behavioural Intention was significantly greater post-program than at follow-up,  $Z = 2.18$ ,  $p = .029$ ,  $r = .21$ .

FIGURE 25: Change in Behavioural Intention across time points.



**Intention to Use Smart Home technologies increased and was partially sustained over time.**





CASE STUDY

Catherine is an 82-year old woman recently diagnosed with dementia. Catherine lives alone, with a disability. Her primary motivator for taking part in the program was to remain independent in her home. Catherine was socially isolated, had low levels of confidence when using technology and performing daily living tasks. Personalised, one on one sessions allowed her to feel comfortable and engaged in the learning process.

Catherine received a number of smart devices including a suite of smart lighting, smart switches, Chromecast, Google nest and the Google hub. Knowing her love of music and art, she was supported to use the devices to search for her favourite classical music and art tutorials. Over the program period Catherine gained confidence using the smart devices, and reported that playing music made her feel at ease and reduced her anxiety. Catherine was also able to use Chromecast to cast water colour painting tutorials to her television set.

Catherine reported that having Google and being able to call out and get a response had made her feel less lonely in the home. She used the devices to schedule reminders for medications, healthcare appointments and setting routines for smart lighting. Catherine reiterated that she was so

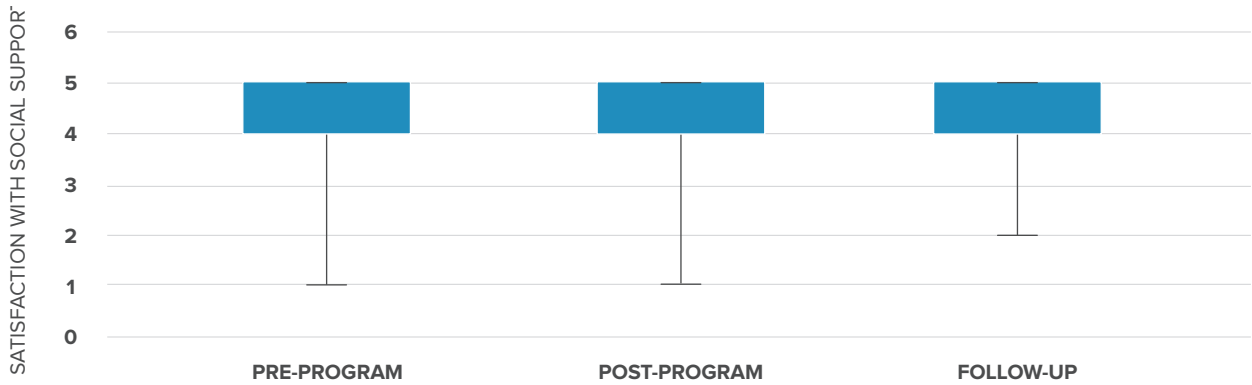


grateful to have the devices, because they had not only given her confidence to use the technology, but also confidence in herself. The program improved her quality of her life, and gave her a **“new lease on life”**. Catherine now welcomes new tasks involving technology which has been highlighted in her positive attitude toward future programs. She has adopted technology that has allowed her to connect in ways that she didn’t know possible. She has been able to reconnect with her love of the arts and music. Catherine is also able to better connect with her family, and with her. Catherine appreciated the personalised, one on one sessions as they allowed her to feel comfortable and engaged in the learning process.

5.4.4 SOCIAL CONNECTEDNESS

Clients reported a very high level of satisfaction with social support at pre-program, and this remained consistent across post-program and follow-up (Figure 21). There was no difference in satisfaction with social support after the intervention or at follow-up ( $p = .192$ ). Whilst the satisfaction reported by clients was very high at pre-program (median was at the maximum value of 5 on a 5-point scale), levels did not drop during COVID-19 as expected due to restrictions imposed for social gatherings and activities.

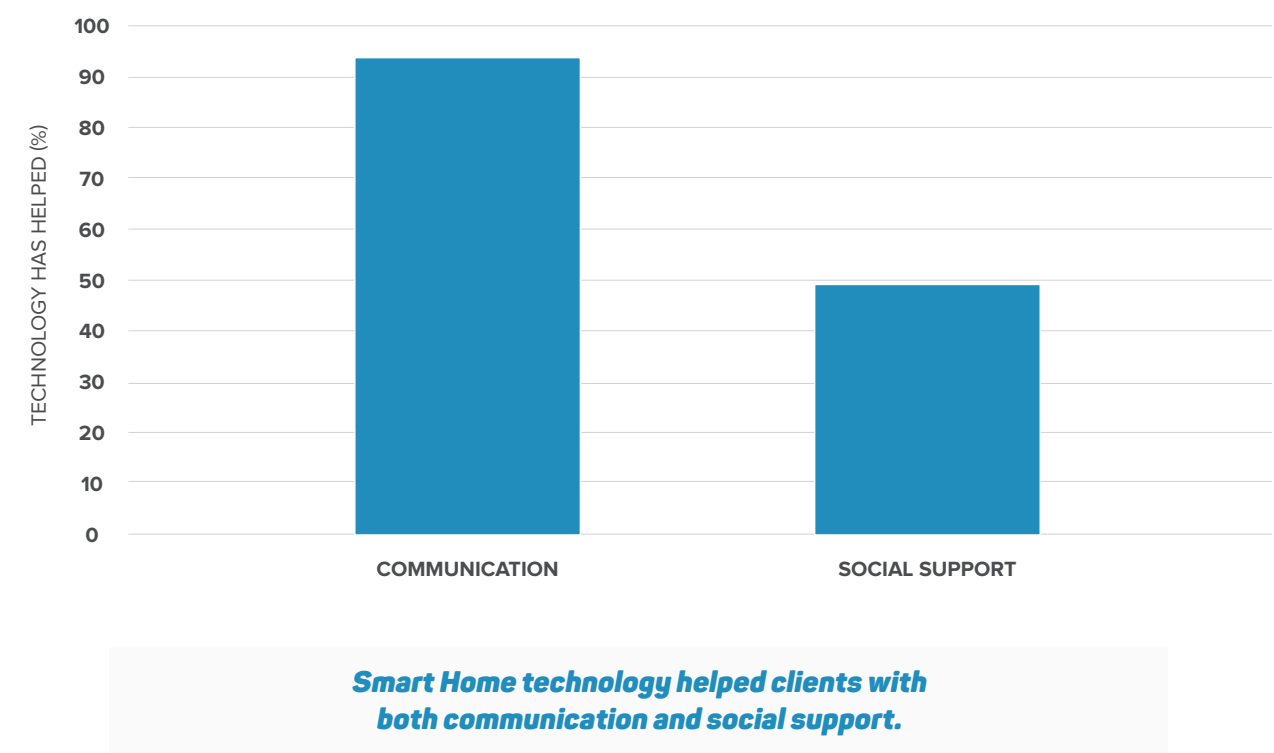
FIGURE 26: Change in satisfaction with social support across time points.



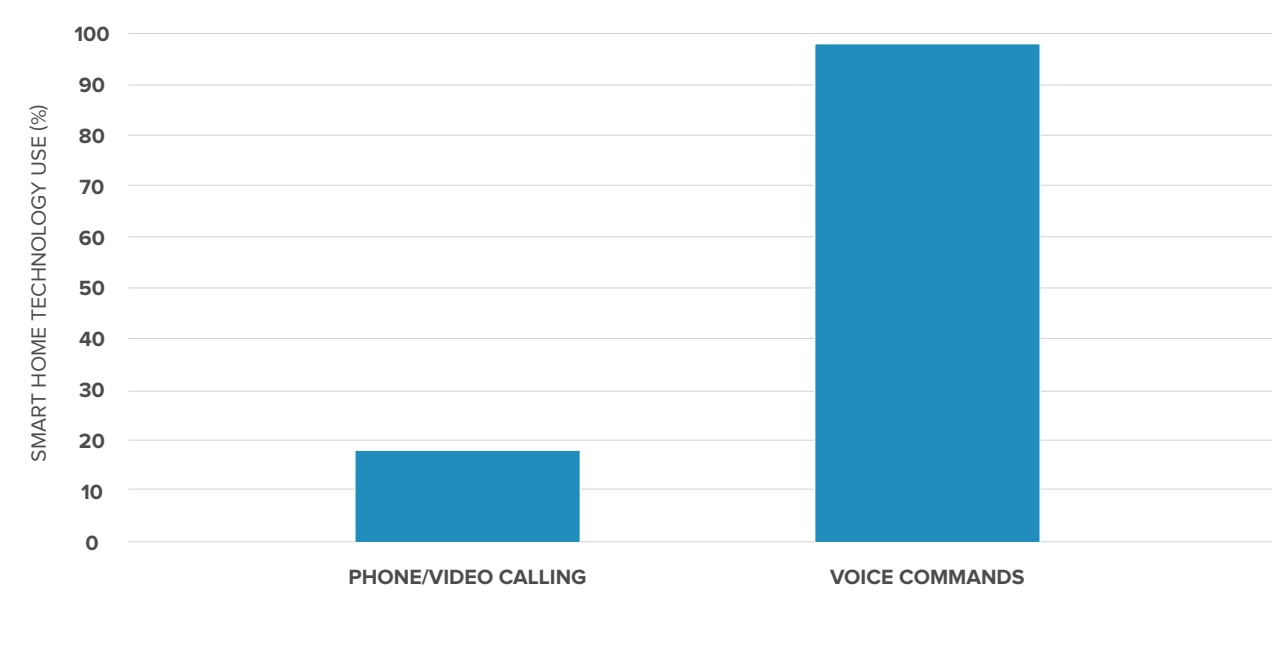
**Satisfaction with social support was sustained through engagement with technology.**

The SHM questionnaire asked clients if technology had helped them in the areas of communication and social support. Of the 60 clients who provided data, 57 (93.4%) reported that the technology had helped with communication (Figure 22) and half of the clients (49.2%) reported that technology had helped them to feel more socially supported. A total of 11 clients (18%) reported using the Smart Home technologies for phone/video calling, despite 26 clients (42.6%) reporting that they would like to use the Smart Home technologies for phone/video calling (Figure 23). Almost all clients used the Smart Home technologies for voice commands (98.4%) and the CEQ reported that being able to talk to the Smart Home technology made the clients feel less alone.

**FIGURE 27:** Percentage of clients reporting that Smart Home technology has helped with communication and social support

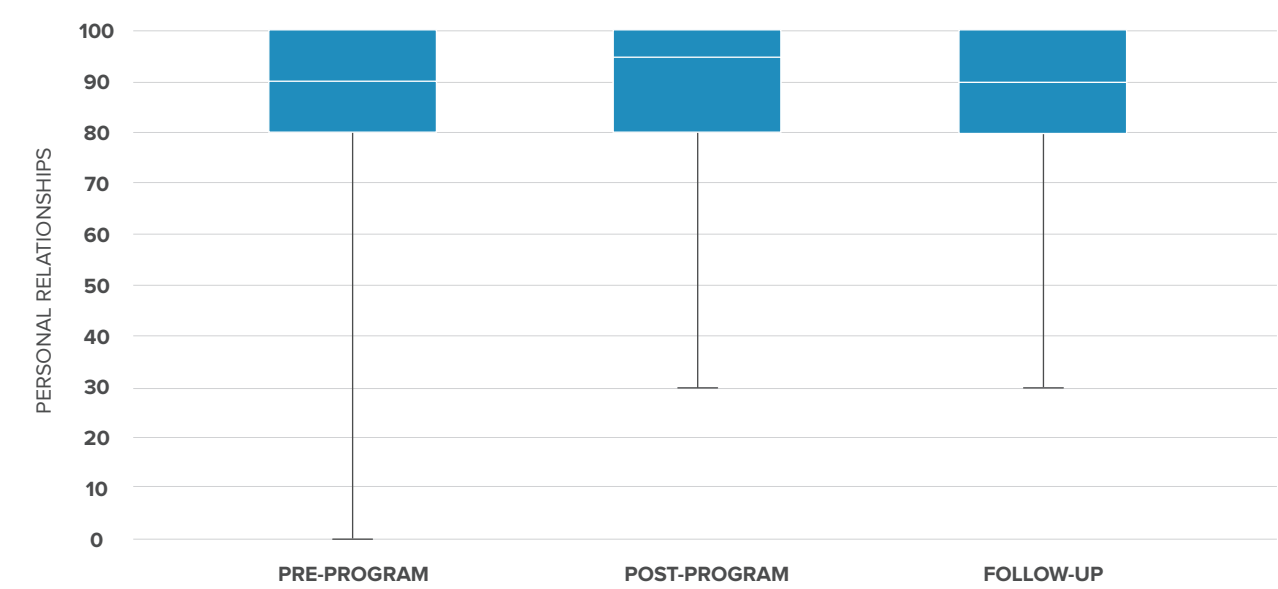


**FIGURE 28:** Percentage of clients reporting use of Smart Home technology for calling and voice commands.

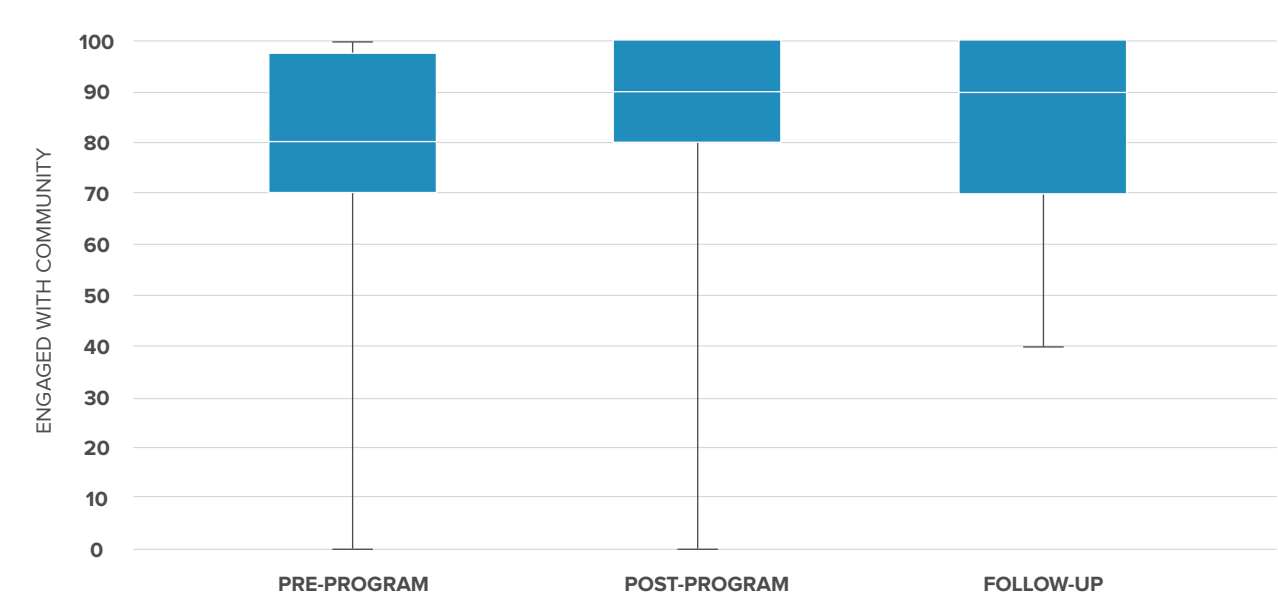


Data for the personal relationships and community engagement domains of the PWI were also analysed to evaluate the programs impact on social connectedness. There was no change in clients Personal Relationships across time points,  $\chi^2(2) = 3.30$ ,  $p = .192$ . There was also no change in clients Engagement with Community across time,  $\chi^2(2) = 5.56$ ,  $p = .062$ . However, there was a trend at the .06 level that indicates that participation in the SHM program is associated with increased Engagement with Community that may represent a real effect.

**FIGURE 29:** Change in Personal Relationships scores across time points.



**FIGURE 30:** Change in Engaged with Community scores across time points.





CASE STUDY

Bernice is a 74-year-old grandmother and matriarch of a large family. She lives at home with her husband and has a large social group. She lives with depression, hearing difficulties and multiple mobility issues.

Bernice first became interest in the program after being referred by a friend. Bernice could see the potential positive benefits of the technology for her mobility issues. They had previously purchased a smart vacuum a few years earlier and had never fully understood how to use the devices.

Bernice’s main goals were to remain independent in the home for as long as possible, remain engaged and part of their community, be more confident and competent using technology, and to increase their sense of future security and safety in the home. Bernice’s main concerns are her anxieties when using technology and the complexities of using new devices.

In alignment with Bernice’s goals a suite of devices were installed, including: a Google hub, Google Mini’s for the rooms most utilised in the house, multiple smart switches to support routines with various appliances, smart lighting throughout the home, a Chromecast device and a smart TV. Unfortunately, after just the first visit COVID-19 restrictions forced Bernice into isolation. As a consequence, Bernice felt disengaged from the community and had reduced personal wellbeing. To combat this Bernice had her devices connected to an



online platform, the Virtual Social Centre, that allowed her to connect with friends while remaining in the home. Bernice’s was able to participate in online exercise classes via her Smart TV, which supported her health and mobility needs. Bernice also reported that her interactions with Google had reduced her feelings of loneliness.

