



Engaging with community organizations to recruit and retain vulnerable adults: The Pathways Study

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1. Introduction

Longitudinal studies of people living in conditions of vulnerability (i.e., when an individual exposed to a risk, shock, or stress lacks the capacity or resources to cope with the situation (Chambers, 1989)) are vital to increasing understanding of the economic, social, and environmental determinants of health inequalities. Despite that, the internal and external validity of these studies is often compromised by barriers to recruiting and retaining participants (Nicholson, Schwirian, & Groner, 2015; Nicholson et al., 2011; UyBico, Pavel, & Gross, 2007). The recruitment barriers pertain to both the difficulty in accessing hard-to-reach populations and the idiosyncratic characteristics of potential participants (Bonevski et al., 2014).

While community outreach, snowball techniques and partnering with community organizations are commonly used to access and contact potential participants, they are time-consuming and costly (Bonevski et al., 2014). Recruiting participants through community organizations is useful when members of the group targeted are naturally drawn to the organization. Yet these organizations often lack human resources and time, which limits their capacity to assist in the research process (Grape, Rhee, Wicks, Tumieli-Berhalter, & Sloand, 2018; Leach, Schoenberg, &

Hatcher, 2011; Meyer et al., 2018).

The recruitment barriers related to the characteristics of potential participants such as fear of being exposed or stigmatized, challenges in understanding the study's purpose, cultural beliefs about and mistrust of research, low literacy and communication skills, and the perception that the research would not benefit the individual or community (Bonevski et al., 2014; Nicholson et al., 2015; Sharpe, Stucker, Wilcox, Liese, & Bell, 2021; Yancey, Ortega, & Kumanyika, 2006). In addition, people living in conditions of vulnerability often have transportation issues, limited time, and lack of childcare (Bonevski et al., 2014). The participant-related barriers to retention include difficulty maintaining regular contact during follow-up due to frequent changes in telephone numbers and addresses.

Recent reviews underscore that combining recruitment strategies (e.g., advertising campaigns, community outreach, recruitment through the health-care system, referrals) that are tailored to the targeted groups might be helpful (Abshire et al., 2017; Bonevski et al., 2014; UyBico et al., 2007). Most of the studies included in these reviews, however, pertain to clinical (not population-based) settings, and they do not report costs associated with recruitment or retention of participants in hard-to-reach groups.

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One interesting approach that combines multiple recruitment and retention strategies is the Tailored Panel Management (TPM) (Estrada, Woodcock, & Schultz, 2014). According to TPM, participation in longitudinal studies depends on four interrelated dimensions: study credibility, consistency of the follow-up plan, regular communication between research team members and study participants, and financial compensation of participants. Strategies to incorporate the four dimensions should be interconnected and tailored to individual participants (Estrada et al., 2014). TPM was conceptualized to foster and maintain students in a longitudinal research project. Consequently, it does not focus on populations living in conditions of vulnerability and does not consider the role of community organizations actively involved in recruiting and retaining participants.

The objectives of this article are (i) to describe recruitment for and retention of participants in the Pathways Study, which is an ongoing longitudinal study that investigates the natural course of food insecurity among newly registered food-aid users in Quebec, Canada; (ii) to describe barriers to and facilitators of recruiting and retaining participants; (iii) to describe mitigation strategies used to address the challenges in recruiting and retaining participants; and (iv) to estimate recruitment costs. We modified TPM (i.e., mTPM hereafter) to account for the fact that Pathways recruited participants in community food-donation organizations.

2. Methods

2.1. The Pathways Study

Pathways is a longitudinal investigation that follows newly registered users of food aid offered in community organizations located in rural, semi-urban and urban settings in four regions in the province of Quebec, Canada. We recruited 1001 newly registered food-aid users from 106 food-donation organizations in Montréal—the largest city in Quebec—and in three other administrative regions (i.e., Lanaudière, Mauricie-Centre-du-Québec, and Estrie), which are all within a 4-h drive from Montréal. The overarching aim of Pathways is to compare access to food-aid services, food insecurity, dietary outcomes, social integration, civic participation, and the health over time among participants according to the type of food-aid program. After a baseline interview at T0, follow-up interviews were conducted at 1 year (T1) and at 2 years post-recruitment (T2).

