

COVID-19 and interdisciplinary research: What are the needs of researchers on aging?

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Abstract: COVID-19 has had an extreme effect on older people. Now more than ever we need collaborative approaches to address complex issues within research on aging. However, the pandemic has dramatically changed the way we conduct, interact, and organize research within interdisciplinary groups. This paper describes a case study of how an interdisciplinary institute for research on aging has managed the process of change during COVID-19 restrictions. A design lead, researcher centered approach was used to understand the needs of researchers as they adapted across 6 months. Firstly, an online survey (n=51) was conducted to understand the scope of change and needs. The survey found broad themes ranging from assistance with finding additional funding to adjusting current research proposals. Following the survey, two Co-Design Sessions were conducted. The first session (n=53) diverged thinking to scope ideas from the survey and actionable themes were created. The second session (n=36) was conducted to converge thinking and focus on solutions based on one of these themes. The results revealed a diversity of ideas addressing the needs of interdisciplinary researchers in aging. These ideas spanned from exploring the capacity to do research remotely and creating virtual collaboration spaces to rethinking stakeholder engagement.

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I. Introduction

The unexpected arrival of COVID-19 in early 2020 has had an all-encompassing effect, with restrictions challenging both our working and personal lives. It has dramatically changed the way we conduct day-to-day work, not least in many cases that working from home has resulted in difficulty separating work and life. The academic world needed to react, change and adapt rapidly. With necessity being the mother of invention, homes changed into makeshift classrooms and researchers from a diversity of fields pivoted and adapted to align with restrictions. Digital technology has assisted during this time, however, in many cases, the demands of physical work have been more difficult to overcome. COVID-19 has had an immense effect on how we conduct research. Within days, researchers were required to change procedures, methods, environments, work schedules, and engagements with participants, to name but a few. Not only has it changed the way we work as individual researchers, but it has also changed the way we conduct, interact, and organize research within interdisciplinary groups.

Interdisciplinary research can be highly rewarding. It allows research teams to cross disciplinary boundaries, to connect and collaborate on complex issues; and to share and combine expertise that might not be achievable within individual disciplines. However, interdisciplinary research can be challenging, as collaborating and removing disciplinary silos requires sustained work and good communication. COVID-19 has added to this challenge. As researchers come to terms with rapid change, it can make time for collaboration more difficult. To ensure research collaborations progress successfully, understanding how interdisciplinary groups are pivoting and adapting during the pandemic is important.

Research on aging requires interdisciplinary perspectives to understand and address the complex issues we face as a society; however, the pandemic has added layers of complexity to this. Across the world, COVID-19 has had an extreme effect on older cohorts of people. In many countries, it has resulted in older people having advanced restrictions applied, most notably in restricted movement by shielding or ‘cocooning’ at home. Restrictions have also dramatically changed how we conduct research on aging, with the safety of participants and researchers of paramount importance. Physical and social distancing creates issues with conducting research in lab situations

and face to face participant engagements have been severely restricted. Reacting to this Richardson et al. suggest that “profound changes are required in the way that we design and deliver research for older people”.¹

Now more than ever we need collaborative and interdisciplinary approaches to address complex issues within research on aging. Illustrating the importance of this, Meisner et al. states:

No single discipline will be able to discern why, how, and how much older adults are and will be impacted by COVID-19. As such, we strongly encourage the adoption of interdisciplinary approaches in the response to COVID-19 because of the value added when connections between and across disciplines are made².

The long term effects of COVID-19 on how we conduct research may not be currently fully understood, however, it is safe to say that there will be short to medium term implications and uncertainty. As a result of this uncertainty, learning to deal with change as it unfolds and having an agile approach would be a positive and constructive course of action. Furthermore, as we continue to learn about the effects of COVID-19 on interdisciplinary research, it is important to support researchers in pivoting and adapting to change.

II. The case study

This paper describes a case study of how an interdisciplinary institute for research on aging is managing the process of change during COVID-19 restrictions. Seeking to understand the needs of researchers as they adapt across a six-month period, a Design lead, researcher centred approach is used to report on stages of engagement with researchers. It offers an account of the methodology, results, and future plans of engagement with older people.

The McMaster Institute for Research on Aging (MIRA) is McMaster University’s cross-Faculty research institute for advancing the science of aging.³

¹ Richardson, Sarah J., Camille B. Carroll, Jacqueline Close, Adam L. Gordon, John O’Brien, Terence J. Quinn, Lynn Rochester, et al. “Research with Older People in a World with Covid-19: Identification of Current and Future Priorities, Challenges and Opportunities.” *Age and Ageing* 49, no. 6 (2020): 901-06. <https://doi.org/10.1093/ageing/afaa149>.

² Brad A. Meisner et al., “Interdisciplinary and Collaborative Approaches Needed to Determine Impact of COVID-19 on Older Adults and Aging: CAG/ACG and CJA/RCV Joint Statement,” *Canadian journal on aging = La revue canadienne du vieillissement* 39, no. 3 (2020), <https://doi.org/10.1017/S0714980820000203>

³ McMaster Institute for Research on Aging, “MIRA Homepage” MIRA. accessed 6th July 2020, <https://mira.mcmaster.ca/>.