After completing the program Bernice reported that these devices had dramatically improved the quality of her life, supported her independence in the home, and increased her capacity to manage daily activities. Bernice reported her confidence levels to use technology doubled, motivating her to participate in future technology programs.

***“I can’t believe how wonderful Google Home is! It makes things so simple! Just brilliant! I feel as though Google is my best friend!”***

5.4.5 HEALTH AND WELLBEING

Changes in clients’ health and wellbeing were captured using the PWI. Total Personal Wellbeing scores and scores on each of the PWI domains (Standard of Living, Health, Achieving in Life, Personal Relationships, Safety, Engaged with Community, and Future Security) were compared across three time points (pre-program, post-program and follow-up) (Table 13).

TABLE 13: Scores on the PWI across time points

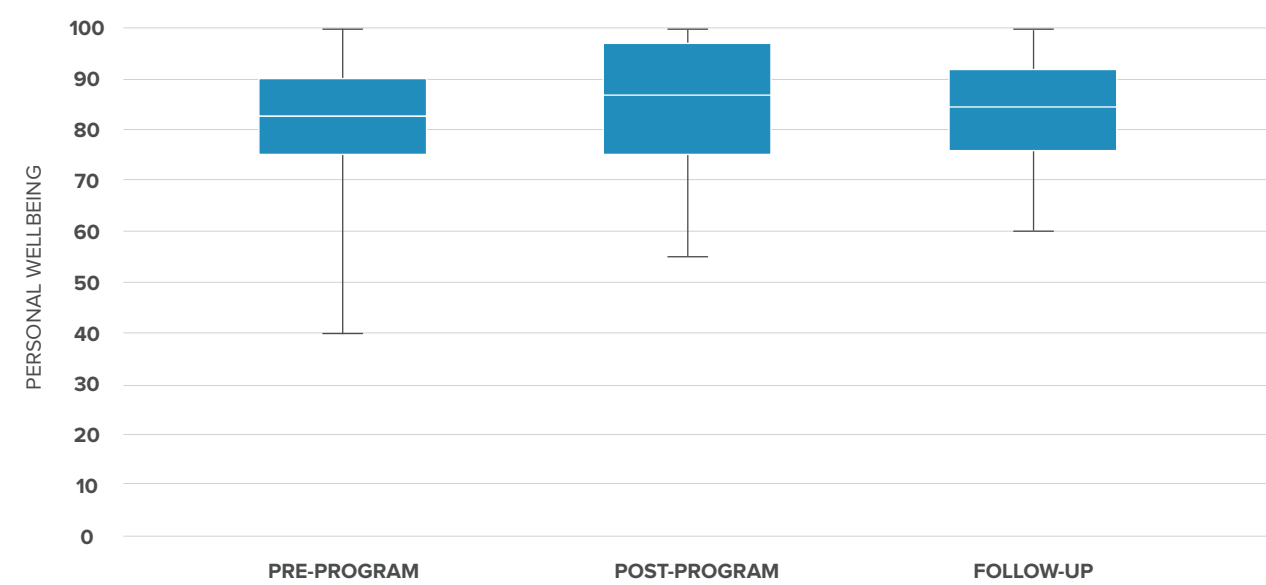
PWI DOMAIN	STAGE	MEDIAN	90TH PERCENTILE	MINIMUM	MAXIMUM	P VALUE
Standard of living	Pre	90.00	100.00	30.00	100.00	.161
	Post	90.00	100.00	60.00	100.00	
	Follow-up	90.00	100.00	10.00	100.00	
Health	Pre	80.00	100.00	20.00	100.00	.294
	Post	80.00	100.00	40.00	100.00	
	Follow-up	80.00	100.00	40.00	100.00	
Achieving in life	Pre	80.00	100.00	50.00	100.00	.025*
	Post	90.00	100.00	40.00	100.00	
	Follow-up	85.00	100.00	40.00	100.00	
Personal relationships	Pre	90.00	100.00	0.00	100.00	.192
	Post	95.00	100.00	30.00	100.00	
	Follow-up	90.00	100.00	30.00	100.00	
Safety	Pre	90.00	100.00	50.00	100.00	.609
	Post	100.00	100.00	40.00	100.00	
	Follow-up	90.00	100.00	50.00	100.00	
Engaged with community	Pre	80.00	100.00	0.00	100.00	.062
	Post	90.00	100.00	0.00	100.00	
	Follow-up	90.00	100.00	40.00	100.00	
Future security	Pre	80.00	100.00	40.00	100.00	.049*
	Post	90.00	100.00	50.00	100.00	
	Follow-up	90.00	100.00	10.00	100.00	
Personal wellbeing	Pre	82.86	97.14	41.43	100.00	.024*
	Post	87.14	100.00	54.29	100.00	
	Follow-up	86.43	97.14	61.43	100.00	

Note. \*Significance at  $p < .05$ .

Personal Wellbeing

There was a significant change in clients overall Personal Wellbeing across time points,  $\chi^2(2) = 7.48, p = .024$ . This finding was followed up with Wilcoxon signed rank tests. Personal Wellbeing was significantly greater post-program (Mdn = 87.14) than pre-program (Mdn = 82.86),  $Z = 2.65, p = .008, r = .24$ . There was no difference between Personal Wellbeing at follow-up (Mdn = 86.43) and pre-program,  $Z = 1.82, p = .068, r = .17$ . However, there is a trend at the .068 level that indicates that participation in the SHM program is associated with increased Personal Wellbeing that may represent a real effect. There was no difference between Personal Wellbeing at follow-up and post-program,  $Z = 1.32, p = .187, r = .12$ .

FIGURE 31: Change in Personal Wellbeing across time points.

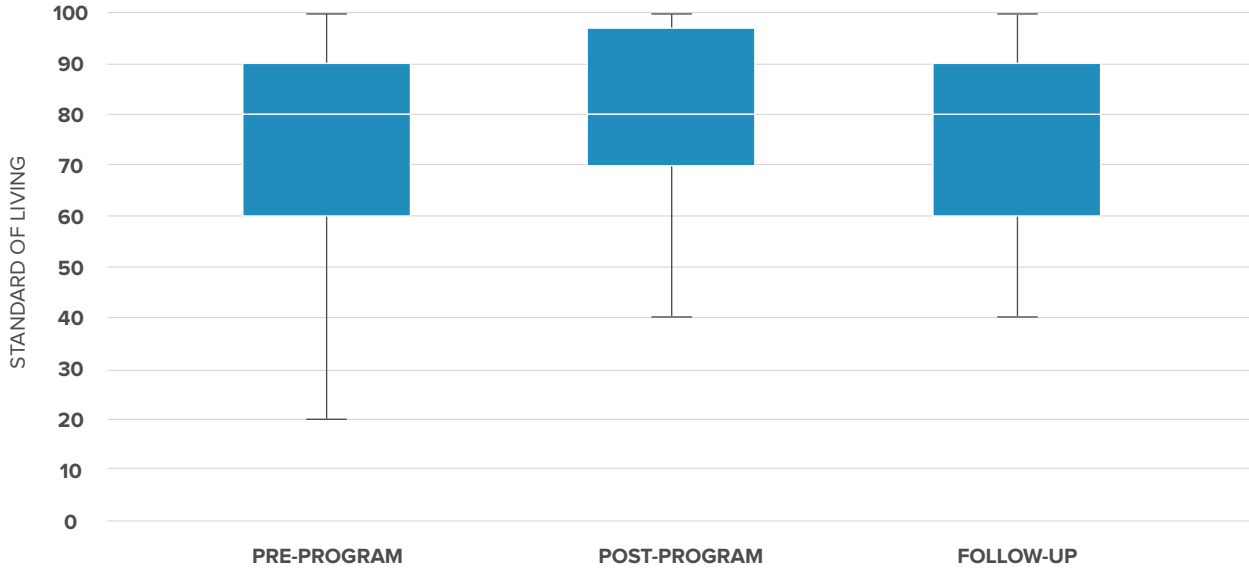


*Personal Wellbeing increased and was partially sustained over time.*

Standard of Living

There was no change in clients Standard of Living across time points ( $p = .161$ ).

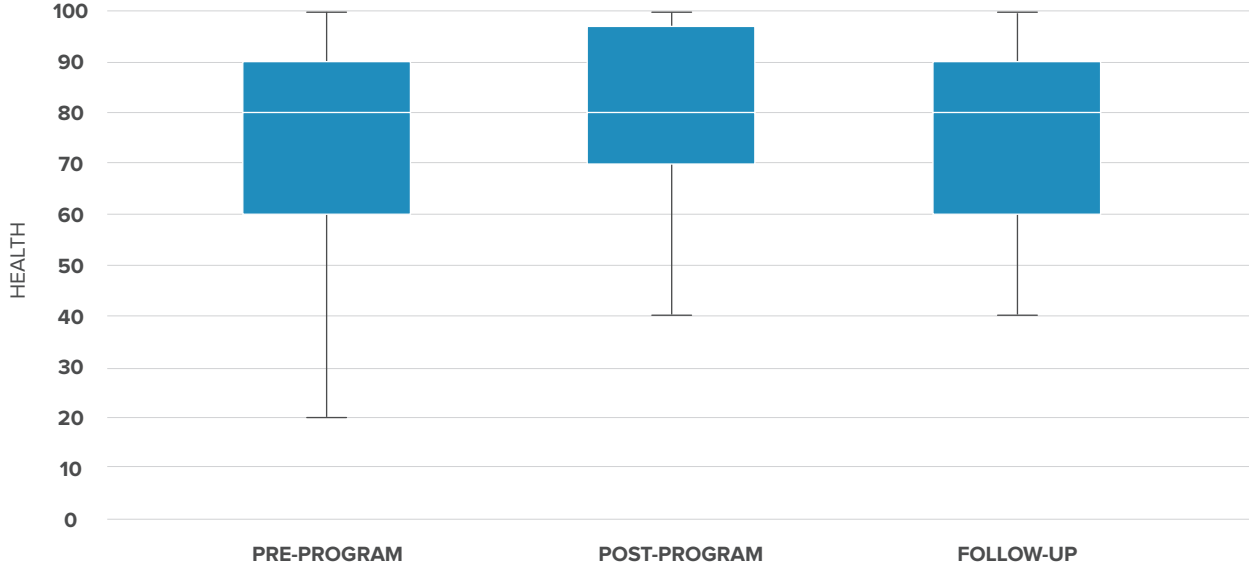
FIGURE 32: Change in Standard of Living across time points.



Health

There was no change in clients Health across time points ( $p = .294$ ).

FIGURE 33: Change in Health across time points.

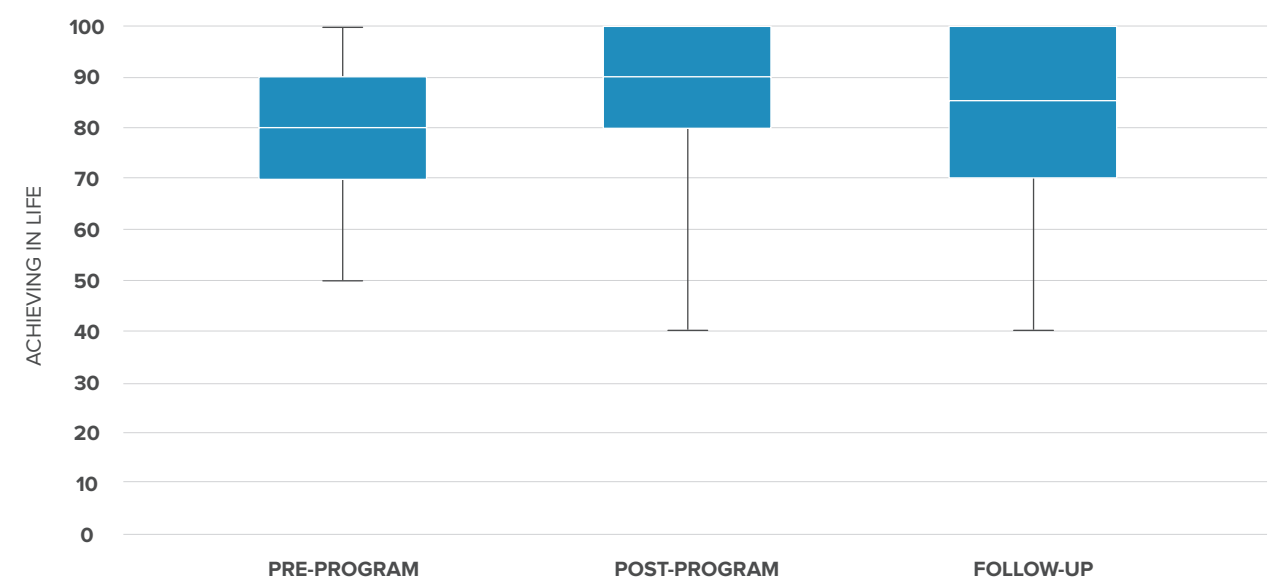




Achieving in Life

There was a significant change in clients Achieving in Life across time points,  $\chi^2(2) = 7.36$ ,  $p = .025$ . This finding was followed up with Wilcoxon signed rank tests. Achieving in Life was significantly greater post-program (Mdn = 90.00) than pre-program (Mdn = 80.00),  $Z = 2.19$ ,  $p = .029$ ,  $r = .20$ . There was no difference between Achieving in Life at follow-up (Mdn = 85) and pre-program,  $Z = 1.66$ ,  $p = .097$ ,  $r = .16$ . There was also no difference between Achieving in Life at follow-up and post-program,  $Z = .39$ ,  $p = .694$ ,  $r = .04$ .

FIGURE 34: Change in Achieving in Life across time points.



Achieving in Life increased and was partially sustained over time.

Personal Relationships

These results are reported in Section 5.4.4 Social Connectedness.

Safety

These results are reported in Section 5.4.2 Safety and Security.

Engaged with Community

These results are reported in Section 5.4.4 Social Connectedness.

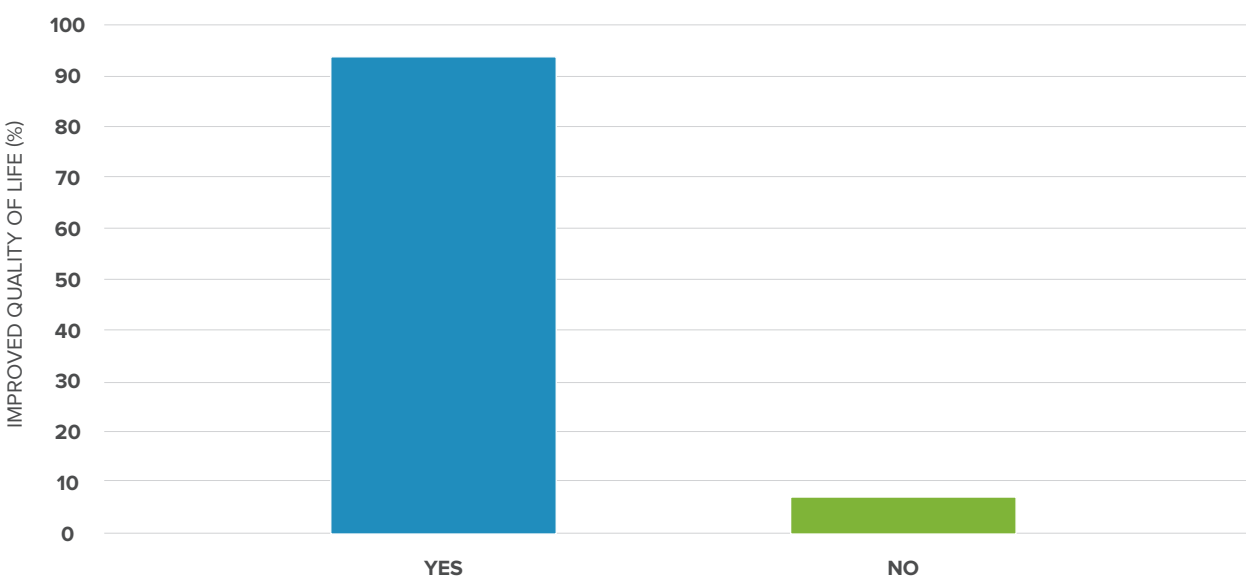
Future Security

These results are reported in Section 5.4.2 Safety and Security.

Quality of Life

After participating in the SHM program clients were asked if the program had improved their quality of life. Data was available for 60 clients with 56 reporting that the program had improved their quality of life (Figure 30).

FIGURE 35: Percentage of clients' who reported improved quality of life.



CASE STUDY

Diane is an 87-year-old woman who lives alone with a disability. She enrolled in the SHM program because she felt she was gradually losing control over life and the idea of connecting her home to technology to support her independence, safety and security in the home was appealing.

