



## SOCIAL CONNECTEDNESS FELLOWSHIP PROGRAM

### **SOCIAL ISOLATION AND TECHNOLOGY:**

### HOW TECHNOLOGY CAN BE USED TO REDUCE SOCIAL ISOLATION AMONG OLDER ADULTS IN BRITISH COLUMBIA

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## EXECUTIVE SUMMARY

The social integration and participation of older citizens in society are indicators of productive and healthy aging. It is widely accepted that social, intergenerational support has a strong effect on health, societal productivity, the economy, and growth of social capital. This paper examines various technologies that are aimed to counteract and prevent social isolation among older adults, and provides policy recommendations based on research. The paper specifically addresses the older adult population in British Columbia (B.C.), Canada.

Research has demonstrated a strong correlation between social isolation and the health and wellbeing of older adults. B.C. has a growing elderly population and thus programs and policies that target them should be prioritized. Technology can be a very effective tool in reducing social isolation and enhancing connectedness, especially among senior citizens. The main ways in which technology help to expand social capital is by increasing communication and connectivity between friends, family, and caregivers. Technology also allows for and embraces an intergenerational approach to building connectedness.

There are various technologies that have been shown to impact levels of social isolation. These include mobile technologies, internet and communication technologies (ICTs), videoconferencing, digital games, mobility tools, and social networking sites (SNS). The majority of research conducted on the topic demonstrates that technologies, particularly those that enhance communication, do lead to higher levels of connectedness and decreased feelings of isolation, loneliness, and depression. However, there have been inconclusive results on the effectiveness of ICTs and SNS.

The primary barriers older adults in B.C. face when it comes to accessing technology include poverty, lack of technological infrastructure, and lack of knowledge. The paper concludes with various recommendations to help older adults overcome these challenges. It recommends that programs and policies be implemented that focus on making technology more accessible to older adults. It also suggests that technologies be specifically used to target vulnerable segments of the older adult population.

## SOCIAL ISOLATION

Research has demonstrated that social isolation leads to loneliness, depression, vulnerability, and subsequently to negative health consequences. Social isolation can be defined as a lack of quantity and quality of social contacts.<sup>1</sup> There is increasing policy recognition that the alleviation of social isolation and loneliness among older people should be prioritized.<sup>2</sup> For the purposes of this paper, a senior refers to a person over the age of 65; it is used interchangeably with the term 'elderly person' and 'older adult'.

Older adults are more susceptible to social isolation for a variety of reasons, including the loss of social ties as a result of death, relocation to different types of living and care communities, and limitations in physical and mental health. In addition, age is negatively related to network size, closeness to network members, and number of primary group ties.

The B.C. Ministry of Health defines loneliness as “subjective and... measured [by] using questions that seek perceptions of relationships, social activity, and feelings about social activity. Social isolation is objective and can be measured using observations of an individual’s social interactions and network.”<sup>3</sup> Although loneliness and isolation are related, they refer to distinct aspects of the social world of older people. Hence “the terms should not be used interchangeably to refer to a single concept.”<sup>4</sup>

There are many risk factors associated with loneliness and isolation; examples include poor health, reduced social networks, poverty, and low self-esteem. These factors have a reciprocal relationship since the impact of all factors is bilateral. Isolation among seniors is a fundamental problem, as it has implications for health in particular, which is already a growing concern for the aging population. Research shows that belonging to social groups and networks is just as important a predictor of health as are diet and exercise. In fact, “Social isolation, particularly among seniors, is a

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<sup>1</sup> Tomaka, Thompson, & Palacios, 2006

<sup>2</sup> Beacker, Sellen, Crosskey, Boscart, & Neves, 2014

<sup>3</sup> Children’s

<sup>4</sup> Victor, Scambler & Bond, 2009, 203

factor in the development of chronic illness and is as strong a factor in early death as smoking 15 cigarettes a day.”<sup>5</sup>

Over the coming years, the number of seniors in B.C. will nearly double to become almost 25% of the population, with the fastest growing segment being over the age of 85.<sup>6</sup> Immigrants compose a relatively large (28%) proportion of seniors living in B.C. Most of low-income seniors’ money is spent on housing, food, transportation, and health related costs.<sup>7</sup>

It has been noted and observed through various studies that there are multiple dimensions of vulnerability experienced by the elderly population in B.C. In 2011, the United Way published a report on the vulnerability of seniors in the Greater Vancouver area and the Sea-to-Sky corridor.<sup>8</sup> The report indicated that vulnerabilities are most concentrated in certain groups of seniors over the age of 65. The results demonstrated that groups most affected include the “oldest” women over 85 years of age, single-income seniors, visible minority seniors, aboriginal seniors, and recent immigrant seniors.

