

# Bridging the AI Gap: Evaluating the Impact of an AI Education Program for Caregivers on Parental Leave

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## Abstract

Artificial Intelligence (AI) literacy is increasingly important across many fields, yet caregivers remain underrepresented in AI-related fields due to a combination of systemic and individual barriers. To address this, the Caregivers and Machine Learning (C&ML) program developed and delivered an accessible AI education program to caregivers on parental leave. Two cohorts participated in this 6-week interprofessional program, featuring fundamental machine learning concepts, hands-on programming assignments, and a capstone project. This study examines the program's impact on participants, focusing on their motivations and barriers before, during, and after the program as outcomes after completion.

Post-program surveys and semi-structured interviews highlight that caregivers often face barriers such as the rapid pace of AI, discrimination, and balancing caregiving responsibilities with learning new skills. The C&ML program's flexible structure and personalized support network were critical in enabling participants to fully engage in the program, leading to significant improvements in their knowledge of ML and increased confidence in applying these skills. After completing the program, 20% of participants transitioned into AI-related roles or pursued further education. This research highlights the value of targeted, inclusive educational programs for underrepresented groups and provides practical recommendations for refining future AI training programs for caregivers.

## Introduction

Rapid advancements in Artificial Intelligence (AI) have transformed many sectors, yet some groups, such as women, remain underrepresented in the tech industry due to a range of systemic and individual barriers (Kenney, McGee, and Bhatnager 2012). The *state of women in AI today* report published by the Deloitte AI Institute (2021) suggests that despite women making up 47% of the workforce in the United States labor force, they make up only 26% of roles in AI and data science.

This gap is especially noticeable in Data Science and AI research, where the 2021 AI Index Report found that women make up only 16% of tenure-track faculty focused

on AI globally (Stanford University-Human-Centered Artificial Intelligence 2021). Addressing this disparity is essential to the broader effort to promote inclusion and is especially critical to attract more diverse student populations to study AI. While the representation of women pursuing education in computer science has been an area of increased focus, the lack of female representation is still evident. For example, the percentage of Computer Science Master's graduate that self-identify as female went from 24.6% (2011) to 26.3% (2022) and for PhD graduates has remained unchanged at 22.1% (2011-2022) (Stanford University-Human-Centered Artificial Intelligence 2024).

In addition to the low representation of women in formalized computer science education, this gap is further exacerbated by the "leaky pipeline" effect throughout their career trajectories<sup>1</sup>. Efforts to improve paid parental leave programs in Canada over the past 30 years have proven effective in increasing the number of new working mothers who were able to take paid temporary leaves from their employment positions and have been shown to improve female employee retention. However, there are still relatively few male caregivers who partake in paid parental leave programs in Canada. For reference, the proportion of new working mothers with a child under the age of 1 on parental leave is 75-78% whereas for men it remains at 7.3% nationally and 11.7% in Quebec (Government of Canada and Canada 2023). While the authors recognize that the effects of parenthood can be decoupled from gender identity, there is an urgent need to acknowledge the increased demands of parenthood and the potential barriers to career advancement that this responsibility can have (Morgan et al. 2021).

The Caregivers and Machine Learning (C&ML) program is a 6-week AI educational initiative developed and delivered by the Vector Institute, Canadian independent, not-for-profit AI research institute in 2022<sup>2</sup> and in 2023<sup>3</sup>. This pro-

<sup>1</sup>The term "leaky pipeline" is used to describe the different points in which women choose to leave their STEM related fields

<sup>2</sup><https://vectorinstitute.ai/mothers-machine-learning-vectors-ai-program-for-mothers-on-leave-and-stay-at-home-caregivers/>

<sup>3</sup><https://vectorinstitute.ai/programs/caregivers-and-machine-learning/>

gram aims to engage stay-at-home caregivers with any general science or math backgrounds to continue to build their skill base while on parental leave or during an extended absence from outside employment. The structure of the program features weekly online lectures and hands-on tutorials delivered by the teaching team, including faculty members and teaching assistants (TAs). In this course, students cover fundamental machine learning (ML) concepts and build practical Python programming skills. Additionally, the C&ML program offers opportunity for participants to build community and seek mentorship through guest speakers, all of whom are world-class researchers and business leaders in the AI space. With an 86% completion rate among 93 participants, the program employed methods designed specifically to meet the diverse learning needs of participants.