2.2. Participant recruitment

We took a three-step approach in developing our recruitment and retention strategies. First, we carried out a rapid literature review on strategies for retaining low-income participants in health research. Second, we critically assessed the results of a similar longitudinal study (Roncarolo, Adam, Bisset, & Potvin, 2015). Third, we conducted two focus groups (i.e., one with employees of food-aid organizations employees and one with food-aid users) to discuss the feasibility of various recruitment and retention strategies. We stratified potential strategies into the four domains recommended in mTPM. Six strategies aimed at maximizing *study credibility*, four were designed to maintain *regular communication* with participants, six ensured *consistency of the follow-up plan*, and two related to *financial compensation* (Table 1). The methods section reports on the recruitment and retention strategies as originally designed. The Results section discusses the mitigation strategies implemented to address the challenges and barriers encountered in the course of the study.

Compared to the original TPM, our strategy enhanced collaboration with community organizations in four domains: (i) building partnerships at the management and operational levels for recruiting participants (i.e., the steering committee includes members from key organizations working on food insecurity; regional committees are set up in each region with members of key organizations working on food

Table 1

The modified Tailored Panel Management approach used in the Pathways study.

| | | | |
|--|--|---|--|
| Maximize project credibility or legitimacy | Ensure consistency of the follow-up plan | Regular communication with organizations and participants | Compensation for participation |
| Partnership with local organizations | Hiring a dedicated resource | Telephone calls | Compensation for organizations involved |
| Public information about the study | Detailed tracking plan, including collection of comprehensive contact information and identifying a back-up contact reference person | Email | Progressive monetary incentives for participants |
| Face-to-face recruitment and interviews | Periodic communication plan | Regular mail | |
| Hiring skilled interviewers and high-level training of the interviewers | Personalized plans to keep contact with participants | Social networks | |
| Continuity of interviewers in follow-up | Scheduling flexibility | | |
| Activities to strengthen the importance of the project for community organizations | Interviewer debriefing meetings | | |

insecurity; the study coordinator works closely with food-aid personnel; interviewers collaborate with food-distribution employees/volunteers); (ii) flexibility in scheduling interviews; (iii) frequent telephone calls and email exchanges with participating organizations to provide updates on recruitment and completed interviews; and (iv) financial compensation given to community organizations for their help in recruiting and providing facilities for conducting in-person interviews.

We used a two-stage cluster sampling strategy to recruit newly registered food-aid users. First, we identified and then enlisted community-based food-donation organizations in order to gain access to their clientele. Food-aid organizations were identified using the database of Food Banks of Quebec (a provincial network of food banks) as well as regional and local registries of community organizations. An initial list of 526 community organizations offering food donations was validated by the regional study committees created in the four study regions. Organizations offering periodic food donations (e.g., at Christmas) and those providing meals to specific groups (e.g., Breakfast Club) were excluded. The latter offer individual-based services that are not consistent the aims of our study focusing on households.

Participants were individuals who registered for and used a food-donation program for the first time in the past 6 months. Participants were excluded if they (i) had accessed a food-donation program of another organization in the preceding 12 months; (ii) were age 63 years or older, ensuring that no participant would be eligible for guaranteed income supplements for seniors during the two-year follow-up (this program mitigates poverty, the primary cause of food insecurity) (McIntyre, Kwok, Emery, & Dutton, 2016); (iii) were homeless (since these individuals represent a minority of food-aid users in the organizations of interest in this study and because follow-up is difficult without a home address); (iv) were living with a person who was already enrolled in the study; and (v) did not speak English or French. The diversity of languages in Montréal is such that translating/back-translating questionnaires or using translators would have incurred significant costs and possibly measurement bias.

