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PROJECT REPORT

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CHALLENGE STATEMENT

What if we could help seniors live independently in their homes longer, by focusing on their complete wellbeing (i.e. physical, mental, emotional, and financial health)?

CATEGORY	DESCRIPTION
PHYSICAL	the state of being free from illness or injury to ensure overall quality of life
MENTAL	the state of someone who is "functioning at a satisfactory level of emotional and behavioural adjustment". It addresses the level of psychological well-being or an absence of mental illness.
EMOTIONAL	the state of being in control of thoughts, feelings, and behaviors. It is a balance between physical, mental, emotional, spiritual and sexual well-being. It can be strengthened through love, friendship, social supports and your sense of "fitting in" in your community. It encompasses an ability to enjoy life without being consumed by things from the past or stressing about things in the future, the ability to manage stress, maintain an optimistic outlook and "bounce back" from difficulties.
FINANCIAL	the state of one's personal financial situation. There are many dimensions to financial health, including: <ul style="list-style-type: none">- the amount of savings you have- how much you're putting away for retirement- how much of your income you are spending on fixed or non-discretionary expenses.- the ability to protect your finances

INDEPENDENCE

WHY SENIORS NEED INDEPENDENCE

Determining the definition of independence for older adults is especially important when considering guardianship and tax rights. According to UHM (United Methodist Homes)¹, whose mission is to “Provide a continuum of services that supports health, independence, and dignity. We build this continuum on the belief that a relationship-centered philosophy best sustains body, mind, and spirit.”, defines general independence for an older adult to be “*how well an individual can manage daily activities without extra assistance. Examples of daily activities include, but are not limited to: preparing meals, personal hygiene, managing medications, completing household chores, driving/coordinating transportation, and maintaining personal finances.*” HealthAffairs² determined in their May/June 2000 study that increasing longevity and declining fertility rate is creating a greater shift towards older age groups; the population of the world, including in Canada, is aging.

BENEFITS OF SENIORS INDEPENDENCE

EMOTIONAL	
INDIVIDUALITY AND PURPOSE	Living independently allows individuals to make personal (and non-personal) choices independently. This is a key factor in making older adults feel themselves, able to express their personalities and beliefs. Being unable to express oneself has shown ³ to be tied to destructive feelings and behaviour. A loss of independence isolates older adults, making them feel they don't have a purpose. Being in an environment where they can provide value to

¹ United Methodist Homes, Elizabeth Bemis. “The Difference Between Assisted & Independent Living.” *Senior Assisted Living*, 2017, www.umh.org/assisted-independent-living-blog/bid/245242/the-difference-between-assisted-independent-living.

² Anderson, Jerry, and Peter Hussey. “Population Aging: A Comparison Among Industrialized Countries.” *Health Affairs*, Johns Hopkins School of Hygiene and Public Health, 2000, www.healthaffairs.org/doi/full/10.1377/hlthaff.19.3.191.

³ M, S. “4 Reasons Independence Is Important for Seniors, VANTAGE Aging.” *VANTAGE Aging*, 20 Feb. 2019, vantageaging.org/blog/independence-is-important-for-seniors/.

	neighbours, communities and friend gives older adults a sense of purpose and achievement.
SOCIAL GROUPS	Aging at a place of and elderly’s choosing gives them more motivation to be social and to interact with neighbours. Friends also tend to live close by, boosting cognitive ability and emotional health. Caregivers have pointed out that being in care homes reduce ties with family members, due to distance or strict schedules. Living in the place of their choosing allows older adults to maintain strong family ties.
MEMORY	When older adults go about their own life, they have the capacity to maintain old synapses and build new ones. Independence and activity boost memory skills. Higher activity levels increase blood flow to the brain and using the mind often helps to preserve memory. Daily routines help promote both memory and independence.
PERSONAL PREFERENCE	Based on interviews conducted with seniors, the general opinion is that of a preference for independent living. Most older adults view “home” as a place to live, and “nursing/care homes” to be a place to be forgotten. ⁴