The C&ML program is a bespoke initiative, designed to concurrently address the needs of caregivers while providing comprehensive education on AI. The curriculum covers ML fundamentals, applied AI in industry, ethics, data science, and the challenges and opportunities associated with AI. Several components of the program that were specifically designed to meet the cohort needs include: offerings of both synchronous and asynchronous elements to facilitate interactive and flexible learning experiences, a small class ratio (5 students:1 teaching assistant (TA)), extended hours support with TAs to accommodate non-traditional working hours, a \$500 childcare bursary upon completion, and the promotion of a "safe space" to discuss challenges of parenting throughout the program. Furthermore, over half of the instructors and TAs had lived experience as parents to help foster a supportive learning environment.

The program design and delivery consulted input from subject matter experts and stakeholders. The educational program was implemented in two cohorts (2022 and 2023), allowing iterative improvements based on participant feedback and evaluation findings. The current study aimed to better understand participant experiences and provide recommendations for future iterations. The multidisciplinary study team, comprised of experts from AI and education, brought together diverse backgrounds and expertise to facilitate a comprehensive and rigorous approach to integrating and evaluating this AI education intervention.

The primary objectives of this study are threefold:

1. To understand the motivations and barriers caregivers experience when trying to pursuing AI studies or careers;
2. To assess the participant experience of the 6-week C&ML Program on increasing knowledge and confidence among caregivers on parental leave;
3. To explore the post-program outcomes and successes of participants in academic, career, or practical applications of their learning.

Additionally, the evaluation specifically aims to investigate the program's ability to foster equitable learning environments, promote inclusion, and empower caregivers to build AI literacy and apply their AI knowledge upon their return to workforce. By employing qualitative research methods, this evaluation examines both structured post-program survey responses as well as semi-structured interviews con-

ducted to better understand learner's personal experiences before, throughout, and following the program.

## Related Works

The rapid evolution of AI education is driven by the growing demand for skills in ML, data science, and automation across industries (Stanford University-Human-Centered Artificial Intelligence 2024). As the field of AI advances, there is an increasing emphasis on promoting AI literacy and incorporating diverse perspectives to tackle real-world problems such as safety, alignment, and governance (Costanza-Chock 2020; Bengio et al. 2023). Despite the growing importance of AI, significant barriers to education remain, particularly for underrepresented groups such as women and caregivers (Deloitte AI Institute 2021).

The benefits of diversity in the field of AI are far reaching, with data suggesting that companies with more diverse and inclusive cultures not only demonstrate higher returns (Deloitte AI Institute 2021) but also representing a more responsible approach to AI development. By prioritizing inclusivity in the AI workforce, biases in technology and the creation of ill-suited systems can be mitigated, ensuring that AI tools serve a broader range of needs (Avni and El Kaliouby 2020).

As AI tools become ubiquitous in workplaces and daily life, AI education has the potential to democratize access to technology and innovation. Yet, access to AI education remains uneven, with caregivers and other underrepresented groups often facing significant barriers. Addressing these disparities requires interprofessional collaboration to foster equitable educational opportunities (Lomis et al. 2021). Partnerships between educational institutions, industry, and government have led to the development of AI curricula tailored to equip underserved populations as well as working-class professionals with the necessary skills and insights to navigate this evolving landscape (Costanza-Chock 2020).

