Understanding Older Adults' Long-term Financial Practices: Challenges & Opportunities for Design

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Abstract
As older adults (OAs) approach retirement, their financial management requirements change as they shift from income to pension or other assets. However, existing interactive budgeting apps neither support this transition, nor facilitate long-term financial planning. Our research aims to understand OAs' technological, educational, and behavioural barriers toward the adoption of budgeting applications. It also aims to uncover the design requirements for long-term financial planning apps that would overcome these adoption barriers. For this, we conducted a contextual inquiry to understand seniors' financial management practices. In-depth qualitative data collected both from individual sessions and participatory design activities has revealed significant gaps between the capabilities of existing apps; the best practices around long-term planning; and the attitudes and behaviours of OAs. We present here an argument, based on the preliminary analysis of the field data, for approaching the design of senior-centred interactive budgeting apps from a behavioural change and educational perspective.

ACM Classification Keywords
H.5.2 User Interfaces; J.4 Social and Behavioral Sciences: Economics

Authors' Keywords
Older adults; Financial planning

Introduction and Motivation

Older adults (OAs) face several long-term planning decisions during retirement. Among these, financial decisions are likely to be one of the most critical. Even within the contexts of strong social safety nets such as those found in countries like Canada, seniors (see Text 1) are expressing significant concerns about their retirement security [9]. This is prevalent even if OAs are proactively taking measures to improve the outcomes and quality of life in retirement [5].

Planning for the financial aspects of retired life may be more difficult than other life decisions. This is due to the complex factors that affect the financial planning *going into* retirement, such as accounting for variations in income, interest rates, investment returns, contributions to defined benefit pension plans, or government-provided pensions [11]. However, seniors encounter additional challenges with respect to long term financial planning once they retire. Households plan their wealth accumulation, savings, and consumption behaviour over their life-cycle in a manner which ensures that their consumption levels are approximately the same across each period [7]. Once they retire, households finance their expenses through decumulation (converting assets) or dissaving (spending the savings). However, retirees are dissaving and decumulating at a much lower rate than needed or afforded [6], reducing spending overly aggressive as proportionate of the available income [12].

Research in behavioural economics suggests that such changes are due to OAs increased difficulty in managing their financial plans and economic risks, even if otherwise they plan well for other life events [3], often caused by decline in cognitive ability leading to inability to make complex decumulation decisions [2], uncertainty of medical expenses [8], struggle to imagine future scenarios [10], or estimation of future events based on current emotional state [14].This can result in seniors altering their consumption behaviour due to precautionary measures.

We acknowledge that there is a significant debate on the appropriate term to describe such a broad user group. In this work, we interchangeably use the terms "older adults" and "seniors", as our participants referred to themselves by either of these two terms. It should be noted that, where we are located, the term "senior" is the most commonly used to denote "older adults" without a more specific age definition, including by the relevant funding agency and government ministry that supports our work.

Text 1: Terminology.

Supporting Long-term Financial Planning

The research surveyed in the previous sections brings to light evidence that OAs, shortly before or once retired, have significant difficulty budgeting for long-term expenses and factoring external risks into their financial planning. For this, we aim to create design solutions which incorporates seniors' current budgeting practices to help them extend their current plan so they can dissave or decumulate their wealth at a rate which allows them to maintain their current standard of living. In particular, our aim is to design visualization tools which will help OAs assess idiosyncratic risks (e.g. interest rates, taxes) as well as systemic risks (medical, personal), when they create a long-term budget.

In this paper we present preliminary findings of a field study aimed at understanding older adults budgeting needs, and at collecting requirements for the design of tools helping older adults manage a long-term budget.