MIRA involves over 140 researchers from across 6 Faculties and disciplines that are committed to transforming the experience of aging by transforming the science of aging. The objective is to optimise the health and longevity of the aging population through leading-edge research, education, and stakeholder collaborations. Since MIRA launched it has been focused on driving interdisciplinary research through user centred engagement.⁴ To facilitate interdisciplinary connections between researchers across all six Faculties, they have hosted multiple Design lead, in-person events and exercises.

In keeping with public health and government directives, McMaster University applied restrictions due to COVID-19. With few exceptions, students were advised not to be on campus and faculty and staff were encouraged to find alternate, online means to deliver programs.⁵ March 24th 2020 marked the University's first restriction of research. At this point, only research that was COVID-19 specific, intervention or clinical trial studies that involved patient monitoring, or research that needed to continue for safety, health or clinical reasons, was permitted. A two-phased return to increased research occurred in May and August, however, remote working remained the preference and a return to campus have remained voluntary for researchers.⁶

In reaction to these restrictions, in April 2020, MIRA sought to create an environment where researchers could be included directly in strategies to adapt and pivot research practices. MIRA created a programme of consultation and enquiry to understand needs first-hand, seeking to connect researchers in the most beneficial way, given restrictions.

Seeking to understand the needs of researchers as they prepared to adapt to restricted research conditions for an indefinite period, the research question for this study was: How have research restrictions impacted, and what are the needs of interdisciplinary researchers in Aging during COVID-19? With this question in mind the objectives of the study were:

- to determine how the new research directives and physical distancing measures affected research and productivity during the pandemic;
- to determine how researchers were adapting; what resources they were relying on; what was enabling and/or holding researchers back and what is the role of the older end-user during the COVID-19 period;

⁴ McMaster Institute for Research on Aging, "MIRA Homepage" MIRA, accessed 6th July 2020, <https://mira.mcmaster.ca/>.

⁵ McMaster University, "McMaster's Phased Return to Increased Research Activity" accessed 8th November, 2020, <https://research.mcmaster.ca/phased-return-to-research-activity/>.

⁶ McMaster University, "Winter Term Will Be Online: Provost's Letter." accessed 8th November, 2020, <https://covid19.mcmaster.ca/winter-term-will-be-online-provosts-letter/>.

- to continue serving MIRA researchers in a capacity that allowed them to connect with other researchers in aging from different Faculties than their own; and
- to crowdsource opinions from researchers on how to design a program for the next six months and beyond given present-day and potential future challenges.

III. Methodology

III.1. Overview of study design

A Design lead, researcher-centred approach was used to discover and then define the needs of interdisciplinary researchers in aging. A design thinking and Co-Design approach was adopted as they are collaborative, agile, and user-centred, allowing for differing interpretations across disciplines when working in interdisciplinary teams.⁷ In looking at strategies for researchers in aging to overcome challenging times during the pandemic, Cohen et al. conclude that researchers need to think creatively.⁸ Design methods and approaches allow for creative problem solving through exploration and discovery leading to problem definition⁹ and this approach has been specifically encouraged in research in aging.^{10,11,12}

The Double Diamond is a framework that is commonly used in Design lead research to guide methods and processes. The framework has four

⁷ P. J. White and Colin Deevy, “Designing an Interdisciplinary Research Culture in Higher Education: A Case Study” *Interchange* 51, no. 4 (2020/04/27 2020): 499-515. <https://doi.org/10.1007/s10780-020-09406-0>.

⁸ Andrew B. Cohen et al., “Succeeding in Aging Research During the Pandemic: Strategies for Fellows and Junior Faculty,” <https://doi.org/10.1111/jgs.16868>, *Journal of the American Geriatrics Society* 69, no. 1 (2021/01/01 2021), <https://doi.org/https://doi.org/10.1111/jgs.16868>, <https://doi.org/10.1111/jgs.16868>.

⁹ Design Council UK, “What Is the Framework for Innovation? Design Council’s Evolved Double Diamond.” accessed 12th November, 2020, <https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond>.

¹⁰ Brenda Vrkljan, Amanda Whalen, Tara Kajaks, Shaarujaa Nadarajah, P. J. White, Laura Harrington, and Parminder Raina. “Creating an Intergenerational University Hub: Engaging Older and Younger Users in the Shaping of Space and Place.” *Gerontology & Geriatrics Education* (2019): 1-17. <https://doi.org/10.1080/02701960.2019.1572010>.

¹¹ P. J. White, H. R. Marston, L. Shore, and R. Turner “Learning from Covid-19: Design, Age-Friendly Technology, Hacking and Mental Models.” *Emerald Open Research* 2, no. 22 (2020). <https://doi.org/https://doi.org/10.35241/emeraldopenres.13599.1>.

¹² Hannah R. Marston, Linda Shore, and P. J. White. “How Does a (Smart) Age-Friendly Ecosystem Look in a Post-Pandemic Society?”. *International Journal of Environmental Research and Public Health* 17, no. 21 (2020). <https://doi.org/10.3390/ijerph17218276>.