For ethical reasons, we did not have direct access to the list of names of community food-aid users. Food-donation organizations' staff informed newly registered food-aid users aged 18–63 years about the study and asked permission to disclose their names to the research team. Those who agreed were then contacted by the research team, received a detailed explanation of the study, and completed a short screening questionnaire to assess eligibility. Each eligible candidate interested in participating was then asked to come in to their community organization for an interview. Participants were called the day before the interview as a reminder. Interviews with participants from organizations distributing food in parking lots took place in public spaces such as parks, libraries, or health centers, depending on participant availability and preferences. Participants were compensated with increasing monetary incentives (\$20 for the first interview, \$25 for the second, and \$30 for the third). The study's steering committee set the compensation amount, considering information gathered from the focus groups and literature review. The compensation was provided in cash by the interviewer at the end of the interview. Our original objective was to recruit 1800 participants to maintain a 70% retention rate at the one-year follow-up and an 80% retention rate at the two-year follow-up. Additional file 1 describes data collection according to year and within the context of the COVID-19 pandemic.

2.3. Follow-up of participants

Up to six contact attempts were made for the follow-up interview at T1, beginning in the 11th month after the first interview and ending at the end of the 14th month. When telephone or email contact information was no longer accurate or available (i.e., telephone deactivated; email address not provided), we (i) contacted a back-up reference person whose contact details had been provided by the participant in the first interview; (ii) asked the community organizations for updated information on the participant; (iii) used social media to reconnect with the participant; and (iv) sent a reminder invitation by regular mail asking the participant to contact us. The T1 and T2 interviews were planned to take place at the same location as the baseline interview. The only exception was conducting telephone interviews with participants who had moved out of the recruitment region. The same process was applied for the second follow-up interview (T2, 24 months after the baseline interview).

2.4. Study variables

The *proportion of community organizations* participating in the study was calculated as the number of organizations participating over the total number of eligible organizations. The *baseline response proportion* was calculated as the number of completed interviews at T0 over the total number of names (eligible or not) provided by the 106 participating organizations. The *retention proportion at T1* was the number of interviews completed 11–14 months after the first interview over the number of completed interviews at T0. The *retention proportion at T2* was the number of interviews completed 11–14 months after the second interview over the number of completed interviews at T1.

Observations concerning *barriers, facilitators, and mitigation strategies* were reported and documented in regular meetings with the interviewers throughout the data-collection period. Whenever possible, common mitigation strategies were designed by consensus to ensure uniformity across the study sites. When major amendments were needed, the study steering committee that designed the mitigation strategies decided the issues.

The *mean cost per interview* at T0 was estimated by adding all direct costs related to recruiting participants and completing the baseline interviews divided by the number of completed baseline interviews. The direct costs were financial compensation of organizations that provided names (\$25 for 10 eligible names, increased to \$50 after nine months), financial compensation of study participants (\$20 for a completed

interview) six salaries for interviewers (based on institutional salary scales), salary for one interview dispatcher, travel and meal allowances for interviewers outside Montréal (four interviewers) (based on institutional rules); and monthly public-transit passes for interviewers in Montréal (two interviewers).

The following variables were used to assess differences among participants retained and lost at each follow-up:

Household food security was measured using the food-security module from the Canadian Community Health Survey (CCHS) (Office of Nutrition Policy and Promotion, 2007). This module is a standardized and validated scale that measures inadequate or insecure access to food due to financial constraints (PROOF: Food insecurity policy research, 2018). Participants were divided into three groups: food secure, moderately food insecure, and severely food insecure.

Annual household income was self-reported as the sum of annual income from all sources of all adults living in the household. This variable was dichotomized for analysis ($\leq \$20,000$; $> \$20,000$).

Highest level of education attained by any person living in the participant's household was ascertained according to the categories of the 2016 Canada Census Profile (Statistics Canada, 2017).

Housing tenure was assessed by asking participants whether they owned or rented their home.

Mental and physical health were assessed with two self-reported summary measures: the Physical Component Summary (PCS) and the Mental Component Summary (MCS) from the SF-12-v2 questionnaire (Ware, Kosinski, & Keller, 1996). Both scores have a mean of 50 and a standard deviation of 10 in the general population (Ware, Kosinski, Turner-Bowker, & Gandek, 2009).

Psychological distress was assessed with the Kessler 6-item scale (K6). Scores range from 6 to 30; a score of 13 was used as a threshold indicative of psychological distress (Kessler et al., 2003).

