Energy to Digital Growth Education and Upskilling Project (EDGE UP 2.0)

Final Report

August 2024

Blueprint

Future Skills Centre Centre des **Compétences futures**

Canada

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Acknowledgements

About the Future Skills Centre

The Future Skills Centre (FSC) is a forward-thinking centre for research and collaboration dedicated to driving innovation in skills development so that everyone in Canada can be prepared for the future of work. We partner with policymakers, researchers, practitioners, employers and labour, and post-secondary institutions to solve pressing labour market challenges and ensure that everyone can benefit from relevant lifelong learning opportunities. We are founded by a consortium whose members are Toronto Metropolitan University, Blueprint, and The Conference Board of Canada, and are funded by the Government of Canada's Future Skills Program.

Le Centre des Compétences futures (CCF) est un centre de recherche et de collaboration avant-gardiste qui se consacre à l'innovation dans le domaine du développement des compétences afin que toutes les personnes au Canada soient prêtes pour l'avenir du travail. Nous travaillons en partenariat avec des personnes chargées de l'élaboration des politiques, des personnes chargées de la recherche, des spécialistes, des employeurs et des travailleuses et travailleurs, ainsi qu'avec des établissements d'enseignement postsecondaire, afin de résoudre les problèmes urgents du marché du travail et de veiller à ce que chacun puisse bénéficier de possibilités pertinentes d'apprentissage tout au long de la vie. Nous sommes fondés par un consortium dont les membres sont l'Université métropolitaine de Toronto, Blueprint et le Conference Board of Canada, et nous sommes financés par le Programme du Centre des compétences du gouvernement du Canada.

About Blueprint

Blueprint was founded on the simple idea that evidence is a powerful tool for change. We work with policymakers and practitioners to create and use evidence to solve complex policy and program challenges. Our vision is a social policy ecosystem where evidence is used to improve lives, build better systems and policies and drive social change.

Our team brings together a multidisciplinary group of professionals with diverse capabilities in policy research, data analysis, design, evaluation, implementation and knowledge mobilization.

As a consortium partner of the Future Skills Centre, Blueprint works with partners and stakeholders to collaboratively generate and use evidence to help solve pressing future skills challenges.
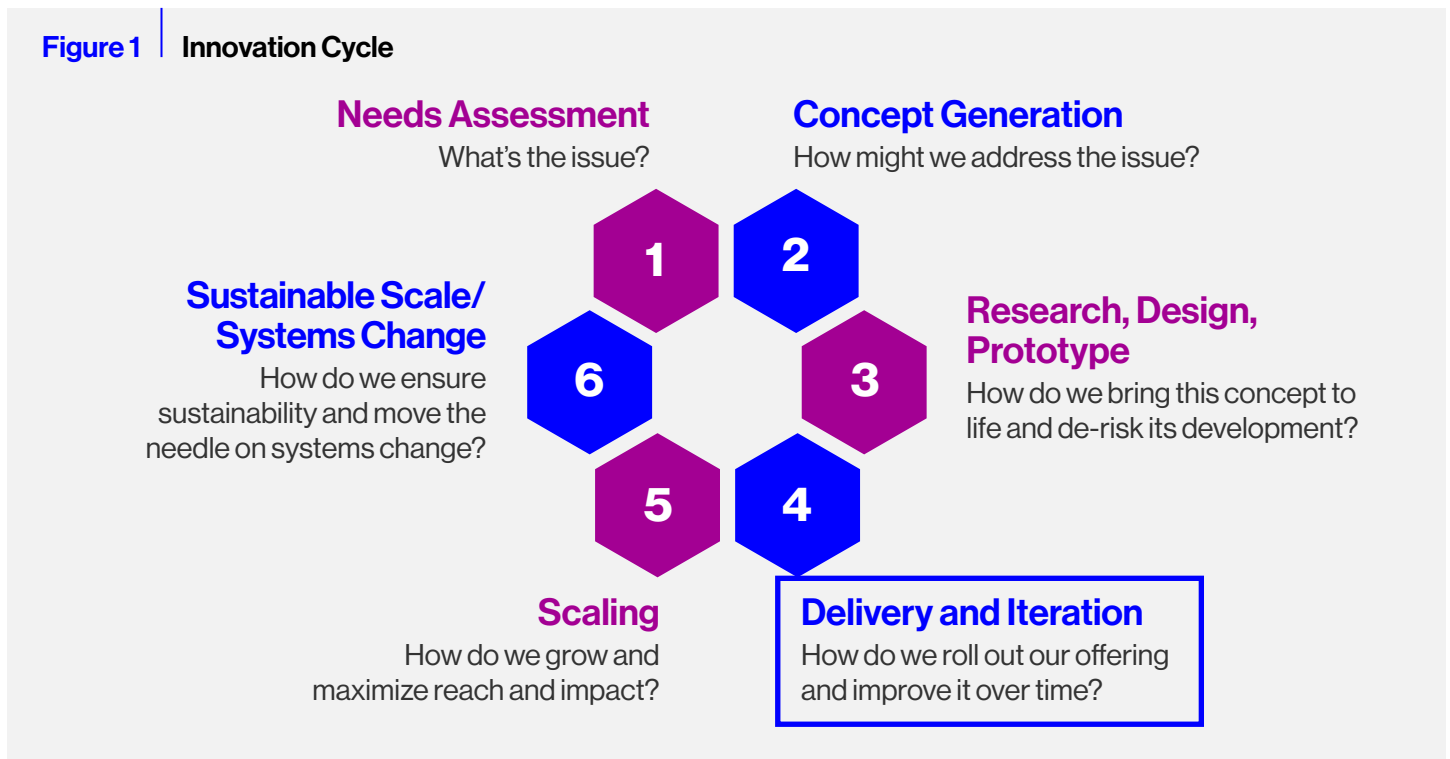
Preface

Canada's labour market is rapidly changing. To keep pace with these changes, Canadians need skills development opportunities that respond to demands and apply evidence-informed practices. Many skills development innovations have emerged to meet these needs, but they often face barriers to scaling their interventions beyond a pilot stage.

To address this challenge, the Future Skills Centre (FSC) and Blueprint launched the Scaling Up Skills Development Portfolio.

In this initiative, FSC is partnering with 10 organizations with promising skills development interventions that began scaling up their impact. As part of the FSC consortium, Blueprint is working closely with each grantee organization to generate evidence to support their scaling journey. This is an opportunity to disrupt the current "one study at a time" approach to evidence-building in favour of continuous evidence generation and program improvement. The hope is that this approach will better produce the quality and quantity of evidence needed to help promising interventions progress in their scaling journeys. For more information about Blueprint's approach to scaling, see our Scaling Social Innovation webpage.

Blueprint's evidence generation approach is aligned with the six-stage innovation cycle (see **Figure 1**). Our focus for the Scaling Portfolio is to work alongside partner organizations to generate evidence that helps move their interventions through **Stage 4** to **Stage 5**, with the ultimate goal of supporting sustainable scale and systems change (**Stage 6**).

Figure 1 | **Innovation Cycle**

Needs Assessment
What's the issue?

Concept Generation
How might we address the issue?

1

2

Sustainable Scale/ Systems Change
How do we ensure sustainability and move the needle on systems change?

6

3

Research, Design, Prototype
How do we bring this concept to life and de-risk its development?

5

4

Scaling
How do we grow and maximize reach and impact?

Delivery and Iteration
How do we roll out our offering and improve it over time?

About this report

This *Final Report* shares findings from the Energy to Digital Growth Education and Upskilling (EDGE UP 2.0) project, led by Calgary Economic Development (CED), and is a follow-up to our *Interim Report.* EDGE UP 2.0 is a sector-based training model that helps displaced, mid-level oil and gas workers make career transitions into IT roles in Calgary. The model responds to long-term trends in Alberta's oil and gas sector, which has seen employment wane over the past decade — a trend that is likely to continue.

This report presents final results from the project, which included two cohorts (cohort one ran from July 2021 to November 2022 and cohort two ran from February 2022 to May 2023).[1] Findings are based on quantitative administrative and survey data from both cohorts and qualitative findings from participant, partner and employer interviews.

This work is part of Blueprint's contribution to the Scaling Up Skills Development Portfolio, which involves collecting and monitoring interventions and capturing implementation stories and participant outcomes along their scaling journey.

This report is organized into seven sections:

- **Section 1: Introduction** (pp. 9-11) provides background on EDGE UP 2.0.

- **Section 2: About EDGE UP Intervention** (pp. 12-17) offers an overview of the model, adaptations made from cohort one to two and a summary of partners.

- **Section 3: Methodology** (pp. 18-21) shares Blueprint's evidence generation approach, learning agenda, data sources, sample sizes and limitations.

- **Section 4: Findings** (pp. 22-44) presents findings on program uptake, participant completion and satisfaction rates, and employment outcomes, as well as reflections from partners on implementation and delivery.

- **Section 5: Discussion and Conclusion** (pp. 45-48) offers reflections on our findings and thoughts for similar sector-based interventions.

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1 CED notably continued past May 2023 on various EDGE UP 2.0-related endeavours. This work included the Calgary Workforce Symposium (September 2023), for which EDGE UP was a sponsor; a social media campaign and EDGE UP 2.0 video trailer, including testimonials from participants, employers and post-secondary partners, to promote the program talent pool (December 2023); the Youthful Cities Forum Calgary Summit (February 2024); employer workforce roundtable sessions (March 2024); as well as additional training sessions discussed in more detail in section 2.1. of this report.

Executive Summary

The Energy to Digital Growth Education and Upskilling Project (or EDGE UP 2.0) was a dual-client, sector-based training program, designed by Calgary Economic Development (CED) and the Information and Communications Technology Council (ICTC), that helped displaced mid-career oil and gas workers make transitions into IT roles in Calgary, Alberta. In 2021, EDGE UP was selected as one of 10 interventions to receive Future Skills Centre funding as part of the [Scaling Up Skills Development Portfolio](). Since then, Blueprint has collected data about the intervention, capturing implementation and participant outcomes along its scaling journey.

EDGE UP 2.0 participants were offered two weeks of workplace readiness (or 'transition') training and help finding appropriate entry-level IT roles. Participants completed online 'Technical Training' and were filtered into subject-matter streams taught by instructors from four post-secondary education (PSE) institutions. Training culminated in a work-integrated learning 'Capstone Project' hosted by a local employer, facilitated through the Riipen online platform. Optional internships were provided with local IT companies. Throughout the program, CED and ICTC provided employment service support and coaching.

This *Final Report* is a follow-up to our *Interim Report* and presents quantitative and qualitative data from cohorts one and two. Findings are based on administrative data on enrolment and completion rates, a baseline survey collecting socio-demographic information, and post-training, four-month and nine-month follow-up surveys from participants on program uptake, satisfaction and employment outcomes. The report also includes findings from semi-structured interviews with participants (n=36) and from delivery partners (n=13) and employers (n=3).

Insights into program uptake and completion rates

- EDGE UP 2.0 achieved **97%** of its recruitment target (309/320) of participants: **81%** were unemployed at intake; **75%** had worked in oil and gas; **68%** were 40 or older; **87%** held a bachelor's degree or higher; and **70%** were immigrants.
- The program completion rate was **84%**.

Insights into participant satisfaction rates

- Overall, **78%** of respondents were satisfied, **88%** were likely to recommend EDGE UP 2.0 and **88%** found it useful for future IT roles. Respondents were highly satisfied with core program components: Transition to Tech training (**86%**), Foundation of Digital Transformation training (**87%**), subject-matter streams (**89%**), PSE course content (**73%**), tech skills training in the streams (**79%**) and their instructors (**75%**).

- Satisfaction was moderate for Capstone Projects (**68%**) and internships (**70%**) — only **14%** of participants received an internship — and lower for post-training employment supports (**54%**), though **88%** found Booster Training — a new component — beneficial.

- In interviews, respondents praised practical elements of the program (including job support services), noted increased confidence levels, streams that matched their level of experience, knowledgeable instructors and flexible learning modes.

- Respondents also made some suggestions: to extend job readiness training, adjust curriculum design to bolster experience and outcomes, provide more relevant Capstone Projects and strengthen employment supports, especially for the internship component.

Insights into employment outcomes

- Employment rates increased from **20%** post-training to **60%** nine months later. Job satisfaction among employed respondents rose from **35%** to **75%**, with average working hours increasing from 27 to 38 per week and annual earnings from **$39,928** to **$78,590**.

- Data show that **68%** of respondents reported using skills learned or improved in the program nine months after it was completed. Almost one-quarter (**24%**) reported that **50%** or more of their current job duties involved the skills developed in the program in the same period; however, only **32%** of respondents found IT roles nine months after.

Insights into program delivery from partners

- Partners operated cohesively and collaboratively, noting that EDGE UP 2.0 was unique in the skills ecosystem due to its unique target demographic, innovative approach to sector-based design, reputable partners and support from government funding.