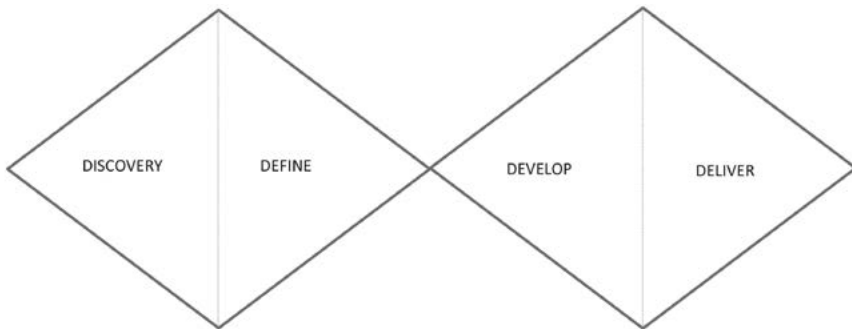


Figure 1
Double diamond framework with stages
(Design Council, 2019)

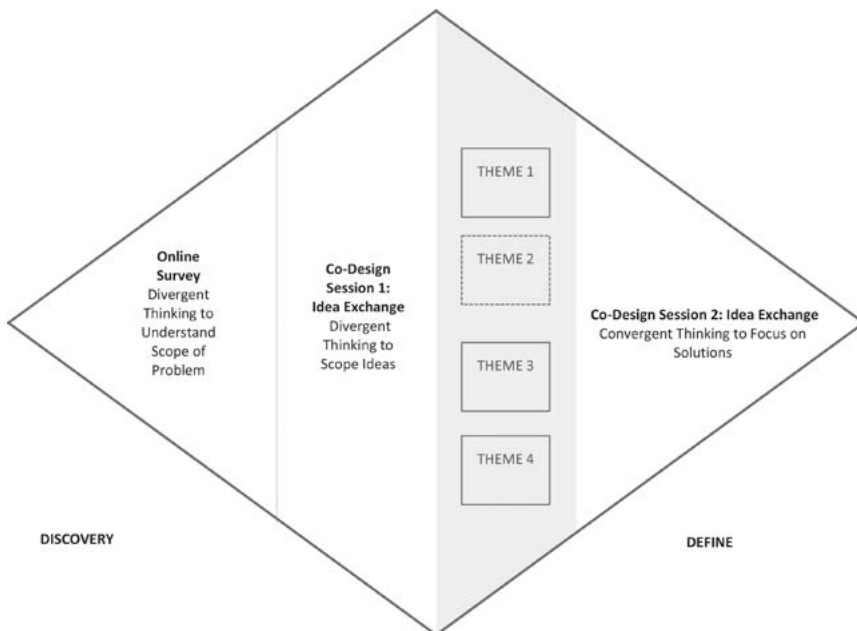


Figure 2
Outline of research stage in the study
in Discovery and Define stages

stages: the stages of discovery and defining the problem (in the first diamond) and stages of developing and delivery of a solution¹³ (in the second diamond). In this research, the first discovery/ define ‘diamond’ was used to focus on the needs of researchers. The discovery stage is an act of divergence, opening up questions to explore and understand the scope of the problem. Once the scope of the problem is understood, these are then organized into themes or categories. The next stage is an act of convergence to define the need within the problem.

In the ‘discovery’ stage an online survey was conducted to diverge and understand the scope of the problem. Furthermore, at this stage, a Co-Design Session was conducted with researchers in the form of an ‘Idea Exchange’ to diverge thinking further and to scope out the ideas from the survey. Actionable themes were created from this Co-Design session. In the ‘define’ stage a second Co-Design Session was conducted to convergent thinking and focus on ideas based on one of these themes.

III.1.1. Online survey design and overview and analysis

Faculty and trainee members were invited to engage in the online survey via email. Each MIRA member and trainee received an invitation to complete the survey, which was in the form of a Google Forms document. A total of 31 Faculty (30 of which were –MIRA members) and 20 MIRA trainees (3 MA/MSc students, 9 PhD students and 8 Postdoctoral fellows) completed the survey. The following is a summary of these questions:

- How have the new research directives and physical distancing measures affected your research and productivity during the pandemic?
- What actions did you take following research restrictions?
- Regarding budget and staff considerations:
 1. Has the pandemic negatively impacted your research budgets?
 2. Have you had to let staff/trainees go due to the pandemic?
 3. Have you had to rethink how you work with trainees due to the pandemic?
- Since research restrictions have been put in place, how much time have you spent on the following: 1. Collaborating; 2. Networking; 3. Writing grant applications; 4. Planning future research; and 5. Other?

¹³ “What is the framework for innovation? Design Council’s evolved Double Diamond.” Design Council UK, 2019, accessed 12th November, 2020, <https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond>.

- Have there been any opportunities and positive outcomes that have resulted from COVID-19 research restrictions?
- How can MIRA help you make the most of your current research situation?
- Other activities that MIRA could facilitate to assist researchers during the pandemic?