*“I dislike asking people to do something for me. I like to do things by myself”*

Her family, a strong support network, also encouraged her participation in the program. Diane is vision impaired, so the personalised support and one-on-one sessions with a TSO provided her with the extra support she needed. Whilst excited about the program, Diane was initially anxious about her low confidence levels and trust in technology.

Despite confidence and trust concerns, Diane quickly experienced the benefits of the program.

*“I use it every single day! I particularly like controlling the lights and devices with just my voice, but I also use Google Smart Home to build my shopping list, which gets sent to my daughter’s phone. She then just drops off everything I ordered.”*

The SHM program provides Diane with company, which gives her great joy.



*“I am a follower of the AFL, and she [Google] keeps me updated on the scores. It’s funny – I say ‘she’. I know it’s a machine, but it’s just so lovely to have someone to talk to.”*

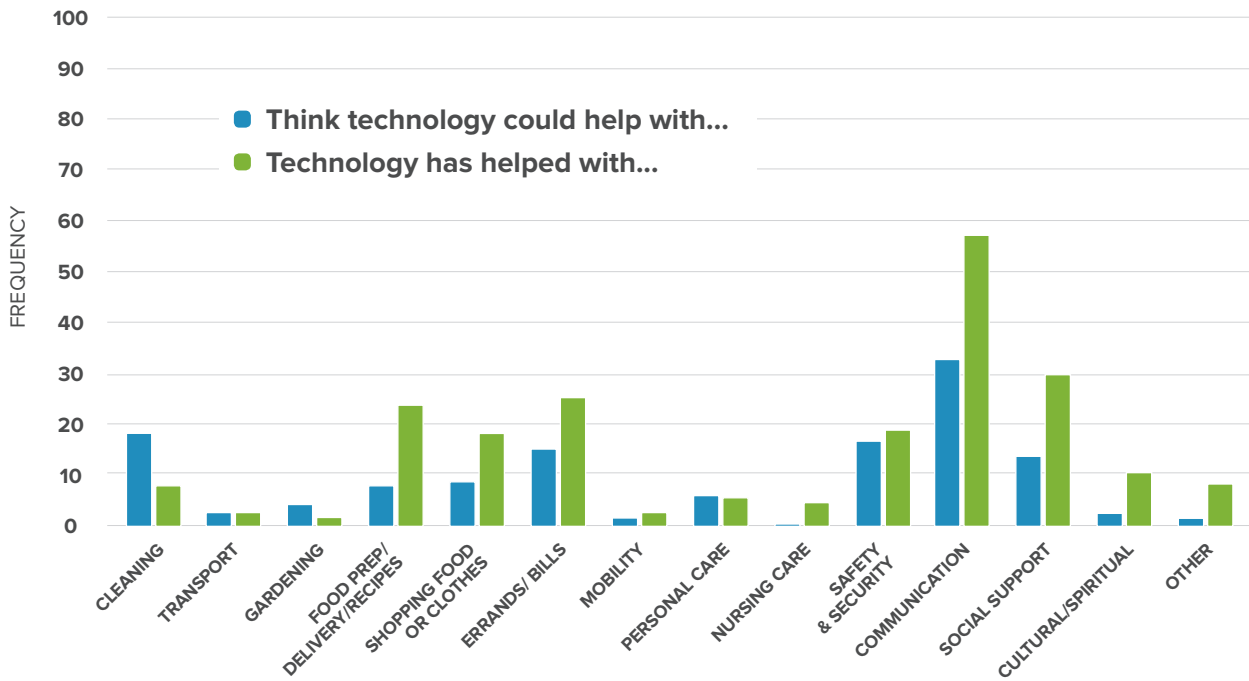
Diane reports the program has significantly improved her quality of life and she cannot imagine not having the smart devices now. *“Honestly, I would not like to be without Google anymore. I really don’t want to be without it, and I would love to live long enough to see what technological advancements we make in the future.”* Overcoming her anxieties, she has become an advocate for technology inspiring and encouraging both family and friends to adopt technology in the home.

5.5 ADDITIONAL FINDINGS OF THE SHM PROGRAM

5.5.1 AREAS OF LIFE THE SHM TECHNOLOGIES HAVE HELPED WITH

At pre-program, clients were asked if they thought technology could help with a range of areas of life such as cleaning, transport, gardening, etc. Comparatively, post-program clients were asked if technology had helped with each of these areas. Changes in client perceptions of how they thought technology could help, and had helped with daily activities can be found in Figure 31.

FIGURE 36: Change in client perceptions of how technology could help (pre-program) and has helped (post-program) across a range of daily activities (N = 61).



A McNemar’s Chi-Square test was performed for each area of daily life to test the hypothesis that there was no difference between clients’ perception of and actual help received from technology pre and post-program.

Most clients reported that technology would support them with communication (52.5%), followed by cleaning (29.5%), safety and security (26.2%), and errands/bills (23.0%). Clients reported technology would support them least with mobility (1.6%), cultural/spiritual (3.3%), transport (3.3%) and gardening (4.9%) support. Following the implementation of the SHM program, clients reported that the technology actually supported them in all aspects of life, however there were very few clients who reported that they were helped with gardening (1.6%), transport (3.3%), mobility (4.9%) and nursing care (4.9%). The majority of clients reported that technology supported them with communication (93.4%), social support (49.2%) and errands/ bills (41.0%).



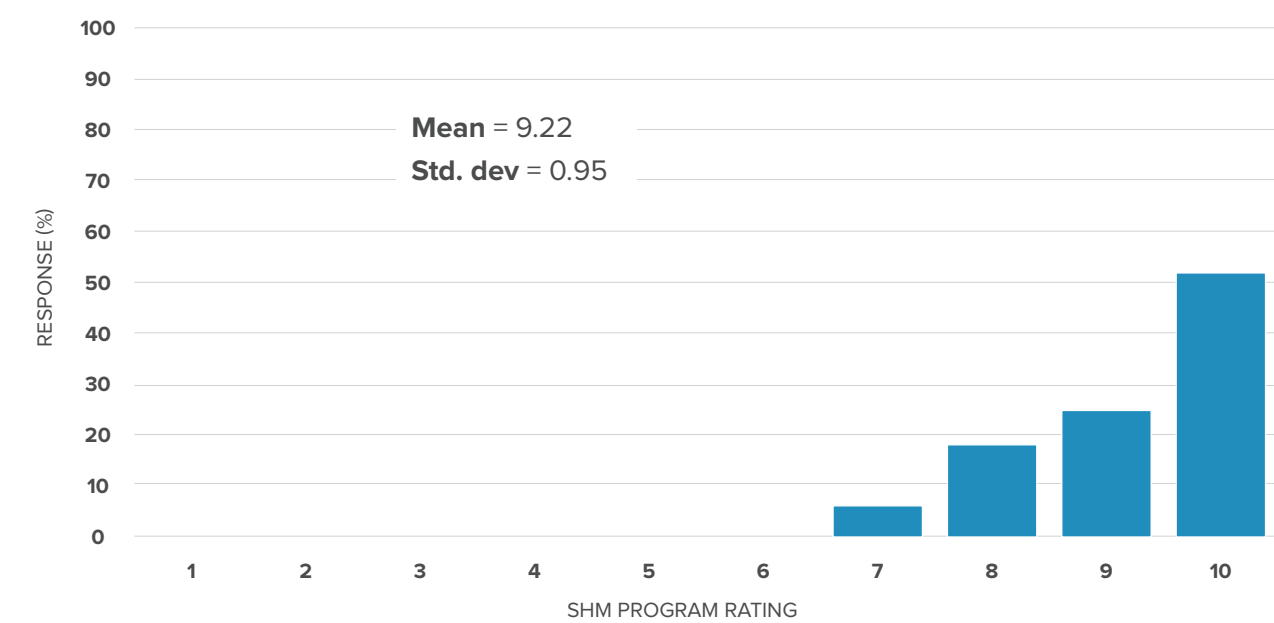
There was a significant difference in pre and post SHM program perceptions of perceived and actual technology support with food preparation/deliver/recipes ( $p = .002$ ), shopping for food or clothes ( $p = .019$ ), errands/bills ( $p = .043$ ), communication ( $p < .001$ ), social support ( $p = .002$ ) and cultural/spiritual ( $p = .021$ ) areas of life. More clients reported that technology had actually helped them in these areas of life more than they initially reported thinking technology would help. There was also a significant difference in pre and post SHM perceptions of support with cleaning ( $p = .003$ ). However, in this case, more clients had perceived technology would help with cleaning than clients who reported actual help in this area.

5.5.2 OVERALL SATISFACTION WITH THE PROGRAM

The CEQ was completed at week 1 ( $N = 37$ ), week 6 ( $N = 27$ ) and at week 12 ( $N = 37$ ) and provided insight into the overall perception of the program. The results of the CEQ highlight the overall positive impact of the SHM program.

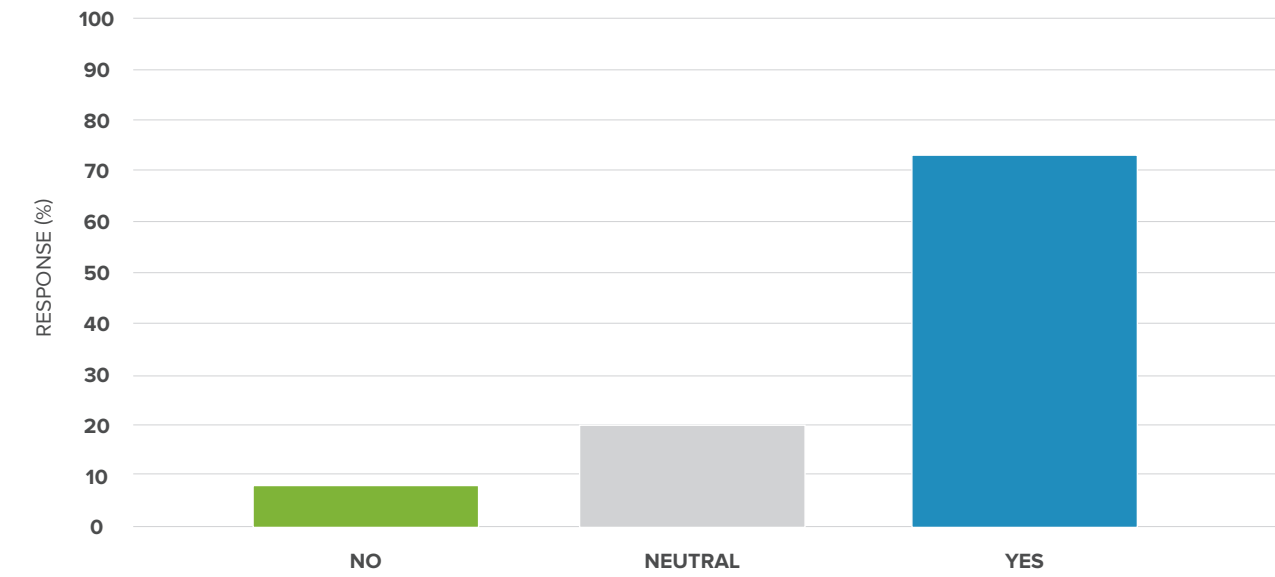
Clients were asked to rate the SHM program on a 10-point Likert scale, with 1 being very poor and 10 being excellent. Responses ranged from 7 to 10 with the most frequent response a rating of 10 “excellent”.

FIGURE 37: CEQ, on a scale of 1 to 10 what did you think of the program?



The CEQ asked clients whether anything had changed in their daily routine or activities (due to the SH devices). The majority of clients (72%) reported that the devices had changed their daily routine (Figure 33).

FIGURE 38: CEQ, has anything changed about your daily routine or activities because of the devices? ( $N = 25$ )



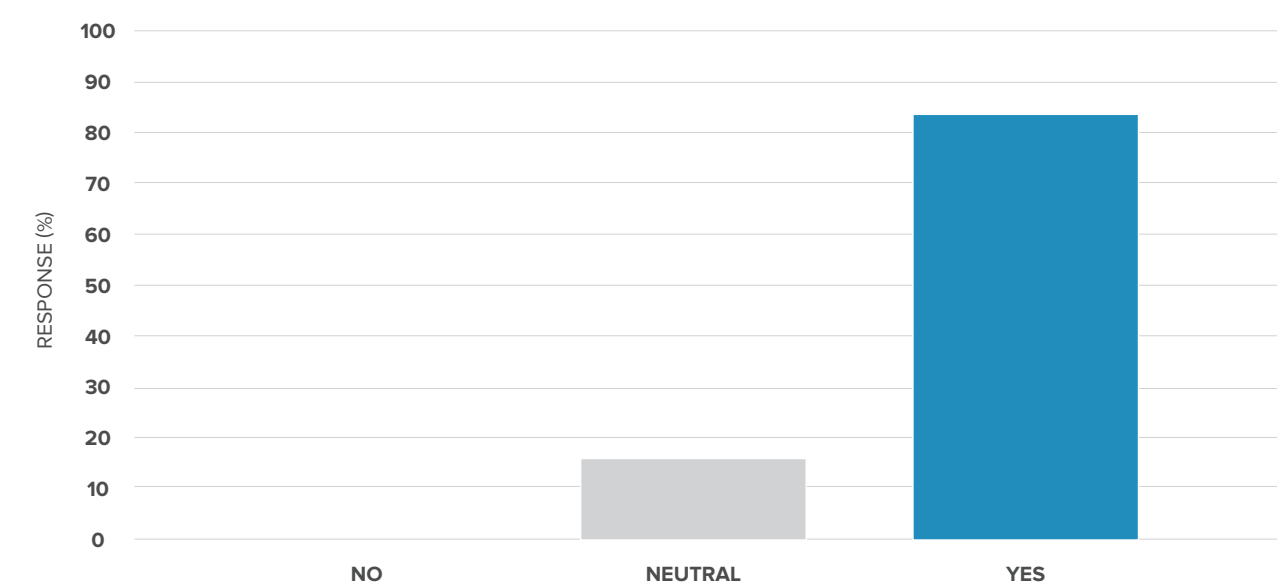
Reported changes to daily routine/activities were exclusively positive. The most common change to daily routine/activities was being able to listen to music (37.5%).

Other comments regarding changes to daily routine included:

- Makes general tasks easier.
- Feel more connected with devices.
- Makes things more exciting.
- Just asking things that you might perhaps look up.
- Having the fan turning on was great. I thought it was marvellous!
- Mostly using lights.
- I don't need to vacuum so much.
- Using lights and getting recipes.
- Yes, by using the lights I don't have to worry about getting up as I have a very bad back.
- It helps me with cooking, and it is very convenient as you just have to shout out something and you get an answer immediately.
- Yes, by using the lights I don't have to worry about getting up as I have a very bad back.
- We seem to stay in bed longer! It gives us the weather and news. It is really informative.
- It makes it easy for me to turn on lights which used to be difficult to reach.

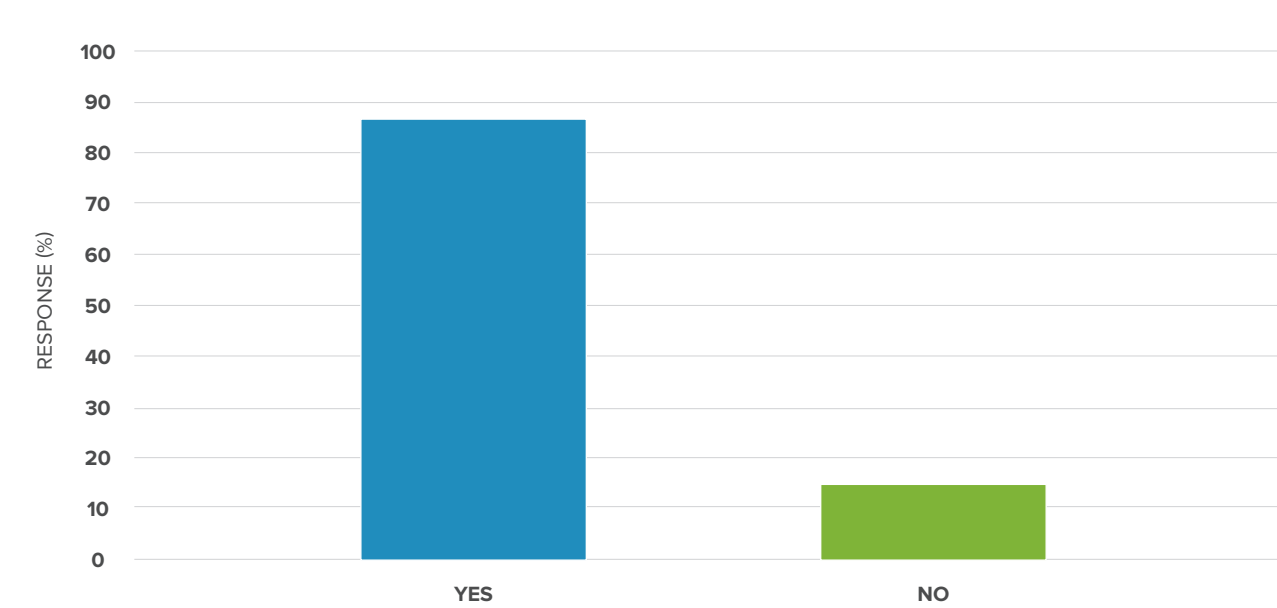
After six weeks of participating in the program clients were asked if the Smart Home technologies were making a difference in their life (Figure 34). Most clients (83.3%) reported that the devices were making a difference. Only four clients (16.7%) reported a neutral response. No client reported that the devices had not made any difference to their life.