- Partners noted that shifting economic conditions — a surge in hiring for oil and gas from 2021 to present and global and local layoffs in tech from 2022–2023 — created obstacles to recruitment and outcomes. Interviewees noted that some participants were reluctant to apply to IT jobs due to a lack of confidence in their own skills and a lack of readiness for the work; some reported being overwhelmed by workload and course intensity.

- Prevailing economic conditions in Calgary meant low employer engagement and fewer relevant internship positions (e.g., many IT companies in Calgary were small and had less financial capacity to offer internships). Partners felt that compared to other employers in other provinces, those in Calgary had low levels of engagement in student work placements and required more personal connections to be brought in.

- Staff also contextualized issues around the Capstone Projects (e.g., projects sometimes exceeded participants' technical abilities) and areas to improve in coordination.

Discussion and wider learnings

EDGE UP 2.0's goal of transitioning mid-career oil and gas professionals to in-demand digital roles required a pioneering approach, setting it apart from traditional sector-based models. Because of this project's inclusion in the [Scaling Up Skills Development Portfolio](#), we can learn from these successes to revise and apply them to new contexts:

- Technologies like web scraping, text analysis and machine learning can significantly enhance sector-based workforce development models by enabling a multi-pronged needs assessment combining insights from stakeholders with job market data.

- While highly effective, sector-based models are vulnerable to labour market disruptions (the uptick in the oil and gas sector and downturn in the IT sector likely dampened recruitment and employment outcomes). Workforce development initiatives may be able to buffer against unforeseen disruptions by targeting multiple sectors with viable skill transitions (i.e., preparing workers for roles across several compatible industries).

- Transitions that are *viable* in terms of skills match may not be desirable — i.e., viability should be defined by multiple factors that can promote transition and retention in a new sector. Similar models may consider incorporating services to address psychological and cultural barriers to career transitions and address anxieties associated with change.

- As expected with a multi-partner collaboration, communication and coordination demands were high. Future research may explore how multi-partner, sector-based training initiatives can be designed to be nimbler and more responsive in the face of contextual changes, labour market disruptions and to adjusting delivery mid-stream.

1. Introduction

Canadian energy production is undergoing a profound transformation: 30,000 jobs were displaced from the oil and gas industry from 2014 to 2019 alone.[2] Despite some notable recoveries, the sector faces a net loss over the long term, with climate policy, automation and machine learning projected to displace 30% of the workforce by 2040, including many routine jobs and competencies.[3] Some occupations could be displaced by as much as 85–95%.[4]

Jobs in oil and gas are concentrated in Alberta. In 2018, Calgarians held 61,000 of these jobs, or 26% of the national total.[5] Because of this concentration, the economic downturn of 2015 saw the province lose 20,000 jobs in the sector.[6] Reduced demand and falling prices during the COVID-19 pandemic meant another 17,500 jobs[7] were lost in 2020.[8] With Calgary composing one third of Alberta's total population (and total employment) – and with some of the highest oil and gas job losses among mid-level management roles, such as engineers and geoscientists – the downturn was "felt deeply" in the city.[9]

Amid this downward trend in sectoral employment, Calgary Economic Development (CED) sensed an opportunity. While roles in oil and gas were declining, the city's Information Technology (IT) sector was growing,[10] and offering quality jobs with competitive salaries in roles such as project management, data analytics and software development. CED's idea was that the management skills and competencies of oil and gas workers might be transferable to roles in IT. With the right training supports in place, these displaced professionals could transition to new careers in Calgary's growing digital economy.

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2 Stanford, J. (2021). *Employment transitions and the phase-out of fossil fuels.* Centre for the Future of Work. https://centreforfuturework.ca/wp-content/uploads/2021/01/Employment-Transitions-Report-Final.pdf

3 Mortlock, L. (2020). *Rethinking the oil and gas workforce in 2040.* EY. https://www.ey.com/en_ca/ oil-gas/rethinking-the-oil-and-gas-workforce-in-2040

4 O'Reilly, B. (2019). *How automation and data analytics will affect jobs in Canada's energy industry.* CERIC. https://ceric.ca/2019/02/how-automation-and-data-analytics-will-affect-jobs-in-canadas- energy-industry

5 Mertins-Kirkwood, H. (2018). *Making decarbonization work for workers.* Canadian Centre for Policy Alternatives. https://policyalternatives.ca/sites/default/files/uploads/publications/National%20Office/2018/01/Making%20 Decarbonization%20Work.pdf

6 Cutean, A., & Davidson, R. (2018). *Mapping Calgary's digital future: Tech employment opportunities for displaced workers.* Information and Communications Technology Council (ICTC). https://www.calgaryeconomicdevelopment. com/assets/Reports/Research/Mapping-Calgarys-Digital-Future-Tech-Employment-Opportunities-for-Displaced-Workers.pdf

7 Stanford, J. (2021). *Employment transitions and the phase-out of fossil fuels.* Centre for the Future of Work. https://centreforfuturework.ca/wp-content/uploads/2021/01/Employment-Transitions-Report-Final.pdf

8 By other accounts, this is a conservative estimate. According to labour force data compiled by Careers in Energy, in September 2014, the total number of employed workers in Alberta's energy sector was 170,268. By September 2020, that number had fallen by 52,064 positions to 118,204.

9 Cutean & Davidson, 2018.

10 Fletcher, R. (2019, May 7). "'We're hiring, constantly': How the tech industry figures into Calgary's future." *CBC News.* https://www.cbc.ca/news/canada/calgary/calgary-tech-industry-blackline-novatel-jobs-workers-1.5124348

To test this idea, CED launched a rigorous needs assessment phase in collaboration with the Information and Communications Technology Council (ICTC). The partners used cutting-edge skills-mapping techniques to estimate the skills overlap between roles in the two sectors and data analytics to identify in-demand IT jobs and their requisite skillsets. CED and ICTC also drew on a large-scale survey of local employers; conducted interviews and focus groups with industry associations and displaced oil and gas workers; and hosted Pivot Tech, an event with over 1,000 oil and gas professionals, to gauge their openness to transitioning to tech careers. An advisory committee, composed of government, industry associations, economic development agencies and academic representatives, provided guidance and validated findings.

Needs assessment data were encouraging. Partners not only discovered that a range of entry-to-mid-level IT jobs, such as software developer, data analyst, UX/UI designer, QA tester and full-stack developer, were in high demand, but also that oil and gas professionals had 50–60% of the skills required for these roles.[11] Drawing from these data, CED designed and launched an ambitious pilot program: a dual-client, sector-based training model[12] that would support displaced oil and gas workers make feasible transitions into IT roles.

Sector-based models can be powerful tools to create 'on ramps' into new careers because they are targeted and typically grounded in a deep understanding of what sector employers are looking for, as well as the needs of employees. However, sector-based models are difficult to implement because they are vulnerable to changing labour markets, require strong relationships with industry stakeholders (particularly employers), deep sectoral knowledge and take time to mature. CED not only took on the challenge of designing and implementing a sector-based model but did so for a target population not often targeted by these models: workers coming from mid-level, well-paying jobs. With little evidence on sector-based models for mid-career professionals or those that target specific sector-to-sector transitions, and thus no clear roadmap to follow, CED's ambitions were bold, highlighting an opportunity to test and generate learnings to help address this gap in knowledge and practice.

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11 For instance, the average geoscientist had nearly 60% of the core skills and competencies needed to become a data analyst while the average engineering manager had approximately half the necessary skills to transition into a project manager role.

12 Sector-based models (SMBs) help employers and workers: employers by identifying skill needs for in-demand occupations (and designing training in response) and workers by offering entry points to quality jobs in growth industries – those offering competitive wages, tenure and career opportunities. SBMs often involve participant pre-enrolment screening to test motivation, suitability and readiness; sector-specific pre-employment and career readiness services; sector-specific occupational skills training to match with employer needs; job development and placements services for graduates; and retention and advancement services to help participants make career progress. For more on SBMs, see Myers, K., Harding, S., & Pasolli, K. (2021). *Skills training that works: Lessons from demand-driven approaches.* IRPP. https://irpp.org/research-studies/skills-training-that-works-lessons-from-demand-driven-approaches/

With funding from FSC, CED launched their dual-client, sector-based training model that would aim to not only bridge participants' skills gaps, but also provide a hiring pipeline for employers: the Energy to Digital Growth Education and Upskilling Project (or **EDGE UP**).

As outlined in the About section (pg. 12), this Final Report is a follow-up to our Interim Report from December 2023. It presents final findings for EDGE UP 2.0, highlighting quantitative and qualitative data from cohort one and two related to program uptake, satisfaction and employment outcomes for participants. We also explore reflections from delivery partners and employers based on evidence from both cohorts.

2. About the EDGE UP intervention

2.1 Evolution of the model

The EDGE UP pilot launched in 2020. The model was designed to move engineers and geoscientists, specifically, through a set of online training phases, including those taught by instructors at partnering post-secondary education (PSE) institutions, culminating in a work-integrated learning (WIL) project – or 'Capstone Project' – hosted by a local employer and facilitated through the Riipen online platform. EDGE UP's first set of training streams targeted roles in IT project management, data analytics and software development. Throughout, CED and ICTC provided employment service support and coaching.

The pilot had promising results. Demand was high among displaced oil and gas workers, and participants reported excellent experiences overall. Given this success – and the model's potential to meet Canada's pressing skills needs and its feasibility to scale – EDGE UP was selected as one of 10 interventions to form FSC and Blueprint's Scaling Up Skills Development Portfolio in 2021. FSC provided funding to CED to support the continuous improvement of EDGE UP according to pilot-phase feedback. Changes to this model included the following:

- including other displaced oil and gas professionals beyond engineers and geoscientists;
- an optional internship component for participants that provided local Calgary employers with a wage subsidy of up to 75%;
- a $1,400 stipend to each participant for 80 hours of Capstone Project work through Riipen's Level Up program;
- modified orientation sessions to ensure participants had more realistic expectations about the workload, employment opportunities and IT salaries;
- five new training streams for additional occupations in IT; and
- an additional PSE partner, bringing the total to three.

In July 2021, the FSC-funded 'EDGE UP 2.0' was successfully delivered to its first cohort of participants, and by February 2022, partners pivoted the program again in response to feedback from both participants and stakeholders. In December 2023, Blueprint released an *Interim Report*, covering early findings on program uptake, satisfaction, employment outcomes, program implementation and learnings from delivery based on the first cohort's 119 participants.

By EDGE UP 2.0's second cohort – running from February 2022 to May 2023 across four streams and enrolling an additional 190 participants – CED and ICTC were working alongside four PSE institutions to deliver remote-based training streams. These institutions were the University of Calgary (UoC), the Southern Alberta Institute of Technology (SAIT), Bow Valley College (BVC) and Mount Royal University (MRU).

2.2 EDGE UP 2.0 design and delivery

Figure 2 provides an overview of the final participant pathway: its components, the organizations responsible, timelines and target outcomes. More details about the project partners and their roles are available in **Box 1** (on pg. 16), and project streams are discussed in **Table 1**.

The EDGE UP participant pathway began with CED and ICTC recruiting displaced professionals from Alberta's oil and gas sector. Participants were offered two weeks of workplace readiness (or 'transition') training and help identifying appropriate entry-level IT roles based on their skills. For the next three-to-four months, participants completed online 'Technical Training' and were filtered into subject-matter streams, each taught by instructors from various PSE institutions acting as program partners. Training culminated in a WIL 'Capstone Project' hosted by a local employer, facilitated through the Riipen online platform. Optional internships were provided with local IT companies for participants to apply their new skills and develop working relationships with employers. Internships were offered through ICTC's Work-integrated Learning Digital Subsidy Program, where employers received a 50–70% wage subsidy from ICTC for hiring interns.

The end goal was to equip participants with skills and competencies relevant to IT roles in a variety of sectors, or in the IT sector itself. Throughout the program, CED and ICTC provided employment service support and coaching. This included weekly newsletters providing job postings for junior-level positions directly relevant to skills acquired in the program. CED also invited participants to attend various career fairs and networking and tech-related ecosystem events where employers were sharing information on sought-after skills in the sector.

| **Figure 2** | EDGE UP 2.0 participant journey

Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Recruitment and intake	**Transition to Tech Training**	**Tech Training**	**Capstone Project**	**Digital Internship** (Optional)	**Employment Services**
Duration					
Pre-Program	2 Weeks	3–4 Months	2–3 Weeks	2–4 Months	Ongoing
Delivery partner(s)					
CED, ICTC	**ICTC**	**PSE Institutions**	**Riipen**	**ICTC**	**CED, ICTC**
Description					
Targeted to unemployed or underemployed professionals displaced from Alberta's oil and gas sector. Cohort two included those with oil and gas work experience from outside of Canada.	IT workplace readiness training, identifying roles in the IT industry for participants based on their skills, experience and interests.	Foundations of Digital Transformation Training, an introduction to working in IT roles, followed by IT training specific to program stream. Participants were divided into streams delivered by PSE institutional partners (see **Table 1** below).	Team projects with an employer selected from Riipen, an online platform providing WIL opportunities, and for which graduates received a stipend for 80 hours of applied project work.	Internships with local IT companies for participants to apply their new skills and develop working relationships with employers. Internships were offered through ICTC's Work-integrated Learning Digital Subsidy Program.	Available support included check-in calls and coaching from program coordinators, featured graduate profiles on the EDGE UP website, newsletters on employment opportunities, job search tips and tech ecosystem trends.