For example, AI4All, a nonprofit organization, has created summer programs that target high school students from underrepresented backgrounds, providing them with mentorship and hands-on experience in AI (Posner and Li 2020). Another example is AI for the Clinician Champions Program, a foundational AI course to accelerate the adoption and implementation of AI in healthcare (Teferi et al. 2023). The program highlights the necessity of a diverse, equitable, and inclusive learning environment to bridge AI education gaps in healthcare. These programs not only introduce students to AI but also foster a sense of belonging in the field. Similarly, initiatives that integrate AI concepts into existing curricula in public schools have shown promise in expanding access to AI education across socioeconomic divides (Luckin and Holmes 2016; Zhai et al. 2021; Akgun and Greenhow 2022).

## Methodology

### Overall Study Design

Our study design is grounded in the Knowledge-to-Action (KTA) framework, which integrates knowledge generation, adaptation, and application in real-world contexts (Field et al. 2014). This framework guides the evaluation by focusing on both the creation of specifically tailored AI educa-

tional material (knowledge) and the ability of participants to apply this knowledge upon returning to the workforce (action). The framework's cyclical process of knowledge creation, synthesis, and action enables the refinement of educational interventions to foster equitable learning environments and promote inclusion. In the context of the C&ML course, it empowers caregivers to translate their newly acquired AI knowledge into practical applications in their personal and professional lives.

Design thinking and the knowledge funnel approach were employed to refine the knowledge base, guiding the development of evidence-based education interventions that were provided in the C&ML program. This stage was completed in consultation with a diverse group of experts, representing both the AI and education sectors. Special consideration was given to potential accommodations that may be needed by caregivers at different stages, ensuring that the program content and structure were inclusive and accessible.

Data collection involved two stages: (1) an online survey administered via the Qualtrics platform and (2) individual semi-structured interviews. Written consent was obtained from each participant, including consent to use survey data and interview responses for research purposes. To protect participant privacy, all data were de-identified upon collection. The data collection protocols were approved by the Institutional Research Ethics Board (REB #23-10-014).

To recruit participants, invitations were emailed to all students who had completed the C&ML program in the 2022 and 2023 cohorts (n=80). The invitation included a letter of information outlining research goals and a link to the electronic survey. No incentives were provided to participants to complete in this study.

**Post-Program Electronic Survey** The survey consisted of 41 questions and was designed to take between 15-30 minutes to complete. It focused on gathering information about participants' backgrounds and their experiences throughout the program. The questions were divided into six sections: participant information, technical skills and professional experience, motivation, barriers<sup>4</sup>, program delivery, and outcomes. The survey used a variety of response formats, including multiple-choice questions, Likert scale responses, and open-text fields. At the conclusion of the survey, participants were invited to express interest in participating in a follow-up 30-minute interview with a member of the research team to further expand on their responses.

**Semi-structured Interviews** As many survey questions were constrained to fixed-response formats (e.g. multiple-choice and Likert scale options) semi-structured interviews were conducted to gain a deeper understanding of participants' experiences. A maximum variation sampling strategy

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<sup>4</sup>A barrier, in the context of the C&ML program, refers to any obstacle, limitation, or challenge that inhibits or restricts the participation, progress, or success of caregivers in the field of artificial intelligence. These barriers can be structural, societal, institutional, or personal in nature, and they often prevent people from fully realizing their potential, accessing opportunities, and contributing effectively to the AI field,

was employed for interview participant recruitment to ensure broad representation from both cohorts (Palinkas et al. 2015). This approach allowed for a diverse range of perspectives from participants who completed the program.

All interviews were conducted by author FW online using the Zoom platform between June and August 2024. Each interview lasted approximately 30 minutes and followed a semi-structured interview guide, while allowing for the exploration of new topics as they emerged during the conversations. All interviews were conducted in English and were recorded and transcribed for subsequent analysis.

**Qualitative Analysis** The semi-structured interviews were transcribed using Zoom's live transcription feature. All identifying information was removed, and the transcripts were imported into NVivo-14 for coding. The analysis was carried out by the first author, KK, in collaboration with FW.

The coding process involved both inductive and deductive approaches, with FW taking notes during the interviews to capture emerging themes. KK cleaned and coded all transcripts. Reflexive thematic analysis was then performed, following the six-phase approach outlined by Braun and Clarke (Braun and Clarke 2006). An initial set of codes was developed based on the research questions, survey results, and notes taken during the interviews. The codebook was iteratively revised throughout the coding process to accommodate emergent themes and reflect the understanding of participant perspectives.