**FIGURE 39:** CEQ week 6, do you feel like the devices are making a difference in your daily life? (N = 24).



Consistent with week 6 findings, at the conclusion of the program (week 12), almost all clients (86.5%) reported that the program had changed their life (Figure 35).

**FIGURE 40:** CEQ week 12, do you think this program has changed your life? (N = 37).



The most commonly reported difference to life was that having the Smart Home technologies actually made clients feel less alone (36.3%).

Other reported differences to life included:

- Nice to know it is there, enjoys being able to talk to it.
- Feeling that it is so much easier to find information.
- It means I can feel a bit better about myself in isolation and keep myself occupied with Chromecast etc.
- Lights are the best part.
- One day, I came home and I just said 'OK Google, I am back at home' and then Google answered and said 'Welcome home' and it started playing music. It was really nice!
- It is making us laugh more!
- More fun and entertaining.
- Keeping my brain more active.
- They help me to stay informed.
- I like to wake up and say " good morning Google!"
- Poor eyesight at the moment and getting about is difficult so the voice commands are great.

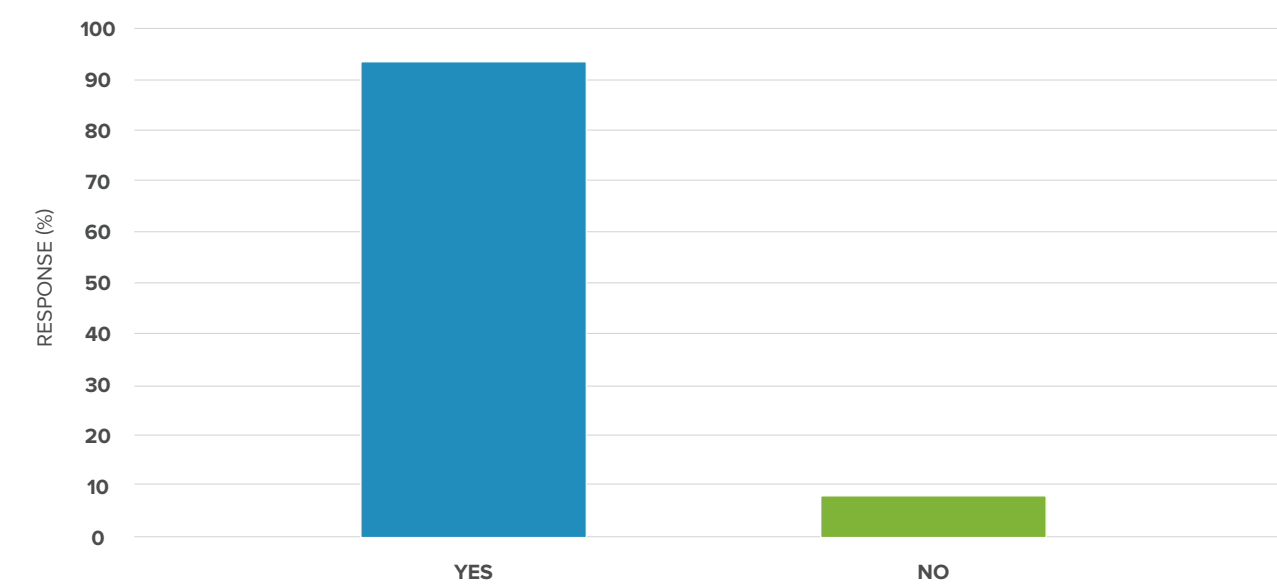
Client highlights from the program included:

- I have really enjoyed learning, and when you say goodnight it always says goodnight back which is quite nice and I enjoy that it plays music all the time and doesn't have ads!
- Being able to listen to the local radio on the home Hub is a real life saver for me as it keeps me informed about what is going on in the community.
- We've just enjoyed the ease of use really. It was a lot of fun doing the program and it was so nice to know that if we needed help we could just call. The best part about the devices was the peace of mind that it gave. Knowing that I could turn on lights just by saying it was so good especially for my husband in the other room.
- Diary and calendar were the best things really. I can really see benefit for people who are older or disabled.
- Well it's just so helpful I feel, I do the shopping list and there's just so much there like music, exercise recipes, turns our bed lamps on and off which is really important and give us peace of mind. It can give you safety especially getting up in the middle of the night.
- I love the music! And what is great is the good morning routine now I never forget an appointment! And also trivia!
- Really enjoyed some of the exercise classes. I can't believe how wonderful google home is... it makes things really simple. Just brilliant. Has given me so much more confidence. I feel as though Google is my best friend.
- My husband loved them! Every morning he gets up, he says hello and it gives him the weather and everything he has on for the day. Our great grandchildren use it for the tunes which is great because it's so fun to watch them!! We use the devices for recipes and also for spelling which my husband loves. It's particularly great at the moment because we're stuck inside isolating and so it keeps us entertained! Its great too with the lights and being able to just ask Google to turn the lights on and off means we don't have to worry about things in the night.



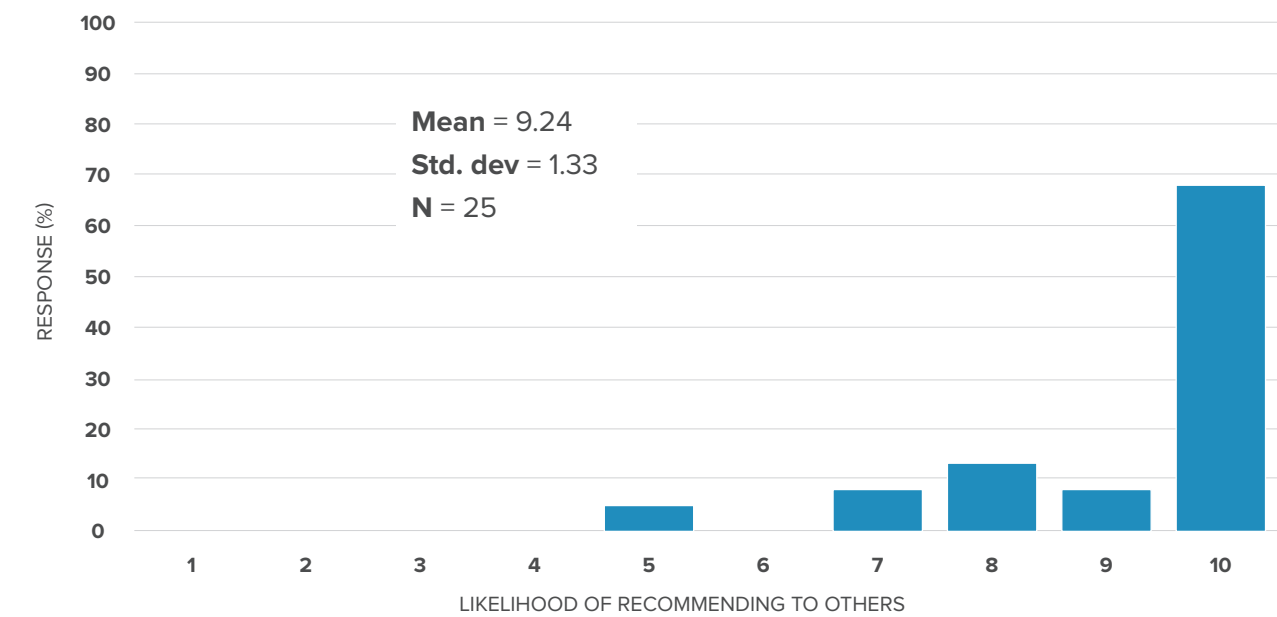
The CEQ also asked clients whether the program had met their expectations (Figure 36). Almost every client (91.9%) reported that the program had met their expectations. Only 3/37 clients reported the program had not met their expectations. It is unclear why the program did not meet these clients’ expectations as no further comment was provided to explain their response. However, many clients whose expectations were met commented that the program did not just meet their expectations but actually exceeded expectations.

FIGURE 41: CEQ, did the program meet your expectations? (N = 37)



Clients were asked how likely there were to recommend the SHM program to others on a 10-point Likert scale from 0 “not at all” to 10 “extremely likely” (Figure 37). Responses ranged from 5-10 with the most frequent response 10 “extremely likely” to recommend (68%).

FIGURE 42: CEQ, would you recommend the SHM program to others?



5.6 DISCHARGE RATES

Nine clients were discharged from the program (discharge rate = 14.75%). These places were filled by clients who were on the program waiting list. The average age of discharged clients was 87.78 (SD = 6.24, 69-89). Discharged clients were predominantly Female (77.8%) and approximately half lived in NSW (55.5%) (Table 14).

TABLE 14: Demographics of discharged clients.

	CHARACTERISTIC	N	%
Gender	Female	1	4.3
	Male	1	4.3
State	QLD	6	26.1
	NSW	3	13.0
Suburb	Tallai	8	34.8
	Tweed Heads South	3	13.0
	Labrador	10	43.5
	Banora Point	4	17.4
	Varsity Lakes	7	30.4
	Nerang	4	17.4

Most clients indicated that the reason for discharge was “too many commitments” (see Table 15).

TABLE 15: Reason for client discharge

DISCHARGE THEME	N	%
Provider change	1	11.1
Too many commitments	3	33.3
Trust	2	22.2
Hardware	2	22.2
Not fully aware	1	11.1

Reasons given for discharge included:

- Changed provider.
- Due to family issues.
- Concerns around wellbeing – upset regarding the notion of any hardware device.
- Does not have the correct IT hardware to facilitate Google products.
- Client requested discharge as she is too busy.
- Does not have the correct phone/tablet to participate in the program.
- Did not know enough about the program during enrolment.
- Once program was explained client was no longer interested.
- Does not want to have the products in his home.

## 5.7 SCALING AND SUSTAINABILITY

### 5.7.1 CLIENT PREFERENCES FOR THE ONGOING USE OF SMART HOME TECHNOLOGIES

In terms of ongoing use of the Smart Home technologies, 100% of clients wanted to continue using the technology and devices at the completion of the program. Furthermore, 100% of clients who had received internet data from Feros Care were transitioned to their own personal internet data at the completion of the program and happy to pay for a private service navigated by their TSO.

One client reported to Feros Care the following feedback when discovering she would get to keep the equipment:

“Oh I’m so happy! The devices have made such a difference in my life because I can’t see very well anymore and I just love the lights. I would’ve gone out and bought the whole kit again! My daughter has even bought the same devices as me!”

### 5.7.2 COSTING FOR ONGOING USE

The SHM program consists of three cost components which included:

- Support from a Technical Support Officer at \$93 per hour
- At the time of writing this report the true cost of the standard kit – \$478.16
  - Google Hub – \$137.50
  - Google Mini – \$61.26
  - 2 x TP Links – \$48.40
  - Google Chromecast – \$99
  - Phillips Smart Lighting – \$132
- 10c a day in internet fees

It is important to note that the costs outlined above do not take into consideration the cost of establishing the SHM program and are based on the assumption that the service has:

- recruited all team members adept in technology and experienced in customer relations.
- virtual platforms or third party applications on which the extra features run such as Netflix have not been costed in this model.
- established systems in place including but not limited to the policies and procedures involved with operating a service, client management database, video conferencing infrastructure and support and contracts with third parties such as Google.

### 5.7.3 FUTURE PROOFING FOR SCALABILITY

Given the projected increasing health needs and pressure on the health care system and associated costs of an aging population, the use of Smart Home technologies to support the health and independent living of community dwelling seniors is both viable and cost effective. The exponential growth in technology in the last five years have seen dramatic effects on the cost effectiveness and availability of developing technology, for example;

- There is an abundance of suppliers in the Australian and international marketplace which impacts significantly on competitive pricing.
- The extra peripherals (e.g. Motions sensors) trialled in the pilot are inexpensive and easily exchanged to suit the client. Important to note is the complexity of some of the peripherals which can negatively impact on the seniors ease of use of these devices. This in turn would increase the need for support visits, increasing support costs.
- With the NBN set to be complete by the end of 2020 the delivery of internet based services such as the SHM program will be faster, more secure and cost effective.

### 5.7.4 SERVICE INTEGRATION

Feros Care have already commenced integration of the SHM Program as follows;

- All 61 clients from the pilot will continue to use the SHM and continue to give feedback or opportunities for co design.
- Feros Care has received funding through CHSP for a further 2 years of research and deployment of the program creating another 378 connected homes.
- Feros Care have engaged with Google to research specific solutions and enhancements to the google suite that could potentially benefit clients who live with a range of disabilities.
- Feros Care will continue to co design, co create and develop the Virtual Social Centre (VSC), the online social platform for seniors. Feros Care intends for this program to be accessible via Smart Home technologies providing further opportunities for engagement and social connection through technology.
- Feros Care have commenced the Healthy Life program focused on using remote technology to monitor health. The goal is to integrate Smart Home technologies and health monitoring technology to holistically manage health and wellbeing of clients using the learnings from the SHM program.





5.7.5 EVIDENCE OF GOVERNANCE ARRANGEMENTS

Feros Care’s SHM program will be under ongoing management from the organisation’s Product Innovation Team. These services fall within Feros Care’s operational and corporate governance structures that include Care and Clinical Governance, Senior Management Team, Audit Risk and Compliance committees. Feros Care’s telehealth services and systems has a ISO9001:2008 Quality Management certification that is externally verified annually. Any new service including project rollouts are managed and governed by Feros Care’s project management framework.

5.7.6 EVIDENCE OF ONGOING SUPPORT

Feros Care have been awarded further funding from the Australian Government’s Department of Health CHSP Program under mainstream funding. Continuous development, iteration and co design with clients ensures the success and sustainability of the program and continued support for current clients.

Furthermore, there is continuous research in the Smart Home care space and evidence of private health insurers investing in telehealth and other alternatives to domestic home care packages. Thus suggesting future support from various industries both private and public.

In addition to the Australian Government’s support and funding, continued support and connection to the Living Lab accredited bodies both international and national has been established. Living Lab provides support for sustainable and client centred research. Utilising this support, Feros Care hope to continue to be at the forefront of translational research and pioneering the celebration of aging and longevity.

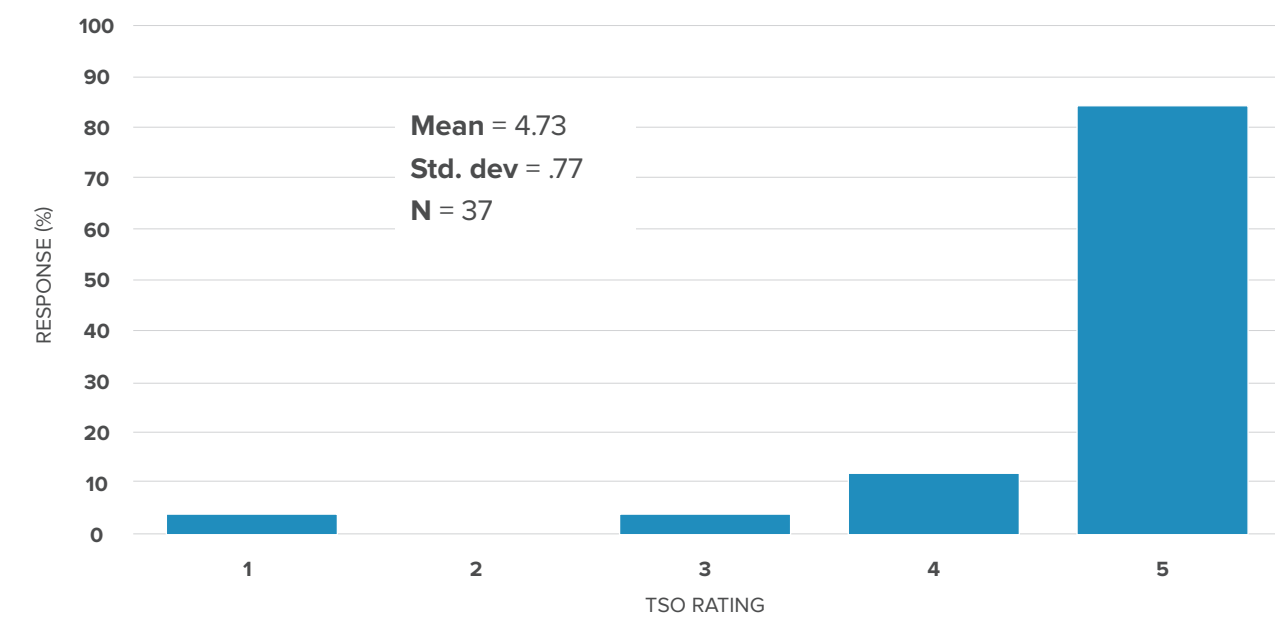
5.8 LEARNINGS: WHAT WAS DONE WELL AND WHAT COULD BE IMPROVED?