Additional supports

CED expanded employment services after feedback from cohort one participants:

- **Booster Training** courses delivered after cohort two finished to help all EDGE UP graduates learn more about the most in-demand IT skills.
- **Gamified challenges** delivered to all 2022 cohort two streams through a partnership with Amazon Web Services.
- **Monthly networking sessions** for graduates.

Table 1 | Program Satisfaction

Post-secondary streams	
Cohort One Streams	**Cohort Two Streams** (for a full description of each stream, see **Appendix B**)
University of Calgary Continuing Education • Procurement and Contract Management • Software Development • IT Foundations • Agile Software Development **Southern Alberta Institute of Technology** • Introduction to Databases • Preparing Data for Analysis • Data Analytics Tools • Programming for Data Analytics • Managing Data in the Cloud **Bow Valley College** • Software Programming Basics • Web Programming Basics • Full-Stack Work Integrated Learning	**University of Calgary Continuing Education** • Product Management with a Specialization in Digital Product Marketing **Southern Alberta Institute of Technology** • Data Analytics with Cleantech Foundations • Cyber Security for Today's World • Data Analytics **Bow Valley College** • Full Stack Software Development • IT Network Management **Mount Royal University Faculty of Continuing Education and Amazon Web Services** • AWS re/Start (Cloud Computing)

| **Box 1** | **EDGE UP 2.0 local and national partner organizations**

Program lead

- Calgary Economic Development (CED): CED is a non-profit organization that works with business, government and community partners to position Calgary as the location of choice for attracting business investment, fostering trade and growing Calgary's workforce.

Founding/design partner

- Information and Communications Technology Council (ICTC): ICTC is a non-profit, national centre of expertise for the digital economy. ICTC is the trusted source for evidence-based policy advice, forward-looking research and creative capacity-building programs for the digital economy.

Post-secondary institution training partners

- University of Calgary: University of Calgary Continuing Education delivers *Product Management with a Specialization in Digital Product Marketing*.
- Southern Alberta Institute of Technology (SAIT): SAIT delivers three programs: 1*) Data Analytics with Cleantech Foundations; 2) Cyber Security for Today's World*; and 3) *Data Analytics.*
- Bow Valley College: Bow Valley College delivers two programs: 1) *Full Stack Software Development;* and 2) *IT Network Management.*
- Mount Royal University: Mount Royal University's Faculty of Continuing Education partners with Amazon Web Services (AWS) to offer AWS *re/Start* (otherwise known as Cloud Computing).

Capstone Project platform

- Riipen: An experiential learning platform that helps educators, organizations and learners collaborate on real industry projects to bridge the gap between higher education and employment. Both learners, instructors and employers can post about project opportunities that they are seeking or offering.

2.3 Summary of program adaptations for cohort two

After cohort one (delivered from July 2021 to November 2022), EDGE UP 2.0 partners adapted curricula to manage workload expectations, expanded eligibility requirements to meet recruitment targets, and offered additional training and supports to strengthen technical skills and employment prospects. Cohort two was delivered in four streams: Feb.–May 2022, Mar.–Aug. 2022, June–Oct. 2022 and Jan.–May 2023, and recruited an additional 190 participants. As described above, this *Final Report* presents qualitative and quantitative data from both cohorts one and two.

Website and knowledge mobilization efforts. CED included additional resources, employer information, labour market reports and community supports on its main website, EdgeUpYYC. com, and mapped target participant skills to in-demand tech jobs on CalgaryUpskill.ca. CED also delivered a report titled The Digital Talent Imperative: Calgary's Economic Edge.

Curriculum. Based on participant feedback, partners modified orientation sessions to add content aimed at ensuring participants had more realistic expectations about workload, employment opportunities and salaries. Program staff further streamlined the curricula of some streams in cohort two to reduce workload.

Eligibility criteria. In response to lower applicant numbers – due in part to the resurgence of the energy sector and a faltering IT industry (see Section 5. Discussion and conclusions) – CED expanded eligibility criteria during cohort two to include applicants with international oil and gas experience.

Additional training and support: Some cohort one participants reported limited learnings from the Capstone Projects and the internship opportunity, noting that the available projects were not always aligned with their interests and the course content in the training streams. Program staff reported a limited number of projects on the platform that were well-aligned with the training.

In response, organizers offered additional opportunities for training and support to strengthen participants' technical skills and their chances of finding work in IT roles. These included:

- gamified challenges delivered to all cohort two streams delivered in 2022 (i.e., all but "Data Analytics with Cleantech Foundations," which was delivered in 2023) through a partnership with Amazon Web Services[13];
- monthly networking sessions for graduates to share their successes and challenges;
- a second Capstone Project offered to select eligible graduates; and
- 'Booster Training' courses to help all EDGE UP 2.0 graduates learn more about the most in-demand IT skills. In all, CED launched eight booster courses, running from July to November 2023.[14]

13 While we know that 25 participants participated in the Amazon-based challenges, Blueprint does not have information on how many participated by PSE stream.

14 Blueprint received data from CED on participant feedback on the four booster courses held in September 2023: "Microsoft Power BI Data Analyst" and "Designing and Implementing Enterprise-Scale Analytics Solutions Using Power BI and Azure," delivered by UoC, and "Intro to Python Programming" and "Machine Learning," delivered by SAIT.

3. Methodology

3.1. Blueprint's evidence generation approach

Blueprint has developed a novel approach to evidence generation that fits within the six stages of the innovation cycle to support the scaling-up of promising interventions. By understanding an intervention's stage of development, we can determine the most appropriate tools to advance it to the next stage. **Box 5** of the *Scaling Design Report* provides more details on our evidence generation approach.

Framed among the Scaling Up Skills Development Portfolio interventions, EDGE UP 2.0 is in **Stage 4** of the innovation cycle, **Delivery and Iteration**. Stage 4 is further broken down into three levels of delivery maturity: *Implement, Improve* and *Prove* (see **Figure 3**). Because EDGE UP 2.0 was already delivered as a pilot and to an initial cohort, we categorized it at **Stage 4b** of the innovation cycle, *Improve*, where evidence generation is focused on data to support continuous improvement.

| **Figure 3** | Phases of delivery Maturity

4

4a
Focus on **data to support implementation**

Implement

4b
Focus on **data for improvement**

Improve

4c
Focus on **long term outcomes, impact evaluation and cost benefit analysis to build the business case for scaling**

Prove
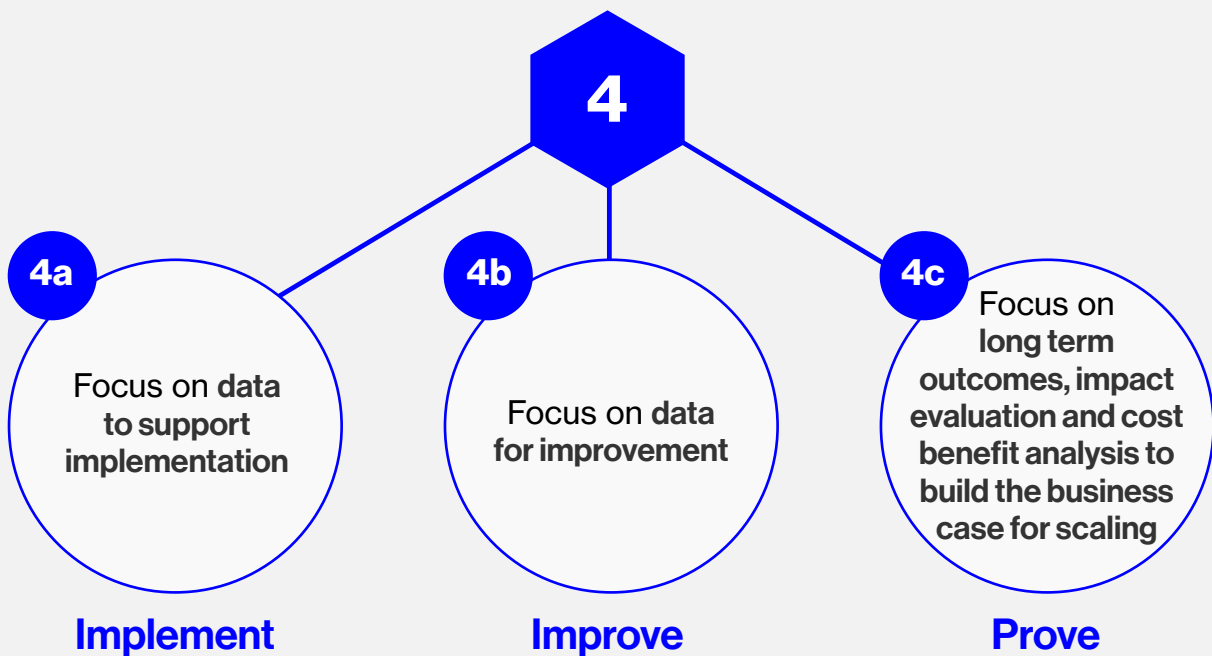
Our measurement approach includes both indicators that are specific to the EDGE UP 2.0 model and common indicators drawn from our Common Outcomes Framework (see **Box 2**).

| **Box 2** | **Common Outcomes Framework**

Our measurement approach includes indicators that are specific to an intervention as well as a set of common indicators that are measured for every intervention in the Portfolio.

These common indicators are drawn from Blueprint's Common Outcomes Framework, which was developed in consultation with our partners and was informed by review of employment-related outcomes frameworks and measurement approaches both within Canada and internationally. They include:

- **Intermediate outcomes** outcomes that reflect 'in-program' participant experiences and gains (e.g., program satisfaction and skills development).
- **Long-term outcomes** such as employment and educational attainment.

Using a consistent approach to measuring outcomes is part of our commitment to understanding how each intervention in the Portfolio is reaching people across Canada and allows us to measure long-term outcomes using Statistics Canada's Social Data Linking Environment.

For more information on Blueprint's Common Outcomes Framework, see **Appendix A**.

3.2. Learning agenda

Our Final Report covers the entire EDGE UP 2.0 program period — from April 2021 to May 2023. We report on five areas:

1. **Program uptake.** Did EDGE UP 2.0 reach its recruitment targets and target demographic?
2. **Participant experiences.** Did participants complete the program? Were participants satisfied with the program? What did participants identify as program bright spots and pain points?
3. **Participant outcomes.** What were the employment outcomes for participants?
4. **Program implementation.** What have we learned about successes and opportunities in program delivery?

3.3. Data sources and sample sizes

Blueprint gathered quantitative and qualitative data to answer our learning questions. Data sources and response rates are summarized in **Table 2**. To understand participant outcomes, we used a longitudinal research design whereby data on outcomes were collected at baseline, exit, and at four- and nine-month follow-up points. Longer-term impact analysis may be possible in the future through Statistics Canada data linkage.

Table 2 | Data sources, sample sizes and notes

Data Source	Number/Percentage of Participants	Description
Administrative Data	Program enrolment: **309** Program completion: **84%** (260/309, with 49 dropouts)	CED collected and shared participant administrative data with Blueprint on program enrolment, dropout and completion rates.
Baseline Survey	**88%** (273/309)	Administered to participants during the first week of the Transition to Tech Training, the baseline survey collected data on participant socio-demographic characteristics, employment and education rates.
Post-Training Survey	**77%** (203/262)*	Administered during the final week of the Capstone Project, this survey collected data on participant satisfaction rates, and employment and education outcomes.
Four-Month Follow-up Survey	**65%** (169/259)**	Administered four months after the end of the Technical Training (including the Capstone Project), these surveys collected data on participant satisfaction rates and employment and education outcomes.
Participant Interviews	**n=36**	We conducted semi-structured interviews with participants approximately four months after the Technical Training and Capstone Projects. Individuals were sampled based on stream, participation in the WIL internship component, satisfaction with program components (we aimed for a balance between those who were satisfied and dissatisfied across components) and socio-demographics (we aimed for diversity across age, employment status and gender).
Nine-Month Follow-up Survey	**57%** (149/261)***	Administered nine months after the end of the Technical Training (including the Capstone Project), these surveys collected data on participant satisfaction rates and employment and education outcomes.
Program Partner Interviews	**n=13**	We conducted semi-structured interviews to generate evidence from staff involved in the design and implementation of the program (including those from CED and its six partner organizations) on what worked well and what needed improvement.
Employer Interviews	**n=3****	We conducted semi-structured interviews to generate evidence from employers who hired program participants. Employers offered feedback on employers' experience with the program and impressions of the graduates they hired, including potential areas for improvement.