1. According to a study done in 2000, “adults aging in place exhibited better levels of cognition, better functioning in daily living activities, decreased levels of depression, and lower levels of incontinence compared to older adults aging in nursing home settings.” Marek, K.D., Popejoy, L., Petroski, G., Mehr, D., Rantz, M., & Lin, W.C. (2005). Clinical outcomes of aging in place. *Nursing Research*, 54(3), 202-211.
2. “The benefits of aging in place extend beyond finances to include social and emotional benefits for both elders and their communities. Aging in place reduces social isolation by promoting community involvement. This leads to significant health benefits including reduced mortality, increased physical functioning, and decreased symptoms of depression, among others. . . . Independence is more than just living outside of an institution—it’s having choice and control in housing and care decisions.” Measuring the costs and savings of aging in place. (2013, Fall). *Evidence Matters*.⁵

⁴ Larlee, Kathryn. “Senior Independence – The Psychological Benefits of Aging in Place.” *Advancing Smartly*, Elder Law of Michigan, 20 Apr. 2015, advancingsmartly.org/2015/04/20/senior-independence-the-psychological-benefits-of-aging-in-place/.

⁵ “Evidence Matters Archive: HUD USER.” *Evidence Matters Archive | HUD USER*, www.huduser.gov/portal/periodicals/em/em_archive.html.

ECONOMICAL	
GOVERNMENT	According to a report by CBC News ⁶ in 2018, The federal government spent \$311 billion in the fiscal year 2016-17, the biggest single expense being elderly benefits. This proves to be a large market that, due to aging populations, will only become greater. Care homes are also not always fully paid for by older adults ⁷ themselves; if an adult reaches the requirements to be admitted but does not have the necessary finances, the government is obliged to pay for their stay.
HOSPITALS	Canada’s Medicare system was established to deal largely with acute, episodic care for a relatively young population. Our system struggles to properly care for patients with complex and ongoing health issues. Approximately 75-80% of Canadian seniors report having one or more chronic condition. ⁸ Health care spending per person increases with age as seen in 2013: ⁹ Age 65 to 69: \$6,298 Age 70 to 74: \$8,384 Age 75 to 79: \$11,557 Age 80 and older: \$20,9178
LOCAL INCOME	Senior couples had an average family income of \$65,540 in 2014, significantly above Statistics Canada’s ¹⁰ low-income measure for 2013 of \$47,878. Senior households are able to contribute financially to the local economy through their spending on goods and hiring of paid services. Most older adult spending is local, including household expenses, food, transportation, clothing, recreation and gifts. This supports local employment in retail and service businesses.

⁶ Armstrong, Peter. “What Does the Federal Budget Really Spend Money on? | CBC News.” *CBCnews*, CBC/Radio Canada, 23 Feb. 2018, www.cbc.ca/news/business/tax-dollars-1.4545415.

⁷ Ontario Ministry of Health. “Long-Term Care Overview.” *Ontario.ca*, Province of Ontario, 2019, www.ontario.ca/page/about-long-term-care.

⁸ “Health Care in Canada, 2011, A Focus on Seniors and Aging.” *CIHI*, Canadian Institute for Health Information, 2011, secure.cihi.ca/free_products/HCIC_2011_seniors_report_en.pdf.

⁹ “Health Care in Canada, 2011, A Focus on Seniors and Aging.” *CIHI*, 2011

¹⁰ Statistics Canada. “Low Income Lines, 2013-2014: Update Table 3 Low Income Measures by Income Concept, for Household Size of Four Persons Note 1, Note 2, 1976 - 2013 Table 3 Low Income Measures by Income Concept, for Household Size of Four Persons Note 1, Note 2, 1976 - 2013.” *Table 3 Low Income Measures by Income Concept, for Household Size of Four Persons, 1976 - 2013*, 23 Dec. 2015, www150.statcan.gc.ca/n1/pub/75f0002m/2015002/tbl/tbl03-eng.htm.