The Seniors Vulnerability Report outlines the following as areas of vulnerability among older people in the Lower Mainland region: economic insecurity, social isolation, inadequate and unaffordable housing, poor mental and physical health, inaccessible transportation and built environments, food insecurity, physical mobility limitations, marginalized identities and cultures, and barriers to multilingual communication and lack of multilingual services.<sup>9</sup>

Seniors are prone to social isolation and the risk is greater if they live alone. Statistics have demonstrated that the experience of living alone in B.C. is gendered, with 36% of senior women and 17% of senior men included in that demographic.<sup>10</sup> Living alone is also influenced by other socio-demographic factors such as age, ethnicity, immigration status, and place of residence.<sup>11</sup>

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<sup>5</sup> PlanH, 2005

<sup>6</sup> Seniors First B.C., 2017

<sup>7</sup> Ibid.

<sup>8</sup> United Way, 2011

<sup>9</sup> Ibid.

<sup>10</sup> Farrell, 2013.

<sup>11</sup> United Way, 201,28.

Social isolation among older adults is becoming more prominent as the global population undergoes a demographic transition. The 2016 Census from Statistics Canada showed the largest increase in the percentage of seniors since the first census after Canada's Confederation.<sup>12</sup> In B.C., the population of older people is also expanding, with nearly four times as many people over 65 living in B.C. today as compared to 30 years ago. According to Statistics B.C., the province will have over 1 million residents over the age of 65 by 2020.<sup>13</sup> To adapt to this demographic change, technology is being used to address new needs and the loss of capabilities of the aging population.

## **ROLE OF TECHNOLOGY IN ADDRESSING SOCIAL ISOLATION**

Technology can be a tool to manage and adapt to changing circumstances and loss of capabilities. It has great potential to support older adults in living and aging well by addressing their physical, mental, and social challenges. By providing older adults with social, stimulating, meaningful, and enjoyable activities, various technologies can enhance levels of connectedness and overall quality of life.

A 2016 study identified eight different technologies that have been applied to alleviate social isolation: general information and communication technologies (ICT), video games, robotics, personal reminder information and social management systems, asynchronous peer support chat rooms, social network sites, Telecare, and 3D virtual environments.<sup>14</sup> Findings from the study show that technologies can be used to reduce social isolation among seniors.

There are a variety of technologies that are being used to mitigate social isolation. Research has been conducted on various tools and has found a positive correlation between technology use and levels of connectedness. In addition to common ICT, video conferencing, digital games, mobility tools, and social networking are all digital instruments being used by B.C. residents.

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<sup>12</sup> Grant & Agius, 2017

<sup>13</sup> BC Stats, Ministry of Technology, Innovation and Citizens' Services, 2016

<sup>14</sup> Khosravi, Rezvani, & Wiewiora, 2016.

The underlying objective of lifelong social engagement by seniors is illustrated by technologies that facilitate communication, “for they are especially appreciated in case of people who suffer from physical and cognitive disabilities, isolation, frustration and depression.”<sup>15</sup> Communication-based technologies give older adults the ability to share their experiences on social networks, perhaps with others who have the same diseases or disabilities, and who can provide suggestions and emotional support.<sup>16</sup>

### *Multigenerational Approaches to Connectedness*

There are three primary ways in which technology fosters multigenerational approaches to connectedness. The first is that communication technologies allow families to stay connected. Often, family members are geographically separated, which makes it difficult to remain in contact. With the use of Skype, email, and other online platforms, families are able to stay in touch. Consequentially, family members of various ages strengthen their connections.

The second is that technologies encourage multigenerational learning. Youth and young adults are more knowledgeable when it comes to the use of technology, and there are many community-based programs that encourage them to teach older adults how to use computers and devices.