## Results and Discussion

### Participant Information and Background

33 participants completed the electronic survey out of the pool of recruited participants (n=80). Of these respondents the majority identified as female (n=32) and one identified as male. All participants in the program were between the ages of 25 and 54. The most common age group was between 35-44 years (n=23), followed by 25-34 (n=6), and 45-54 (n=4). The program was provided through Vector Institute where most of the participants (n=27) resided in Ontario. Other participants were also from British Columbia (n=1), Alberta (n=2), and Quebec (n=3).

All participants had completed some formalized education in the form of a Bachelor's degree (n=11), Master's degree (n=14), Doctoral degree (n=6), and Professional degrees such as a Juris or Medical Doctor (n=2). Participants came from many professional backgrounds, such as engineering (n=10), data science (n=6), life sciences (n=6), social sciences (n=2), business and finance (n=2), and other fields (n=7). They had varying confidence levels in tools to support ML efforts (Figure 1).

### Motivations

The majority of participants indicated that they had been motivated to learn more about AI and ML for several years. Interestingly, 66% (n=22) said that they had been motivated for over one year prior to applying for the program and only 12% said that their application was an "in the moment" decision when they saw the call for applicants (n=4). Participants

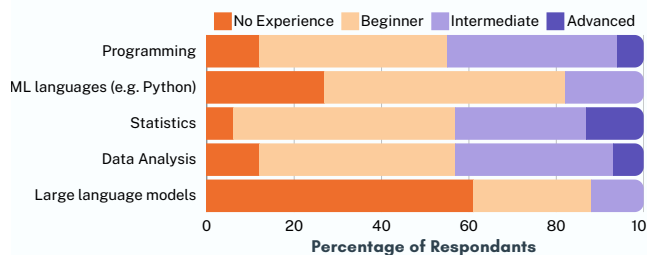


Figure 1: Participant knowledge of AI before beginning C&ML Program

were asked about both their general and skill-specific motivations for enrolling in this program (Figure 2). The most frequently cited skill-specific motivations included understanding the basics of ML (n=26) and hoping to build comfort discussing/applying ML in the workplace (n=25). As far as general or personal motivations, the most frequently cited motivations were learning a new skill (n=25) and career shift or advancement (n=24).

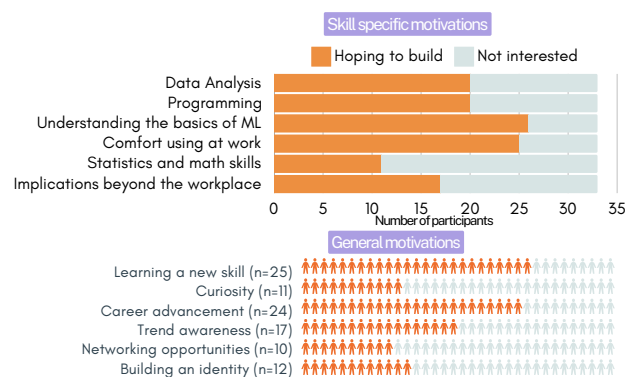


Figure 2: Skill-specific and general motivations for enrolling and completing the C& ML Program. \*Several columns were shortened for the figure, including: Comfort using ML at work represents Comfort discussing/applying ML in the workplace. “Building an Identity” represents “Building an identify outside of being a caregiver”

**Curiosity** During interviews many of the participants cited a general curiosity and desire to understand AI as a primary motivating factor for signing up for this program.

*Participant 10:* “Taking the course was fascinating because I’ve done a little bit of programming in my previous life, but not a lot. So it was really, really interesting to get that back end understanding of what’s going on, because on the surface. It really is a black box, right? These tools and apps you just use it you know right? What you want is spits out an answer. And and it’s it’s just magic. So it was really nice to have some context.”