*The post-Training survey was sent to 262 instead of 273 participants because 11 consenting participants dropped out either before the technical training or during the first few weeks of it.

**Three participants did not receive the four-month follow-up survey due to technical issues.

***One participant did not receive the nine-month follow-up survey due to technical issues.

****CED approached and recruited participating employers.

3.4 Data limitations

Our evidence generation efforts navigated the following limitations:

- **Generalizability of employer interview findings.** Blueprint gathered feedback from a small sample of employers (n=3), selected and recruited by CED. Employer interviews were intended to provide additional context to supplement the data and do not serve as a generalizable source of evidence to be applied to employers as a group.

- **Incomplete staff feedback on cohort one delivery.** Due to staff turnover reported at partner sites over the last five years, some staff we interviewed for this report had little knowledge of the early planning and development stages and could not speak to major adaptations made throughout. Feedback from staff is heavily weighted toward the more recent phases of the program and should be interpreted with this context in mind.

- **Assessment of implementation of the internship component.** We were unable to gather data from ICTC on certain internship details, including the number of employers providing positions; positions on the ICTC job board; participants who applied and completed the internship; positions that developed into full-time offers; and participants who secured positions themselves.[15]

- **Small sample sizes.** Two surveys (the post-Booster Training survey and the nine-month follow-up survey) had low response rates; readers should interpret findings from them with caution.

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15 ICTC's final report describes how some participants ("at least three") declined an internship because they "indicated they were seeking permanent job opportunities, while others deferred their job search to take time off to be with their families."

4. Findings

4.1 Program uptake

Did EDGE UP 2.0 reach its target demographic?

EDGE UP successfully reached its target population and very nearly met its recruitment target. EDGE UP recruited **97%** of its target participants across its two cohorts (**309 of 320**). Of these participants, most were mid-career professionals displaced from the oil and gas industry — and most were long-term unemployed.[16]

Eighty-one percent were unemployed at intake and had been out of work for an average of **19 months. Seventy-five percent** of participants worked in the oil and gas industry before becoming unemployed; and **68%** were aged 40 or older, meaning they fell within the typical "mid-career" designation, often defined as workers with at least 10 years of professional experience and aged 35 to 55.[17] **Eighty-seven percent** held a bachelor's degree or higher, **68%** were men and **70%** were immigrants to Canada.

As noted in **Table 3**, the program attracted and included people from a broad, diverse range of backgrounds and experiences.

Table 3 | Participant socio-demographics

Participant Socio-Demographics		Response rate /Number of respondents
No. of Respondents to Baseline Survey		273
Gender	Woman/Female	**32%** (86/269)
	Man/Male	**68%** (182/269)
	Other	**0%** (1/269)
Age	Under 40	**31%** (80/255)
	40–49	**40%** (103/255)
	50+	**28%** (72/255)
	Average age	**45**

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16 In Canada, "long-term unemployment" is variously defined as individuals "searching for work or on temporary lay-off for 27 weeks or more" or as "the proportion of the labour force aged 15 or older who did not have a job any time during the current or previous year." This 12-month period corresponds with OECD definitions.

17 See, for example, "Managing Middlescence" in Harvard Business Review and "What Does 'Mid-Career Professional' Mean?" in Chron.

Participant Socio-Demographics		Response rate /Number of respondents
Highest level of education	Below Bachelor's level	**13%** (36/271)
	Bachelor's level	**50%** (135/271)
	Above Bachelor's level	**37%** (100/271)
Race[18]	Black (African, Afro-Caribbean, African-Canadian descent)	**20%** (31/155)
	East-Asian (Chinese, Korean, Japanese, Taiwanese descent)	**20%** (31/155)
	South-East Asian (Filipino, Vietnamese, Cambodian, Thai, Indonesian, other Southeast Asian descent)	**3%** (5/155)
	Latino (Latin American, Hispanic descent)	**6%** (9/155)
	Middle Eastern (Arab, Persian, West Asian descent (e.g. Afghan, Egyptian, Iranian, Lebanese, Turkish, Kurdish, etc.))	**6%** (10/155)
	South Asian (South Asian descent, (e.g. East Indian, Pakistani, Bangladeshi, Sri Lankan, Indo-Caribbean, etc.))	**14%** (21/155)
	White (European descent)	**27%** (42/155)
	Other	**3%** (4/155)
Indigenous		**1%** (3/265)
Racialized[19]		**36%** (39/109)
Immigrant		**70%** (188/270)
(Among immigrants) Newcomer[20]		**15%** (28/187)
Unemployed at intake		**81%** (220/271)
Industry of last employment	Oil and gas	**75%** (161/214)
	Other	**25%** (53/214)
Length of last employment	0 – 2 years	**64%** (101/158)
	More than 2 years	**36%** (57/158)
	Average years	**3.6**
Time since last employment	0 – 12 months	**22%** (46/213)
	More than 12 months	**78%** (167/213)
	Average months	**19**

18 This question was included only for cohort two.

19 This question was included only for cohort one.

20 We define 'newcomer' as someone who has resided in Canada for five years or fewer.

It is not surprising that participants were highly educated; many supervisory and senior positions within the industry (including petroleum engineers, geoscientists and environmental specialists) require at least a bachelor's degree in a relevant field, such as engineering, geology or environmental science. More specialized or senior positions can prefer or require even higher levels of education, such as master's or doctoral degrees.[21] The proportion of EDGE UP 2.0 participants with a university degree (**87%**) was **54 percentage points** higher than a recently reported industry average; according to Statistics Canada, merely **33%** of workers in the sector in 2019 were university graduates.[22] In other words, EDGE UP 2.0 effectively reached its target demographic of **more skilled, mid-career workers** from among the oil and gas industry.

It is also unsurprising to see increasing numbers of participants who identified as **immigrants** (this proportion rose **nine percentage points** from cohort one to two, or from **61%** to **70%**). Among immigrant participants, **15%** were newcomers (i.e., they had resided in Canada for five years or fewer). As explained in section 2.3. Summary of program adaptations for cohort two, CED expanded eligibility requirements to allow those with international experience in oil and gas; this partially explains the higher numbers of immigrant participants. For further thoughts on EDGE UP 2.0's appeal to immigrant workers, see section 5. Discussion and conclusions.

4.2 Participant experiences

Did participants complete the program?

Most participants (84%) completed the program. Across all streams, **84% (260/309)** of participants completed the Technical Training component and received a certificate of completion. The remaining **49 individuals** who did not complete the Technical Training dropped out before it began or during the first few weeks. Although Blueprint has limited data from those who did not complete,[23] most indicated they left because they found a job or internship position — and not due to any perceived lack of quality or appropriateness with EDGE UP 2.0.

Were participants satisfied with the program?

Overall, participants were highly satisfied with the program. Satisfaction is a key indicator of engagement and retention and a driver of participants' recommendations of the program to

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21 Typical levels of education for roles within the industry can be explored via the Government of Canada's National Occupational Classification "Career Handbook." Readers can browse position descriptions by entering 'oil and gas' in the basic search field or by inputting specific codes, such as 8222, 2212, 0811, 8232 and 8412.

22 Statistics Canada. (2021). *Employment characteristics for the oil and gas industry* [Catalogue No. 11-627-M]. https://www150.statcan.gc.ca/n1/en/pub/11-627-m/11-627-m2021063-eng.pdf?st=vQMQ403o

23 CED program coordinators collected these data and used open text boxes to indicate reasons for dropouts, but not all text boxes were completed.

others. We asked about satisfaction overall and about specific components of the program to assess the strengths and areas where improvement might be needed. As shown in **Figure 4**, **78%** of participants reported in the post-training survey that they **were satisfied** with **EDGE UP 2.0** overall.

| Figure 4 | Overall program satisfaction rates

78%

41%
(79/195)

37%
(73/195)

11%
(22/195)

9%
(17/195)

2%
(4/195)

Very dissatisfied | Somewhat dissatisfied | Neutral | Somewhat satisfied | Very satisfied
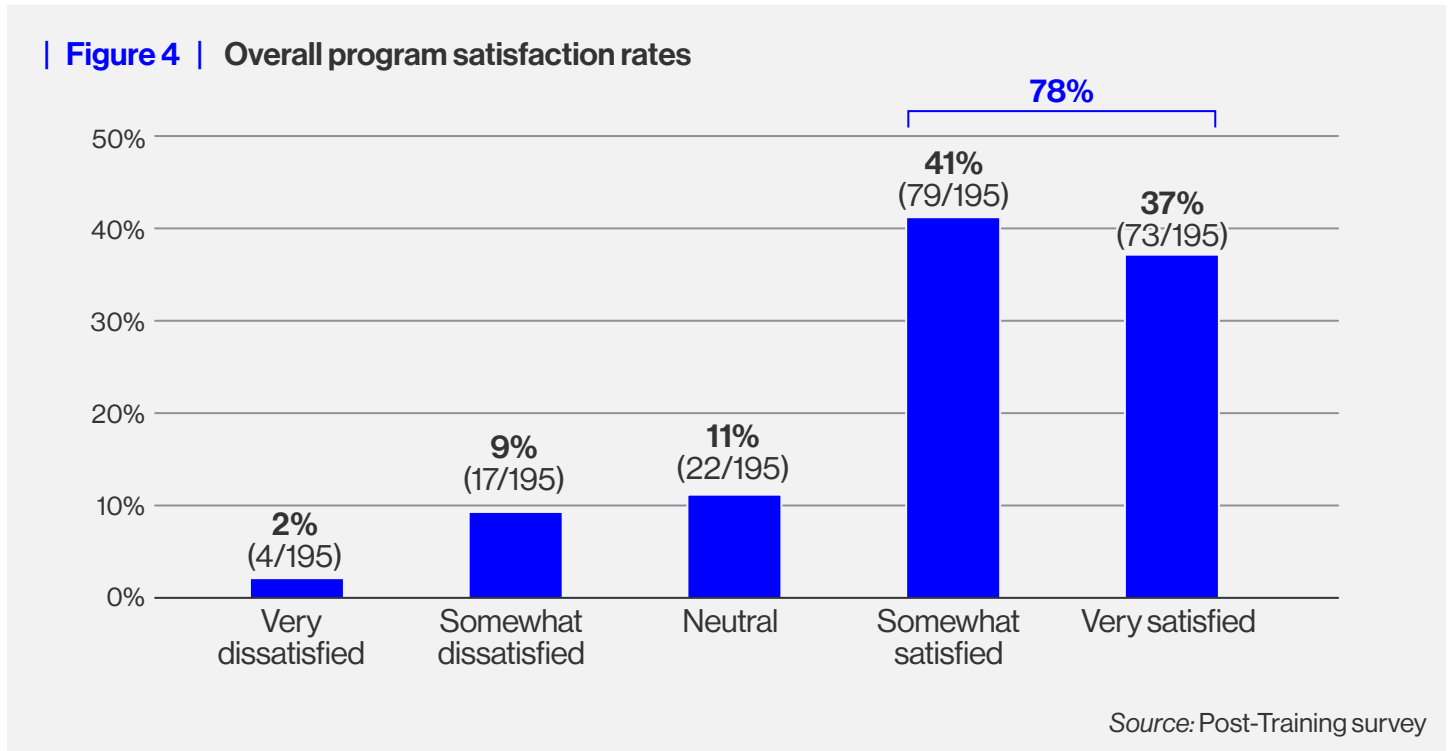
Source: Post-Training survey

Figure 5 shows that, based on their experience in the program, **88%** of participants were either 'likely' or 'very likely' to **recommend EDGE UP 2.0**, or had already recommended it to someone considering transitioning to a new career in a digital or tech role.