COMMUNITIES	<p>Canadians aged 65 to 74 contributed an average¹¹ of 231 hours in volunteer time in 2013, and those aged 75 and over contributed an average of 196 hours, compared to 154 hours for all Canadians.</p> <p>Canadians aged 65 to 74 made donations averaging¹² \$715 in 2013, and those aged 75 and over made donations averaging \$726, compared to \$513 for all Canadians.</p> <p>Older adults contribute to their communities.</p>
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WHAT IT LOOKS LIKE TODAY

TYPE	DESCRIPTION
INDEPENDENT LIVING	<p>Seniors prefer to live independently. They feel that at this point in their lives, they have the opportunity to relax and be with themselves and their partners.</p> <p>The typical lifestyle is calm, relaxing. Most seniors take care of their own house chores and will spend time working on their own hobbies (dancing, writing, reading, etc.)</p> <p>Seniors see independent living as being close to family and friends. Their own home is usually a place of gathering for grand family events. They feel they have access to meeting up with friends if they choose.</p> <p>Some seniors continue to work, joining community events to volunteer or doing casual work to maintain some income.</p> <p>Seniors have some worry that eventually, they will not be able to care for themselves or their loved ones. They tend to contemplate moving into smaller homes to retain their independence but have smaller real estate to care for.</p> <p>Source: Users</p>

¹¹ Statistics Canada. “Donor Rate and Average Annual Donations, by Age Group.” *Statistics Canada: Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada*, 2013, www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=4510000401.

¹² Statistics Canada. “Volunteer Rate and Average Annual Volunteer Hours, by Age Group.” *Statistics Canada: Canada's National Statistical Agency / Statistique Canada : Organisme Statistique National Du Canada*, 2013, www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=4510001201.

CARE HOMES

Seniors who move into care homes feel they do so because they require 24/7 care. Most times, the general feeling is that they aren't fully cared for. Seniors feel a great sense of loneliness and disconnection to their caregiver. Moving into a new home is stressful from a social, emotional and mental perspective. Seniors feel as though, because they're already old and "waiting to die", there's no point in going through the process of making friends again. Rules and regulations make living in a care home feel restrictive and makes seniors feel as though they lose a sense of identity.

Source: Caregivers

ROOT CAUSES

The Problem

Canada, and particularly Ontario, has a critical problem with long-term care for the elderly population in the nation. There are huge staffing, budget, and space issues within these institutions. Ontario alone has a waitlist of over 30 000 people waiting¹³ for a placement in long term care.

Thousands of seniors require care in long-term facilities due to three key reasons¹⁴: cognitive impairment (dementia and Alzheimer's), falling (body part gets fractured and an older adult is not as mobile as they were before) and loneliness, which leads to depression and many other side effects and conditions.

In addition to these problems, there are a whole range of other problems that impact a senior's ability to live independently, including a senior's finances, and other diseases such as incontinence, which are not fully treatable.

Cognitive Impairment

In Ontario, 90% of seniors living in long term care homes¹⁵ have some form of cognitive impairment such as dementia or Alzheimer's disease. This leads to an immense deterioration in cognitive capabilities which greatly affects their overall wellbeing. Seniors with cognitive impairments forget critical tasks such as taking medicine, eating, the locations of important places, and the identities of loved ones. This directly impacts their ability to live independently as they are not able to take care of themselves without significant assistance from others.

About 7% of Canadian seniors (more than 400 000)¹⁶ have some form of dementia. The total annual health care costs in Canada of treating dementia are over \$8 billion

¹³ Frangione, Rocco. "Union President Warns of Bed and Staff Cuts Coming to North Bay Hospital." *My North Bay Now*, 8 July 2019, www.mynorthbaynow.com/45656/union-president-warns-of-bed-and-staff-cuts-coming-to-north-bay-hospital/.

¹⁴ Senior Living. "Long Term Care Options for Seniors: Long Term Care Facilities & Centers." *SeniorLiving.org*, 30 May 2019, www.seniorliving.org/care/.

¹⁵ Advanced Solutions International, Inc. "About Long-Term Care in Ontario." *Facts and Figures*, 2019, www.olca.com/olca/OLTCA/Public/LongTermCare/FactsFigures.aspx.

¹⁶ Public Health Agency of Canada. "Government of Canada." *Dementia in Canada, Including Alzheimer's Disease: Highlights from the Canadian Chronic Disease Surveillance System - Canada.ca*, Government of Canada, 21 Sept. 2017, www.canada.ca/en/public-health/services/publications/diseases-conditions/dementia-highlights-canadian-chronic-disease-surveillance.html.

dollars¹⁷. However, this is a disease that currently does not have a cure, and there is no certain way to prevent all types of dementia. For this reason, based on feasibility and complexity, this problem was not selected as a main area of focus for ideating solutions.