III.1.2. Results of online survey

Of the 52% (8) members conducting wet lab or animal research, 75% (6) noted that new restrictions required the lab to shut down completely, with at least one researcher noting that data from in progress experiments was lost. Current students were shifted to working on reading and writing activities, and prospective students were unable to begin their studies. Even when restrictions were reduced, labs could not operate at full capacity due to physical distancing guidelines.

Of the 84.3% (43) of researchers conducting human research, 58% (25) were able to adjust or alter interactions with participants to continue with data collection despite physical distancing measures, employing a combination of telephone, virtual, or web-based data collection methods. At the same time, 42% (18) of researchers placed their studies on hold.

Faculty members also noted challenges in working with trainees, including trying to alter current studies for trainees to continue to collect data, developing ideas for review papers or modelling/analysis work, or accessing available datasets for secondary data analyses to assist trainees in meeting degree requirements. The inability to meet in person meant that trainees could not be instructed in laboratory techniques or procedures, hampering progress on some fronts. Alternately, at least one faculty member felt that moving to virtual meetings fostered more independence in students and increased their willingness and ability to troubleshoot independently. Faculty members were also cognizant of the importance of more frequent online meetings or interactions to replace the interactions and opportunities that would organically occur in the lab, to maximize research training benefits for trainees. Notably, since undergraduate students do not need laboratory or research experience to meet degree requirements, their presence on campus was not deemed essential. This lack of access to undergraduate students reduced the research capacity for many labs, as well as interfering with potential research and networking opportunities for undergraduate students.

Of the faculty members surveyed, 55% (17) reported that the COVID-19 pandemic had negatively affected their research budget, 39% (12) had had to let staff/trainees go due to the pandemic and 74% (23) had to rethink how

they interact with their trainees. In response to the question, “Since research restrictions have been put into place (March 17th 2020), how much time have you spent:

Table 1
Results of Survey question “how much time have you spent on research activities”

Research activity	More time	Same amount of time	Less time	Not applicable
Collaborating	31% (16)	35% (18)	31% (16)	2% (1)
Networking	14% (7)	10% (5)	74% (38)	2% (1)
Planning future research	41% (21)	24% (12)	33% (17)	2% (1)
Writing grant applications	29% (15)	41% (21)	16% (8)	14% (7)
Writing papers/books/book chapter	39% (20)	29% (15)	28% (14)	4% (2)
Engaging in peer review	21% (11)	45% (23)	21% (11)	12% (6)
Collecting pilot data	6% (3)	8% (4)	30% (15)	57% (29)
Analyzing recently collected data	25% (13)	43% (22)	14% (7)	18% (9)
Analyzing partial data (from studies interrupted by pandemic)	14% (7)	21% (11)	16% (8)	49% (25)
Analyzing old data	31% (16)	24% (12)	10% (5)	35% (18)
Conducting secondary analyses	30% (15)	30% (15)	8% (4)	33% (17)
Analyzing publicly available datasets	18% (9)	30% (15)	8% (4)	45% (23)
Searching for/reading scientific literature	37% (19)	47% (24)	12% (6)	4% (2)
Looking for new career opportunities	18% (9)	28% (14)	8% (4)	47% (24)
Learning a new scientific skill	28% (14)	20% (10)	20% (10)	33% (17)
Attending a course	28% (14)	16% (8)	18% (9)	39% (20)
Attending conferences	2% (1)	16% (8)	69% (35)	14% (7)
Teaching	24% (12)	35% (18)	8% (4)	33% (17)
Converting old course content for online teaching	55% (28)	6% (3)	2% (1)	37% (19)
Creating new course content	35% (18)	18% (9)	6% (3)	41% (21)

III.2. Co-design sessions

Identified from the surveys was the need for a platform whereby the voice and ideas of the researchers could be expressed further. Processes of Co-Designing could fulfil this need, as they allow a wide range of people to make a creative contribution to the formulation of solutions. Co-Designing is advantageous when working with teams as it has been proven to lead to more long-term success, more support and enthusiasm for change, and can generate solutions that improve day to day experiences.^{14,15} According to Moll et al., when Co-Designing one should “tap into tacit knowledge, creativity and shared meaning of diverse perspectives to co-create a shared vision for improvement”.¹⁶ Therefore, the Co-Design sessions were conducted with researchers in the form of an ‘Idea Exchange’. The main purposes of these sessions were to ensure the voice of the researcher was being heard and to iteratively scope out ideas from the online survey.

III.2.1. Co-design session 1: Idea exchange session Design and Format

The first Co-Design Idea Exchange occurred in July 2020. The format was designed to allow participants to explore concerns and challenges researchers faced (and had overcome) in the context of the COVID-19 pandemic. In doing this, contributing to a group discussion by building on dialogue and experiences of others. This allowed participants to express the best ways MIRA could support researchers. The research questions at the start of the Co-Design session were broad to facilitate open discussion and to allow stakeholders to direct the agenda. These were:

- What are the needs of an Interdisciplinary Researcher in Aging during COVID- 19?
- How can we pivot due to the restrictions of COVID-19?

¹⁴ M. Steen, M. Manschot, and N De Koning, “Benefits of co-design in service design projects,” *International Journal of Design*, 5(2), 53-60. (2011), <http://www.ijdesign.org/index.php/IJDesign/article/view/890/346>.