| **Figure 5** | Likelihood of recommending the program
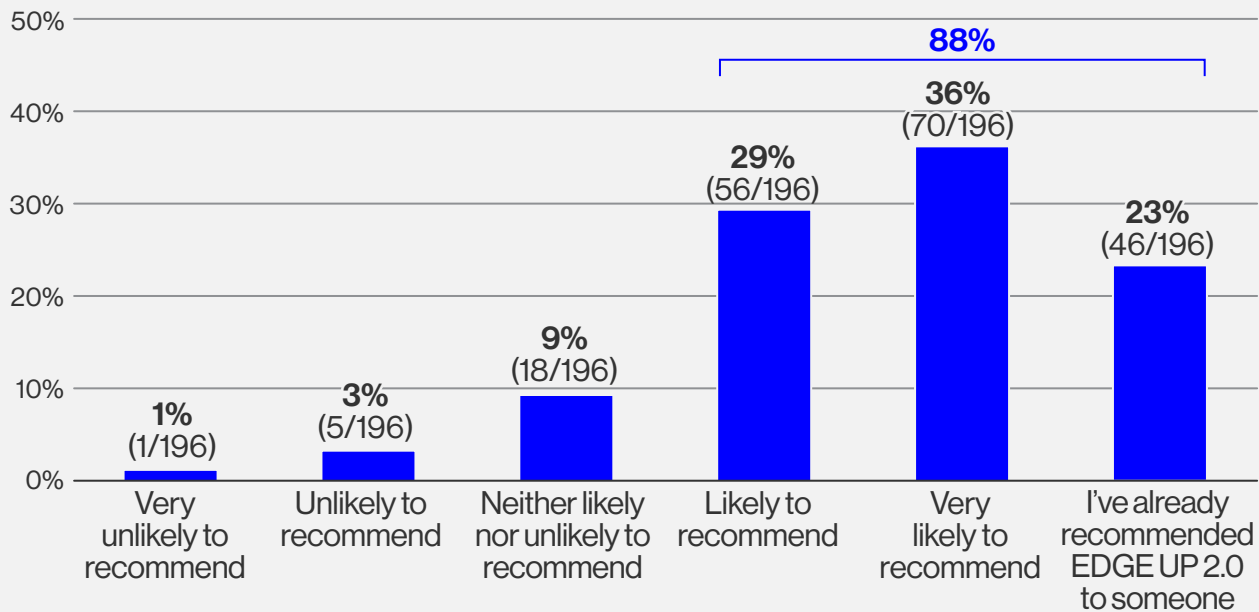
Source: Post-Training survey

Satisfaction data gathered from the post-Training survey shows a high level of satisfaction with the program and its features among most participants, including with the Transition to Tech training, Foundation of Digital Transformation training, subject-matter streams and content, and instructors at the PSE institutions. Respondents' high satisfaction rates were determined based on whether they either 'agreed' or 'strongly agreed' with statements about the program; these responses ranged from **73%** to as high as **89%** agreement, as shown in **Table 4**.

| Table 4 | Levels of satisfaction with the program and components

Prompt	Percentage endorsement				
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I am satisfied with the Transition to Tech Training	2% (3/195)	3% (6/195)	9% (17/195)	50% (98/195)	36% (71/195)
I am satisfied with the Foundation of Digital Transformation training	1% (1/195)	4% (7/195)	9% (18/195)	48% (93/195)	39% (76/195)
I am satisfied with the stream of training I chose	1% (1/196)	5% (9/196)	6% (12/196)	51% (99/196)	38% (75/196)
I am satisfied with the content of the courses I took at the post-secondary institution	2% (4/196)	8% (15/196)	17% (34/196)	43% (85/196)	30% (58/196)
I am satisfied with the tech skills training for my stream at the post-secondary institution	2% (3/196)	10% (19/196)	11% (21/196)	51% (99/196)	28% (54/196)
I am satisfied with the instructors at the post-secondary institution	4% (8/196)	7% (14/196)	14% (27/196)	45% (88/196)	30% (59/196)

Source. Post-Training survey

The course-based technical training component was complemented by WIL delivered through the Riipen platform as well as optional engagement with employers as part of a paid internship. The internship component involved matching participants with local Calgary IT companies, for which they were expected to apply their new IT skills and develop working relationships. Although administrative data on internship positions is limited, as explained in section 3.4. Data limitations, we found **36** participants received the internship (**14%** of the **260** participants who completed the technical training) and **20/36** responded to the four-month follow-up survey.

Table 5 provides the distribution of responses to questions pertaining to the Capstone Project facilitated through the Riipen platform and the internship. Respondents reported moderate levels of satisfaction with their employer and internship (those who 'agreed' or 'strongly agreed' to various questions related to satisfaction ranged from **50%** to **90%**) and with the Capstone Projects (**68%** reported being 'somewhat' or 'very satisfied').

| **Table 5** | Levels of satisfaction with Capstone Projects and internships

Internship prompt	Percentage endorsement				
	Strongly disagree	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
I am satisfied with the employer I worked with during the paid internship*	0%	15% (3/20)	5% (1/20)	20% (4/20)	60% (12/20)
Overall, I am satisfied with the paid internship*	0%	5% (1/20)	5% (1/20)	35% (7/20)	55% (11/20)
I am satisfied with the support provided by the EDGE UP team in helping me secure a position for the paid internship*	10% (2/20)	15% (3/20)	25% (5/20)	30% (6/20)	20% (4/20)
Capstone prompt	**Strongly disagree**	**Disagree**	**Neither agree nor disagree**	**Agree**	**Strongly agree**
How satisfied are you with the work-integrated learning though a Capstone Project with Riipen (which includes a stipend)?**	8% (13/160)	8% (13/160)	16% (25/160)	28% (45/160)	40% (64/160)

*Source. Four-month follow-up survey
**Source. Post-Training survey

An additional question was asked about the program's usefulness. When asked if the program was **useful** in **helping to prepare** participants for **future employment in IT**, the majority agreed, with **88%** finding it 'useful' or 'very useful' and only one respondent replying that it was 'not useful' (see **Table 6**).

| **Figure 6** | Overall usefulness of the program
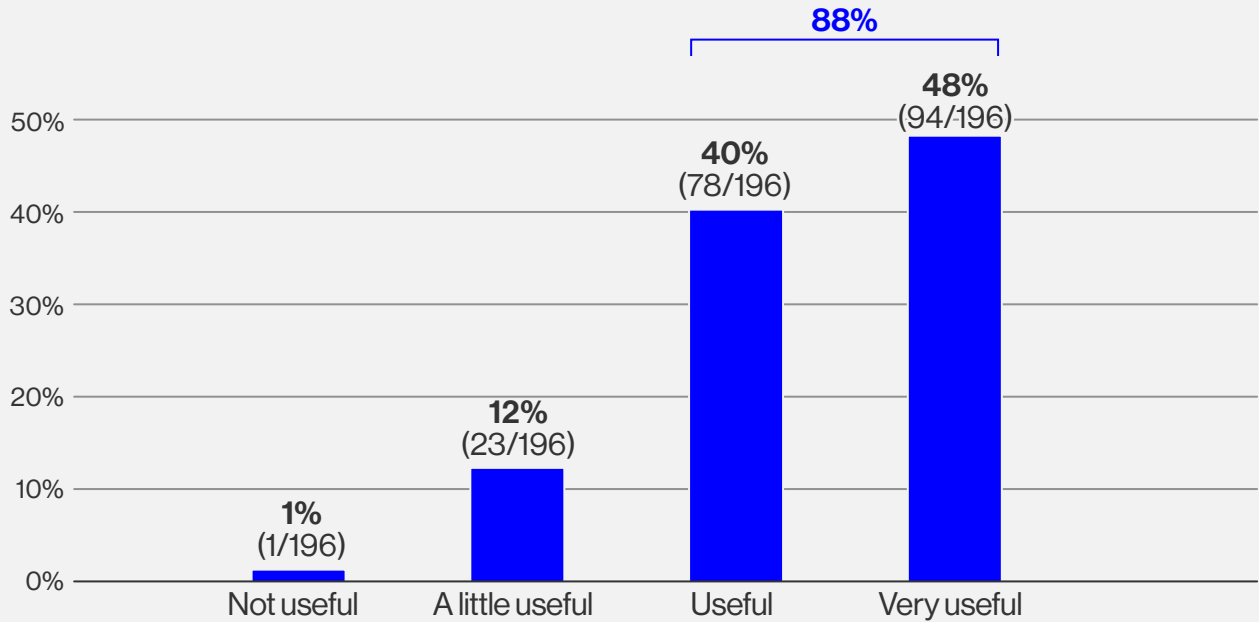
Source: Post-Training survey

Blueprint gathered data on participant satisfaction rates four- and nine-months after the Technical Training period to gauge their changing perception of post-program supports. Just under half of respondents were satisfied with the **Post-Training employment support** offered by the EDGE UP 2.0 team; **49%** were satisfied at four months and **54%** at nine months after the **Technical Training**, as shown in **Figure 7**.

| Figure 7 | **Post-program satisfaction with EDGE UP 2.0 training**

■ Four-month follow-up survey   ■ Nine-month follow-up survey

54%

49%

Very dissatisfied
- **12%** (20/168)
- **6%** (8/127)

Somewhat dissatisfied
- **12%** (20/168)
- **17%** (22/127)

Neutral
- **24%** (41/168)
- **23%** (29/127)

Somewhat satisfied
- **23%** (39/168)
- **24%** (30/127)

Very satisfied
- **29%** (48/168)
- **30%** (38/127)

Source: Post-Training survey
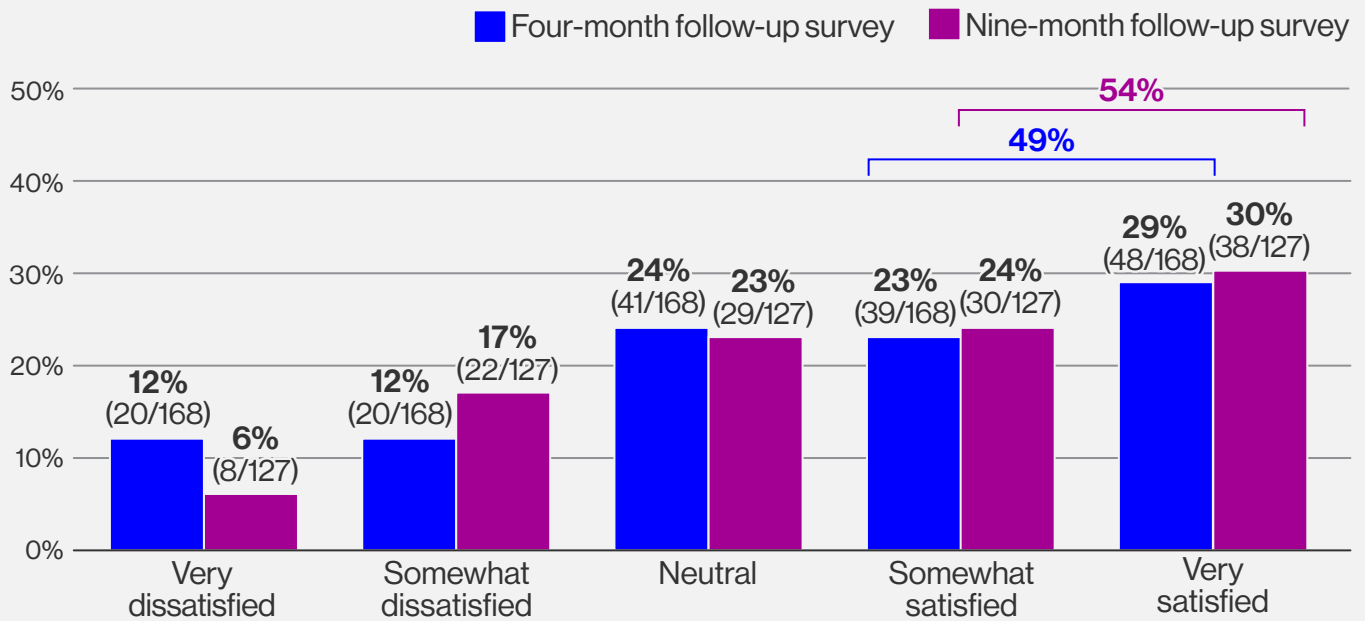
Notably, **83%** of participants believed that a new program component – the CED-led Booster Training courses – would benefit their job search, as shown in **Figure 8**. This percentage is based on data gathered from a survey CED distributed at the end of the training period. As mentioned, the Booster Training was designed for EDGE UP 2.0 graduates to develop their skills in four IT areas and was added to the program after feedback from the initial cohort.

| Figure 8 | **Participant perceptions of Booster Training course utility**
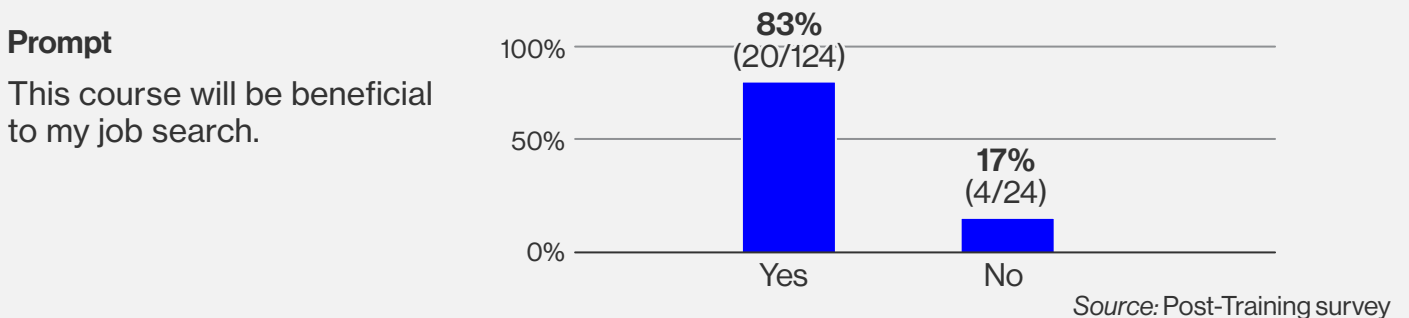
Prompt

This course will be beneficial to my job search.