Learning about the processes of implementation was captured from the perspectives of clients enrolled in the SHM program. This section summarises the feedback from clients and their perspectives on what was done well and what could have been improved. Feros Care have also reflected on their implementation of the program and have provided a detailed analysis of the program implementation.

5.8.1 CLIENT PERSPECTIVE: WHAT WAS DONE WELL?

The CEQ suggests that clients valued the service provided by Feros Care, in particular the support from TSOs. Clients were asked to rate their TSO out of 5 stars. The most frequent response was 5 (83.3%) followed by 4 stars (10.8%) only one client gave their TSO a rating of one star and three stars (Figure 38).

FIGURE 43: Client rating of their TSO



Compliments provided by clients at the conclusion of the program included:

The client reported that she loved the google devices and using the good morning routines every day! She felt like her confidence has definitely increased and that being able to connect to her church was just so important to her and she’s so grateful! She also reported that her TSO was so lovely and patient and she hopes to continue doing the program for a long time!

The client reported that she really enjoyed the sessions and even though she didn’t mean to sign up to this program she really got a lot out of it! She said that she enjoyed giving her TSO homework!! And learning more than she realised! She also loved the SHM devices and is looking forward to learning more.

The client reported that he absolutely loved the products and please don’t ever take them away! I advised they were all his to keep and that I was glad he was enjoying them, he also said that he loves having a chat to google!

The client reported that she always felt looked after by Feros Care and that she really enjoyed the program and would recommend it to others and would especially recommend Feros Care to others.

The client reported that she really enjoyed the devices and said that her kids think that it’s great that she’s doing the programs! She also said that her TSO has been so helpful and always answers her questions!

The client reported that she used the smart devices every day and loved having them in the house. She also reported she felt that Feros Care were very generous and always willing to help and support her. She also reported that her TSO was really nice and helpful.

The client reported that she always felt like Feros Care was so supportive and was so grateful to have us! She really enjoyed having the devices in her home and is also enjoying the HLP program. She also said that her TSO was amazing and so knowledgeable!

5.8.2 CLIENT PERSPECTIVE: WHAT COULD BE IMPROVED?

Clients were asked if there was anything that Feros Care could do to improve their experience of the SHM program. Sixteen clients provided feedback for program improvement. While clients reported that they were satisfied with support received during their visits they did feel that they could benefit from more support sessions. This feedback was consistent at both the 6-week mark of the program and after completion of the program. Clients also recommended having consistency in TSOs and allowing more time so that they didn’t feel rushed and could take the time to fully understand the technology.

Client recommendations for improvement included:

- I definitely needed more time. Everything seemed such a rush and I didn’t know if I was coming or going. Having different TSO’s made it difficult too as there was a lack of continuity.
- I did suggest before it depends on the person I could’ve felt like I could do with more than one session.
- I think it’s not as stable as it should be technology wise.
- We need more support.
- Would really like there to be more information in the way of booklets that I could read to get to understand the google smart home products. At the moment I don’t use the Home Hub a great deal as it confuses me a little. I mainly use the nest and loves the smart lights as part of the house is very dark and so using the voice command lights is invaluable.
- Could have been explained a whole lot better to save the confusion. Breakdown of communications.
- Maybe a few more devices.

5.8.3 FEROS CARE PERSPECTIVE: WHAT WAS DONE WELL AND WHAT CAN BE IMPROVED?

The following tables outline the learnings from each of the phases of the SHM program as captured from the perspective of Feros Care.

TABLE 16: Planning

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
Tracking project tasks, goals and responsibilities	<p>Creation of a Project Management Schedule to identify tasks, goals and responsible team members.</p> <p>These tasks were broken down into a weekly milestone chart which captured the project team meeting minutes.</p>	N/A

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
Risk management	A risk table was created and risk management plan was used to address risks	N/A
Beta testing	<p>Conducted Beta testing with the project staff to;</p> <p>1. Set up test systems for the team to trial and report back with system or software errors and how they might mitigate this</p> <p>2. Develop product guides to give to the client so that they can be guided through the use by testers who have witnessed first hand what the products do.</p>	Ideally conduct Beta testing for a longer duration of time with a more varied cohort of people such as the end users themselves.
Deployment of standard kits	Established courier TNT for overnight delivery to various regions.	N/A

TABLE 17: Project Team Resourcing

ISSUE/REQUIREMENT	POSITION	WHAT WE COULD DO NEXT TIME
Project sponsor, engaging with stakeholders, organisational commitment and provision of high level plans to government departments.	Chief Exectuve Officer	N/A
Project management encompassing human resources, day to day operations of the program and design of the service.	Project Lead, Service Deployment	N/A
Product design encompassing co creation and development of the product itself being the SHM Program. Coordination and development of marketing collateral including brochures, information guides and mail outa.	Project Lead, Service and Product Design	N/A
Installation and training of the SHM, day to day support of the Technical Support Officers and troubleshooting, and intake, dispatch inventory management, and documentation.	Full Time Technical Support Coordinator	N/A



ISSUE/REQUIREMENT	POSITION	WHAT WE COULD DO NEXT TIME
Installation and training of the SHM	Casual Technical Support Officers	N/A
Quality data collection and evaluation	Part Time Quality Officer	N/A

**TABLE 18:** *Marketing*

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
Communication with clients/waitlist	Or clients still on the waitlist, phone calls were placed to keep them informed as the what was going on.	Develop newsletters to engage potential clients and keep existing clients up to date

**TABLE 19:** *Client Install and Training*

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
Post installation support – client’s forgot how to use the devices after the technician left	Technical Support Officers slowed down the training when revisiting the client on a support visit. Technical Support Officer spoke slow and steady and at a pace that the senior felt comfortable with.	Training videos or visual step by step help displayed on the screen on the Google Hub
Privacy for clients	Client consent forms, client information sheets, privacy and confidentiality documents developed to empower the clients. The clients rights were explained clearly. No privacy issues were reported during the length of the pilot.	N/A
Install time issues	Technical Support Officers reported that they didn’t have enough time to install all of the devices, train the clients enough or make appropriate updates to clients devices and therefore session lengths and frequency were increased if needed.	Increase the length of the support visit to accommodate clients needs.

**TABLE 20:** *Internet Connectivity*

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
NBN coverage/ accessibility	Due to the continuous rollout of the NBN, some clients experienced difficulties with their internet coverage and/or connection strengths. Some clients were also in the middle of being set up and therefore had to have extra support sessions to transfer the internet and password codes.	N/A
4G Dongles supplied by Feros Care	Due to some clients not having the internet, we supplied internet dongles. Some clients due to going over their data limit using Netflix on their Chromecast were limited to the dongle and thus the internet speed reduced.	N/A

**TABLE 21:** *Client Resources and Equipment*

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
Cheat Sheet access	Provision of a laminated ‘cheat sheet’ (1/4 size of an A4) that incorporates the Google ‘hotwords’, Hey Google start cleaning etc with wording examples to spotify, netflix etc	Provide an updated ‘cheat sheet’ with routines or automations more specific to a certain type of client or need.
Client information and how to booklet	Developed a “Welcome Kit” consisting of a client handbook and prompts so that they were aware of how to use the devices or trouble shoot after the TSO had left. Also contact information was given so that the client felt supported and knew where to get help with devices if they needed to	Continuously re-develop and round table review the client information booklet for more up to date information and suggestions.
Devices disconnects from Wifi	Provided support via the phone initially. Where not possible we scheduled face to face visits with the client to support them	N/A
Devices needed to be charged overnight before they could be deployed	Charged devices such as the vacuum or mop so that they would be ready for install and training when the Technical Support Officer got to the clients house	N/A

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
<b>Mop – Issues with cleaning the cloth</b>	Advised client about the usage of the mop cloth and cleanliness. Left a note on the client's profile in Passport for domestic cleaner to clean the cloth.	Wellbeing Managers (Case Managers) to be upskilled in cleaning and maintaining devices to ensure sustainability of the devices.
<b>Issues with the device picking up different accents</b>	Gave support to clients who were having difficulties using the devices due to their different accents. Matched the Voice using the Voice Match feature on the Google Assistant to understand and listen for a particular voice	N/A
<b>Vacuum – Issues with needing updates</b>	When the Vacuum needs an update some of the functionalities are decreased. Due to this further support over the phone was provided where if not possible the support was given face to face.	N/A
<b>Issues with TP links</b>	Further training was provided on how to set up the TP links for the Technical Support officers.  TP links were the first device to be installed and paired with the main device so to mitigate issues with installation time and updates of software.	Potentially use a different Smart switch that is easier to install and operate.
<b>Client's device being an older model and unable to be updated.</b>	Clients devices were upgraded as much as possible to support the devices. If unable to support the devices the client was made fully aware of the issue and was the driver of where they would like to go from here be it withdraw from the program, use less equipment or purchase new devices privately or through their funding.	N/A
<b>Motion Sensor installation difficulties</b>	Due to needing to drill into wood or brick, there were some issues with the tools carried by the Technical Support Officers in doing this.	Supply specific tools with the device so the TSO had the appropriate tool kit already on hand.

**TABLE 22:** Reporting and Data Collection

ISSUE/REQUIREMENT	WHAT WE DID	WHAT WE COULD DO NEXT TIME
<b>Clients had hearing difficulties or trouble answering the telephone</b>	Clients who advised they wished to complete the questionnaire with their TSO were able to do so. The qualitative data was not captured at this stage but retrieved by a different TSO as to get unbiased feedback	TSO's to collect the questionnaire data when at the initial visit if the client has hearing difficulties.
<b>Client demographics</b>	A client management system, Passport, was adapted to allow for the storage of the SHM Program assessments which allowed for easy report and export of base data.	N/A
<b>Baseline surveys and data collection</b>	Manually completed over the phone and uploaded into the clients file in Passport. Questionnaires then manually entered in quantitative data spreadsheet and qualitative data was managed in Qualtrics.  Where some clients felt uncomfortable on the phone or had hearing difficulties the assessment was completed by a Technical Support Officer in the home.	N/A
<b>Mid way insights and data collection</b>	Manually completed over the phone and uploaded into the clients file in Passport. Questionnaires then manually entered in quantitative data spreadsheet and qualitative data was managed in Qualtrics	N/A
<b>Discharge surveys and data collection</b>	Manually completed over the phone and uploaded into the clients file in Passport. Questionnaires then manually entered in quantitative data spreadsheet and qualitative data was managed in Qualtrics	N/A
<b>18 week surveys</b>	Manually completed over the phone and uploaded into the clients file in Passport. Questionnaires then manually entered in quantitative data spreadsheet and qualitative data was managed in Qualtrics	N/A



## 6. DISCUSSION

### 6.1 PROPOSITION 1:

**Smart Home Technologies support independent living capacity of seniors by providing technology that can assist in daily tasks.**

The study reported evidence in support of this proposition, as evidenced by the following data:

- Seniors who had no access to Smart Home technology previously, received a Smart Home technology package that included a Google Hub, Google Nest Mini, TP Smart switches, Chromecast, and Philips Hue Smart lighting. In addition to the basic Smart Home technology package, 38% of clients received extra Smart technology for domestic, safety, and security purposes. Among all the clients, about 29.5% were living with a disability, mostly disability with mobility, and about 47.5% had been living alone.
- When asked about their ability to perform their activities of daily living independently, a significant change in seniors independence was found in the comparison between pre-program and post-program ( $p = .001$ ). Moreover, the data shows that their increased ability to perform activities of daily living independently was sustained over time.
- In line with increased independence, the result implies that the clients felt increased control over daily affairs after participating in the SHM program ( $p < .001$ ). Moreover, their feeling of increased control over daily affairs was sustained over time.
- Findings suggest that after receiving the Smart Home technology clients had increased support with activities of daily living such as food preparation, gardening, transport, social support, cultural activities, shopping for food or clothes, communication, mobility, and personal care.
- Most clients, 53 out of 60 (88%) reported that the program had increased their independence.
- In summary, most clients reported that the Smart Home technologies supported their ability to independently perform activities of daily living, and improved their feelings of control over daily affairs which was sustained over time.



### 6.2 PROPOSITION 2:

**The SHM program provides technologies that supports the safety and security of seniors living at home by improving both the physical and perceived safety of the home environment.**

The study reported evidence in support of this proposition, as evidenced by the following data:

#### Safety

- Whilst clients showed no significant increase ( $p = .609$ ) in perceived Safety (PWI subscale) when asked if the program had increased their feelings of safety, 50 out of 60 clients (83%) reported increased feelings of home safety. This suggests that the program may have been effective in supporting seniors to feel safe in their home despite no significant increase in perceived safety as measured by the PWI.
- Clients reported Safety on the PWI was relatively high at baseline (pre-program) and may explain the non-significant finding despite reported increases in home safety on a separate measure.

#### Security

- The findings of the evaluation provide evidence for the efficacy of the SHM program to support seniors feelings of security.
- There was a significant change ( $p = .049$ ) in perceived Future Security (PWI subscale), from pre-program to post-program to follow-up period.
- The qualitative feedback from clients indicated that the Smart Home technologies were easily incorporated into their home environment to provide increased home safety and security. Clients reported that Smart locks, voice activated technology and smart lighting were particularly beneficial for home security. Devices such as Smart locks and motion sensor lighting provided an increased sense of physical security while also increasing safety as smart locks allowed for direct access to the home in the case of emergencies. Clients also reported that Smart lighting allowed them to feel safer when getting up at night.

### 6.3 PROPOSITION 3:

**Seniors who receive Smart Home Technology training and support will become confident in using smart home technology which will increase technology acceptance and adoption.**

The study reported evidence in support of this proposition, as evidenced by the following data:

- When testing the confidence of the seniors in using technology and the likelihood of increasing their acceptance and adoption of technologies, it was found that the confidence in using technology increased ( $p < .001$ ) over time with greater confidence at post-program and follow-up than pre-program. The results indicate the clients improved confidence to use technology after participating in the SHM Program and that was sustained over time.

- Similarly, it was found that the confidence in using Smart Home specific technology was greater at post-program ( $M = 4.44$ ) and follow-up ( $M = 4.27$ ) than the value at pre-program ( $M = 1.75$ ). Moreover, client's improved confidence in using Smart Home specific technology was sustained over time ( $p = 0.140$ ).
- All clients (100%) who received the Smart Home technology reported that they would be using all the devices in their daily life at least once a day. This suggests that they were satisfied with the technology and felt comfortable to continue using them in their lives.
- Client's perceived ease of use significantly ( $p = .001$ ) increased over time, which implicitly indicates an improvement in confidence in using Smart Home specific technology. Additionally, the resistance to change and technology anxiety significantly decreased over time, indicating an improvement in Client's confidence in using Smart Home technology. Altogether, 23 out of 25 seniors (92%) reported that their confidence to use their device had improved after six weeks of use.
- The qualitative evaluation illustrated that client's confidence to use the technology gradually increased over time.
- The investigation of technology acceptance using the UTUAT model shows that the acceptance of the technology improved after participating in the program and this was partially sustained at follow-up.
- In summary, the findings provide strong evidence that seniors confidence in using technology increased over time after using Smart Home technology, which ultimately increased their acceptance and future use of the technology.