¹⁵ Linda Shore, Louise Kiernan, Adam DeEyto, Deirbhile Nic A Bhairst, Anne Connolly, P. J. White, Tracy Fahey, and Siobhan Moane. “Older Adult Insights for Age Friendly Environments, Products and Service Systems.” *Design and Technology Education: an International Journal*; Vol 23 No 2 (2018): *Design and Technology Education: An International Journal* (07/03 2018). <https://ojs.lboro.ac.uk/DATE/article/view/2327>.

¹⁶ Sandra Moll et al., “Are you really doing ‘codesign’? Critical reflections when working with vulnerable populations,” *BMJ Open* 10, no. 11 (2020), <https://doi.org/10.1136/bmjopen-2020-038339>, <http://bmjopen.bmj.com/content/10/11/e038339.abstract>.

- How can MIRA provide support to individual and interdisciplinary researchers?

Participants were recruited from across all 6 Faculties by email. Participants (n=53) attended the session and represented researchers from across various disciplines and career stages. The Co-Design session occurred online via the Zoom platform to allow participants to access remotely. The format (table 1) was designed to commence and conclude within 1 hour to facilitate optimum engagement and allow the session to fit easily into a working day. Three moderators controlled the flow of conversation both from verbal and typed input from participants.

Table 2
Format and times for Co-Design Idea exchange session

Duration	Stage and description
5 minutes	Opening of Co-Design Session. The waiting room disabled and participants allowed enter directly into the meeting. Participants muted on entry.
5 minutes	<ul style="list-style-type: none"> • Introduction to Co-Design 'Idea Exchange' session and housekeeping • Thanking participants for taking the time to join and for completing the COVID-19 survey. • Discussed that this is an interactive session with the purpose to hear researcher concerns and ideas for how MIRA can provide support and assistance to you. • Note to participants that the meeting is recorded.
10 minutes	<ul style="list-style-type: none"> • The facilitator provides an introduction to 'Idea Exchange'. • Facilitator shares the screen and shows some of the results from the online survey.
30 minutes	<p>Facilitator moderates the discussion and starts with some broad facilitating questions based on themes that emerged from the survey:</p> <p>Introduces questions:</p> <ul style="list-style-type: none"> • What are the needs of an Interdisciplinary Researcher in Aging during COVID-19? • How can we pivot due to restrictions of COVID-19? • How can MIRA provide support to researchers?
5 minutes	Summarizes the broad themes that have emerged from the discussion.
5 minutes	Facilitator thanks the participants. Explains vision for future ideas exchange seminars and summarizes next steps. How they will feedback based on themes that have emerged.

III.2.2. Analysis co-design sessions

The Co-Design sessions were recorded and transcribed into word format using the transcribe function in Zoom. This document was then screened, edited and cleaned before analysis. The analysis was firstly achieved through a manual open coding process of reading and re-reading the data to assign broad themes. Axial coding followed this to understand detail within the themes.¹⁷ This was achieved by creating color codes by highlighting text to visually understand reoccurring patterns.^{18,19}

III.2.3. Co-design session 1 idea exchange results

Four themes emerged from the Co-Design Idea Exchange. Themes 1 and 2 are closely linked, with Theme 4 transcending the other themes. From these themes, several ideas/ formats to assist researchers emerged (Table 2).

Table 3
Themes from Co-Design session Idea Exchange

Theme 1:	Opportunities in acknowledging the 'new normal'
Theme 2:	Exploring the capacity to do research remotely
Theme 3:	Advocacy and support for non COVID-19 research
Theme 4:	The voice of the older person

III.2.3.1. Theme 1: Opportunities in acknowledging the new normal

COVID-19 can bring together thought leaders to advance the discourse on the future of our healthcare system... (Participant quote)

There was a very strong view that the COVID-19 period, albeit difficult for researchers and participants, held many opportunities. It was acknowledged that the current conditions may last some time and that further challenges

¹⁷ John W. Creswell and J D. Creswell, *Research design: qualitative, quantitative, and mixed methods approaches.*, Fifth edition. ed. (Los Angeles: SAGE., 2018). <https://search.library.wisc.edu/catalog/999743449602121>.

¹⁸ P.J. White, "Designer as Ethnographer: A Study of Domestic Cooking and Heating Product Design for Irish Older Adults." PhD, National University of Ireland Maynooth, 2012. http://mural.maynoothuniversity.ie/4740/1/PhD%20Thesis_PJ%20White.pdf.

¹⁹ P.J. White and Frank. Devitt. "Designing Personas from Design Ethnography and Grounded Theory." *Journal of Usability Studies* 16, no. 3 (2021). <https://uxpajournal.org/personas-ethnography-grounded-theory/>

may be encountered. The need to adapt was a reoccurring thread, and the opportunity to look at introducing new ways of doing research using technology was encouraged. An example of this from a participant stating:

Some clinicians were more open to using software applications/virtual interventions than they had been before the COVID-19 research restrictions. This may provide an opportunity to develop different virtual methods for interventions that are not COVID-19 related.