FALLS

The Problem¹⁸

In Canada, seniors experiencing falls is a crucial problem. Between 20-30% of all Canadian seniors fall each year, and the direct costs associated with falls among seniors in Canada is estimated to be over \$2 billion each year. A fall is defined as a sudden unintentional change in position resulting in an individual landing at a lower level such as an object, the floor, or the ground, with or without injury.

67% of seniors who experience falls go to the emergency room within 48 hours of experiencing a fall. Seniors who are hospitalized for a fall spend an average of 22 days in the hospital. Over 1/3 of seniors who are hospitalized for a fall are discharged to long-term care, which is double the proportion living in that kind of care when they fell. In addition, 83% of injury related visits to the hospitals for seniors are due to falls. Once seniors experience a fall, they have a 90% chance of falling again in the next one-year period.

Falls are the leading cause of 95% of hip injuries, leading to death in 20% of the cases. 35% of the resulting injuries from a fall is broken or fractured bones.

41% of falls are caused due to incorrect weight-shifting and balancing by the senior.

This is mainly because of backward disequilibrium, which is a postural disorder prevalent in older adults. Individuals with backward disequilibrium sustain their center of mass behind their feet, which means that they are more likely to fall backwards rather than forwards. When seniors fall backwards, it is extremely difficult for them to get back up, and falling backwards causes significantly more injuries than falling forwards as you are more susceptible to landing on your head or back, whereas when you fall forwards, you can protect yourself by landing on your hands.

¹⁷ Public Health Agency of Canada. "Government of Canada." *Dementia in Canada, Including Alzheimer's Disease: Highlights from the Canadian Chronic Disease Surveillance System - Canada.ca*, Government of Canada, 21 Sept. 2017, www.canada.ca/en/public-health/services/publications/diseases-conditions/dementia-highlights-canadian-chronic-disease-surveillance.html.

¹⁸ Public Health Agency of Canada. "Government of Canada." *Canada.ca*, Government of Canada, 10 Apr. 2014, www.canada.ca/en/public-health/services/health-promotion/aging-seniors/publications/publications-general-public/seniors-falls-canada-second-report.html.

There are many repercussions after a fall occurs, specifically injuries that reduce the mobility of seniors. The percentage of injuries due to falls varies from an average of 35% for seniors aged 65 to an average of 71% for seniors over the age of 90, with a steady increase in between. A reduced mobility for seniors means that they are not able to do basic tasks that may include getting out of bed, eating, going to the washroom, etc.

Current Solutions

There are currently no prevention methods that are commercially available to stop falls from occurring. There have been many devices and methods used to detect falls after they have occurred, however, there are currently no solutions to prevent falls before they happen. Since 2000, falls have been the leading detriment to senior independence. It has been 20 years and we still have the exact same problem despite new advancements in technology.

The industry standard currently is a gait belt. This is a device used as a waistband that is used to measure a patient's gait, balance, coordination, reaction time, and muscular strength. These metrics are then used by doctors to prescribe a routine that will improve the patient's physical fitness state. An add on to this belt is deploying airbags to reduce the impact when the built-in sensors detect a fall.

There are a lot of existing solutions that are add-ons to everyday household items, for example a toilet with handles, a bedside fall mat, and socks with non-skid treads. However, these solutions aren't guaranteed ways to prevent falls as they are cautionary methods put in place that might help in aiding falls that occur by tripping over items or slipping.

Proposed Solution – Smart monitoring for fall protection

Falls don't happen out of the blue and they are often a result of slow decline in balance that older people might not even notice. Technology that can detect subtle changes in an older person's gait can alert a doctor or caregiver of the increased likelihood of a fall before it happens so they can take advised remediating measures.

The solution will be able to measure the gait of an elderly individual and detect anomalies that indicate an increased risk for falling within the next 3 weeks. Once this is detected, family members will be notified via text message, and physicians will be notified via email so they can take their preferred course of action.

Ten years of research performed at TigerPlace in Missouri¹⁹ showed that people whose gait slowed by 5 centimeters per second within the span of one week had an 86% probability of falling during the next three weeks.

LONELINESS

The Problem²⁰

In Canada, 50% of the population over 80 years old report feeling lonely, and 25% of Canadian seniors live alone. 44% of seniors living in residential care have been diagnosed with depression or show symptoms of depression without diagnosis. In addition, the lack of a social network leads to a 60% increase in the risk of dementia. There are many factors that contribute to seniors becoming socially isolated, mainly being living alone, having compromised health status, having no contact with children or family, lacking access to transportation, and living with low income.