The third is the creation of digital legacies. By using technology to preserve memories and stories, older adults are able to share their wisdom with future generations. Through digital storytelling workshops, older adults are learning how to convey their legacy using a video. The Continuing Studies 55+ program at Simon Fraser University offers a Digital Storytelling class for students. Through the 10-week course, students identify their legacy story and create a short video. A 73-year old student in the course articulated her interest in taking it:

About 18 months ago, I started to downsize, and I started to find so much content in my house. I used to be a career coach and I always collected inspiring things. When I saw the title of the course I thought that it could be helpful for me to get rid of things. I thought to myself, how can I digitize these in a meaningful way to make a difference.

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<sup>15</sup> McColl, Lei, & Skinner, 1995

<sup>16</sup> Gamberini, Alcaniz, Barresi, Fabregat, Ibanez, & Prontu, 2006

## *Telephone*

Telephone befriending has been considered an effective low-level method to decrease loneliness among older people. In 2010, Cattan et al. evaluated the impact of telephone programs and its impact on making connections.<sup>17</sup> The purpose of this study was to assess the impact of different models of telephone-based befriending services on older people's health and well-being. The authors concluded that befriending plans provide a low-cost means for socially isolated older people to become more confident and independent. Given that finances are a significant barrier for older adults, promoting low-cost communication technologies and programs would be beneficial in B.C.

A recent study conducted by Nokia Mobile Phones concluded that a majority of older adults are ready to accept new forms of mobile communication service. More importantly, the study indicated that “the ease of use and actual need of the services are important criteria for older adults when it comes to mobile technologies.”<sup>18</sup> With this in mind, age-friendly cell phones with large texts and easy-to-see icons are recommended.

## *Internet Communication Technologies (ICTs)*

General ICTs, or computer and Internet use, provide new ways of communication that are accessible to all individuals and assist in overcoming obstacles to social interaction among seniors.<sup>19</sup> Evidence indicates that ICTs have the potential to prevent or reduce the social isolation of elderly people through various means. In recent years, older Canadians have increased their Internet usage and are closing the gap with younger Canadians. In 2010, 29% of people age 75 and over and 60% of those 65 to 74 had used the Internet in the previous month, while Internet use among those age 15 to 24 was almost universal.<sup>20</sup>

In 2007, Statistics Canada published a report, “Online Activities of Canadian Boomers and Seniors.” The findings demonstrated that from 2000 to 2007, seniors were the fastest growing group of users. Ninety percent of the seniors who responded to this survey indicated that they use the Internet for

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<sup>17</sup> Cattan, Kime, & Bagnall, 2011

<sup>18</sup> Mikkonen, Vayrynen, Ikonen, & Heikkila, 2002

<sup>19</sup> Khosravi, Rezvani, & Wiewiora, 2016

<sup>20</sup> Allen, 2013

email at home.<sup>21</sup> Over half of the seniors who responded indicated that they use it to check weather and road conditions, and 52% indicated that they use it to read the news.<sup>22</sup>

There is a strong division within the literature as to whether the Internet leads to greater communication and information exchange between people, and thus encouraging social connectivity and reducing social isolation. On the other hand, there is data that supports the fact that the use of ICTs leads to isolation in that it reduces social activity and therefore threatens the social fabric.<sup>23</sup> Echoing this dual effect of ICTs on levels of isolation, one B.C. senior expressed her concern: “Using technology can be both good and bad for seniors. It is helpful for seniors to know how to use technology so that they can research and stay connected to friends. But it is also easy for seniors to get sucked into their devices and become even more isolated.”

Researchers have found that the amount of time older adults spend online can influence levels of social cohesion. Sum et al. concluded that using computers and the Internet to communicate with friends alleviated elderly people’s social loneliness, but heavy usage over long durations made it worse.<sup>24</sup>

A 2016 literature review looked specifically at information and communication technologies and their impact on social connectedness.<sup>25</sup> Researchers found that ICT use consistently affected social support, social connectedness, and social isolation in a generally positive manner. Interestingly, this positive outcome was often short lived, on average lasting less than six months. A possible explanation for the short-term effect is that the use of ICTs is voluntary. It is likely that older adults resorted to their prior habits of not using ICTs because either they were too challenging or not interesting enough to be made into a regular habit.