Methodology

The aim of the study was to first understand how seniors' plan and manage their short-term and long-term budget in order to design applications which will facilitate their financial goals. The research is divided into two phases (with an ongoing follow-up). The first phase (interviews and contextual inquiries) gathered qualitative data about how seniors planned and manage their finances. During the second stage of the study, we held envisionment workshops (loosely following participatory design (PD) – individual and as groups),

Participant	Gender	Highest Level of Education	Job pre-retirement	Financial Literacy	Age	Budgeting Tool
1	Male	High School	Gardner	18.5	60	Mental
2	Male	High School	Concierge	14.5	60	Mobile Banking App
3	Male	Graduate Degree	Teacher	14.5	73	Mental
4	Male	Undergraduate Degree	Teacher	15.5	72	Spreadsheet and envelopes
5	Female	Graduate Degree	Physical Therapist	14.5	67	Diary
6	Female	Vocational Training	Account Manager	16.5	63	Spreadsheet
7	Male	Ph.D	Professor	11.5	60	Budgeting Software for Desktop
8	Female	Undergraduate Degree	Teacher	11.5	72	Chequebook
9	Female	Undergraduate Degree	Customer Service	11	65	Diary
10	Male	High School	Taxi Driver	19	68	Mental

Table 1: Participant demographic data and choice of everyday budgeting tools.

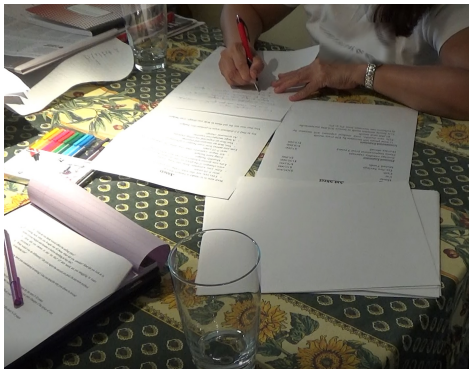

Figure 1: Participant working on provided activity and questionnaire, aimed at understanding their current financial practices.

focusing on how seniors visualize financial planning. We provided the seniors with fictitious scenarios and asked them to find solutions to the problems by indicating what is needed from a budgeting tool. The PD sessions follow the methodology employed in similar studies [1,13] of seniors designing apps for life planning.

Our study was anchored in theories from economics, mainly that of the lifecycle model [4], which has informed our development of the study's instruments which aimed to expose seniors' attitudes and practices with respect to exogenous and endogenous budget events. Seniors were asked to disclose how they finance their retirement expenditures and debts using their income stream or assets (short and long term). We provided seniors with scenarios based on this. We also aimed to determine how seniors plan for systematic and idiosyncratic risks, for which we asked them to solve hypothetical scenarios about planning anticipated and unexpected expenses (from holidays to increases in phone bills and to decline in health). We then invited the same seniors to attend a group workshop, focused on envisioning designs for apps that help visualize a financial plan for unanticipated expenses and risks. We provided scenarios based on their problems which were revealed during the first phase: managing daily and monthly budgets, planning for one-time expenses, and planning for risks.

Participants

Ten seniors between the ages of 60 and 73 were recruited for the study. Recruitment was conducted through publicly-posted flyers around community places (gyms, libraries, etc.) and through snowball sampling. The study was deemed low-risk and approved by our university's Research Ethics Board. Participants had a diverse educational background, financial ability and use various tools to manage their budget. A summary of this can be found in Table 1. Furthermore, the participants came from a wide range of cultural backgrounds which affect their budgeting practices.

Results

The first phase of the study involved understanding of the differences between participants' long-term and short-term budget (Figure 1). The income, assets and debts which the participants chose for their retirement (Table 1) were influenced by their desired lifestyle, attitude towards budgeting, and availability of government-funded universal pension and healthcare. To find HCI solutions that help OAs manage their finances, we need to understand their current budgeting practices and attitude towards their finances. For this, we present here a preliminary structured analysis of qualitative data collected from interviews, inquiry sessions, scenarios, and envisionment exercises. We reflect on design implications for each of the key findings stemming from this analysis.