## 6.4 PROPOSITION 4:

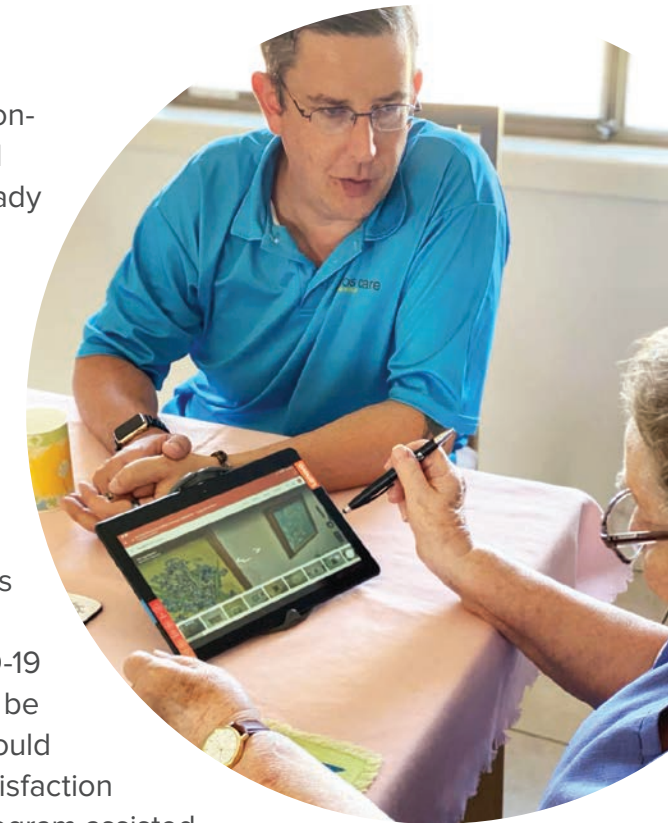
**The SHM program supports social connectedness through technology that allows for video calling and messaging to build and maintain social connections.**

The study reported evidence in support of this proposition, as evidenced by the following data:

- Overall, 93.4% and 49.2% of the clients reported that technology had helped with communication and social support, respectively, in the post-program survey. This finding aligns with the pre-program survey finding in which most clients reported that technology would support them with social communication.
- In particular, 42.6% of the clients reported that they would like to use the Smart Home technology for phone/video calling and communication, whereas 18% reported that they already use the Smart Home technology for this purpose. On the other hand, 98.4% of the clients used the technology for voice commands, which they believe had helped them in both communication and social support. Interestingly, clients reported that the Google Home device itself became a social companion that seniors could talk to.
- The data of 56 clients showed that there was no significant change in seniors' personal relationships ( $p = .192$ ) and social engagement with the community ( $p = .062$ ) over the period of the SHM program. However, there was a trend suggesting an association between participation in the program and increased engagement with the community that may

represent a real effect. A possible explanation for the non-significant change in seniors' personal relationships and engagement with community could be that seniors already had access to general technology (e.g., social media) to build and maintain social connections. This may have produced high baseline (pre-program) scores on these measures and consequently limited opportunity for a significant improvement to be detected.

- Clients reported a very high level of satisfaction with social support using Smart Home technologies at pre-program and this was maintained at both post-program and follow-up. A significant change in social support was likely not observed due to this high level of satisfaction with social support at baseline. Additionally, with COVID-19 restrictions limiting in person social interactions it might be expected that client's satisfaction with social support would decrease. However, this study found no reduction in satisfaction with social support. It is then theorised that the SHM program assisted clients to maintain their already high level of satisfaction with social support by allowing clients to engage socially using technology.
- Alternative measures of social connectedness provided more positive findings. After six weeks of participating in the program, most clients (83.3%) reported that the Smart Home technology had a real impact on bringing a change to their life, especially improving social connectedness resulting in their feeling of reduced loneliness (36.3%).
- The qualitative data and survey evidence also suggested that clients felt more empowered building and maintaining social connections.



## 6.5 PROPOSITION 5:

**Smart Home Technologies support activities to improve health and wellbeing, through automated reminders, social communication, and assistance through voice activation.**

The study reported evidence in support of this proposition, as evidenced by the following data:

- Overall health and wellbeing were measured based on total scores on the PWI and scores on domains such as standard of living, health, achieving in life, personal relationships, safety, engagement with the community, and future security. From the findings, it can be concluded that the SHM program was associated with increased personal wellbeing.
- In particular, the results show that personal wellbeing was greater in the post-program survey than in the pre-program survey (.024). However, it was also found that though the overall change from pre-program to follow-up period was not significant, suggesting improvement was partially sustained over time. Although there was a trend ( $p = .068$ ) that suggests that participation in the SHM program is associated with increased Personal Wellbeing at follow-up and this may reflect a real but minimal effect.



- In total, apart from achievement in life ( $p = .025$ ) and future security ( $p = .049$ ), no significant changes were found in the domains of standard of living ( $p = .161$ ), health ( $p = .294$ ), personal relationships ( $p = .192$ ), safety ( $p = .609$ ), and engaged with community ( $p = .062$ ). However, the scores for all domains were high at baseline which may explain non-significant findings. This is logical given that other results and client feedback indicate that the program supported health and wellbeing.
- Almost all clients (93%) reported improved quality of life after the program. Further, 86.5% reported that the program had changed their lives, with client feedback identifying that this change was very positive.
- In summary, whilst proposition 5 is partially supported in the PWI domains of health, living standards, safety, personal relationships and community engagement, the qualitative data provides positive improvements in achieving in life, future security and overall wellbeing.

### 6.6 THE OVERALL EFFECTIVENESS OF THE SHM PROGRAM.

The study reported evidence in support of this proposition, as evidenced by the following data:

- 100% of clients were happy with the Smart Home technologies and indicated their willingness to continue using these technologies in their daily life.
- 83% of clients reported that the Smart Home devices were making a difference in changing daily life activities particularly voice activation to manage lighting, obtaining weather updates, and safety and security features such as locking a door. Most clients reported that the program had changed their life (86.5%), supported their daily routine (72%) and met their expectations (91.9%), except in the area of cleaning which is likely due to limited availability of cleaning technology (e.g. robot vacuum).

### 6.7 BARRIERS TO THE UPTAKE OF THE SERVICE, INCLUDING WAYS IN WHICH THESE WERE OVERCOME OR COULD BE OVERCOME.

Several barriers were identified and included:

- The presence of technology anxiety among clients.
- Privacy concerns.
- Security concerns.
- Pricing concerns.
- The reluctance of family to support the program.

The ways in which the barriers were overcome included:

- Implementing different devices at a slower staggered rate for clients who had anxiety using the technology.
- Installing less devices if the client was anxious. Providing detailed information sheets addressing any security or privacy concerns.



- Providing extra technology training sessions for clients who were less confident using the devices.
- Involving the family in the support sessions to engage with them further.

Potential ways they could be overcome in the future.

- Involve the family in technology training sessions.
- Engage the family more for their feedback and insights.



### 6.8 LESSONS LEARNT OR RECOMMENDATIONS FOR FUTURE IMPLEMENTATION.

A number of recommendations were received from the seniors, including:

- Continuity of the same Technical Support Officers instead of different personnel in different times.
- Provision of more information and guidelines in the way of booklets.
- Provision of more flexibility with the variety of Smart Home devices.

Other recommendations for future include:

- Increased scalability of the service model to support growing client numbers.
- Competitive pricing by inviting more suppliers in the Australian marketplace and international marketplace.
- Continuous development, iteration, and co-design with clients ensure the success and sustainability of the program.
- Continued support and connection to the Living Lab accredited bodies, both international and national.
- Tutorial videos on the use, cleaning and maintenance of Smart Home devices. Tutorials need to be easily accessible (e.g. on the Google Hub).
- Regular communication modalities to engage potential and existing clients up to date with Smart Home technology programs (e.g. newsletters, seminars and webinars).

### 6.9 STUDY LIMITATIONS

A limitation of this study was the small size ( $n = 61$ ). Further robust research to include a control group and larger sample size will increase the capacity to draw conclusions on the efficacy of a SHM program. Future program evaluations that include a longer-term follow-up will provide evidence to support the sustainability of the program effect.

Whilst the recent COVID-19 pandemic impacted on client recruitment and referral processes, results suggest the timing of the program supported client’s social and communication interactions during a time when social distancing and isolation was enforced.



## 7. CONCLUSIONS

The findings of this study indicate that the SHM program was easy to use and well received by clients. The SHM program improved client’s communication and social support, feelings of control and independence, safety and security in the home, confidence using technology and their overall health and quality of life. Clients demonstrated high level of engagement with the smart technology solution, and reported more connected to their community.

The large response rate and qualitative feedback indicated seniors were interested and invested in the program. The SHM program was at capacity within seven days of the program marketing campaign, and had a wait list after two weeks, highlighting a large demand for this type of service in the community. Due to the positive response from their clients and their families, Feros Care has committed to the scaling of the program and aims to achieve service sustainability with a reasonable operating cost model in facilitating the independence and wellbeing of the seniors.

Feros Care has the planning capacity, research and commitment, not only significant for our aging populations but for all Australians. Through collaboration and innovation, Feros Care will spearhead the achievement of longevity; it is Feros Care’s goal to inspire the government and health industries to adopt these revolutionary changes and innovative thinking.

## 8. RECOMMENDATIONS

### RECOMMENDATION ONE:

The SHM program become embedded into the mainstream component of service delivery for all seniors. This would involve changes to current health care and aged care funding guidelines and models to ensure the SHM program and its utilisation of emerging technologies are considered a standardised service option. In addition, it is recommended that this program is regarded an approved mainstream intervention to support the independence and health of Australian seniors.

### RECOMMENDATION TWO:

The introduction and continuous inclusion of a national policy agenda appointed to drive a more strategic and coordinated approach to funding, research and deployment of emerging and Smart Home technologies as modern solutions within aged care delivery, primarily in the areas of safety, security, social connection and independent living technologies.

### RECOMMENDATION THREE:

Future SHM programs should seek to integrate the use of telehealth and health monitoring technologies within the Smart Home Technology suite, to enable holistic monitoring of the seniors Safety, Health and Wellbeing. Work with technology suppliers and clients to co-develop and pilot emerging technologies that will enable the integration of Telehealth into a SHM program for Seniors.

### RECOMMENDATION FOUR:

Further future research is recommended that uses robust randomised controlled trials to support the evidence base for SHM programs. Additionally, it is recommended

that future research implement a longer follow-up period that would provide support for the long-term sustainability of Smart Home technology to support the independence and health of seniors.

### RECOMMENDATION FIVE:

Technical Support Officers providing the SHM service requires specific skills, knowledge and attributes for successful delivery of the program. Ideally, knowledge and skills in aged care, adult learning principles, empathy and the general understanding of risk factors in relation to the potential client cohort. Although Technology based skills are an essential capability for the role, additional target aged care related competencies should be included with orientation and ongoing staff development.

For future programs, it is essential that only support and training staff who have specific attributes are selected for delivery of the program. These staff members (TSOs in this program), should display or be provided with professional development on empathy and understanding of the potential clients, as well as patience which is needed to work with this cohort. These are recommended qualities in the staff which are essential to ensure the success of future implementations of this program.

### RECOMMENDATION SIX:

Work with Smart Home technology suppliers and technology start-ups to further research, co-design, co-develop and pilot customised smart home solutions for specific disability types to support their unique challenges and opportunities. Including challenges associated with hearing, sight and speech impairment.



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## SMART HOME MODIFICATION PARTICIPANT INFORMATION SHEET

### What is Smart Home Modification?

The Smart Home Modification (hereafter, SHM) is a new, FREE program to implement and evaluate smart home modification services so that clients with functional limitations can live longer in their own homes and enjoy increased social participation, and to provide support for these technologies to become market ready.

Testing and installation of smart home technologies - the program will include:

- Provision of a SHM 'Google Home Kit' comprised of the following equipment:
  - 2 x TP Link Smart Wifi Plugs
  - Google Home Hub
  - Google Nest Mini
  - Google Chromecast Mini
  - Smart Lighting Starter Kit
- Equipment setup and configured in the client's home by a dedicated technical support officer
- Training on how to use equipment by technical support officer
- Customisation of equipment to client's preference by technical support officer
- SHM Google Home Kit left in the client's home for the duration of the pilot, with option to keep equipment post pilot free of charge

### Who is Feros Care?

Feros Care is a community owned non-profit organization which has been operating aged and community care services since 1990. Devoted to the research, design and implementation of technology for our clients, Feros Care is always looking to innovate through cutting-edge technology. Feros Care takes pride in leading the way when it comes to the future of care.

Our services include Telehealth care, residential aged care, in-home care, respite and allied health & wellness services. Our website is [www.feroscare.com.au](http://www.feroscare.com.au)

### Who is eligible to participate in the pilot?

- People 65 years and over or 50 years and over for Aboriginal and Torres Strait Islander people
- Clients to reside in the Far North & Mid North Coast NSW regions
- Clients to reside in Gold Coast, and Brisbane Queensland regions

### What is involved?

- If you would like to participate, there will be a consent form, information material and two short interviews to complete
- The SHM program includes Google Home devices that will be setup in your home; connected to an internet service by a dedicated Technical Support Officer
- Dedicated Technical Support Officer will visit you to install the equipment and teach you how to use the equipment
- You will be asked during and after the program to complete surveys/interviews and questions to provide feedback about your experience participating in this new service to see how you are coping – this may be phone, video or face to face interviews

### What is Smart Home Modifications?

Feros Care will implement Google Home devices in your home to allow you to communicate verbally with Google. You will have additional Google Home devices that will allow you to voice control home lighting, to set alarms, to make shopping lists, ask for recipes, ask to hear the news, set calendar reminders, talk to Feros Care through your MyFeros application.

The Google Home equipment will require an internet connection – this can be provided for the duration of the trial if necessary.

### How long will the pilot last?

You will have access to the Google Home equipment for approximately 12 weeks. You have the choice to keep the equipment after the conclusion of the pilot. You may, however, opt out of the program at any time.

### Is there a cost?

Feros Care will provide you with everything you need and there is no cost to you to participate in the program.

Participants using their own internet connections may have an increase in their monthly data usage.

### How can I complain or seek help?

Feros Care will provide mechanisms for you or your family to access support or provide feedback to Feros Care. Please call our team on 1300 090 256 for help or to provide feedback.

### What if I am having problems using the equipment?

Simply call 1300 090 256 and staff will help you over the phone, or you can call your dedicated Technical Support Officer or Technical Support Coordinator. If needed, your Technical Support Officer may also visit you at home to assist.

### Why is a university involved?

Southern Cross University, known as “SCU” will help Feros Care undertake an evaluation of the program. This will include data collection in the form of surveys and interviews. A Southern Cross University and/or Feros Care representative may contact you at some point to discuss your experience and views of the pilot.

SCU or Feros Care may also contact your family and friends you have identified, to get their views of the pilot.

### Will it use much power?

If you keep the Google Home equipment on all day, every day (which is advisable), the impact on your power bill will only be approximately 10c per day.

### Can I use the internet for personal use?

If an internet connection is provided, it is only to be used to operate the Google Home equipment.

### Will there be a camera watching me in my home?

No. There will be no camera watching you in your home. The only time someone will see you, is if you are sitting in front of your Technical Support Officer in your home. You control who and when people can see you.

### Who will be coming into my home, and how often?

You will be provided with a dedicated Technical Support Officer who will meet with you to install your Google Home kit. They will show you how to use the equipment and complete some initial information.

During the program you may receive calls from the Project Group member/s, Technical Support Coordinator. Any visits will be by prior phone appointment.

### How is my password and security protected?

Here at Feros Care, your privacy and security are paramount. When creating any passwords you feel necessary to make, from logging into your Laptop to downloading apps, the Technical Support Officer will guide you on any steps you need help with and then physically remove themselves from view. The Technical Support Officer WILL NOT have access to any of your login credentials or passwords and you are not to share your login credentials or passwords. If under any circumstances they may become privy to any of your information or you have disclosed your information, you will be instructed to reset your passwords.

### What happens at the end of the program?

Providing you with the Google Home equipment will help you navigate your everyday activities using Google Home technologies. We aim to seek your feedback on the benefits and challenges of the equipment.

After the duration of 12 weeks, you will be given the opportunity of keeping the Smart Home Devices. You do however have the option of withdrawing from the program at any stage and can have the equipment removed.



# YOUR PRIVACY INFORMATION SMART HOME MODIFICATIONS PROGRAM

Your home is a special place. It’s where you get to decide who you invite in. It’s the place for sharing family experiences to watching family members grow. You want to trust the things that you bring into your home. At Feros Care, we’re committed to earning that trust!

Our mission is to create a more helpful home, continuing to build devices and services that allow your home to take care of the people inside it. For example;

- We will be transparent about the data that we collect and why**
- We will never sell your personal information to anyone**
- We will empower you review, move or delete your data**

We want you, your family and your guests to feel comfortable using these devices and services, since the purpose is to help and provide peace of mind. We also recognise that we’re a guest in your home, and we respect and appreciate that invitation. Technology in the home is dynamic and evolving, so we’ll approach our work with humility, a commitment to seeking out many points of view and an eagerness to learn to adapt to your requirements.

### Is Google Home recording all my conversations?

No Google Home listens in short (a few seconds) snippets for the hot word “Hey Google or “OK Google”. Those snippets are deleted if the hot word is not detected, and none of that information leaves your device until the hot word is heard. When Google Home detects that you have said the hot word or physically long pressed the top of your device, the LEDs on the top of the device light up to tell you that recording is happening. Google Home records what you say and sends that recording to Google in order fulfill your request.

### Data collection – how does Google Home get information about you?

You can share your personal preferences and other information in the settings for Google Home and through your voice interactions with the Google Assistant.

### What data does Google collect?

Google collects data that’s meant to make their services faster, smarter and more useful to you. Google Home learns over time to provide better and more personalised suggestions and answers.

## YOUR PRIVACY INFORMATION SMART HOME MODIFICATIONS PROGRAM

### What does Google Home know about me?

If you opt to share information with Google, Google uses that information, along with your Google history, to better assist you with improvements like your name and interests. You can delete your history through the Google Home app and online – [myactivity.google.com](https://myactivity.google.com) (you will have full control over your data and the ability to delete the history at any time).

### Is my data safe with Google?

Your security comes first in everything! If the data is not secure, it is not private. Google makes sure the Google services are protected by one of the worlds most advanced security infrastructures.