Participants mentioned that this was an opportunity for researchers to “identify the big questions in aging”. It was seen that there was a real opportunity to consider new methods or analysis to connect disparate parts of a research study. Furthermore, participants identified opportunities to define the direction going into future phases, developing themes post COVID-19 and developing good protocols for research.

III.2.3.2. Theme 2: Exploring the capacity to do research remotely

Closely linked to theme 1 was the opportunity to explore the capacity to do research remotely. In addition to this, a subtheme emerged regarding concerns about connectivity to participants. There was an interest in understanding what remote research meant in the near future, and understanding new mechanisms for non-face to face engagement. There were questions about remotely collecting data, and looking at new ways of working flexibly with funders. Furthermore, a need to understand virtual care and how it is being delivered/received, understanding the capacity for remote monitoring, and developing simple forms of handoff procedures.

Researchers who successfully adapted procedures during COVID-19 mentioned that there was an opportunity to share experiences and develop good protocols over time. For example, (in testing prototypes) creating ‘a hand off’ or ‘drop off’ procedure for older people and creating a follow-up demonstration through video conferencing.

Sub-Theme: Internet concerns and connectivity

A sub-theme emerged, discussing the barriers that may be encountered with virtual and remote engagement. Comments included:

We could in principle do work virtually but our population has a very low internet connectivity - are there any resources for providing internet connectivity to subjects? (Participant quote)

Ideas in this theme:

- Is it possible to develop a toolkit for researchers to get older adult participants remote research ready? Aiming for enjoyable interactions and equity among potential participants?” (Closely linked to THEME 4 The Voice of the Older Person)
- There’s a cost to it, but how about shipping by courier a mobile internet USB dongle to target participants?
- Would it be possible to group people who do virtual research/ exchange experiences?

III.2.3.3. Theme 3: Advocacy and support for non-COVID-19 research

Non-COVID-19 related research for older people remains of critical importance and must not be neglected in the rush to study the pandemic. Throughout the Idea Exchange, there was a strong acknowledgement of working with COVID-19 restrictions for the foreseeable future. The participants expressed the importance of support and advocacy of non-COVID-19 related research, ensuring that other research with older adults continues. Understanding that older participants are most vulnerable to COVID-19, ideas around pivoting research were considered to be useful. It was noted that the lack of face-to-face communications was “killing” community-based research. It was mentioned that there was a need to consider non-invasive interactions in the next stages. Questions that came up in this theme:

- How internally can we pivot creatively during COVID-19, especially for researchers who don’t want to completely pivot?
- How do we foresee advocacy for ongoing research?
- How can we safely get research up and running again?
- How can we reach objectives if we can’t recruit?
- How can we have a stronger voice? If we are not allowed to use certain procedures how can we collect data?

III.2.3.4. Theme 4: The voice of the older person

Including the voice of the older person and the need to gauge how older people felt about being included in research was a transcending theme. The question of consent and safety of the older person was also seen as paramount, and the perceived risk of data collection. As a positive, it was mentioned that older adults expressed interest in participating in studies at rates higher than normally seen. Statements and ideas from this theme included:

- It might be helpful as an Institute to do some work with older adult stakeholders to understand what their concerns would be in engaging

in clinical research as either a partner or participant...What would make them feel safe, what are the barriers...etc. Perhaps this could inform a set of recommendations for conducting research on aging.

- I think we have to have researchers and older adults together - that is important that we hear directly from them. We need to hear their experiences first-hand.

III.2.4. Co-design session 2 exploring the capacity for remote research

The second Co-Design session occurred in October 2020. In this, a similar Co-Design approach was used however with a more focused theme. As opposed to the first idea exchange, this session used convergent thinking to focus on potential solutions. Theme 2 was chosen to further explore options and opportunities around remote research. This session was guided by one main question: Which tools or resources would help you to execute your non-pandemic-related research in the next 12 months (during and in the post-pandemic era)? To commence dialogue and idea exchange, expert speakers were invited to discuss how they have pivoted research to online and potential tools that were available to researchers. Participants were recruited from across all 6 Faculties by email and Twitter. Participants (n=36).

Table 4
Format and times for Co-Design 2 session

Duration	Stage and description
10 minutes	Opening of Co-Design Session. Introduction of format and speakers
10 minutes	Presenter 1: Presentation on potential online and cloud tools for researchers
10 minutes	Presenter 2: Experiences of leading a research lab during COVID-19
10 minutes	Presenter 3: Health research methods during COVID-19
10 minutes	The facilitator introduces 'Idea Exchange'. <ul style="list-style-type: none"> • The facilitator shares screen and shows themes from session 1 • Discusses that this is an interactive session with the purpose of hearing researchers' ideas for how MIRA can provide support and assistance. • Note to participants that the meeting will be recorded.

Duration	Stage and description
30 minutes	Share screen with question slide: Which tools or resources would help you to execute your non-pandemic-related research in the next 12 months (during and in the post-pandemic era)? Moderators facilitate discussion/Co-Design session
10 minutes	Moderators summarizes and thanks the participants.