Groups of seniors who are at a greater risk of becoming socially isolated are seniors with physical and mental health issues, low income seniors, seniors who are caregivers, First Nations seniors, seniors who are newcomers or immigrants, and seniors' part of the LGBT+ community.

1.4 million Canadian seniors reported severe loneliness²¹. Loneliness itself does not cause health problems, however, depression, desperation and feeling unappreciated and unwanted can cause seniors to neglect their health or resort to unhealthy behaviors such as smoking, drinking, or not taking their medication. Social isolation leads to many other repercussions including an increased risk of developing dementia by 60%, as well as becoming more prone to falls, heart disease, high blood pressure, obesity, Alzheimer's disease, cancer, and even death.

Case Study

¹⁹ Rantz, Marilyn, et al. "Automated In-Home Fall Risk Assessment and Detection Sensor System for Elders." *The Gerontologist*, Oxford University Press, June 2015, www.ncbi.nlm.nih.gov/pmc/articles/PMC4566912/.

²⁰ Rantz, Marilyn, et al. "Automated In-Home Fall Risk Assessment and Detection Sensor System for Elders." *The Gerontologist*, Oxford University Press, June 2015, www.ncbi.nlm.nih.gov/pmc/articles/PMC4566912/.

²¹ Smith, Willow. "Loneliness in Canadian Seniors an Epidemic, Says Psychologist | CBC Radio." *CBCnews*, CBC/Radio Canada, 20 Sept. 2016, www.cbc.ca/radio/thecurrent/the-current-for-september-20-2016-1.3770103/loneliness-in-canadian-seniors-an-epidemic-says-psychologist-1.3770208.

Frederick's life dramatically changed when he had to go to the hospital for a hip operation. At 70 years old, the effect it had on him was not just physical, but his mental health also deteriorated after spending three long months in the hospital.

Once Frederick got discharged from the hospital, he was relocated to long-term care, a vast difference away from his family, friends, and familiar surroundings. His family only visited once or twice a year, leaving him in severe isolation. He withdrew from his life, stopped doing the things he loved, and became depressed and started to experience anxiety attacks.

Frederick did not leave his residence for an entire year. He only saw a care worker for 20 minutes a day who was too busy doing their job. He only had the radio or the television for company. The life he once had surrounded by people he loved and cared about didn't exist anymore.

Frederick's experience is similar to what over 1 million seniors in Canada face. Seniors who experience loneliness end up completely withdrawing themselves from society, which can lead to depression and eventually death.

Current Solutions

There are a few robots and devices that were created to simulate human companionship. These are very early stage devices, and most of them are not optimized enough to be able to provide proper care for those who are lonely.

There are no other products that are able to aid in overcoming loneliness. Families are able to invite seniors to their homes more often and encourage them to sign up for community activities such as bingo or bridge. However, if the senior is living alone, these activities may not be enough to help them.

Proposed Solutions

At-home AI Companion – An Amazon Alexa programmable smart-speaker or Robot-type assistant at home can be implemented to provide companionship to the elderly through embracing human social qualities like conversation. In addition to this, to help with adherence, it can be programmed to remind users when to take medications and eat food, provide a platform with reminders to phone or video call their families, and perform tasks for household assistance.

Virtual Community Gatherings – To combat loneliness by getting immobile seniors together, virtual community gatherings on any TV screens at home can be implemented on a software that enables group calls with contacts and other individuals to develop new relationships. With this platform, they can find new friends, create

topics that can be posted on the network where people can join to chat about, and chat with others with the provided messaging feature.

FRAUD

The Problem

In 2017, there were 71 000 mass marketing fraud complaints²² received in Canada, with a total reported loss of \$110 million. However, it is estimated that fewer than 5% of victims actually file a mass marketing fraud report. This means that the total amount of money lost could be in the billions.

Elders experience fraud in many different ways²³ including Medicare fraud, telemarketing, lottery scams, counterfeit drugs, and more. They consequently lose up to hundreds of thousands of dollars each year without even knowing it due to scam artists.