*Participant 9:* “But right now, artificial intelligence ML is so important for any field whatever we are doing. So that was the main reason that I want to be in, so that I can understand the basics.”

Additionally, several participants discussed the self-satisfaction associated with learning or building upon new or existing skills that have been dormant. This was particularly evident in the context of participant having taken significant leaves from work to act as a primary caregiver. Many participants discussed a drive to continue to learn and prevent their skills from degrading.

*Participant 6:* “I really enjoy the learning aspect of it. It’s something really in depth. I’ve been out of formal education for a very long time. So it was good to have, like a more university in depth. Purely almost scientific course to do, because that really something that I’ve really missed.”

*Participant 12:* “So ML when it started to kind of blow up. I was like. Oh, here’s my chance to kind of reach back into my math-y brain, and maybe I’ll combine it somehow with my PhD.”

**Identity outside of parenthood** While there was a general interest in learning there was also some specific mention of transitioning to the role of being a caregiver. In particular, several interview participants (n=3) spoke about the isolating nature of being a primary caregiver and that they had interests outside of providing care for their children.

*Participant 14:* “So in that kind of a context, it was just very like isolating, and your confidence really dwindled because you’re a new parent trying to like go through all the new like caregiving responsibilities. And then you’re thinking, oh, no, but I really want to advance in my career. But then you just kind of see yourself falling behind ...

And then, when I saw this opportunity through, I just thought it was incredible, like, just like the audience that it was geared towards. And I feel like it really, kind of it brought me back to a level where I was like, okay I can do this right, like I can learn a new skill that’s highly technical and complex.”

## Barriers

Participants identified several prominent barriers they have faced in their professional experiences. While some of these barriers were not caregiver specific (i.e. racism, sexism, gender-specific expectations) others addressed challenges directly related to caregiver responsibilities (i.e. flexible working arrangements, childcare supports, work experience gaps). Relatively few participants responded that they had experienced explicit workplace racism (n=2) and sexism (n=16) as a frequently encountered barrier. However, many participants indicated that they frequently encountered barriers regarding a lack of similar/familiar role models working in AI (n=16), lack of flexible work arrangements to accommodate parental responsibilities (n=15), and the *motherhood penalty*, where women who become mothers experience negative consequences in their career progression, earnings, and opportunities (n=19).

**The Rapid Pace of ML** Several participants spoke about practical barriers that prevent them from learning more

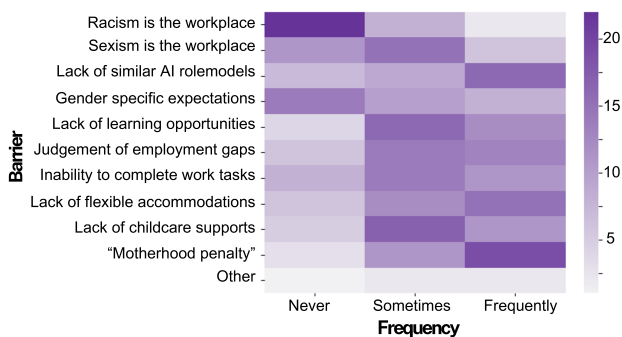


Figure 3: Frequency of participants encountering specific professional barriers

about ML such as the fast-pace of progress and breadth of topics.

*Participant 11:* “I think that’s where I’m finding like this whole field. It feels like you’re drinking from the fire hose, and at some point you just start to feel like I gotta pick a horse. Just pick a damn horse and go with it. But right now the horse that’s running at a full gallop.”

*Participant 1:* “I feel that’s exactly what is currently lacking only because there is a massive population of like really smart people who really wanna learn. And they they kept telling like, I don’t even know, where do I start? Like, you know, I don’t even know which program, like, you know, when I would read the requirements. I don’t fit anywhere.”

**Discrimination and Feelings of Belonging** In the semi-structured interviews some participants discussed experiencing challenges related to sexism, ageism, and their status as caregivers, while many acknowledged that they had been relatively fortunate in facing fewer professional obstacles and experiencing certain privileges. Previous research suggests that women tend to be less confident in their self-assessments of technical capabilities and are less likely to feel a sense of belonging in male-dominated fields, such as engineering and AI (Young, Wajcman, and Sprejer 2023). This underscores the importance of increasing the representation of women in these fields and providing equitable, supportive learning environments.