### How do I turn off Google Home?

To completely turn off Google Home, you must unplug the power adapter from the wall outlet.

This disclaimer is intended to be read and signed in conjunction with the Participant Consent Smart Home Modifications Program form. The material in the provision of the Smart Home Modifications Program is general in nature. It is made available on the understanding Feros Care is not engaged in rendering professional advice. Before relying on the material in any important matter, the participant and other engaged stakeholders should carefully evaluate the accuracy, completeness and relevance for their purposes.

### Access and correction

You can request access to the personal information Feros Care holds about you. We will provide you access in most circumstances. You can request that Feros Care correct your personal information – we will take reasonable steps to correct the information we hold about you if we consider it inaccurate, out of date, incomplete, irrelevant or misleading.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

# PARTICIPANT CONSENT FORM

## SMART HOME MODIFICATIONS PROGRAM

I, \_\_\_\_\_ [NAME], agree to take part in this 12-week program and give permission for Feros Care staff to install Google Home devices in my home.

### In giving my consent I state that:

1. I understand the purpose of the program, and what is being offered. I understand that being in this program is completely voluntary and I do not have to take part.
2. I understand that I can withdraw from the program at any time.
3. I understand it is my responsibility to communicate the level of involvement I wish to have and understand Feros Care want me to involve only to a level that I feel comfortable with.
4. I have read the Participant Information Statement and understand I am able to discuss my involvement in the program with a Feros Team member if I wish.
5. I understand that the Technical Support Officer will be coming to install Google Home and a selection of smart home devices.
6. I understand that the Google Home equipment is **not an emergency device**, and should I feel unwell, I should contact my medical practitioner or emergency services.
7. The Feros Team have answered any questions I have had about the program and I understand the answers.
8. I understand that I may need to create private passwords. I will not disclose any of this information to the Technical Support Officer or other Feros personnel. Any passwords I do create should not be written down in an area easily accessed by others. If I do disclose my password it is my responsibility to reset the password/s. I understand I have no obligation to share my password or personal login details with anyone including the Technical Support Officer, family or friends.
9. I understand that by participating in this program, I am part of an evaluation with Southern Cross University and Feros Care. Personal information about me will be collected over the course of this program, stored securely and de-identified before it is provided to Southern Cross University for analysis.
10. I understand that if I choose to participate in an additional case study, that photos of videos of me may be used in Feros Care publications, their website or social media activities.
11. I understand there may be an increase in data usage of my pre-existing internet service if I choose to use my own internet device, and I am required to monitor any increased usage. I understand that if I exceed data usage on my internet plan, that I am responsible for any additional financial expenses.
12. I understand that in the situation that Feros Care provide internet data, Feros Care will monitor usage levels and advise me if there are any limits being reached.
13. I understand that the internet data I am being provided with is limited and Feros Care will monitor usage levels and advise me if there are any limits being reached.
14. I understand the Technical Support Officer has undergone training in safe handling practices to minimise the likelihood of mishandled or broken equipment. However, if this occurs Feros Care will promptly work to resolve this issue for me and cover all resulting costs.
15. I understand that the Technical Support Officer has undertaken training to prevent installation damage to my property, however if this occurs Feros Care will cover the cost of repairs to my property.
16. I understand that the equipment is to remain with me for the duration of the trial and not passed on to other people (including but not limited to my family members).
17. I understand that if I do not complete the duration of the pilot Feros Care have the right to remove the equipment and provide another client with the equipment.
18. I understand that if the equipment faults during the trail that it will be replaced with no charge.

### PARTICIPANT CONSENT FORM

#### SMART HOME MODIFICATIONS PROGRAM



PARTICIPANT CONSENT FORM  
SMART HOME MODIFICATIONS PROGRAM

19. I understand that if for any reason the equipment is broken due to intentional damage that the equipment will not be replaced without charge.
20. I understand that if equipment is found to be damaged due to an accident, this will be reviewed, and information gathered about how the accident occurred. This equipment may or may not be replaced depending on the outcome of the review.
21. I have read and understood the information provided to me regarding the safe use of docking and storage of smart vacuums, smart mops and smart lighting to prevent injury and minimise risks of falls.
22. I have read and understood the information provided to me for the safe use of smart lighting, smart vacuuming and smart mops to prevent injury and falls risk as a result of the using the devices.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_



PASSPORT  
QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

DEMOGRAPHIC INFORMATION

Email address: (if they have one) \_\_\_\_\_

Country of birth: ☐ Australia ☐ Other \_\_\_\_\_

Language spoken at home: ☐ English ☐ Other \_\_\_\_\_

Do you identify as: ☐ Aboriginal ☐ Torres Strait Islander  
☐ Neither Aboriginal or Torres Strait Islander

Ethnicity or cultural identity: ☐ Australia ☐ Other \_\_\_\_\_

Do you identify as: ☐ Primary school ☐ Some high school ☐ Year 10 ☐ Year 12  
☐ Trade certificate ☐ Diploma ☐ Bachelor degree ☐ Postgraduate

What is/was your main occupation? \_\_\_\_\_

Last year of paid employment: \_\_\_\_\_ or ☐ Current

Income details: ☐ Employed ☐ Self-funded ☐ Age pension  
☐ Other \_\_\_\_\_

Relationship status: ☐ Current spouse/partner ☐ Widow ☐ Divorced ☐ Single  
☐ Other \_\_\_\_\_



## PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

### What are your living arrangements?

- ☐ Live alone    ☐ Living with partner    ☐ Living with children    ☐ Live with grandkids  
☐ Other \_\_\_\_\_

### Satisfaction with family/social support

- ☐ 1    ☐ 2    ☐ 3    ☐ 4    ☐ 5  
*Very dissatisfied*                      *Neutral*                      *Very satisfied*

### Social/volunteer activities per week: ☐ 1    ☐ 2    ☐ 3    ☐ 4    ☐ 5 or more

### What devices or Smart Home technology do you own?

- ☐ Smart phone – if yes choose either ☐ Android ☐ iPhone  
☐ Tablet – if yes choose either ☐ Android ☐ iPad  
☐ Smart TV    ☐ Computer    ☐ Google Home & Assistant    ☐ Alexa  
☐ Other \_\_\_\_\_

- How do you connect to the internet?** ☐ Not connected  
☐ Wifi / NBN  
☐ Through a dongle/device  
☐ Through a 'hot spot' on my Smart phone  
☐ ADSL  
☐ Other \_\_\_\_\_

### Any health conditions requiring management (list)?

- ☐ High Cholesterol                      ☐ High Blood Pressure  
☐ Diabetes                                      ☐ Heart Disease  
☐ Depression                                      ☐ Lung Disease  
☐ Osteoporosis                                      ☐ Cancer  
☐ Chronic or regular pain                      ☐ Urinary or bowel disorder or concern  
☐ Other Chronic Condition \_\_\_\_\_



## PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

### Do you live with a disability? ☐ Yes ☐ No

### Have you had unplanned hospitalisation in the last 6 months?

- ☐ No    ☐ Yes    Days spent in hospital \_\_\_\_\_  
 Reason: \_\_\_\_\_

### How often would you contact your GP?

- ☐ More than once a week    ☐ Weekly    ☐ Fortnightly    ☐ Monthly    ☐ Every 3 months  
☐ Every 6 months    ☐ Other \_\_\_\_\_

### What areas of your life do you currently receive help with?

- ☐ Assistance with cleaning the home    ☐ Mowing and gardening  
☐ Food preparation, delivery or recipes    ☐ Shopping for food or clothes  
☐ Errands and billpaying    ☐ Mobility  
☐ Personal care    ☐ Nursing care  
☐ Safety and Security    ☐ Transport  
☐ Communication (incl. technology use)    ☐ Social support  
☐ Cultural/spiritual    ☐ No identified needs  
☐ Other \_\_\_\_\_

### What areas do you think technology could be used to help with your life?

- ☐ Assistance with cleaning the home    ☐ Mowing and gardening  
☐ Food preparation, delivery or recipes    ☐ Shopping for food or clothes  
☐ Errands and billpaying    ☐ Mobility  
☐ Personal care    ☐ Nursing care  
☐ Safety and Security    ☐ Transport  
☐ Communication (incl. technology use)    ☐ Social support  
☐ Cultural/spiritual    ☐ No identified needs  
☐ Other \_\_\_\_\_





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

PERSONAL WELLBEING INDEX – ADULT

The following questions ask how *satisfied* you feel, on a scale from zero to 10.  
**Zero** means you feel no satisfaction at all and **10** means you feel completely satisfied.

1. How satisfied are you **with your standard of living?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

2. How satisfied are you **with your health?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

3. How satisfied are you **with what you are achieving in life?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

4. How satisfied are you **with your personal relationships?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

5. How satisfied are you **with how safe you feel?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

6. How satisfied are you **with feeling part of your community?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

7. How satisfied are you **with your future security?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

UTAUT

1. Google Home Technology/Smart Home Modification Program would be useful in my daily life

☐ 1  
Entirely disagree

☐ 2  
Mostly disagree

☐ 3  
Somewhat disagree

☐ 4  
Neither agree nor disagree

☐ 5  
Somewhat agree

☐ 6  
Mostly agree

☐ 7  
Entirely agree

2. Using Google Home Technology/Smart Home Modification Program would help me accomplish my daily activities more quickly

☐ 1  
Entirely disagree

☐ 2  
Mostly disagree

☐ 3  
Somewhat disagree

☐ 4  
Neither agree nor disagree

☐ 5  
Somewhat agree

☐ 6  
Mostly agree

☐ 7  
Entirely agree

3. Using Google Home Technology/Smart Home Modification program would increase my productivity

☐ 1  
Entirely disagree

☐ 2  
Mostly disagree

☐ 3  
Somewhat disagree

☐ 4  
Neither agree nor disagree

☐ 5  
Somewhat agree

☐ 6  
Mostly agree

☐ 7  
Entirely agree

4. The Google Home Technology/Smart Home Modification program would improve better access to health services

☐ 1  
Entirely disagree

☐ 2  
Mostly disagree

☐ 3  
Somewhat disagree

☐ 4  
Neither agree nor disagree

☐ 5  
Somewhat agree

☐ 6  
Mostly agree

☐ 7  
Entirely agree

INITIAL  
EVALUATION

PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

5. The Google Home Technology/Smart Home Modification program would help provide easier access to health services

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

6. Learning how to use Google Home Technology/Smart Home Modification program would be easy for me

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

7. My interaction with Google Home Technology/Smart Home Modification program would be clear and understandable

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

8. Google Home Technology/Smart Home Modification program would be easy to use

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

INITIAL  
EVALUATION

PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

9. It would be easy for me to become skillful at using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

10. People who are important to me think that I should use Google Home Technology/Smart Home Modification service

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

11. People who influence my behaviour think that I should use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

12. People whose opinions that I value prefer that I use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree





### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

13. If I see the people I know are using Google Home Technology/Smart Home Modification Program, it would motivate me for using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

14. I have the resources necessary to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

15. I have the knowledge necessary to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

16. Google Home Technology/Smart Home Modification Program would be compatible with other technologies I use

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

17. I could get help from others when I have difficulties using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

18. Using Google Home Technology/Smart Home Modification Program depends on Trust

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

19. Lack of trust is a barrier to using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

20. Trust in the authenticity of information is important in Google Home Technology/Smart Home Modification Program adoption

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

21. Trust in the reliability of service is important in Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

22. I don't want the Google Home Technology/Smart Home Modification Program to change the way I deal with my daily activities

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

23. I don't want the Google Home Technology/Smart Home Modification Program to change the way I keep myself healthy

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

24. I don't want the Google Home Technology/Smart Home Modification Program to change the way I interact with other people

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

25. Using Google Home Technology/Smart Home Modification Program would make me very nervous

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

26. Using Google Home Technology/Smart Home Modification Program would make me worried

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

27. Using Google Home Technology/Smart Home Modification Program may make me feel uncomfortable

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

28. Using Google Home Technology/Smart Home Modification Program may make me feel uneasy and confused

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

29. I intend to use Google Home Technology/Smart Home Modification Program in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

30. I will try to use Google Home Technology/Smart Home Modification Program in my daily life in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

31. I plan to use Google Home Technology/Smart Home Modification Program frequently in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

32. My use of the Google Home Technology/Smart Home Modification Program would be voluntary

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

33. Although it might be helpful, using the Google Home Technology/Smart Home Modification Program would be certainly not compulsory in my life

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

34. My family/supervisor/care service provider would not require me to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



# PASSPORT QUESTIONNAIRE

SMART HOMES MODIFICATION PROGRAM

DEMOGRAPHIC INFORMATION

Satisfaction with family/social support

☐ 1  
*Very dissatisfied*

☐ 2

☐ 3  
*Neutral*

☐ 4

☐ 5  
*Very satisfied*

Social/volunteer activities per week: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

How often would you contact your GP?

☐ More than once a week

☐ Weekly

☐ Fortnightly

☐ Monthly

☐ Every 3 months

☐ Every 6 months

☐ Other \_\_\_\_\_

What areas of your life has technology help improve?

☐ Assistance with cleaning the home☐ Mowing and gardening

☐ Food preparation, delivery or recipes☐ Shopping for food or clothes

☐ Errands and billpaying☐ Mobility

☐ Personal care☐ Nursing care

☐ Safety and Security☐ Transport

☐ Communication (incl. technology use)☐ Social support

☐ Cultural/spiritual☐ No identified needs

☐ Other \_\_\_\_\_



# PASSPORT QUESTIONNAIRE

SMART HOMES MODIFICATION PROGRAM

TECHNOLOGY USE INFORMATION

How often do you use digital technology such as a smart phone or tablet?

☐ More than once a day

☐ Daily

☐ More than once a week

☐ Weekly

☐ More than once a month

☐ Monthly

☐ Rarely

☐ Never

How would you rate your confidence now in using technology

☐ 1  
*Not confident*

☐ 2

☐ 3  
*Confident*

☐ 4

☐ 5  
*Very confident*

How do you now use smart home modifications? Do you use...

☐ Voice commands☐ Lighting control☐ Banking/paying bills

☐ Smart locks & security☐ Reminders☐ Phone/video calling

☐ Health monitoring☐ Other \_\_\_\_\_

☐ Unsure

How would you rate your confidence now in using smart home technologies?

☐ 1  
*Not confident*

☐ 2

☐ 3  
*Confident*

☐ 4

☐ 5  
*Very confident*

What is the level of control that you feel you now have managing your daily affairs?

☐ 1  
*No control*

☐ 2

☐ 3  
*Some control*

☐ 4

☐ 5  
*High control*

What is your ability to independently perform activities of daily living now that you have smart home modifications?

☐ 1  
*No ability*

☐ 2

☐ 3  
*Some ability*

☐ 4

☐ 5  
*High ability*





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

PERSONAL WELLBEING INDEX – ADULT

The following questions ask how *satisfied* you feel, on a scale from zero to 10.  
**Zero** means you feel no satisfaction at all and **10** means you feel completely satisfied.

1. How satisfied are you **with your standard of living?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

2. How satisfied are you **with your health?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

3. How satisfied are you **with what you are achieving in life?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

4. How satisfied are you **with your personal relationships?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

5. How satisfied are you **with how safe you feel?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

6. How satisfied are you **with feeling part of your community?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied

7. How satisfied are you **with your future security?**

No satisfaction at all

1

2

3

4

5

6

7

8

9

10

Completely satisfied



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

UTAUT

1. Google Home Technology/Smart Home Modification Program would be useful in my daily life

1

2

3

4

5

6

7

Entirely disagree

Mostly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Mostly agree

Entirely agree

2. Using Google Home Technology/Smart Home Modification Program would help me accomplish my daily activities more quickly

1

2

3

4

5

6

7

Entirely disagree

Mostly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Mostly agree

Entirely agree

3. Using Google Home Technology/Smart Home Modification program would increase my productivity

1

2

3

4

5

6

7

Entirely disagree

Mostly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Mostly agree

Entirely agree

4. The Google Home Technology/Smart Home Modification program would improve better access to health services

1

2

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Entirely disagree

Mostly disagree

Somewhat disagree

Neither agree nor disagree

Somewhat agree

Mostly agree

Entirely agree



### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

5. The Google Home Technology/Smart Home Modification program would help provide easier access to health services

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

6. Learning how to use Google Home Technology/Smart Home Modification program would be easy for me

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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7. My interaction with Google Home Technology/Smart Home Modification program would be clear and understandable

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Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

8. Google Home Technology/Smart Home Modification program would be easy to use

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
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### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

9. It would be easy for me to become skillful at using Google Home Technology/Smart Home Modification Program

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### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

13. If I see the people I know are using Google Home Technology/Smart Home Modification Program, it would motivate me for using Google Home Technology/Smart Home Modification Program

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Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

14. I have the resources necessary to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
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15. I have the knowledge necessary to use Google Home Technology/Smart Home Modification Program

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### PASSPORT QUESTIONNAIRE SMART HOMES MODIFICATION PROGRAM

17. I could get help from others when I have difficulties using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

18. Using Google Home Technology/Smart Home Modification Program depends on Trust

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

19. Lack of trust is a barrier to using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

20. Trust in the authenticity of information is important in Google Home Technology/Smart Home Modification Program adoption

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

21. Trust in the reliability of service is important in Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

22. I don't want the Google Home Technology/Smart Home Modification Program to change the way I deal with my daily activities

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

23. I don't want the Google Home Technology/Smart Home Modification Program to change the way I keep myself healthy

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

24. I don't want the Google Home Technology/Smart Home Modification Program to change the way I interact with other people

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

25. Using Google Home Technology/Smart Home Modification Program would make me very nervous

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

26. Using Google Home Technology/Smart Home Modification Program would make me worried

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

27. Using Google Home Technology/Smart Home Modification Program may make me feel uncomfortable

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

28. Using Google Home Technology/Smart Home Modification Program may make me feel uneasy and confused

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

29. I intend to use Google Home Technology/Smart Home Modification Program in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

30. I will try to use Google Home Technology/Smart Home Modification Program in my daily life in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

31. I plan to use Google Home Technology/Smart Home Modification Program frequently in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

32. My use of the Google Home Technology/Smart Home Modification Program would be voluntary

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

33. Although it might be helpful, using the Google Home Technology/Smart Home Modification Program would be certainly not compulsory in my life

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

34. My family/supervisor/care service provider would not require me to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



# PASSPORT QUESTIONNAIRE

SMART HOMES MODIFICATION PROGRAM

DEMOGRAPHIC INFORMATION

Satisfaction with family/social support

☐ 1  
*Very dissatisfied*

☐ 2

☐ 3  
*Neutral*

☐ 4

☐ 5  
*Very satisfied*

Social/volunteer activities per week: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 or more

How often would you contact your GP?