III.2.5. Co-design session 2 results

Three main themes emerged from the Co-Design session 2. The themes were wide-ranging from improving the day-to-day experience of researchers and creating virtual collaboration and knowledge spaces, to rethinking stakeholder engagement. From these themes, several ideas for future consideration emerged (Fig 3).

III.2.5.1. Theme 1. Day-to-day research

Overcoming challenges in recruitment, training, and safety

Participants noted a challenge in pivoting was that “there’s a lot of work to be done, and there’s not a lot of people who are trained to do it”. Citing that some of the biggest challenges were in training, retraining, recruitment in specific skillsets and the time it took to bring new people in. Maintaining the safety of researchers was also challenging, as was getting samples transported safely from place to place and receiving samples during the pandemic. Essential cleaning protocols were also cited as time-consuming, slowing down the research process.

More physical space

It would be amazing if my whole team could all work at the same time, but we can’t because we have to stay two meters apart, so we have to be at about 25 to 30% capacity. (Participant quote)

Physically having more lab space was mentioned as being beneficial ensuring researchers could all work safely at the same time. Heads of lab spaces have had to make a lot of adaptations to accommodate physical distancing, relying particularly on shift work to work flexibly. More physical space would also enable the ability to safely work with research participants.



Figure 3
 Themes from co-design session 2 (image created in MIRO)

Maintaining mental health

It's been tremendously stressful, everyone's trying to take on these dual roles and to keep the original research running, writing grants etc... it's been a huge challenge. (Participant quote)

The mental health of researchers was flagged as a challenge that needed to be addressed, ensuring social connections were maintained as work conditions changed. There was sympathy for people who had just joined labs and were new to research. Also acknowledged was the fact that personal lives could have changed radically within the COVID-19 period.

Coming to work is not as much fun as it used to be, because we can't actually spend any time together (Participant quote)

Being willing to adapt quickly and innovate

Researchers expressed the need to innovate and adjust day-to-day, adjusting existing processes, "continually tweaking along the way" and being rapid and responsive to urgent challenges. A factor in this was having a contingency plan, to strategize, and mitigate challenges if a team member got sick, or if there was an outbreak. Ensuring that there were opportunities for exchanging ideas was an important aspect of this.

III.2.5.2. Theme 2. Rethinking stakeholder engagement

Understanding participant online experience and fostering diversity

We're going to lose some richness (from not doing face to face). It's just not going to be the same as having people in the room. (Participant quote)

Participants mentioned how they needed to rethink whether or how they used stakeholder engagement. It was felt that this was a process best achieved in person and that spending a full day on a video call with a group of people would not be ideal. It was felt that it was more difficult to read an individual's body language and to know when and how to engage with quieter participants. Generally, the feeling was that people are more likely to be less willing to share in an online format, particularly when dealing with topics that might be more personal or sensitive. Achieving diversity in online groups was also seen as a difficulty, for example engaging participants from rural areas (due to poor internet access) or those who may not be as accustomed to using online meeting platforms. In learning how to better understand participant online experience it was mentioned that exit interviews would be done to gather thoughts with a small number of people after engagements.

Sending technology to participants and collecting data from patients

The opportunity of sending technology to participants at home was discussed as a means to overcome restrictions:

...Ideally, a situation where it allows a two-way conversation: we can send the package to people for 2-3 days where they have a technology which is easy to use and you can have communication back and forth to collect data. (Participant quote)

This opportunity was extended to research new ways to collect data and compare these to traditional methods. As a positive, it was observed that older people were learning more about technology during the pandemic and that the use of technology among older people had increased. The difficulty however was with older groups of people who might not normally have access to technology or have the resources to access technology. In this case, it was noted that whatever technology they used was going to need to be very simple. An idea for assistance in this regard was an online database for remote research resources. One of the main challenges is being able to collect data from patients, both from a research perspective, but also from a clinical perspective.

We can go down the route of giving everybody a device and train them. If a patient is doing it every week at home and telling you what the numbers are. Then the likelihood is that they'll get better at doing it. (Participant quote)

One of the positives found was that because patients were not physically coming into hospital, the whole process was shortened, in some cases appointments were just an hour or two. Identified was that some patients preferred shorter but more frequent conversations on the telephone. Therefore, what was lost in the face to face, was gained in the frequency or efficiency.

III.2.5.3. Theme 3: Virtual collaboration and knowledge spaces

Creating a virtual co-design space or a 'Discussion Board'

I think that we are in the middle of the experience, of understanding what our researchers needs are. I think the idea of a platform in which people can share over time might be useful ...Is there a possibility for this ideas exchange, creating a discussion board where people show their ideas and kind of have a real-life dialogue? (Participant quote)

The researchers reflected on the Co-Design sessions and mentioned the positives around sharing and collaborating however they welcomed a space