*Participant 11:* “Postings now strongly suggest an ‘always on’ culture, particularly with startups and scaleups. GenX and older are often not reflected. It’s still a dude party. I get along fine with guys, but there are social norms to respect.”

*Participant 6:* “It’s still a very male orientated environment, especially when you come to the highly technical stuff. So they’re quite fine with women being project managers and stuff like that, and even BA’s. But when you’re very technical female in that environment, the boundaries are still there, then not as bad as they were when I started in it 20 years ago, 30 years ago, but they are still there.”

*Participant 12:* “And I feel lucky cause I think I think I have supervisors who are like very supportive and you know, they’ll do things like other lab meetings wouldn’t. Also lab meetings and other meetings that they’re able to control or organize are not gonna happen like after 4:30 or 5, cause they know, like people have to go pick up their kids from daycare and it’s not. It’s not at all. It’s like. So in a way, I feel fortunate, because, like there’s other people also who are very aware of those barriers, and are doing like little things to make it easier. And I’m not. I don’t have to fight that fight.”

## Program Delivery and Experiences

Significant efforts were made in the program design to provide a supportive environment for students to learn while maintaining their roles as caregivers. Participants were asked how these components of the program helped to meet their needs (Figure 4). In general, responses from participants were positive. In particular, participants responded that the outside of working hours access to TAs (n=27), small cohort size (n=26), and asynchronous course delivery (n=23) helped a lot or completely. Some aspects, such as the condensed six-week format of the program were met with mixed feelings as some participants suggested that they would prefer the length of the program to be extended.

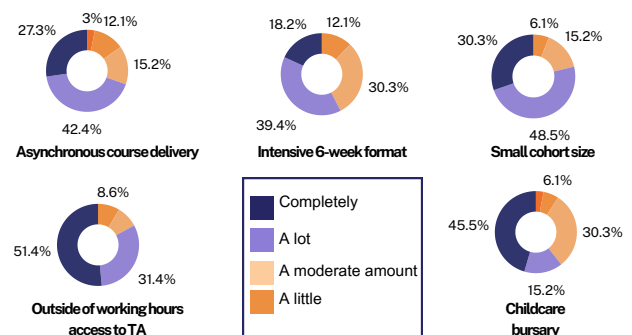


Figure 4: Participant evaluations of program adaptations and accommodations to meet the needs of caregivers

Relatively few participants found different aspects of the program extremely challenging (Figure 5). The most commonly cited challenge encountered by participants was impostor syndrome and the highly technical nature of the content. The required heavy emphasis on fundamental math and programming in order to engage deeply with the course material was challenging, particularly to participants who had been out of formalized education for long periods or came from non-mathematics backgrounds. This aligns closely with other findings that found that mathematical aspects of modules were often where students encountered the most difficulty in AI educational programs. Researchers have also suggested that this problem can be further intensified in interdisciplinary cohorts, where students come from different educational backgrounds and have taken varying levels of technical prerequisites (Allen, McGough, and Devlin 2022).

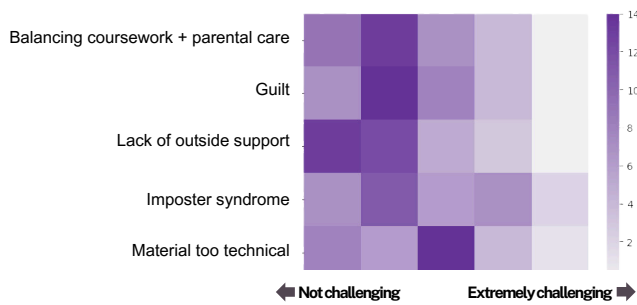


Figure 5: Responses of participants when asked what challenges they faced during the C&ML program

When asked if participants would recommend participating in this program 94% said yes (n=31). Participants suggested that this program could be enhanced with providing opportunities to advance careers through practical work experience such as internships or be expanded to have multiple components, including a secondary offering focused on knowledge mobilization.