2.5. Data analysis

Descriptive statistics were used to depict the characteristics of participants at baseline and to compare participants retained and not retained at the one-year follow-up. Observations pertaining to barriers and facilitators to recruiting and retaining participants and to mitigation strategies used to address barriers were collated and consolidated in team discussions.

The study was approved by the Health Research Ethical Review Panel of the Université de Montréal Cert. n. CERSES-18-074-D.

3. Results

3.1. Recruitment of food-donation organizations

Public documents were used to determine that 103 organizations were no longer in operation, leaving 423 operating organizations out of the initial 526 organizations. Each remaining organization was contacted by phone to verify eligibility and interest in participating in the study. Of those, 246 met the inclusion criteria and 149 (60.6%) agreed to participate in the study (Fig. 1). A 30-min telephone interview was conducted with a key administrative person in each organization to collect data on services provided, partnerships with other organizations, characteristics of the clientele, number of new users per year, and willingness to recruit first-time food-aid users for Pathways. A total of 117 organizations provided names of potential participants. Newly registered food-aid users were recruited by Pathways from 106 of the 117 organizations that provided names. That corresponds to 71.1% of all the organizations that agreed to participate. Fig. 1 shows the flowchart of organization recruitment.

3.2. Response proportion and characteristics of participants

The baseline response proportion (i.e., number of interviews

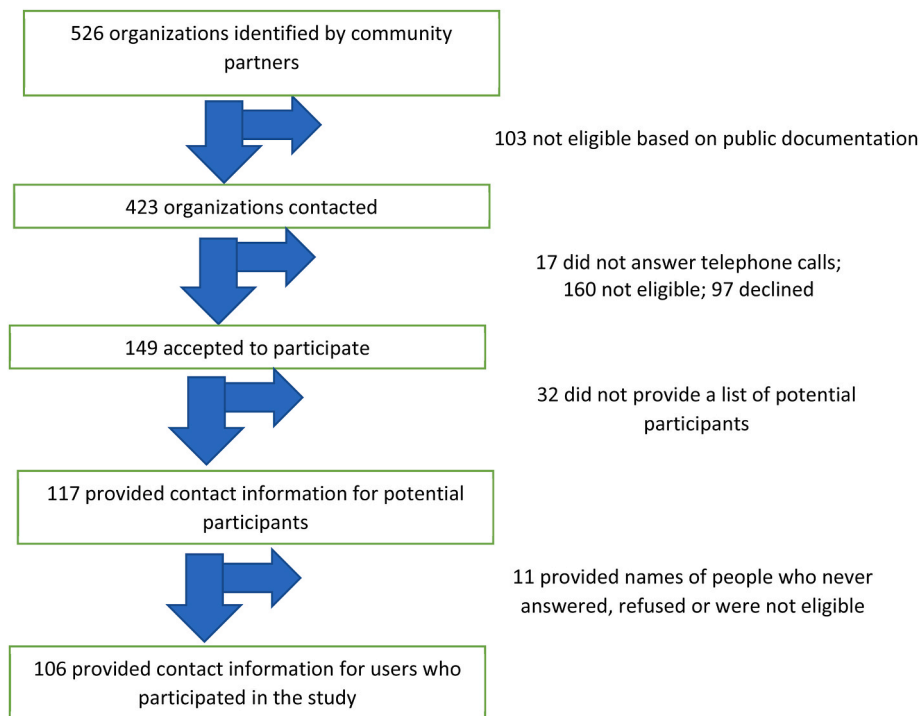


Fig. 1. Flowchart of the recruitment of organizations to obtain a listing poll of eligible participants in the Pathways study.