In 2013, Cotten et al. conducted a study on how Internet use affects perceived social isolation and loneliness of older adults in assisted and independent living communities.<sup>26</sup> They found that going

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<sup>21</sup> Timusk & Veenhof, 2007

<sup>22</sup> Ibid.

<sup>23</sup> Mellor, Firth, & Moore, 2008

<sup>24</sup> Sum, Mathews, Hughes, & Campbell, 2008

<sup>25</sup> Chen & Schulz, 2016

<sup>26</sup> Cotten, Anderson, & Mccullough, 2013

online was associated with a decrease in levels of loneliness, but that online activity was not associated with perceived social isolation. The researchers concluded that using the Internet may be beneficial for decreasing loneliness and increasing social contact among older adults in assisted and independent living communities.

The Internet affords numerous opportunities for individuals of all ages to communicate, access information, and engage in recreational activities. In 2011, Erickson and Johnson conducted a survey examining the correlation between the frequency and patterns of Internet use, levels of wellbeing and demographics.<sup>27</sup> The researchers found that Internet use and self-efficacy remained significantly related. Among the sample of older adults, individuals who used the Internet more had higher perceptions of self-efficacy than those who used the Internet rarely or not at all.

Whether Internet use increases or decreases social isolation is not clear. Although much research has shown Internet use to be beneficial in terms of reducing social isolation and loneliness, other research has found it to be of little or no benefit. To address this discrepancy, more research should be conducted on the effectiveness of ICTs.

### *Video Conferencing*

While most older adults prefer face-to-face interaction, geographic and mobility barriers often prevent such interactions from occurring regularly. Video conferencing technologies, such as FaceTime or Skype, have demonstrated the ability to enhance levels of connectedness. Tsai et al. conducted a study and found that only five minutes of weekly video conferencing interaction with family over three months “alleviated depressive symptoms and loneliness for nursing home residents, as compared to a control group, over a period of a year.”<sup>28</sup> In a similar study, researchers found that video conference programs have a long-term effect in alleviating depressive symptoms and loneliness for elderly residents in nursing homes.<sup>29</sup>

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<sup>27</sup> Erickson & Johnson, 2011

<sup>28</sup> Tsai & Tsai, 2011

<sup>29</sup> Tsai, Tsai, Wang, Chang, & Chu, 2010

## *Digital Games*

Studies have shown playing games can improve cognitive activity and facilitate successful aging in several domains, including sociability and connectedness. In 2007, 36% of Canadian seniors (65+) played games compared to 27% of those in the baby boomer generation (aged 45-64 at the time of the survey).<sup>30</sup> Perhaps with more free time, seniors are able to use technology for pleasure. With over one-third of Canadian seniors playing games online, these technologies become useful tools to mitigate isolation and promote successful and healthy aging.

Eldergames, an EU-funded initiative, developed electronic games using advanced visualization and interaction interfaces, with the goal of improving the cognitive, functional, and social skills of older adults.<sup>31</sup> Researchers found that the cognitive and mental capacity of the older adults improved and their social capital expanded. Similar research on digital games was conducted in B.C. Kaufman et al. found empirical evidence suggesting that digital gameplay can enhance social interaction and improve cognition for older adults.<sup>32</sup> More importantly, digital gameplay has socio-emotional benefits. Significant associations were found between player skill level and reported benefits.<sup>33</sup> It was concluded that digital gameplay also provides a venue for developing social capital that strengthens strong social ties, both online and offline.<sup>34</sup>

Schell et al. conducted a study on the effects on older adults of playing in a Wii Bowling tournament. Participants were recruited from 14 independent living centres, assisted living centres, and senior recreation centres in greater Vancouver. Results showed that players' levels of social connectedness increased and loneliness declined over an 8-week period.<sup>35</sup> Qualitative results described participants' positive perceptions of their interactions with others, conversations with family and friends, social connections, and the team experience.<sup>36</sup>

When played with others, games can offer a venue for meeting other people, creating personal connections, and alleviating loneliness. Bowling is a game with which many older adults are familiar,

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<sup>30</sup> Timusk & Veenhof, 2007

<sup>31</sup> Gamberini, Alcaniz, Barresi, Fabregat, Ibanez, & Prontu, 2006

<sup>32</sup> Kaufman, Sauve, Renaud, Sixsmith, & Mortenson, 2016

<sup>33</sup> Ibid.