*Participant 7:* “Maybe part two of the course could be like just solely like different industries or something, and like solving problems and using the skills we learned in like some real life kind of job. If that could be like an option for a next step for the people who took your course. Then I think that could be cool, just to like, have work on a team, and have, like a real experience in the field”

*Participant 6:* “I know. Yeah, I just think, like, okay, there’s like, okay, we learn the theory, we learn the skills and then applying the skills and like some different industries or something, and like solving problems and using the skills we learned in like some real life kind of job.”

**Support Structures and Communities of Care** Many participants spoke about the different ways in which they receive support, allowing them to thrive both personally and professionally. In the context of the C&ML program the continuous access to the program providers (i.e. instructors and TAs) proved to be critical in supporting their experiences throughout the program. In particular, many participants described the irregular hours they were able to interact with their TAs as critical to their success in this program.

*Participant 14:* “I liked how many TAs you had, so that if one wasn’t available they were also readily available. Like, I’m talking like midnight, they were available like on a weekend like even you like you were like on the weekends and late into the evening. So I think, being a new parent, that’s really key cause, like your baby’s hours are just so like unpredictable right? Like they’ll sleep in the day, and then they’ll be like all night. So I think, just like being accessible was so key for a new parent.”

Furthermore, the specificity of the program proved to be important in creating a sense of community between students, providing an open platform for participants to discuss

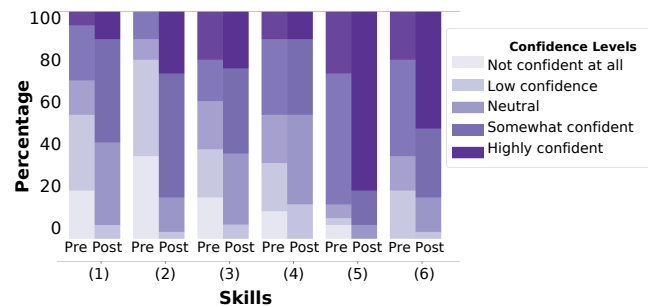


Figure 6: Confidence changes when comparing pre- and post-program responses. Individual skills legend: (1) General programming skills, (2) Discussing AI in a Professional setting, (3) In your current employment role, (4) Fundamental Math Skills, (5) Learn something new and unknown

not only course content but also challenges and triumphs of parenthood.

### Outcomes

While the goals of this program were to provide additional opportunities to individuals currently acting as caregivers, the research team recognizes that traditional success metrics (i.e. promotion, new job) may not holistically capture the benefits of the program. In addition to outcome driven metrics we also evaluated pre- and post- program confidence changes in participants (Figure 6).

**Confidence** Overall participant confidence increased in all categories, with the most notable changes in *discussing AI in a professional setting, that they could learn something new and unknown, and that they could balance coursework while maintaining their role as a caregiver* (Figure 6). There was some increase in confidence related to fundamental math skills (e.g. probability, calculus, etc.), however, it seems that there was a ceiling effect that primarily benefited students who were less confident upon beginning the course. These results align with current research that highlight the importance of building students’ confidence in AI education (Allen, McGough, and Devlin 2022). By progressively increasing the difficulty over the period of the course the cohort demonstrated that they were able to become more confident across several axes, both AI and caregiver specific.

*Participant 8:* “Like, you know, there was a human component to it which I think was really helpful to hear that less isolating, I guess, to hear that sort of story that it’s not just, you know. Every time, I’ve had 3 kids and every time I go on leave I feel like I’ve completely deskilled and all this was sort of that confidence boost that, you know, You need the reminder that, actually, you, you do have those skills, and you can apply them”

**Application in the Workplace** When considering traditional metrics, almost 20% of participants made a major career shift since completing the C&ML Program, either

through pursuing graduate studies in AI (n=3) or new ML specific roles (n=3). Furthermore, 27% of participants responded that they are actively applying developed ML skills (n=3) and discussing ML regularly in their roles (n=4).