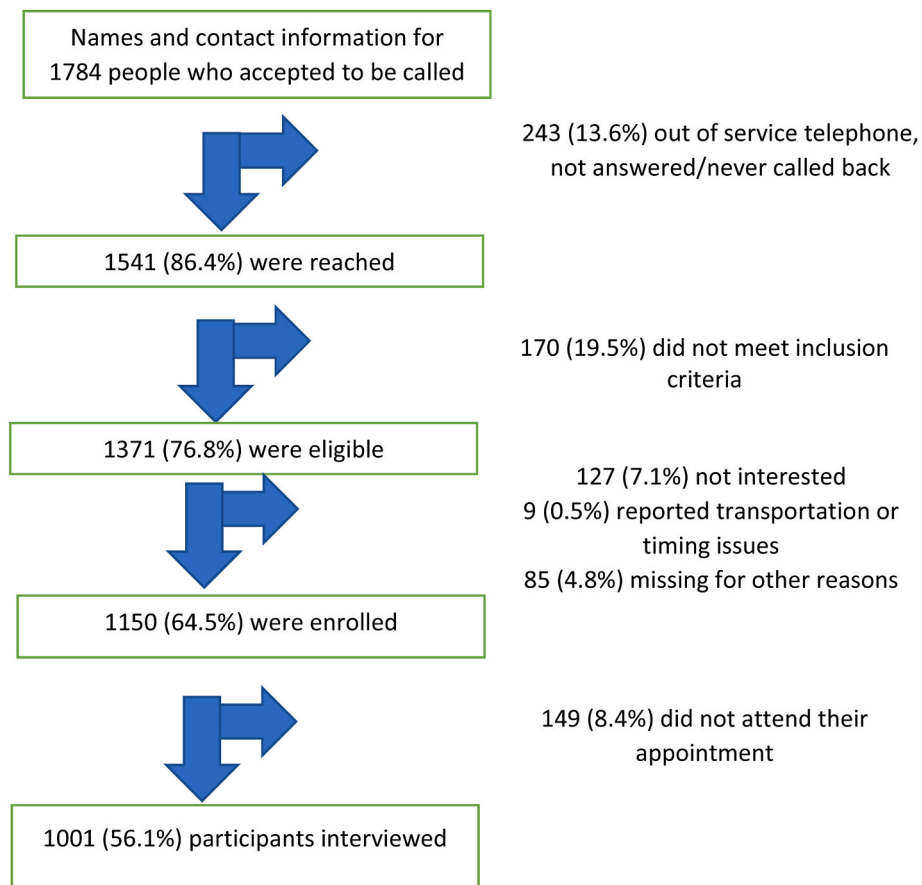


Fig. 2. Flowchart of Pathways study recruitment.

completed at T0 divided by the total number of names of potential participants provided by the organizations) was 56.1%. When the denominator was restricted to names of eligible participants ($n = 1371$), the proportion was 73.0% (Fig. 2).

3.3. Barriers and mitigation strategies

3.3.1. Barriers to obtaining names and recruiting participants

Delegating the initial contact with potential participants to food-donation organizations did not achieve the expected results. The number of contacts received was lower than expected based on the results of the telephone survey with key administrative persons at participating organizations. Many organizations stated that their staff and volunteers had little interest in the study and did not have the time to adequately describe the study to potential participants. Several organizations did not have any new users because their current roster consisted of long-time users. Informal discussions between study team members and the staff in the participating organizations suggested that more frequent contacts and developing informal relationships might have facilitated recruitment. For this reason, after few months, we adopted various approaches, adapting to the needs expressed by community organizations, as explained in the paragraph on mitigation strategies. By 12 months into recruitment, the participating organizations had provided 1440 of the 1800 names anticipated in the study plan; 805 of the 1440 (55%) had completed the baseline interview. After 17 months of active recruitment, the participating organizations had provided 1784 names, 1001 of whom (56.1%) completed the baseline interview. Fig. 2 gives the reasons for not participating.

3.3.2. Barriers in conducting baseline interviews

Some participants reported difficulty attending in-person interviews (especially in remote areas during the winter) for reasons related to family, work, or transportation. It was not always possible to schedule interviews during the business hours of the food-donation organizations where the interviews were to take place. Finally, despite having agreed on a scheduled appointment, some people did not show up for the interview. Extending opening hours in study organizations facilitated interviewing. The proximity to parks and other public places in which privacy was possible were facilitators.