Budgeting Practices: Behaviour and Attitude

Discount rate

One of the key elements of economic analysis involves deciphering an individual's discount rate in order to determine how they make choices. The discount rate refers to how seniors value their present life style against their future lifestyle with respect to making borrowing vs. savings decision. For instance, P1 stated that he is "after the lifestyle" therefore they would rather enjoy leisure activities instead of working longer hours to save for retirement. Similarly, P9 stated that "I want to enjoy my life, I spent my whole youth worrying about money" and is therefore willing to use an overdraft on a monthly basis to finance her expenses. In contrast, P4, who values his future chose to move

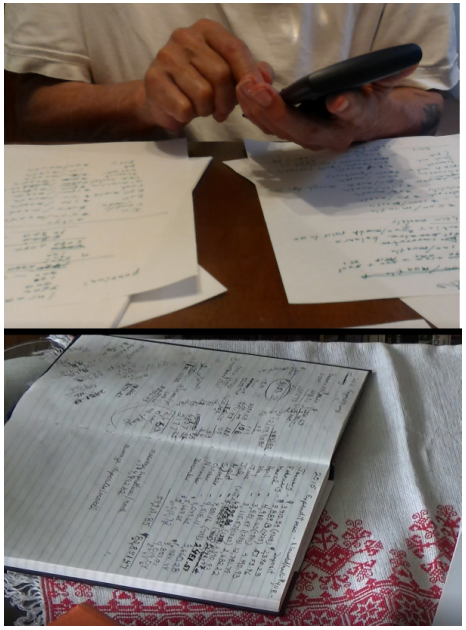

Figure 2: Participants engage in hypothetical scenarios about dealing with unexpected expenses in the future. Most of them opted to use pen and paper, and engaged in elaborate calculations to accommodate expenses into their regular budgets (instead of extracting liquidity from assets as suggested by the economic theory of the consumption lifecycle [4]).

houses to a ground-level one because he realized that his "parents were having difficulty getting up the stairs and ... geez one day I might have trouble". P2 value his family's happiness and therefore willing to take a $6000 high-interest debt (trading off his future income) to alleviate their struggles.

A mobile app or software that helps seniors manage their retirement budget needs to take into account their preferences to help smooth their consumption during retirement. The tool must nudge the senior to make decisions which will help maintain their lifestyle, and help pick the financial instruments which will facilitate their preferences, for example help family members, but help make decisions which bring financial stability.

Perception of Risk

We presented the participants with various scenarios Figure 2 where they faced unexpected expenses. These were a combination of systematic risks, such as an increase in medical expenses, as well as increase idiosyncratic risks, such as rising inflation. However, almost all participants struggled to imagine a scenario where they would have to plan for such risks. The three most expensive shocks that they could conceive were related to a loss in income, an increase in medical expenses or the need to change their living conditions. The scenarios that we presented, such as an unexpected increase in the phone bill, seemed unrealistic therefore the seniors struggled to formulate a strategy. According to P4, "our budgets are pretty consistent they don't change much, you know. Accounting for big, big, changes is unnecessary".

The seniors' inability to strategize is related to living in a welfare state. They couldn't imagine a realistic scenario that would require planning for a medical expense or for housing-related expenses (P7: the government will not "throw a bunch of old people out onto the streets."). Additionally, most seniors expressed confidence in the government's economic caretaker role ("the Canadian economy is very stable") therefore they didn't need to plan for idiosyncratic risks. This resulted in participants not perceiving the value of visualizing risks: "this is too much information, I don't see the value of adding this to a spreadsheet" (P6). Therefore, budgeting apps should help seniors plan for long-term by presenting clear and convincing strategies on how they should decumulate in order achieve consumption smoothing when they face risks.

However, participants' attitudes changed when presented with a concrete scenario of managing an unexpected expense. All participants agreed that they needed to cut discretionary expenses, and some even suggested reducing essential ones (e.g. groceries), but not activities that have a perceived value. P2: "hockey, I don't consider that a vice because I'm 60 and in great shape". As such, budgeting tools must allow seniors to define the expenses that they can change.