Types of Financial Fraud	Description
Medicare Fraud	Scam artists will promise services for elderly people and then use the information to bill Medicare and then pocket the money.
Telemarketing	Scammers will commonly fake telemarketing calls. Seniors make twice as many purchases via telephone calls than the national average, and a primary reason for this is because of fake telemarketing calls.
Lottery Scams	Scammers will inform the victim that they have won the lottery and need to make some kind of payment in fees

²² Jones, Sophie Nicholls, and Margaret Craig-Bourdin. "Seniors Too Ashamed to Report Financial Fraud, Say Experts." *CPA Canada*, 2018, www.cpacanada.ca/en/news/canada/2018-06-15-seniors-too-ashamed-to-report-financial-fraud.

²³ National Council on Aging. "Top 10 Scams Targeting Seniors." *NCOA*, 26 Apr. 2018, www.ncoa.org/economic-security/money-management/scams-security/top-10-scams-targeting-seniors/.

	<p>or taxes to claim the prize. This often involves the senior depositing the fake prize check into their bank account. The prize amount shows up in their account immediately and takes a few days before it is rejected. During this time, scammers collect money for supposed taxes or fees on the prize, and then the victim has the fake prize money removed from their account when the check bounces.</p>
Counterfeit Drugs	<p>This is most often done through the internet when seniors search for better prices on specialized medications. There is a danger of paying for medications that will not help the senior's medical condition. In addition, seniors may also end up purchasing unsafe substances that can cause harm.</p>
"Grandmother/ Grandfather scam"	<p>Scammers will pretend to be a relative of the elder and ask for money in need of support, claiming that a false emergency occurred.</p> <p>These are common scams that elders experience, and each senior can lose up to hundreds of thousands of dollars every year.</p>

Case Study

Estelle Haynes trusted the man who called to tell her she had won a sweepstakes prize, saying she could collect the winnings once she paid the taxes and fees. After the wired the first payment, he and other callers kept adding conditions to convince her to send more money.

As the scheme progressed, Haynes, who was legally blind and lived alone in a house in Louisiana, depleted her savings, took out a reverse mortgage, and cashed in a life insurance policy. She didn't tell her family, not even her sister who lived next door. An investigator on this case stated that scammers often push victims to keep promised winnings a secret.

Her family didn't realize something was wrong until she started asking to borrow money. This was a first for a woman they admired for her financial independence. Unfortunately, by then, it was too late. Haynes had lost all of her life savings, which amounted to hundreds of thousands of dollars. About one week after calling her family to borrow \$6000, Jones committed suicide.

There are millions of elderly individuals who suffer from targeted scams and fraudulent activity. Over 1.4 million mass marketing fraud attempts have occurred each year, maliciously targeting the most vulnerable segment of Canada's population.

Current Solutions

There are currently no products that are able to actually prevent fraud. There are companies that have been able to provide services such as checking seniors bills and information, however, this is a reactive approach to the issue.

There are also a few start-ups that are trying to prevent healthcare fraud. They use data science to outline healthcare bills to prevent surprises and confusion. However, there are currently no solutions to prevent scam artists from getting in touch with the senior in the first place.

Potential Solution – Telephone 'CAPTCHA' Gateway

A gateway protection software can be installed onto landlines and mobile phones. An audio message with a series of numbers and letters will be played, and the dialer will be required to type these in to prevent automated callers who are attempting to scam elderly individuals.

Seniors can also have individually assigned codes that act as a gateway protection system to block callers with malicious intentions. They can provide this code to their family, friends, and other contacts that will need to be entered when others try to call them. This will help make sure that only people in the senior's life are reaching out to them, so they are less susceptible to fraud.

THOUGHT PROCESS

FRAMEWORK

1. Map out the value chain

a. Understand everything that happens in the industry & determine the root causes for the problem in question. Steer clear of assumptions. Ensure that everything is backed up by accurate data and information.

b. Look into where the money & time is for each piece of the industry that causes inefficiencies, and the deeper pain points that lead to the development of each issue (eg. backwards disequilibrium causing falls to occur).

2. Determine what information is needed that is not available for research online.

3. Find positions and roles that will have professionals in those areas of expertise (eg. Long-term care specialists to validate root causes, seniors to discuss impact of loneliness & falls).

4. Ask open ended questions and then go deep into specific things they talk about. It's critical to also ask for numbers and data points. Validate this as well to ensure the accuracy of the data received.