3.3.3. Mitigation strategies implemented to maximize recruitment

To address recruitment challenges, (i) we invited regional partners to act as an advocate for the study with community organizations; (ii) we provided community organizations with a template of key points to facilitate explaining the study to potential participants; (iii) increased financial compensation to community organizations to incentivize recruitment (from \$25 to \$50 for each batch of 10 names provided); (iv) we proposed to compensate one volunteer in each of the 106 organizations to query registers and contact new users (this was not implemented because of confidentiality issues); (v) we mandated interviewers to promote the study and recruit participants during food-aid distribution, despite our initial plan to centralize the collection of the names of potential participants and their recruitment, with a person coordinating and scheduling interviews for all the interviewers; (vi) we placed flyers about the study in food baskets to promote self-candidacy; (vii) we maximized the flexibility of interviewer working hours; (viii) we found alternative locations to conduct interviews, establishing agreements with health centers to conduct interviews in their facilities and interviewing people in parks and public libraries (in some organizations, it was possible to conduct interviews right after recruitment); and (ix) we extended the recruitment period by six months until January 2020. By that time, all the strategies yielded to a total of 1784 potential participants.

3.4. Retention of participants

Of the 1001 participants at baseline, 745 (74.4%) completed the one-year follow-up interview. Of the 745 participants who completed the T1 survey, 642 (86.2%) completed the T2 survey. The two-year retention rate of the study is 64.1%.

A higher proportion of participants lost to follow-up reported severe food insecurity and relatively more lived in households in which the highest level of education was high school compared to retained participants. In addition, those lost to follow-up also had higher psychological-distress scores (Table 2). No differences were found among participants lost to follow-up after one year and those lost after 2 years.

3.4.1. Barriers to and facilitators of retention

Midway through T1 data collection, COVID-19 lockdown measures were implemented province-wide. We switched from in-person interviews to telephone interviews. We found no significant differences when comparing retention before and after COVID-19 lockdown measures. One-fifth (21%) of baseline participants dropped out prior to the onset of the COVID-19 pandemic, compared to 25.4% during the COVID-19 lockdown. Table 3 shows the reasons why participants were lost to follow-up. Since many participants remained at home during the lockdown, interviewers reported that it was easier to contact them by telephone than before the lockdown. At the one-year follow-up, the main reason for dropping out was that the telephone was out of service. The percentage of people who explicitly refused to participate was nearly three times (12.9%) higher before the lockdown than during it (4.5%). The reasons for dropping out at T1 and T2 are similar.

Other barriers included difficulty conducting a interviews lasting 30–45 min with participants in households with children and those whose first language was neither French nor English, and difficulties in transferring financial compensations after the COVID-19 lockdown.

3.4.2. Mitigation strategies implemented to maximize retention

When moving from in-person to telephone interviews, we implemented multiple strategies to maximize retention: (i) we adjusted the method of compensating participants, providing compensation through bank transfers or by cheques instead of cash, according to participant preference; (ii) we offered the option to complete the interview at the first contact call (rather than using the first contact to set up an appointment); (iii) we offered participants to split the interview into two sessions to reduce the time commitment for any session; and (iv) we proposed video calls for the interview (using ZOOM, Skype, or other platforms) as an alternative to telephone interviews.

Table 2

Comparison of baseline characteristics of participants retained and lost at follow up at 1 and 2 years.

| | Retained % (n = 642) | Lost at 1 year % (n = 256) | Lost at 2 years % (n = 103) |
|---|----------------------|----------------------------|-----------------------------|
| Severe food insecurity | 40.8 | 56.9 ^a | 53.9 ^a |
| Annual household income ≤ \$20,000 | 74.1 | 78.3 | 83 |
| Highest household education level ≤ high school | 44.8 | 62.1 ^a | 67 ^a |
| Not owners of their dwelling | 87.4 | 94.9 ^a | 93.2 |
| Psychological distress (score >13) | 20.3 | 27.9 ^a | 25.5 |
| SF12 Physical Component Summary, mean (sd) | 45.4 (13.2) | 46.3 (13.2) | 46.2 (14.0) |
| SF 12 Mental Component Summary, mean (sd) | 41.3 (12.3) | 39.8 (13.7) | 39.2 (12.7) |

^a $p < 0.05$ comparing participants lost to follow-up with participants retained.