Summary of Results

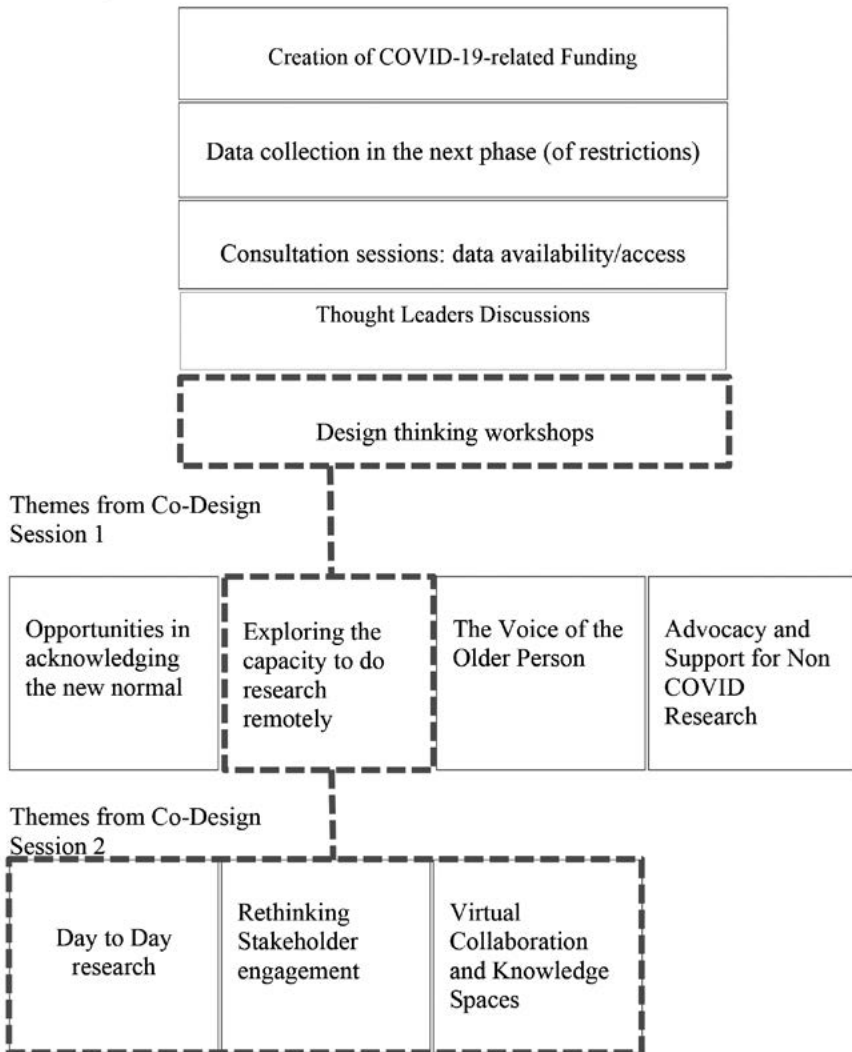


Figure 4
 Outline of needs of interdisciplinary researchers
 in Aging during COVID-19

where they could Co-Design over a longer period, a place to think and reflect about ideas, rather than having to ‘think aloud’ in the moment. Expanding on this, it was suggested that it could be a place where researchers could go to put ideas or questions and iteratively develop them.

Collaboration, coordination, and inventories of knowledge

It was reinforced by researchers that collaboration and coordination were essential, and it was forecasted that post-COVID-19 research would require more collaborations, along with bringing in international expertise. In situations where researchers didn’t have much time, quick access to the highest quality, most relevant evidence and policy was required. The creation of a knowledge ecosystem or inventory to advance evidence synthesis would be welcomed. The majority of the researchers said that they would like some live interaction or resource page started.

IV. Summary of results

IV.1. Limitations

There were some limitations and constraints when designing this study. Due to COVID-19 restrictions, all researcher engagement was required to be online. Another limitation was time constraints, ensuring appropriate time for as many researchers as possible to attend sessions, and collecting data regularly within the first six months of COVID restrictions. The involvement of older people (the voice of research participants) in the process was considered, however it was decided that this would be more appropriate at a later stage when specific needs were discovered.

IV.2. Future research

The Double Diamond was used to guide methods in this study. The first ‘diamond’ discovery/ define was used to focus on the needs of researchers through discovery (Co-design session 1) and Define (Co-design session 2). Future research will focus on the second diamond ‘develop’ and ‘deliver’ stages with older people focusing on their specific needs.

V. Conclusions

COVID-19 has added layers of complexity to the way in which we execute research in aging. In the aftermath, we will increasingly need

interdisciplinary approaches to understand the evolving needs of older people. This paper identified needs of interdisciplinary researchers during the pandemic. These needs were varied, they help shape how we progress, and help us understand how to assist researchers in times of uncertainly and change.

The initial survey showed the different ways in which researchers needed to pivot due to restrictions. The Co-Design sessions explored and refined these needs into actionable themes for progression. In the first session, themes included: ensuring the voice of the older person was heard, continued support for non-COVID-19 research, opportunities in acknowledging the 'new normal' and exploring the capacity to do research remotely. The second Co-Design session focused on the capacity to do research remotely and found ideas to facilitate this. These included support in day-to-day research, the creation of virtual collaboration and knowledge spaces, and ways in rethinking stakeholder engagement. Of importance for future research will be to conduct similar Co-Design sessions with older adult participants. In addition, as the Co-Design format was welcomed by participants, online collaboration tools will be developed to assist progression.

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