Struggles

Although 4 participants stated that they don't struggle with any aspect of planning and managing their regular budget, all four female participants in our sample did. "It's really hard [...] to have to keep my monthly budget balanced, and if I don't then at the end of the year I could be really messed up" (P5). However, this "day to day [...] makes me tired [and worried]" (P8). Tools which are designed to help seniors with their finances need to address this issue, but not overload what seniors already handle well, e.g. shopping. All participants knew how much they spend shopping: "I am aware of [my limit], I don't need to be told or

reminded" (P2). In order to alleviate such stress, apps need to help seniors easily adjust their budget with respect to granularity of details and controls.

Reliance on Pension

During our study it became clear that living in a country with universal pensions influenced our participants in how risk items are dealt with: not by liquidating assets but by paying off unexpected expenses through daily/monthly budget adjustments. "If you're in a mess like that, you have to put it on your credit card and give as much as you can and as fast as you can, that's all you could do" (P8), or just "tighten the belt" (P3, P4). They did not see a need to sell assets to manage unexpected situations unless it's really a catastrophic event (P6), although this will not involve assets of sentimental value (P2). These were specific for our participants who relied on monthly pension payments instead of dissaving. Therefore, when designing HCI solutions to seniors' budgeting problems, we can't rely on economic theory when seniors perceive their pension as a source of steady income as they do not change their budgeting practices after retiring.

Requirements for Seniors' Budgeting Apps

In the second phase of our study we presented seniors with examples of mobile budgeting apps that are available in the market (namely: Mint, Mvelopes and Fudget), to more explicitly refine our design requirements. Our participants' initial reaction was that they don't need a mobile app to budget.

As shown in Table 1, each participant uses their own tools to manage and plan their budget. They reported spending a substantial and elaborate amount of time updating their expenses as they occur and readjusting their monthly and yearly budget as they face unexpected expenses. None of the tools employed by our participants allowed for long-term trend analysis. After engaging in critiques and discussions of current budgeting apps, participants realized the value of features such as trend analysis. "The only thing I really see of value in the graphical is looking for exceptions. If this kind of pattern repeats month after month, there is no real information for me here" (P3). However, they were critical of the perceived intrusiveness of current apps with respect to dictating spending and restricting their decision-making. On the other hand, during the focus group, participants agreed that the app should adapt to unexpected expenses so they can "tighten their belt" for the rest of the month – "just like Google Maps, if you change directions it recalibrates" (P6).

This revealed a gap in seniors' financial capability. Financial apps need an educational component that teaches seniors' how to choose financial tools that fit their budget and how to create contingency plans. Currently, seniors choose the cheapest debt, i.e. the one with the lowest payments per month, rather than the products that fits their needs. They view debt as an expense item on their budget. This was evident when the seniors were presented with a scenario where a friends comes to stay with them for a week and they accrue an extra $1000 worth of expenses. P4's solution was to send the friend to a food bank as he couldn't imagine altering his strict budget. Even though he planned for a contingency, he couldn't re-adjust his budget. Other participants chose to pay the amount using a credit card and pay off the debt over time by reducing the expenses in other categories.

Discussion and Conclusions

The inquiry and participatory design / critique sessions we have conducted with ten older adults revealed that

several of the economic-based theories of decumulation for seniors did not apply to our participants. This is due in part to where seniors live (Canada, hence the perception of financial safety), resulting in a deferential attitude toward managing long-term financial risks in retirement. The consequence of this is that, as evidenced by the activities we conducted with participants, seniors do not plan for the mitigation of long-term risks beyond simply absorbing any potential costs after they occur by folding these into monthly budgets. Instead, the expectations from the lifecycle model would be to adjust long-term expenses as well as factoring such risks a priori through financial instruments.

We believe this presents a significant opportunity for HCI research to address the lack of long-term budgeting support tools for seniors, particularly in countries with a strong social safety net. This opportunity stems from the behaviour of seniors observed in our studies, as well as their lack of awareness (education) about long-term financial risks. We argue that HCI is well suited to tackle this problem, as it did for problems that are similar in requiring behavioural and educational interventions (e.g. personal health). The preliminary design requirements we have suggested here, grounded in the early analysis of our ongoing study, can serve as a starting point for fulfilling this opportunity.

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