Docs: [User Questions](#)

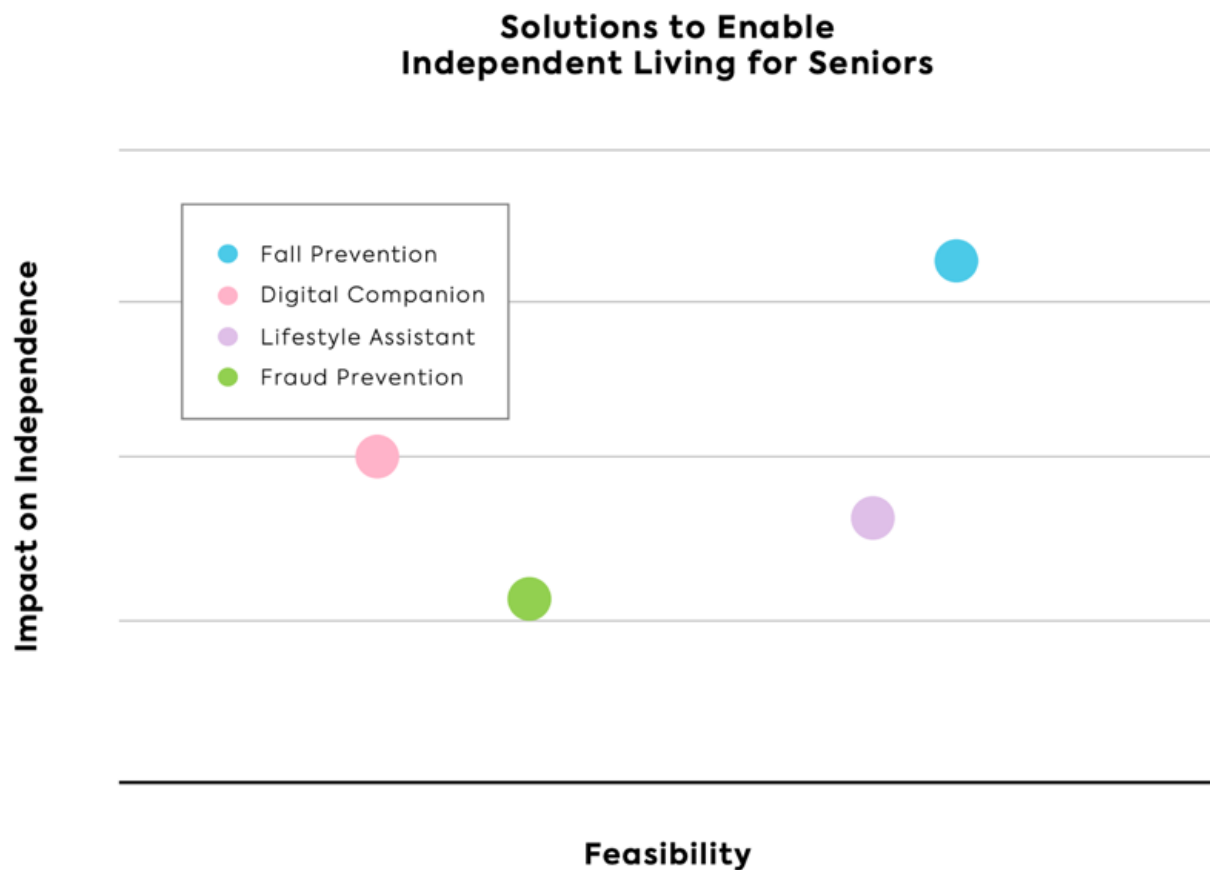
5. Identify key problem areas to focus on based on prevalence of the issue, size of the market, economic incentive, the potential for impact and how significant it is for enabling independence and mobility for older adults.

Key Problem + One Pagers
Falls – one pager
Financial Fraud – one pager

Loneliness – [one pager](#)

6. Brainstorm solutions to tackle the root causes of these problems and break down into two sections: proactive and reactive.
7. Validate these solutions in meetings to see if individuals/companies would purchase this. Iterate and implement feedback.
8. Create a scatter plot with all solutions and use feasibility and impact as key metrics.
9. Select solution as a key focus based on meetings, research and position based on metrics developed.