<sup>34</sup> Ibid.

<sup>35</sup> Schell, Hausknecht, Zhang, & Kaufman, 2015

<sup>36</sup> Ibid.

and thus it is possible that part of the positive reaction to the games initially was sparked by familiarity with the activity. Often the initial introduction of digital games to this demographic is easier when they are familiar with the content, since they can use their prior knowledge in learning the system.<sup>37</sup>

### ***Mobility Tools***

Technology, such as ICTs and video conferencing, can be used to help older adults overcome mobility challenges that come with aging and stay better connected. More recently, technology has been used to identify various transportation routes to make it easier for seniors to transport themselves and stay in touch with their community. The Capital Regional District (CRD) of Victoria recently developed an online tool called the Community Map.<sup>38</sup> Shannon Clarke, the Healthy Communities Planner at the CRD, articulated that “the intention of the map is to help mitigate senior social isolation by breaking down two barriers of being socially isolated: (1) transportation options to get people to where they want to go and (2) knowledge of places that are available to socially connect with others.”<sup>39</sup>

The first version of the map located places where seniors can be social, such as community centres and parks. The map also included affordable transport routes, such as public transit and regional trails. The second version of the map included census data for planners and facilitators so they would have more information, and the newest version has community data and a wider range of resources for all ages to create an intergenerational platform. The map currently includes education facilities, bike routes, and a wide range of population data, among other resources.

### ***Social Media***

Social networking sites (SNS), such as Facebook and Twitter, assist in building and maintaining social relationships and have been found to be essential in contributing to the wellbeing of seniors. Impaired mobility or geographical distance from family members may cause loneliness among

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<sup>37</sup> Schell, Hausknecht, Zhang, & Kaufman, 2015

<sup>38</sup> CRD Community Map

<sup>39</sup> Clarke, 2017

seniors. SNS have the capacity to overcome these obstacles by allowing seniors to maintain involvement with their family or friend networks, despite their immobility or distance from them.

It has been argued that SNS have the potential to reduce loneliness among seniors.<sup>40</sup> With a considerable amount of older adults living alone in B.C., social media provides the possibility to engage in meaningful social contact. The results from a literature review conducted by Leist in 2013 demonstrate that social media is extremely beneficial when older adults need support in dealing with a challenging life event. Research has also confirmed that social media can be used to advance health-related knowledge such as information on prevention of common diseases among older adults and treatment of specific conditions and disorders.

This mode of communication may be unfamiliar to those older adults who have not been introduced to it at their workplace or by friends or family members, but it does offer an incredibly rich variety of options. SNS can keep users engaged, stimulated, and learning as they continue to age.<sup>41</sup>

Similar to the effectiveness of ICTs at reducing social isolation, there is some uncertainty around the impact SNS can have on levels of connectedness among older adults. Aarts et al. studied this question and found that for the participants (members of the Dutch population), SNS usage was unrelated to loneliness and/or mental health.<sup>42</sup> However, it remains unknown whether this result applies more broadly. One possible reason for the lack of impact is that older individuals might not be aware of the fact that SNS could complement their relationships by providing a platform for communication between family, friends, and acquaintances.<sup>43</sup> Since the technology is newer, older adults may lack the experience using it, which in turn is reflected in their usage and overall interaction online.

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<sup>40</sup> Leist, 2013

<sup>41</sup> Finn

<sup>42</sup> Aarts, Peek, Wouters, & M, 2015

<sup>43</sup> Ibid.

## BARRIERS

The main barriers older adults in B.C. face when it comes to technology include poverty, lack of access to a broadband connection, absence of training and support, and fear of technology. In terms of poverty, B.C. has the highest rate of senior poverty in Canada, a rate which doubled from 2000 to 2014.<sup>44</sup> As a result, income has been identified as one of the biggest obstacles to accessing technology. The costs associated with a computer, Internet access, and even telephone services are not affordable for some seniors.

While older citizens may have the financial means to afford technologies, like a mobile phone, the infrastructure may not be available. Citizens in Northern B.C. are often disadvantaged when it comes to technology as there is a lack of cell towers and poor bandwidth, resulting in limited use and communication.