Table 3
Pathways study: reasons for lost to follow-up after one and two years.

| Reason | T1 | | | T2 |
|---|------------------------------|-------------------------------|---------------------|--------------------|
| | Before lockdown (%) n.101 | During lockdown (%) n. 155 | Total (%) n. 256 | Total (%) n.103 |
| Refused | 12.9 | 4.5 | 7.8 | 7.8 |
| Phone out of service | 39.6 | 52.9 | 47.7 | 35.0 |
| More than six calls unanswered | 25.7 | 18.1 | 21.1 | 31.1 |
| No show at the interview meeting | 10.9 | 10.3 | 10.5 | 13.6 |
| Messages were left, but nobody called back | 7 | 6.4 | 6.6 | 6.8 |
| Other reasons (i.e. Sick/hospitalized/in prison/death) | 4 | 7.7 | 5.9 | 5.8 |

3.5. Cost

The planned average direct cost at baseline was \$183 per interview for 1800 baseline interviews over one year. After 17 months, we had completed 1001 interviews at an average cost of \$255 per interview. Our original plan overestimated the capacity of food-donation organizations to provide eligible participants and underestimated the difficulties in converting eligible participants into completed baseline interviews. Conducting interviews in more remote areas was more costly both because of transportation costs and because the low density of participants in those regions made it difficult to optimize the number of interviews per day/trip.

4. Discussion

In planning recruitment for and retention in the Pathways study, we adopted a tailored model to maximize recruitment and retention in our population (mTPM). We implemented 18 strategies grouped into four dimensions, enhancing collaboration with community organizations. Even our comprehensive mTPM did not, however, anticipate all the challenges encountered, including the complexities of recruiting through community organizations. Despite our mitigation actions and extending the recruitment period by 6 months, we were unable to reach our target of 1800 participants. In particular, we underestimated the number of potential participants identified by the participating organizations who were not eligible or could not be interviewed. Retention was higher than anticipated, possibly because of the diversity and comprehensiveness of our retention strategies.

Major difficulties in planning recruitment flow and interview conduct related to two primary issues. First, our recruitment success depended in part on employees/volunteers in participating organizations. Recruiting from 106 different organizations meant dealing with 106 different administrations, people, and ways of distributing food. The challenges and successes of outsourcing participant recruitment to community organizations have been described (Grape et al., 2018; Meyer et al., 2018), but increasing the number of organizations also means increasing tailor-made adjustments to accommodate partners. Second, because many potential participants could not be contacted or did not show up for a scheduled interview, interviewers spent much more time than anticipated rebooking and travelling to conduct interviews, which translated into increases in the costs of data collection and difficulties in planning interviewer schedules.

For interviewers experienced periods of intense work alternating with periods of minimal workload. For example, people received their social-assistance allocations at the beginning of each month, which meant food banks registered fewer new users, making recruitment difficult. Staffing and cost challenges have been described in studies involving multiple community-based locations (Grape et al., 2018). In

contrast to the Pathways study, in which the only benefit for participants was a small financial compensation, most of these studies involved screening tests or new therapies, which meant that the personal benefits to participants were likely perceived as high (Brannon et al., 2013; Cole, Doan, Ballinger, & Brown, 2009; Grape et al., 2018; Kakumanu et al., 2019; Keyzer et al., 2005).

Our mTPM strategy had to be supplemented with mitigation actions to address unanticipated challenges primarily related to differences across urban, semi-urban, and rural settings; between community organizations; and due to the different living status of participants. For example, strategies tailored to rural areas might not be suited to urban settings. We encountered more difficulties in recruiting participants in rural areas essentially because, being less populated, the number of people demanding food aid for the first time is smaller in rural areas. Alternative locations for conducting interviews had to be found for organizations distributing food in parking lots, especially during the winter. Single parents with children might not be available for interviews at the same times as people living alone.

Considering the premises, reaching a retention rate of 74.4% after one year of follow-up and a retention rate of 64.1% after two years is outstanding. Participants lost to the follow-up were mostly people we were unable to reach. Interestingly, the lockdown measures did not seem to influence dropout percentages. We expected that, being at home, more people would have time to participate in the survey. Instead, difficulty in reaching people was the main reason for dropping out, both before and during the lockdown. The percentages of people we could not reach after missing a planned interview were similar before and during the lockdown.