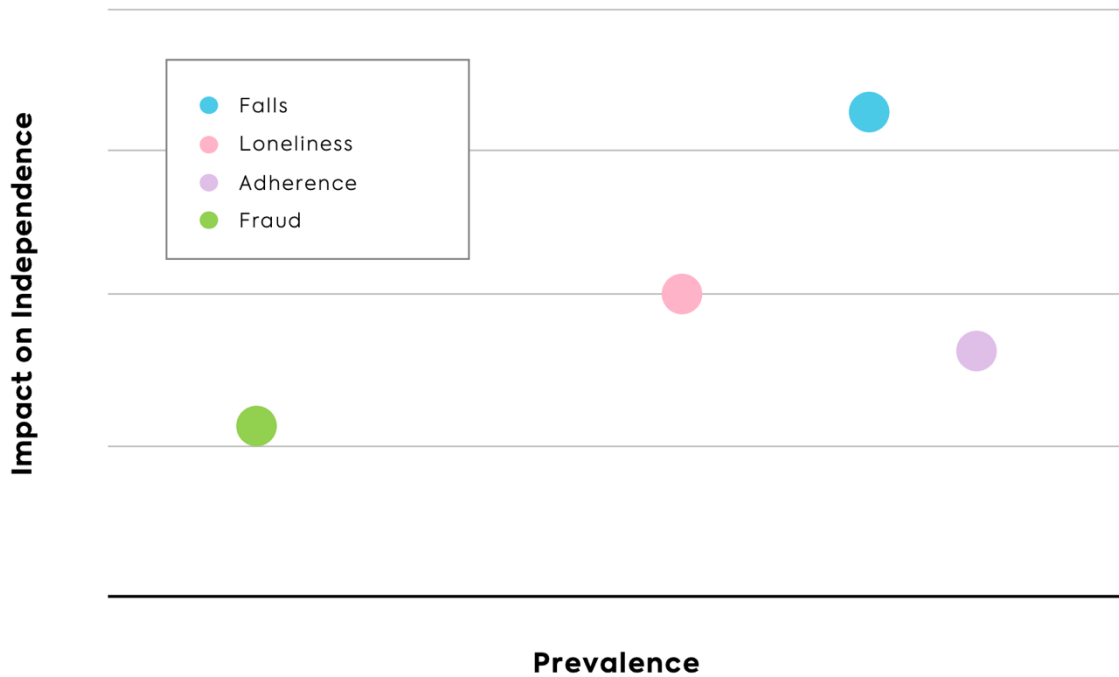
Scatterplots (8,9)



Lifestyle assistants were the most feasible solution to tackle loneliness, but due to inefficiencies of

assistant integration, the impact on independence would be rendered low. Fraud Prevention relied on many external communities to function optimally. Based on our research, using GAIT analysis for fall prevention was the most feasible with the greatest impact ability. GAIT analysis has already established its legitimacy within the athletic community, and physical safety is an inevitable worry for all older adults.

Factors Impeding Independent Living for Seniors



Through further research, we were able to determine that fall prevention maintains top prevalence to our older adult community.

Problems of Elderly Population	Prevalence	Economic Incentive
Falls	30% of seniors in Canada (nearly 2 million) experience at least 1 fall per year	Direct costs to the healthcare system total to \$2.4 billion per year. Each hospital visit due to a fall is about \$30,000
Loneliness	1.4 million elderly Canadians reported feeling lonely.	Loneliness leads to a 60% increased risk of developing dementia and other diseases,

	<p>20% of elders live alone.</p> <p>On that average, people who are over 80 years old say that they feel lonely up to 80% of the time.</p>	<p>which consequently puts increased demand on the healthcare system to offer treatment, consume more resources and offer beds. This provides incentive for governments to invest in the field.</p> <p>Elders will pay for solutions to combat this. Current robot companies like ElliQ are retailing at \$1,499USD and have received positive responses from the senior community.</p>
Fraud	<p>In 2017, there were 71,000 mass marketing fraud complains received in Canada, with a total reported dollar loss of 110 million. However, it is estimated that fewer than 5% of victims actually file a mass marketing fraud report. This means that the total amount of money lost could be in the billions</p>	<p>Elders in Canada lose over \$2 billion each year due to fraud and targeted financial abuse</p>

Further description and research on Prevalent problems in relation to their Economic incentives.