Additionally, participants were able to leverage their domain expertise in different areas to act as a bridge between applied problems and technical ML approaches.

*Participant 2:* “The advantage of that job was I could use my engineering physics background beside the new skills that I learned. It was kind of very ideal position to use your skills, data, analytics, data, science, data story telling things like that.

You know, we have to understand the field. It’s not just the numbers, not just the graphs you have to try to interpret them. Try to tell the stories based on the knowledge you had before, for the many years of working industry. So it was very good combination for me, and helped me to exceed further in my career in my career path.”

*Participant 6:* “I could contribute with my understanding of how business works and how things work in real life. Which I found quite a lot of the other people were missing. So that was quite interesting.

So I can talk to them. But I can also look at the business request and say, okay, from ML point of view, what we want to focus on is A, B, and C. So actually something that I’ve always done in my job is like bridge that gap between the technical people and the business people.”

Many participants suggested that they were interested in applying their new skills after completing the program but felt that there was a gap in knowledge translation. It is important to note that not all participants who completed the C&ML Program felt that they were well equipped to pursue a job in a new field such as ML or data science, suggesting that major career shifts are not an appropriate metric of program success.

*Participant 6:* “I have a little theoretical knowledge but then trying to apply that to the real world. So I’m like, okay, I have a job. I’ve got some data running, some machine learning over, that would be great. But in the real world, how do I go about that?”

*Participant 6:* “If I wanted to get a new job, then, yeah, I’d have to go and do a masters in data, science? That whole area is ridiculous. I mean, they want somebody that has so much academic experience. And then real life experience as well and the 2 don’t add up. That whole part of the industry is not particularly inviting for anybody that doesn’t have those, especially when you’re talking by AI and talent acquisition. It’s like my my resume is gonna be filtered out before even gets to somebody to look at and I know this. So that’s one of the reasons I’ve come to terms with that.”

## Conclusions and Limitations

By bridging the gap between AI education and caregivers, the C&ML program equips participants with the skills to

navigate discussing and applying AI technologies upon their return to work. The program successfully addressed challenges by offering an accessible, flexible, and supportive AI education program tailored to the needs of caregivers on parental leave. While approximately 20% of the participants transitioned to pursue new opportunities directly related to AI after completing the C&ML course, the remaining participants did not have a significant career shift. However, the findings show that the program significantly enhanced participants’ ML knowledge base and their confidence in applying ML-relevant skills such as programming, statistics, and learning something new and unknown. This study underscores the importance of targeted, inclusive educational initiatives and offers practical recommendations for refining future AI training programs to better serve caregivers and other underrepresented groups.

This study has a number of limitations. First, the participants in the program were self-selected (voluntarily enrolled in the program) introducing the potential for selection bias. Those who opted to participate may have been more motivated or predisposed to adopting the program’s concepts compared to those who did not enroll. Furthermore, individuals under financial pressure, with fewer support structures in place, and dealing with highly complex caregiver scenarios may not have been able to participate despite being interested. As a result, the sample may not fully represent the broader population of caregivers. Additionally, not all program participants took part in the interview component, which may have resulted in incomplete data despite the use of a maximum variation sampling strategy.

Second, members of the evaluation team were involved in the program’s development and delivery. This has the potential to introduce bias and impact the objectivity of the evaluation. To mitigate the potential of bias and improve objectivity of the evaluation, researchers took reflexive notes on their ideas, assumptions, and only personal experiences through the analysis process. Finally, the program’s content and delivery methods evolved across different cohorts, creating variability in the educational experience being studied.

General AI literacy and problem solving skills are becoming critical across sectors such as engineering, medicine, and business. Future efforts should focus the continued education and empowerment of underrepresented groups. Programs such as the C&ML program provide a powerful opportunity to not only provide equitable access to AI-specific opportunities but also encourage participation and increased confidence in caregivers across all levels of industry.

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