Challenges are common in all longitudinal studies, but especially in those that target participants living in vulnerable conditions in which attrition rates can fluctuate between 20% and 70%. For example, Brannon et al. reported a one-year attrition of 65.7% in a study targeting families in a supplemental nutrition program (Brannon et al., 2013); Cummings et al. reported 32% attrition after 10 months in a postal survey in Scotland. Wrigley et al. reported an attrition of 39% after one year among participants from a deprived area of Leeds, England (Wrigley, Warm, & Margetts, 2003). Sharpe et al. using a multifaceted approach, lost 17.4% of participants in a study involving highly disadvantaged African-American communities in the US (Sharpe et al., 2021). In a recent study on food-bank participants in Ottawa, Rizvi et al. reported that 189 participants out of 401 (47.1%) completed the four follow-up questionnaires in their 18-month study (Rizvi, Wasfi, Enns, & Kristjansson, 2021). Lastly, still another study of new food-bank users in Montréal reported a 47.7% attrition rate for in-person interviews after nine months (Roncarolo, Bisset, & Potvin, 2016). The best results are generally reached when multiple approaches are used for recruitment and retention (Estrada et al., 2014).

People demanding food aid are extremely vulnerable and difficult to retain in research projects. Moreover, participants lost to follow-up after one year and after two years were more vulnerable than those retained. Their precarious conditions made them more difficult to reach despite multiple types of contact information (phone number, email, possibility to ask for information at food banks, second contact). These results are in contrast with the findings of another Canadian study on food-bank users (Rizvi et al., 2021), which found no difference between participants lost to follow-up and those retained. Unlike our study, they did not target just first-time food-bank users (Rizvi et al., 2021). Since the main reason for participants lost to follow-up in our study relates to failure to reach them, it is realistic to hypothesize that these participants had to terminate their telephone service or relocate due to their extreme vulnerability (Clair, Fledderjohann, Lalor, & Loopstra, 2020; Tarasuk, Fafard St-Germain, & Loopstra, 2020). The loss of the most vulnerable people in each wave of a longitudinal study is an issue that should be considered. Indeed, the level of vulnerability of participants in the final sample will be inversely proportional to study length.

This study has some limitations. First, we were not able to estimate

the exact cost of interviews according to setting type (rural, semi-urban, or urban). To maximize their working hours, interviewers often filled their schedules with interviews requiring them to travel to various settings in the same day. Second, our sample only included participants who were able to respond to the questionnaire in English or French. This criterion might have excluded recent immigrants who did not understand the official languages and who often have worse social and economic outcomes (Nawyn, Gjakaj, Agbenyiga, & Grace, 2012). Third, despite our comprehensive retention strategies, we were unable to retain the most vulnerable participants. Other methods should be identified and implemented to be more successful in retaining people with extreme vulnerability (i.e., tracking with medical records).

5. Conclusions

This study provides an analysis of the recruitment and retention of people living in conditions of vulnerability in a longitudinal study, analysis of the challenges of doing so, and mitigation strategies that were implemented to overcome these challenges.

We have formulated five recommendations for recruiting and retaining participants in studies of persons living in conditions of vulnerability.

- People living in conditions of vulnerability are difficult to identify and locate. Recruiting participants through community organizations might help overcome this challenge. Nevertheless, recruitment and retention strategies need to be adapted to the specific characteristics and needs of partner organizations.
- Plan for real-time monitoring of recruitment based on participant characteristics (in our study, recruitment targets in rural areas were difficult to achieve because of lower-than-anticipated numbers of new food-aid users and shorter-than-expected business hours in food-donation organizations).
- Allow flexible working hours for interviewers and adapt the budget accordingly.
- Update participant contact information at each interview.

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Ethics approval and consent to participate

The study was approved by the Health Research Ethical Review Panel of the Université de Montréal Cert. n. CERSES-18-074-D.

Author's contributions

RF was responsible for data collection and analysis, and drafted preliminary versions of the paper. PE reviewed the literature and drafted the introduction. MG, OLJ, RM, SM-P and PL contributed to preliminary versions and reviews of the paper. All authors approved the final version of the article.

Declaration of competing interest

The authors declare that they have no competing interests.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssmph.2022.101088>.

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