- **83%** (20/124) — Yes
- **17%** (4/24) — No

Source: Post-Training survey

Blueprint also gathered data on satisfaction rates four months after the Technical Training period to understand how participants' experiences in the labour market shaped their perceptions of EDGE UP 2.0.

Figure 9 illustrates participant satisfaction from the immediate end of the Technical Training to the four-month point across five questions. Four months after the Technical Training, participants' overall program satisfaction, perception of program usefulness and levels of confidence in finding and working in IT positions dropped (for example, the likelihood of respondents recommending EDGE UP 2.0 fell from **88%** to **72%**, or by **16 percentage points**).

| **Figure 9** | Rates of overall program satisfaction over time

Legend:
- Post-Technical Training Survey
- Four-month Follow-Up Survey

Data:
- Somewhat or very satisfied with EDGE UP overall: 78% (156/200), 68% (115/169)
- EDGE UP was somewhat or very useful in helping prepare for future employment in a digital/tech role: 88% (177/201), 74% (125/169)
- Likely or very likely to recommend EDGE UP or have already recommended it: 88% (176/201), 72% (121/169)
- I feel confident about finding an IT related job*: 51% (63/123), 47% (77/164)
- I feel confident in my ability to carry out duties of an IT related job*: 66% (81/122), 58% (94/162)

This question was shown only to cohort two participants.

What did participants identify as program bright spots and pain points?

Blueprint interviewed 36 participants approximately four months after the Technical Training and Capstone Projects to identify what worked and what needed improvement from their perspectives (see section 3.3. Data sources for details on our sampling strategy). The interviews revealed relatively robust themes and general agreement among respondents.

Participants praised practical elements of the program, noted increased confidence levels through streams that matched their level of experience, knowledgeable instructors and flexible learning modes. They praised some aspects of the internship opportunities and the Booster Training. Some insights and experiences of participants are presented below along with relevant quotations.

On practical job support services. Respondents commonly found **resume** and **interview support** valuable and suggested extending and expanding these practical elements to learn more skills related to **searching for jobs, networking** and **applying for positions**. As participants noted:

- "Transition to Tech was good because you actually focused on interview skills and on job preparation skills — and I thought that was smart to start with that." — Participant interview
- "ICTC helped me prepare a beautiful resume and did mock interviews, and it was great. For me, I haven't had any experience in this." — Participant interview

On improved confidence and knowledge levels. Many interviewees noted an **increase in their confidence levels** and attributed this feeling to the program; some felt they were able to learn the **right mix of technical skills** that would help them **reach their career goals**.

On streams, instructors and course structure. Interviewees generally felt that the **streams** they chose to enrol in (at one of the four PSE institutions) were a **good fit for their career interests and goals**. Participants felt the **streams matched their level of knowledge and experience** entering the program. Respondents mentioned that their **instructors** were **knowledgeable**, **supportive** and **helpful** overall. Interviewees appreciated the time granted for **self-learning outside of the classes** and the **flexibility of the online format**.

On the internships. Those interviewees who took part in the **internship component** mentioned that it helped them **"get their foot in the door"** and was a good match for their **skills and interests**.

On Booster Training. Respondents generally believed that the **Booster Training** would be **beneficial to their job search**.

Respondents made some suggestions for improvement: extending job readiness training, adjusting curriculum design to bolster program experience and outcomes, providing more relevant Capstone Projects and strengthening employment supports, especially for the internship component.

On basic skills. Some interviewees felt the need to **build on basic skills** to make the transition to IT. This was especially true for those who trained in a more technical field, such as Cybersecurity; as one participant noted:

- ○ "Cybersecurity is such a vast field that I don't know if it can be done in four months." – *Participant interview*

On instructors. Some interviewees voiced issues with instructors – for example, that they were not actually **"subject matter experts"** and would benefit from better **communication skills** and **time preparing** to teach the technical content. In the product-related streams outlined in **Appendix B**, some participants felt that the instructors weren't "product leaders" or "product managers." According to some respondents:

- ○ "The program should be taught by subject matter experts, and this wasn't the case… On the first day of our Technical Training, no one knew what we were doing. The instructor kept losing connectivity and then was changed." – Participant interview

- ○ "I don't think any of [the instructors] were [software] product leaders. They were from all sorts of fields … It would have been nice to hear from more product people." – Participant interview

- ○ "If more of the classes were taught by actual product managers, that would have been beneficial." – Participant interview

- • **On workload.** Interviewees suggested **increasing the program length or reducing the number of topics** covered to ensure the **workload was less intense and more manageable**.

- • **On the curriculum.** Respondents suggested tailoring the curriculum to **reduce overwhelm, better reflect industry needs and focus more on practical applications to bolster overall job readiness**. Some suggested the coursework better **cover skills or programming languages** that they were being asked to use on **job applications**. In their words:

- ○ "It was too much information at the same time, and we could not digest the whole thing. I think there should be some revision to the contents of the programs or the way they deliver them … so they will be more practical for somebody who is entry level. Most of us were entry level."—*Participant interview*

- ○ "It's a very vast field. And we learned lots of different areas of cloud, or IT. I think the program could be more than three months. It could be five months [and the] group teamwork [project] … could be included in those five months. It could be a little longer [so] we could be able to work more and get more familiar with the field."—*Participant interview*

- • **On the Capstone Projects and employers.** While some felt the Capstone Projects helped them apply their learning, many reported they could have been **more relevant to the subjects covered in the Technical Training** and provided **additional opportunities for them to practice their skills**. Some interviewees felt that **project relevance was a matter of chance**. For example, in one case, students in the "Full Stack Software Development" stream were asked to build a web

page, which differed considerably from their training. Others expressed concerns that certain employers may not have leveraged the program in the intended spirit of skills development (i.e., some employers were benefiting from the labour without investing in the participants' growth opportunities).

- ° "The project … required us to learn something new. It's called the Python language and the Django framework. It would have been much better if we had a project [that involved] using the technologies that we learned. We were given just a couple of weeks to learn Python. It doesn't seem right … even [when] I spoke to the instructor … he said that this is the only project that he had."—*Participant interview*

- ° "[The Capstone Project] just didn't feel like it would line up with what we were taking. So, it was all right, but I wouldn't say it was great. I wouldn't say it was horrible. Kind of just all right. I think there's probably more room for opportunity there."—*Participant interview*

- ° "I was hoping that Bow Valley College would find us an applicable, relatable company so that we could … do a valid practicum. But all Bow Valley College found was a software company that asked us to do some programming, and I don't have any experience in programming, and here I am asking to program an AI."—*Participant interview*

- **On the internship.** Dissatisfaction arose from some participants being **unable to find a relevant internship position**. Overall, interviewees cited **a lack of opportunities, lack of communication about opportunities,** and **mismatches between opportunities and skills developed in training** related to their internships. Respondents suggested **improvements to clarity, expanding the number of opportunities,** or **having better prepared participating organizations** and **more positions relevant to the technical content**.

- ° "Disappointingly, they told us that they have some companies in their job portal who wanted to hire, but I didn't see that."—*Participant interview*

- ° "I wish there were more opportunities for jobs after the Capstone Project. The job board (or the portal) didn't have a lot of actual jobs you could do … so that was disappointing. There weren't very many jobs that people post on the job platform."—*Participant interview*

4.3. Employment outcomes

What were the employment outcomes for participants?

Our study design does not allow us to attribute certain outcomes to EDGE UP 2.0 versus other factors. Therefore, our findings should be interpreted as correlational rather than causal. With this caveat in mind, results are encouraging.

Based on our survey data, participant employment rates improved substantially over time, from 20% to 60% over the follow-up period. Figure 4 shows participant employment rates increased from **20% (40/201)** immediately after the Technical Training to **52% (88/169)** four months later (an increase of **32 percentage points**) and to **60% (89/149)** nine months later (an increase of **40 percentage points**) from the post-Training survey.

| **Figure 10** | Participant employment rates at three points
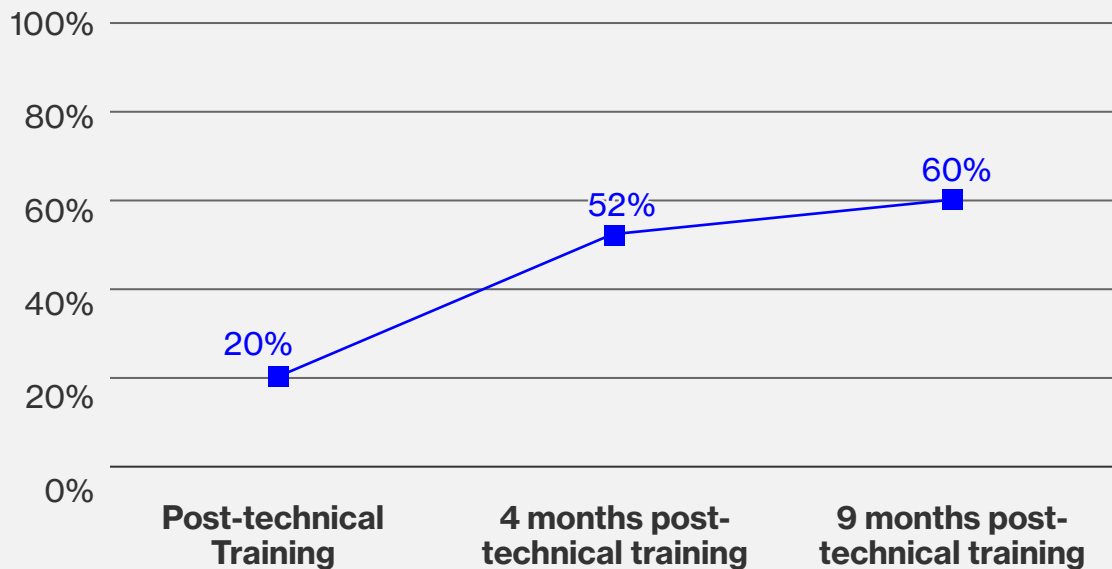
Job satisfaction among those employed improved considerably over time, especially between the post-Training survey and the four-month follow-up survey. Table 7 shows responses to three questions related to satisfaction conducted immediately after the Technical Training and then four months and nine months later.

| **Table 7** | Employed participant responses to job satisfaction-related questions at three points

Job Satisfaction (if employed) (responses presented: 'agree' or 'strongly agree')	Post-Training Survey	Four-month Follow-up Survey	Nine-month Follow-up Survey
Satisfied with the job overall	35% (12/40)	72% (63/87)	75% (63/84)
In my current job, I think I will be able to advance in my career	40% (16/40)	64% (56/87)	69% (57/83)
I worry about losing my job	25% (10/40)	18% (16/87)	22% (18/83)

The largest shifts occurred between the post-Training survey and the four-month follow-up. Between the two touchpoints, general job satisfaction increased by 37 percentage points; the proportion of respondents who believed they could advance their careers in their current job increased by **24 percentage points**; and fears around losing those jobs decreased by **seven percentage points**.

Employed participants felt more satisfied with EDGE UP 2.0 overall over time compared to unemployed participants. Based on crosstab analysis of the data from the post-Training survey and the four-month follow-up survey, the overall satisfaction of both **employed** and **unemployed** respondents decreased over time. **Table 8** separates responses to this question between employed and unemployed respondents.

| **Table 8** | Rates of overall program satisfaction over time, separated by employment status

Overall Program Satisfaction by Employment Status		Post-Training Survey	Four-month Follow-Up Survey
Somewhat or very satisfied with EDGE UP overall	Employed	**78%** (31/40)	**77%** (67/87)
	Unemployed	**78%** (125/160)	**62%** (48/77)
EDGE UP was somewhat or very useful in helping prepare for future employment in a digital/tech role	Employed	**98%** (39/40)	**78%** (69/88)
	Unemployed	**86%** (138/161)	**69%** (56/81)
Likely or very likely to recommend EDGE UP or have already recommended it	Employed	**95%** (38/40)	**80%** (70/87)
	Unemployed	**86%** (138/161)	**66%** (51/77)

The survey sample size of those employed in IT limited our ability to be sure whether the drop in satisfaction was due to unemployment, unemployment specifically in IT roles or another cause (see **Table 9** below for sample size information). Ultimately, many respondents (and especially unemployed respondents) had different perceptions of EDGE UP 2.0 four months after their immediate involvement in the program, indicating room for improvement in the ways it could have prepared individuals for future employment in a digital/tech role.