Many older adults struggle with digital literacy and remain uncomfortable using certain technologies. While community and senior centres do offer introductory computer and technology courses for older adults, they are often expensive or inaccessible to the most vulnerable populations. Andrea MacDonald, a computer trainer for seniors in Vancouver, has found that her students, before attending training, often receive little to no help when it comes to using their devices. If they do receive help from their family members, they are often receiving the wrong type of help. She recommends that technology training courses should primarily focus on the basic use of the device, simple social networking applications, online privacy control, and fraud prevention.

While older adults may not be technophobic, some may simply lack confidence when it comes to using technology. Marquié compared levels of knowledge and confidence between older adults and younger adults.<sup>45</sup> The results of the study demonstrated that under-confidence in technological abilities among older adults is one possible source of the difficulties that they may encounter in

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<sup>44</sup> Pitman, 2017

<sup>45</sup> Marquié, Jourdan-Boddaert, & Huet, 2002

learning new computer technologies. This lack of knowledge often translates into a lack of confidence in using technologies, and thus limited use. To address this challenge, more affordable technology classes should be made available.

Older adults are also very susceptible to fraud and online hacking. As a result, many older adults fear using technology after hearing stories about fraud and privacy hacks.<sup>46</sup> This sense of fear was articulated by an older woman who uses a variety of technologies: “I use technology to play games, for email, to make videos. I don’t do online shopping or online banking because I am very suspicious of hacking. So I think the fear of hacking limits the stuff that I tend to do.”

## Recommendations

### *Increase Access & Knowledge*

#### Expand Infrastructure

In the north and interior of B.C., the lack of infrastructure has limited access to technologies. Citizens in rural B.C. experience problems with connectivity and service due to the limited range of cell towers and low bandwidth. For example, cloud-based software is not practical in remote areas in B.C., as there is often limited access to Wi-Fi. It is of the utmost importance that infrastructure be expanded in these rural areas of B.C. so that individuals can have access to cell reception and the Internet. Once the infrastructure is in place, programs can be implemented to enhance connectivity within and between rural communities in the province.

#### Remove Financial Barriers

Subsidies should be more available to seniors to access basic methods of communication. Once they have access to technologies and devices, such as a mobile phone, they can access a variety of services and applications that reduce social isolation.

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<sup>46</sup> MacDonald, 2017

Local senior and community centres should offer a technology recycling program, where individuals can drop off their used devices. Older members of the community can then purchase these second-hand devices at a low cost. The proceeds generated from this program can then be invested into expanding the technology education program for older adults. For this program to succeed, the centres will need to advertize to all members of the community and provide incentives for donors. While the used phones, tablets, and laptops could be given to older adults for free, depending on the community and average level of income, older adults who can afford the discounted price should be encouraged to pay as it reinforces their level of independence. Maintenance of independence in later life has been associated with greater levels of social capital and stronger social networks.<sup>47</sup>

#### [Offer Opportunities to Learn](#)

More programs centered around using technology should be implemented. The need for extra supports for learning and use of technology in institutional settings has been identified. Beyond the institutional setting, informal community based programs aimed specifically at teaching older adults how to use new technologies should be pursued and implemented.

Fisk et al. conducted several focus groups with elderly people and found that more than 50% of problems reported by participants in using technological tools related to usability and 28% of these problems could be solved by providing training.<sup>48</sup> Governments and policy-makers should consider financial support for implementing new technologies and increasing ICT literacy among seniors.

#### ***Target Specific Populations***

##### [Older Women](#)

Roughly one-third of all senior women in B.C. live alone, and women over the age of 85, especially widows, compose one of the most vulnerable population groups.<sup>49</sup> Educational programs geared specifically towards older women could be highly beneficial. Introducing mobile technology and ICTs to this vulnerable population could help reduce the isolation they experience.

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<sup>47</sup> Keating, Swindle, & Foster, 2004

<sup>48</sup> Fisk, 2009

<sup>49</sup> United Way, 2011

### Indigenous Populations

Social isolation is a significant problem for Indigenous communities in Canada. When engaging them in any initiative, it is important to identify their definition of social and emotional health and wellbeing. Definitions may involve strengthening identity and cultivating connections to land and community. Applications and digital tools that focus on how Indigenous elders can share knowledge could help build social connectedness within and across communities.