☐ More than once a week

☐ Weekly

☐ Fortnightly

☐ Monthly

☐ Every 3 months

☐ Every 6 months

☐ Other \_\_\_\_\_

What areas of your life has technology help improve?

☐ Assistance with cleaning the home

☐ Mowing and gardening

☐ Food preparation, delivery or recipes

☐ Shopping for food or clothes

☐ Errands and billpaying

☐ Mobility

☐ Personal care

☐ Nursing care

☐ Safety and Security

☐ Transport

☐ Communication (incl. technology use)

☐ Social support

☐ Cultural/spiritual

☐ No identified needs

☐ Other \_\_\_\_\_



# PASSPORT QUESTIONNAIRE

SMART HOMES MODIFICATION PROGRAM

TECHNOLOGY USE INFORMATION

How often do you use the digital technology such as a smart phone or tablet or smart devices?

☐ More than once a day

☐ Daily

☐ More than once a week

☐ Weekly

☐ More than once a month

☐ Monthly

☐ Rarely

☐ Never

How would you rate your confidence now in using technology

☐ 1  
*Not confident*

☐ 2

☐ 3  
*Confident*

☐ 4

☐ 5  
*Very confident*

How do you now use smart home modifications? Do you use...

☐ Voice commands

☐ Lighting control

☐ Banking/paying bills

☐ Smart locks & security

☐ Reminders

☐ Phone/video calling

☐ Health monitoring

☐ Other \_\_\_\_\_

☐ Unsure

How would you rate your confidence now in using smart home technologies?

☐ 1  
*Not confident*

☐ 2

☐ 3  
*Confident*

☐ 4

☐ 5  
*Very confident*

What is the level of control that you feel you now have managing your daily affairs?

☐ 1  
*No control*

☐ 2

☐ 3  
*Some control*

☐ 4

☐ 5  
*High control*

What is your ability to independently perform activities of daily living now that you have smart home modifications?

☐ 1  
*No ability*

☐ 2

☐ 3  
*Some ability*

☐ 4

☐ 5  
*High ability*





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

PERSONAL WELLBEING INDEX – ADULT

The following questions ask how *satisfied* you feel, on a scale from zero to 10.  
**Zero** means you feel no satisfaction at all and **10** means you feel completely satisfied.

1. How satisfied are you **with your standard of living?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

2. How satisfied are you **with your health?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

3. How satisfied are you **with what you are achieving in life?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

4. How satisfied are you **with your personal relationships?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

5. How satisfied are you **with how safe you feel?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

6. How satisfied are you **with feeling part of your community?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied

7. How satisfied are you **with your future security?**

No satisfaction at all

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Completely satisfied



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PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

5. The Google Home Technology/Smart Home Modification program would help provide easier access to health services

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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

18. Using Google Home Technology/Smart Home Modification Program depends on Trust

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

19. Lack of trust is a barrier to using Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

20. Trust in the authenticity of information is important in Google Home Technology/Smart Home Modification Program adoption

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree





PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

21. Trust in the reliability of service is important in Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

22. I don't want the Google Home Technology/Smart Home Modification Program to change the way I deal with my daily activities

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

23. I don't want the Google Home Technology/Smart Home Modification Program to change the way I keep myself healthy

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

24. I don't want the Google Home Technology/Smart Home Modification Program to change the way I interact with other people

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

25. Using Google Home Technology/Smart Home Modification Program would make me very nervous

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

26. Using Google Home Technology/Smart Home Modification Program would make me worried

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

27. Using Google Home Technology/Smart Home Modification Program may make me feel uncomfortable

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

28. Using Google Home Technology/Smart Home Modification Program may make me feel uneasy and confused

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

29. I intend to use Google Home Technology/Smart Home Modification Program in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

30. I will try to use Google Home Technology/Smart Home Modification Program in my daily life in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

31. I plan to use Google Home Technology/Smart Home Modification Program frequently in the future

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

32. My use of the Google Home Technology/Smart Home Modification Program would be voluntary

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



PASSPORT QUESTIONNAIRE  
SMART HOMES MODIFICATION PROGRAM

33. Although it might be helpful, using the Google Home Technology/Smart Home Modification Program would be certainly not compulsory in my life

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree

34. My family/supervisor/care service provider would not require me to use Google Home Technology/Smart Home Modification Program

<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	2	3	4	5	6	7
Entirely disagree	Mostly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Mostly agree	Entirely agree



CLIENT EXPERIENCE  
QUESTIONNAIRE  
SMART HOME MODIFICATIONS PROGRAM

Client’s Name \_\_\_\_\_

What made you become interested in the program (add emotions felt)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What do you hope to achieve by doing this program?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Do you have any concerns around doing the program?

☐ Yes \_\_\_\_\_

☐ No



CLIENT EXPERIENCE QUESTIONNAIRE  
SMART HOME MODIFICATIONS PROGRAM

Do you have any mobility, dexterity, vision or hearing difficulties?

☐ Mobility

☐ Dexterity

☐ Vision

☐ Hearing

☐ No issues

Have you had any falls...

☐ No

☐ In the last 3 months

☐ In the last 6 months

☐ In the last 6 months

How would you rate your technical support officer “insert name” out of 5 stars

TSO name: \_\_\_\_\_ 1 ☆ 2 ☆ 3 ☆ 4 ☆ 5 ☆

Why did you rate them this score? What were they good at and what could they improve on?

\_\_\_\_\_

\_\_\_\_\_

In your welcome pack you may have seen information regarding Feros Care’s services.  
Would you like me to get someone to give you a call about these services?

☐ Yes \_\_\_\_\_

☐ No





**CLIENT EXPERIENCE  
QUESTIONNAIRE**  
SMART HOME MODIFICATIONS PROGRAM

Client's Name \_\_\_\_\_

How are you going with your new Smart Home technology?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What are you using the device for?  
*(go through each device the client has installed in their home according to Passport)*

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

What are you enjoying the most about your devices?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**CLIENT EXPERIENCE QUESTIONNAIRE**  
SMART HOME MODIFICATIONS PROGRAM

Is there anything you dislike about the devices or are having trouble with?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Is there anything you dislike about the devices or are having trouble with?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

How are you finding the google client booklet? Is it helpful?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Has anything changed about your daily routine or activities (because of the devices)?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comments about changes to daily routine...

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



CLIENT EXPERIENCE QUESTIONNAIRE  
SMART HOME MODIFICATIONS PROGRAM

If yes, do you feel like the devices are making a difference in your daily life?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comments about changes to difference in life...

Do you think your confidence to use your devices has improved?

- ☐ Yes
- ☐ No
- ☐ Neutral

Comments about confidence...

How would you rate your confidence out of 5?  
*(1 being not confident at all, and 5 being very confident)*

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5



CLIENT EXPERIENCE QUESTIONNAIRE  
SMART HOME MODIFICATIONS PROGRAM

Did you feel like you had enough support from us to know how to use the devices (during their visits)?

Do you have any feedback on our staff member (TSO) who installed the equipment?  
Or the installation process?

Is there anything you think we could do better? How could we improve the smart home modification service?

Would you recommend the Smart Home Modifications program to others?  
*(0 being not at all, and 10 being extremely likely to recommend)*

- Not at all likely
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8
- ☐ 9
- ☐ 10
- Extremely likely



# CLIENT EXPERIENCE QUESTIONNAIRE

SMART HOME MODIFICATIONS PROGRAM

Client’s Name \_\_\_\_\_

On a scale of 1 to 10, 1 being very poor and 10 being excellent, what did you think of the program?

Very poor

☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5   ☐ 6   ☐ 7   ☐ 8   ☐ 9   ☐ 10

Excellent

Did the program meet your expectations?

☐ Yes   ☐ No

How likely are you to recommend this program to a friend?

☐ Extremely likely  
☐ Somewhat likely  
☐ Neither likely nor unlikely  
☐ Somewhat unlikely  
☐ Extremely unlikely

How likely are you to recommend Feros Care to a friend?

☐ Extremely likely  
☐ Somewhat likely  
☐ Neither likely nor unlikely  
☐ Somewhat unlikely  
☐ Extremely unlikely

Were you linked to any other services either community services or Feros Care services

☐ Community Services   ☐ Feros Care Services   ☐ No



# CLIENT EXPERIENCE QUESTIONNAIRE

SMART HOME MODIFICATIONS PROGRAM

What were your highlights during this program? “Quotes from client”

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Is there anything we can do to improve your experience of the Smart Home Modifications program?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

(If client had a smart mod peripheral) Do you think this product made a difference in your life? Refer to their particular need.

☐ Yes definitely  
☐ Maybe  
☐ No

Do you think this product increases your independence in the home?

☐ Yes  
☐ No

How would you rate your technical support officer “insert name” out of 5 stars








TSO name: \_\_\_\_\_ 1 ☆   2 ☆   3 ☆   4 ☆   5 ☆

Is there anything else that we can assist you with here at Feros Care?


☐ Yes \_\_\_\_\_  
☐ No



## SMART HOME MODIFICATIONS CUSTOMER JOURNEY MAP

STAGES	CATALYST		AWARENESS	ENQUIRE	ONBOARDING ★	SUPPORT	CHANGING NEEDS ★	GRADUATION ★
ACTIONS	<p>Client decides to take action as:</p> <ul style="list-style-type: none"><li>• They are worried about remaining independent in the home</li><li>• They are wanting to be more safe and secure in the home</li><li>• Client has decreased mobility in the home</li><li>• Client struggling with activities of daily living</li></ul>	<ul style="list-style-type: none"><li>• Client doesn't know how technology can help them</li><li>• Client receives a letter in the mail from Feros Care promoting their new pilots on offer for 2020</li><li>• Client becomes interested in the Smart Home Modifications offering</li></ul>	<p><b>SIGN UP TO PILOT</b></p> <ul style="list-style-type: none"><li>• After reading the flyer, the client is excited about the opportunity and calls through to Feros Care to express their interest</li><li>• On the phone, they answer the eligibility questions with a Feros Care agent</li><li>• The client decides on their Install day and time, and advises the Feros Care agent</li></ul>	<p><b>APPOINTMENT SCHEDULING</b></p> <ul style="list-style-type: none"><li>• Client receives a phone call from Feros Care to confirm the date/time of their first service, and receives confirmation of which Technical Support Officer will be coming to their home</li></ul>	<p><b>INSTALLATION</b></p> <ul style="list-style-type: none"><li>• The client meets their Technical Support Officer (TSO) for the first time</li><li>• They discuss the clients current situation, and decide on where devices are to be set up and what routines will suit</li><li>• The client signs a consent form to participate in the pilot</li><li>• The TSO completes the installation and offers the client some training, at the client's pace, on how to use the devices</li></ul>	<p><b>SUPPORT VISIT</b></p> <ul style="list-style-type: none"><li>• The Technical Support Officer follows up with a second support visit</li><li>• This is an opportunity for the client to ask any questions</li><li>• The TSO ensures the devices are all still connected, working and customised correctly</li><li>• The client is trained how to make any changes as necessary</li><li>• The client now feels a level of independence they haven't felt before</li></ul>	<ul style="list-style-type: none"><li>• Client is still struggling with technology and needs additional training however has already had one support visit</li><li>• Client phones Feros Care to ask for more support</li><li>• Feros Care offers the client more Support Visits or refers them onto the Let's Get Technical program to build their digital capacity and confidence</li></ul>	<ul style="list-style-type: none"><li>• The client receives one final face to face visit with their Technical Support Officer where they are presented with a graduation certificate, thanking them for their participation</li><li>• The Technical support officer asks the client if they want to have the devices removed or to keep them</li><li>• If they want it removed, the TSO decommissions the devices</li></ul>
WHO'S INVOLVED	<ul style="list-style-type: none"><li>• Client</li><li>• Family or spouse</li><li>• Friends or community</li></ul>	<ul style="list-style-type: none"><li>• Client</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Feros Central</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Feros Central</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Technical Support Officer</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Technical Support Officer</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Feros Central</li><li>• Technical Support Officer</li></ul>	<ul style="list-style-type: none"><li>• Client</li><li>• Technical Support Officer</li></ul>
CHANNEL	N/A							
CLIENT NEEDS	<ul style="list-style-type: none"><li>• The client needs personalised support that is affordable, senior friendly and is individualised to their home and environment</li></ul>	<ul style="list-style-type: none"><li>• Assistance and clarity on the pilot offer and how to sign up</li></ul>	<ul style="list-style-type: none"><li>• Further assistance and clarity on the pilot offer and how to sign up</li><li>• Understand what devices and support are available.</li><li>• Easy/ fast process</li><li>• Installation to occur on a day and time that suits the client – no conflicting appointments</li></ul>	<ul style="list-style-type: none"><li>• To know who their Technical Support Officer is</li><li>• Time of the first service to start</li><li>• The duration of the service</li></ul>	<ul style="list-style-type: none"><li>• To understand and trust the technology</li><li>• The installer to be understanding, patient and not judgemental.</li><li>• To enjoy the installer's company</li><li>• To feel safe and not worried about any personal information being taken advantage of</li><li>• reassurance that there is more support if they need it and that they are not a burden asking for more support</li></ul>	<ul style="list-style-type: none"><li>• To be independent using the devices</li><li>• To be confident using the devices</li><li>• For the devices to be easy to use</li><li>• Support there when needed</li><li>• To trust the devices</li><li>• For the devices to make a difference in their lives</li></ul>	<ul style="list-style-type: none"><li>• To receive additional support to use devices</li><li>• Not to be nervous about asking for help</li></ul>	<ul style="list-style-type: none"><li>• Trust in the Feros staff members</li><li>• Privacy</li><li>• Easy process</li></ul>
CLIENT STRESSES	<ul style="list-style-type: none"><li>• Not knowing where to start looking for help</li><li>• Not wanting to burden anyone</li></ul>	<ul style="list-style-type: none"><li>• There is a lot of 'noise' about technology</li><li>• Too much communication</li></ul>	<ul style="list-style-type: none"><li>• Waiting on hold, or not receiving a call back promptly</li><li>• Client doesn't qualify – no device or no internet at home</li><li>• No suitable times for the client to book in the install as per their personal schedule</li><li>• Not knowing who is coming to their home yet</li></ul>	<ul style="list-style-type: none"><li>• Client is apprehensive of the gender of the staff member attending</li><li>• Client wants to know the exact time of the appointment</li></ul>	<ul style="list-style-type: none"><li>• Hesitant to sign a consent form</li><li>• Hesitant to install devices</li><li>• Not understanding the devices or how to use them</li><li>• Information overload</li><li>• The client feels embarrassed to ask for help</li></ul>	<ul style="list-style-type: none"><li>• Client is anxious about the devices and the learnings around them</li><li>• The client feels embarrassed to ask for more help</li></ul>	<ul style="list-style-type: none"><li>• Not knowing how to troubleshoot independently</li><li>• Not wanting to reach out for help as feel like a burden and silly</li><li>• Losing confidence in self</li></ul>	<ul style="list-style-type: none"><li>• Client worries about not having support after the program</li></ul>

★ Evaluation phone interviews conducted

 EOI Letter Brochure Phone call Face to face



**Southern Cross  
University**



**feros care**  
**GROW BOLD**

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