A minority of program graduates (around a third) reported finding work in an IT role nine months after the training. The primary goal of EDGE UP 2.0 was to help displaced oil and gas workers transition to positions in IT. To assess whether participants found employment in IT-related roles over time, participants were asked two survey questions: a binary question on whether they were employed in an IT job, and a question asking them to report the percentage of their job duties that involve the skills they learned or improved through EDGE UP 2.0. These questions were asked on the post-Training survey and on the four- and nine-month follow-up surveys. **Table 9** shows that

almost one-third of respondents reported having secured employment in what they believed to be an IT role at nine months post-training.

| Table 9 | Proportion of employed respondents working in IT-related roles at three points

Employment Question	Positive responses		
	Post-Training Survey	Four-month Follow-up Survey	Nine-month Follow-up Survey
Are you employed in an IT role?	29% (7/24)	32% (14/44)	32% (27/84)

Note. This question was asked to cohort two participants only during the post-Training survey and at the four-month follow-up, which explains the lower numbers compared to Table 13; both cohorts were asked at the nine-month mark. Readers should interpret these findings as suggestive due to small sample sizes.

Most employed respondents reported using skills they learned or improved through EDGE UP 2.0 in their current jobs. Table 10 shows the percentage of survey respondents who reported having duties and responsibilities that utilized the skills developed through EDGE UP 2.0. Due to the data pattern and uneven participation distribution across each survey, the results should be interpreted cautiously. Nevertheless, our data show that **68%** of respondents reported using skills learned or improved in the program nine months after it was completed. Almost one-quarter (**24%**) of respondents reported that **50%** or more of their current job duties involved the skills developed in EDGE UP 2.0 in the same period.

| Table 10 | Proportion of employed survey respondents whose job duties required skills learned through EDGE UP 2.0 at three points

Employment Outcomes Overall		Post-Training Survey	Four-month Follow-Up Survey	Nine-month Follow-Up Survey
(If employed) % of job duties/ responsibilities involving skills learned or improved through EDGE UP 2.0	0%	29% (7/24)	41% (18/44)	32% (27/84)
	1–24%	17% (4/24)	32% (14/44)	24% (20/84)
	25–50%	33% (8/24)	9% (4/44)	20% (17/84)
	51–75%	13% (3/24)	14% (6/44)	16% (13/84)
	76–100%	8% (2/24)	5% (2/44)	8% (7/84)

Roughly half of employed respondents reported having jobs commensurate with their level and/or field of training from their highest degree. We asked employed participants (both those employed in IT roles and those employed in other jobs) if their new jobs were appropriate to the field of training they received from their highest degree. **Table 11** (below) shows the proportion of respondents that 'agreed' or 'strongly agreed' with our question about job fit (appropriateness of field and seniority to level/field of training).

At the post-Training survey, **48% of those employed in any field (and who answered our question about field and seniority) felt that their new job was appropriate for the level and/or field of training they received from their highest degrees.** This may suggest that many respondents were able to secure employment in areas aligned with their oil and gas experience (as that would be the most likely focus of their most advanced post-secondary training).

| Table 11 | Respondents reporting employment commensurate with their educational attainment

Questions	Post-Training Survey	Four-month Follow-Up Survey	Nine-month Follow-Up Survey
(if employed) My current job (including job field and/or seniority) is appropriate for the level and/or field of training I received from my highest degree (agree or strongly agree)	48% (14/29)	36% (16/44)	50% (25/50)

The average number of working hours per week and annual earnings increased over the follow-up period. Table 12 shows the average reported weekly work hours and annual earnings from the post-Training survey and the four- and nine-month follow-up surveys. **Average weekly working hours and average annual earnings increased substantially** over the nine-month period. By the nine-month follow-up, the average weekly work hours reported represented full-time employment (38 hours per week), and average earnings were nearly $80,000 per year — an increase of 11 hours per week and $38,662 from the post-Training survey.[24]

| Table 12 | Average weekly work hours and average annual earnings at three points

Questions	Post-Training Survey	Four-month Follow-Up Survey	Nine-month Follow-Up Survey
(if employed) Average number of work hours per week	27	36	38
(if employed) Average annual earnings*	$39,928	$63,828	$78,590

*Note. Hourly wages and sub-annual earnings reports were annualized assuming 50 working weeks in the year.

24 In the survey, participants were asked, "How much are you paid — including tips and commissions, but before taxes and other deductions?"

While our data do not allow us to provide a reliable estimate of the proportion of participants who returned to oil and gas, we draw on findings that point to this trend: we analyzed nine-month follow-up survey data on respondents' reported sector of employment, and **27%** (23/82 respondents) reported working in in the energy sector.

Given the experience and expertise of participants, the rebound in the oil and gas sector, and the likelihood that the new IT-related training did not translate into higher wages, these findings are unsurprising. It is important to recognize that the energy sector job market changed considerably during EDGE UP 2.0's implementation, creating opportunities for many involved in the program to return to their area of professional experience. This does not necessarily reflect participants' experience with EDGE UP 2.0.

4.4. Program implementation

What have we learned about successes and opportunities in program delivery?

EDGE UP 2.0 was implemented successfully. Through continuous improvement efforts and strong collaborative processes, partners delivered all essential program components.

Based on feedback collected through interviews with project partner staff (n=13) and employers (n=3), the project partners (CED, ICTC and the four PSE institutions) operated cohesively and with a strong spirit of collaboration. This summary reflects both sources of data (partner and employer interviews); however, distinctions are noted when it applies to a specific group.

Designing and delivering EDGE UP 2.0 was a major undertaking. It involved a diverse set of organizations, each with their specific fields of expertise and approaches to program-building. Partners included regional and national non-profits, four post-secondary institutions and an experiential learning platform, so EDGE UP 2.0 required careful coordination.

Despite this challenge, we heard that partners co-created and co-managed effectively to deliver all core model components. Interviewees also observed that EDGE UP 2.0 was unique in the skills ecosystem due to its unique target demographic, innovative and bespoke approach to sector-based model design, reputable organizational partners and support from government funding. Should future programming be initiated, partners would be enthusiastic about being involved in the early design stages.

Partners encountered challenges related to recruitment, internships, employer skills needs and partner communications. Partners and employers observed the following four challenges with implementing EDGE UP 2.0.

1. Challenges with recruitment and outcomes

Project partners noted that shifting economic conditions created significant obstacles to recruitment and outcome goals.

- **Fewer participants were interested in the program in cohort two.** Recruitment for cohort two was more difficult compared to cohort one. Interviewees cited two main causes: a) a surge in hiring for oil and gas from 2021 to present; and b) global and local layoffs in the tech industry in 2022 and 2023[25] (for further thoughts on both labour market fluctuations, see section 5. Discussion and conclusions). This required expanding eligibility criteria to workers with international experience in oil and gas.

  - Some program staff expressed concern for the future of the tech industry in Alberta. In 2023, CED organized a workforce symposium attended by representatives from industry associations, training institutions, relevant service providers, talent firms and local/provincial and national government. Interviewees mentioned that symposium attendees echoed their concerns, noting that "people specifically think of Calgary as an oil and gas town." While the city is "promoted as having a great tech sector," it "does not have enough tech sector jobs available to attract the right talent."[26]

- **Not all participants may have been suitable for the program.** The post-secondary institutions were not involved in the screening of participants, and some institutions lacked confidence that participants were appropriately screened or ready to transition to a new career in IT.

- **Participants were reluctant to apply for IT jobs.** Interviewees observed that participants were reluctant to apply for IT positions primarily due to a lack of confidence in their own skills and experiences and a lack of readiness for the work. Others reported that participants believed that IT jobs were "for younger people" after they could not find jobs in the sector, and after further investigation, found that the wage gap between entry-level IT jobs and mid-level oil and gas positions was prohibitive.

  - Interviewees reported that graduates were encouraged to join CED at various ecosystem events centred on employer networking to help overcome low confidence in transitioning to a new field. CED offered supporting career information, including greater clarity on salaries, through regular outreach methods. Despite these efforts, partners mentioned that few respondents read emails, returned calls or attended networking events, and among those who did, few felt confident enough to speak to employers.

- **Participants reported being overwhelmed with workload and course intensity.** Interviewees reported that many participants would have preferred a part-time or evening course, extended over a longer period, to gain more free time during the days for other obligations (replacing the concentrated nature of EDGE UP 2.0, which was designed to get participants back to

25 Scott, J. (2022, December 16). *Layoffs persist at Canadian tech companies amid bleak outlook for 2023.* Betakit. https://betakit.com/layoffs-persist-at-canadian-tech-companies-amid-bleak-outlook-for-2023/

26 Stone Olafson. (2023, September). *Workforce symposium facilitation.* Calgary Economic Development.

the workforce as soon as possible). While participants had agreed via acceptance letters to begin applying for jobs before their Capstone Projects finished, many paused their job search to take extended breaks. Partners reported that participants who took longer breaks forgot course details and lost confidence in their abilities, requiring additional coaching supports.

- As mentioned above, many participants were long-term unemployed; interviewees mentioned that some had been unemployed for up to five years. In response, partners were watching for mental health concerns and other psychological issues associated with longer-term unemployment. Those experiencing prolonged joblessness can experience profound financial and interpersonal stresses,[27] and research shows that the longer one goes without work, the more difficult it is to make a return.[28]

- **Participants also discussed Calgary employers' current priority of hiring mid-level instead of junior IT roles.** Several of our interviewees pointed us to a key finding in CED's workforce symposium report that stated "there is no shortage of frontline, junior tech/innovation talent. Instead, there is a deep need for experienced upper managers and leaders."[29]

  - Relatedly, some staff also noted that participants who were immigrants to Canada (70% according to the survey data, with 15% being newcomers) also potentially faced racist and/or xenophobic behaviour from employers. Several interviewees noted that participants at the workforce symposium cited discrimination and racism as persistent factors in the Calgary labour market. Others faced basic language barriers, which participants felt limited their success in their job searches.

- **Some participants encountered low IT job retention.** Staff heard from employers that a handful of program graduates who secured jobs in IT quit their new-found positions to return to careers in oil and gas. Staff informed us that this led to some Calgary employers becoming reluctant to hire additional program graduates for fear that future candidates would do the same.

2. Challenges engaging employers to secure digital internships

Interviews with project staff revealed how certain prevailing economic conditions in Calgary meant low employer engagement and continued to pose challenges, resulting in fewer relevant internship positions for participants.

- **Characteristics of the local IT industry.** Many IT companies in Calgary were (from 2021 to 2023) either small or medium-sized (and included start-ups). Smaller organizations, program partners felt, could have greater difficulties ensuring the financial and operational capacity to offer internships while scaling their businesses.

27 Batic-Mujanovic, O., Poric, S., Pranjic, N., Ramic, E., Alibasic, E., & Karic, E. (2017). "Influence of unemployment on mental health of the working age population." *Mater Sociomed*, 29(2), 92–96. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5544462/

28 Borovičková, K. (2023, April). *Why do long-term unemployed workers struggle to find new jobs?* Federal Reserve Bank of Richmond. Economic Brief 23-10. https://www.richmondfed.org/publications/research/economic_brief/2023/eb_23-10

29 Stone Olafson. (2023, September). Workforce symposium facilitation. Calgary Economic Development.

- **Characteristics of local employers.** Interviewees discussed how low employer engagement could be partly a regional phenomenon. Alberta-based employers typically have low levels of engagement in student work placements, including internships, compared to other provinces (for more context, interviewees referenced [ESDC's Evaluation of the Student Work Placement Program](#)). Several partners also suggested that employers in Calgary also required more personal connections with the program or organizations to be brought in relative to employers in other provinces. Participants frequently referenced CED's workforce symposium, where attendees asserted that businesses in Calgary, and "specifically" SMEs, "are not willing to take on emerging talent that they could coach. This is likely the result of internal challenges the industry faces, such as the lack of time or resources to explore non-traditional development."

3. Challenges involved in securing relevant Capstone Projects

Interviewees addressed and contextualized many notable issues participants had with the Capstone Projects.

Mismatches between participant technical skills and employer needs. The process involved employers posting projects with specific requirements on the platform. PSE instructors would then choose from this set of options and assign projects to student teams. However, EDGE UP 2.0 participants learned foundational skills only, whereas employers were often looking for "experienced upper managers and leaders" and not willing to "coach" emerging talent. This meant projects often exceeded participants' technical capacities. Riipen attributed this gap in relevance to a mismatch between academia and industry, generally, indicating a greater need for dialogue between course designers and employers providing WIL opportunities.

- **Challenges with the Cybersecurity stream.** Employer uptake was particularly low for one of the new streams offered by SAIT, "Cyber Security for Today's World." Interviewees noted that this stream was designed to be even more introductory and foundational than the other streams due to cybersecurity's comparatively vast applications. Therefore, employers were looking for a much higher level of technical competency than what this stream could offer. Moreover, employers voiced concerns about giving entry-level students assignments in cybersecurity due to complex concerns around privacy and safety.

4. Challenges with program delivery

The EDGE UP 2.0 program involved a host of organizations involved in a complex, innovative and ambitious project; project partner interviewees praised the collaborative spirit and work completed to ensure the program proceeded smoothly. Nevertheless, staff at partner organizations pointed to four areas for improvement in communication and coordination.