### Recent Immigrants

Some online tools and resources cater to the immigrant population. For example, the B.C. Senior's Guide is offered in English, French, Chinese, and Punjabi.<sup>50</sup> Online tools should be made available in multiple languages for recent immigrants, who may have limited English communication skills. In addition to offering content in various languages, online resources and applications should include less text and more icons and larger images. By doing so, apps and digital tools become more accessible to individuals with a language barrier and those with poor eyesight.

The Mosaic Senior's Club, in partnership with Immigration, Refugee & Citizenship Canada, the Ministry of Jobs, Tourism & Skills Training, the United Way, the City of Vancouver, and the City of Burnaby, has developed a program that encourages participants to make new friends, learn new skills, and join community events.<sup>51</sup> The program offers English Conversation Circles for immigrant seniors to practice everyday communication in a friendly setting. Given that mobility and transportation is a recognized challenge for many senior citizens, online social clubs could be established using tools such as video conferencing to create a digital conversation circle involving immigrant seniors who cannot attend physical meetings.

### ***Age-friendly Apps***

More communication technologies specifically geared towards older adults should be developed — in particular, digital games that improve cognitive functions and promote collaborative online interactions. Fisk et al. concluded that more than 50% of problems reported by older adult

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<sup>50</sup> SeniorsBC.ca, 2017

<sup>51</sup> Seniors, 2017

participants in using technological tools are related to usability.<sup>52</sup> The results further demonstrated that the problems could be solved by improving design (25%). Thus, applications should provide multiple options for communication, including through video, photos, and audio, and not necessarily require seniors to type. Rather than text-based instructions, applications should use more icons and graphics.<sup>53</sup> This will not only make the application accessible to those who do not speak English, but will also accommodate those with mental impairments.

While new applications specifically aimed at seniors and their caregivers are gaining more traction, Baecker et al. found that “expressions of personhood through alternate interaction techniques and tangible interfaces based on real-world objects and practices were more popular for older adults.”<sup>54</sup> Games and applications should build on activities with which older adults are already familiar — for example, playing bingo online. Games that are familiar can be digitized and thus have a reduced learning curve. Similarly, taking photographs is something older adults are familiar with and can be an entry point for seniors to using technology. One senior in their 70s articulated that the camera on the iPhone is one of the best features:

But the most instant thing is the cell phone. I just love how instant it is. When I had a surgery I was able to take a picture of the flowers my daughter sent me and text that picture to her. It just takes communication to another level when you can add pictures. It’s an instant connection. So if people are good at taking pictures then they can decide how to share.

### *More Research*

Research should identify who among elderly people can benefit most from ICT use in terms of reducing social isolation. As populations continue to age, more surveys and focus groups should be conducted to identify the role of technology and the need for new programs and policy. The research should also be applied in a practical manner for older adults and their caregivers. One way of achieving this would be through the development of a technology-centred guide, including the best technologies, applications, and digital programs for B.C. seniors, covering specific needs in various economic brackets.

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<sup>52</sup> Fisk, 2009

<sup>53</sup> Baecker, Sellen, Crosskey, Boscart, & Neves, 2014

<sup>54</sup> Ibid.

## CONCLUSION

As demonstrated by various studies, there are a variety of ways in which technology can be adapted to target older adults. The primary concern for policy and program developers, including health care providers and governments, should be increasing access. Once older adults have access to devices, they are able to engage digitally and increase their social capital. However, efforts need to be made to reduce the financial and physical barriers to access and the development of age-friendly applications should be prioritized. In urban areas of B.C. where access to technology is not a barrier, educational support should be provided. As seniors become more comfortable with technology, they are better able to reap the benefits and tap into more online resources.

Loneliness and social isolation have a direct and negative impact on seniors' health and their quality of life. As the older adult population in B.C. continues to grow, it is critical that technologies be utilized to improve their lives. By introducing different technology-based applications, programs, and policies targeting older adults, it is possible to reduce feelings of isolation, loneliness, and alienation. This will also help to create healthier, more productive, and age-friendly communities.

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