- **Improved collaboration efficiency.** Despite some major program improvements made for cohort two, some challenges discussed in Blueprint's *Interim Report* persisted largely due to logistical challenges in meeting the timeline for completion. The complicated logistics of assembling a wide variety of partners contributed to some delays in adjusting the project.

- **Improved communications for decision-making and updates.** Large collaborative projects often bring challenges in rapid decision-making and communications. Staff felt that group decision-making could have been improved. EDGE UP 2.0 may have benefitted from channels that enabled more rapid communication outside the regular monthly committee meetings. This would have allowed for more ongoing reporting on program data, and especially information on participant outcomes.

- **Need for clearer delineation (and less duplication) of labour and roles.** Partners were unclear about which organization was responsible for managing participant expectations about workload and employment opportunities. Others were unsure about which partner to contact regarding various topics (such as employment support, program feedback, technical issues and coursework). As one interviewee commented: "following the Transition to Tech component of the program … we actually had to duplicate … some of the activities, [such as] getting final resumes [and] making sure their LinkedIn profiles were up to date … we couldn't assume that ICTC had covered all that because we still had to do a lot of follow-ups."

- **Need for greater ability to share information.** Staff reported that partner organizations, and particularly the PSE institutions, were reluctant to share program information due to organizational proprietary or security concerns. At other times, participants noted receiving inconsistent or confusing information about instructional material, components and logistics. One interview subject described this issue as follows:

  ○ "Post-secondary institutions have their own policies in place, but there's only certain information that they will share externally … Because of the limiting policies they have in place at the institution, they can't share a lot. It's a little bit challenging sometimes, right?"

5. Discussion and conclusions

5.1 Summary of findings

EDGE UP 2.0 was an ambitious project with a dual objective: help displaced oil and gas professionals transition into new roles and address the labour demand in IT. CED recognized that a sector-based approach was needed, but there were few models that support mid-career transitions from one specific sector to another. Therefore, there was no evidence-based approach or clear roadmap for CED to follow. This required exceptional flexibility and creativity to implement its innovative 'career-change' model.

After a sophisticated and comprehensive needs assessment phase that identified viable career transitions, EDGE 2.0 was developed, launched and successfully implemented. Project partners achieved 97% of their recruitment target, and most of those recruited fit their target of mid-career professionals displaced from the oil and gas sector. Through efforts at continuous improvement and collaborative processes, partners delivered all essential program components. Most participants completed the program, reporting high satisfaction with technical training modules, IT workplace readiness training and instructors. Employment rates increased from 20% immediately after training to 60% nine months post-training, with significant boosts in job satisfaction and confidence around career advancement among employed respondents. The average number of working hours per week and annual earnings also increased over the follow-up period, from 27 to 38 hours and from $39,928 to $78,590.

Challenges included lower satisfaction levels with Capstone Projects, internships and the post-training support, prompting suggestions for curriculum enhancements and stronger job readiness training. Project partners also encountered difficulties with recruitment and securing participants with Capstone Projects and internships that aligned with the knowledge and skills they acquired from training. While most employed respondents reported using skills they learned or improved through the program in their new roles, a minority found an IT role nine months afterward, and some respondents returned to employment in the oil and gas sector.

Although partners experienced difficulties related to cross-partner communication and coordination during program iteration and adaptation, the project challenges and outcomes appeared to be largely related to labour market fluctuations occurring during the project's implementation — namely, the shrinking and shifting demand for IT workers and the rebound in the oil and gas sector, which are discussed below.

5.2 Discussion and wider learnings

Overall, EDGE UP 2.0 provided four key lessons for the design and delivery of sector-based models aimed at supporting specific sector-to-sector transitions:

1. **New technology can help identify desirable and viable career transitions.** Advanced technologies like web scraping, text analysis and machine learning can significantly enhance sector-based workforce development models by enabling a multi-pronged needs assessment approach — one combining qualitative insights from key informants and stakeholders with quantitative insights from job market data. These tools collect and analyze vast amounts of real-time job market data across multiple sectors, revealing unexpected skill overlaps and transition pathways. By breaking down roles into specific skills and competencies, they identify similarities between seemingly disparate occupations, broadening horizons for transitioning workers (perhaps even beyond what a career development practitioner might imagine). This tech-driven approach adds value by providing a more nuanced, data-driven understanding of skill requirements and labour market trends, allowing for more targeted and adaptable training initiatives.

2. **Sector-to-sector transition programs are especially vulnerable to labour market disruptions.** There is strong evidence that sector-based models can be effective at delivering outcomes for workers and employers.[30] However, they are also highly challenging to deliver. Successfully implementation requires a broad range of expertise, including deep industry knowledge, the ability to serve participants with complex needs and plan with employers, expertise in design and delivery, and cross-organizational collaboration and coordination skills.

   Unlike most sector-based models, which generally focus on connecting workers to better-paying jobs, EDGE UP 2.0 was designed to respond to a specific, local labour market issue. It provided a 'crosswalk' for highly trained, mid-career workers to transition from one specific sector to another. Thus, design and delivery were akin to threading a needle; this specificity left the program vulnerable to shifting labour market conditions, and when disruption occurred, threading the needle became more challenging. The years 2020–2023 were particularly turbulent, with two major events affecting employment and satisfaction outcomes for EDGE UP 2.0:

   i. **Oil and gas rebounded.** In July 2020, 118,656 workers were employed in Alberta's energy sector. By July 2021, the sector added over 25,000 jobs (with 143,896 employed).[31] This number has not fallen by more than 10% since; overall, it continues to rise.[32] The war in Ukraine also increased global oil prices, resulting in an 11% increase in Alberta oil production from 2021.[33] An upturn in hiring and the availability of mid-level oil and gas jobs

30 Myers, K.., Harding, S., & Pasolli, K. (2021). *Skills training that works: Lessons from demand-driven approaches.* IRPP. https://irpp.org/research-studies/skills-training-that-works-lessons-from-demand-driven-approaches/

31 Careers in Energy. (2024, March). *Employment and labour data*. https://careersinenergy.ca/employment-and-labour-data/

32 In fact, it "experience[ed] a 20% rise in new job postings in Q1 2024 compared with the previous quarter." See: Offshore Technology. (2024, May 6). *Hiring activity in the Canadian oil and gas industry increased in Q1 2024*. https://www.offshore-technology.com/dashboards/jobs/hiring-canadian-oil-and-gas-industry/

33 Alberta Energy Regulator (2023, June). *Crude oil production*. https://www.aer.ca/providing-information/data-and-

likely dampened recruitment efforts for EDGE UP 2.0. It also likely dampened employment outcomes: findings show that at least 27% of employed survey respondents returned to the energy sector.[34]

    ii. IT experienced instability. From 2022–2023, the IT industry saw a 45.7% increase in global layoffs,[35] with Alberta experiencing similar turbulence (e.g., in early 2023, Calgary tech firm Benevity laid off 137 workers).[36] By mid-2023, "Calgary's IT graduates [were] struggling to find tech jobs in the city"; after hiring "to meet accelerated demands during the COVID-19 pandemic, many companies [were] scaling back."[37]

These events demonstrate the vulnerability of single-sector transition programs to unpredictable labour market shifts. By targeting multiple sectors with viable skill transitions, workforce development initiatives can identify and prepare workers for roles across several compatible industries. This approach may help buffer against unforeseen labour market disruptions and enhance overall program effectiveness.

3. Reconsidering success. While displaced workers were willing to transition to careers in IT — and most employed respondents reported using skills they learned or improved through EDGE UP 2.0 in their current jobs — many seemed unable to gain employment in IT positions: only 27 respondents reported finding work in what they believed was an IT role after nine months.

On the demand side, this was likely due to high employer expectations for advanced competencies coupled with fewer vacancies. On the supply side, participants may have been reluctant to pursue IT roles due to a prohibitive wage gap between entry-level IT jobs and mid-level oil and gas positions; sector wage disparities exist even for mid-level positions (ICTC's survey during an early phase found nearly 70% of mid-level oil and gas workers earn more than $81,000 — compared to merely 47% of mid-level IT workers).[38] Some junior or entry-level IT positions would see some oil and gas salaries cut in half or by more.[39]

reports/statistical-reports/st98/crude-oil/production

34 Thus, many returning workers were merely cyclically, rather than structurally, unemployed. See: Nickolas, S. (2024). *Structural vs. cyclical unemployment: What's the difference?* https://www.investopedia.com/ask/answers/050715/what-difference-between-structural-unemployment-and-cyclical-unemployment.asp

35 In 2022, 1,064 tech companies laid off 165,269 employees; in 2023, 1,192 tech companies laid off 263,180 employees. See: Layoffs.fyi. (n.d.). *Layoffs tracker*. https://layoffs.fyi/

36 Franklin, M. (2023, January 19). "Calgary tech firm Benevity lays off 137 workers, cites poor market conditions." *CTV News*. https://calgary.ctvnews.ca/calgary-tech-firm-benevity-lays-off-137-workers-cites-poor-market-conditions-1.6237343

37 Thomas, T. (2023, August 2). "Scarcity of tech jobs in Calgary a growing challenge for IT grads." *CBC News*. https://www.cbc.ca/news/canada/calgary/it-jobs-calgary-competition-hiring-tech-1.6925781

38 Cutean & Davidson, 2018.

39 According to the Government of Canada's *Wages in Alberta* resource, the average lower-end salaries for relevant IT roles in Alberta are as follows: user support technician ($15/hr); web designer ($18/hr); computer network and web technicians ($24.50/hr); web developers and programmers ($21.63/hr); information systems testing technicians ($15/hr); and computer engineers ($16.83/hr). But average mid-level oil and gas salaries range from $28 to $62.50 per hour, with most over the $40 per hour mark. For more, see: Government of Canada. (2024, March). Wages in Alberta. https://www.jobbank.gc.ca/wagereport/location/ab

Project partners also reported that some participants seeking employment in IT post-training believed that IT jobs were "for younger people," whereas oil and gas roles offered participants familiar, comfortable settings. Ultimately, transitions that may be viable in terms of skills match may not be desirable — in other words, viability should be defined not only in terms of skills, but also in terms of other factors that can promote transition and retention in a new sector. This is especially important when designing for mid-career professionals from well-paying jobs.

This raises the question of what other services or support might help address psychological and cultural barriers to career transitions. For example, would dedicated training content for immigrant participants, such as mentoring or networking opportunities, improve satisfaction or employment outcomes? Likewise, it is worth considering how psychological supports might be integrated into the core model to help participants reframe career uncertainties as opportunities for growth. It is possible that sector-based models can better address anxieties associated with career change, particularly for older or recently disrupted workers.

4. **Sector-based models often require multi-partner collaborations, which have both strengths and drawbacks.** CED needed to engage partners who brought expertise in design and delivery of various program components. EDGE UP 2.0 demonstrated that workforce development organizations like CED, sector councils like ICTC and PSE institutions like UofC, SAIT, BVC and MRU can be highly effective partners in delivering dual-client sector-based models for both workers and employers. Project leads not only navigated a complex network of relationships and responsibilities, but did so against a backdrop of major disruption, including the wide-ranging effects of COVID-19.

As expected with a multi-partner collaboration, the communication and coordination demands were high, introducing challenges for program delivery. This is common among sector-based models, which require time to reach operational maturity.[40] These coordination issues are also not uncommon in the Scaling Up Skills Development Portfolio, where grantees must navigate a network of stakeholders with changing staff, different structures and sizes, and varying objectives. The question to explore is how multi-partner, sector-based training initiatives can be designed to be nimbler and more responsive in the face of contextual changes.

EDGE UP 2.0 stands as a testament to CED's commitment to innovative workforce solutions. The program's ambitious goal of transitioning mid-career oil and gas professionals to in-demand digital roles required a pioneering approach, setting it apart from traditional sector-based models. Because of this project's inclusion in the Scaling Up Skills Development Portfolio, we can learn from these successes to revise, replicate and apply them to new contexts.

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[40] For example, in WorkAdvance, a landmark sector-based demonstration project in the US, it took one year for the large, high-capacity providers to fully implement the model as planned. For more, see: Hendra, R., Greenberg, D. H., Hamilton, G., Oppenheim, A., Pennington, A., Schaberg, K., & Tessler, B. L. (2016). *Encouraging evidence on a sector-focused advancement strategy: Two-year impacts from the WorkAdvance demonstration.* MRDC. https://www.mdrc.org/work/publications/encouraging-evidence-sector-focused-advancement-strategy-0

Appendix A

Common Outcomes Framework

	Outcome	Indicators
Socio-demographics	Sex & Gender	Sex at birth
		Self-identified gender
	Age	Age
	Location	Province
		Region & Municipality
	Marital status	Marital status
	Children & Dependents	Children Dependents Household size
	Household Income	Household income
	Education	Highest credential obtained
		Location of highest credential attainment
	Indigenous Identity	Self-identified Indigenous identity
	Francophone status & languages spoken	First language spoken
		Official languages
		Language spoken at home
		Other languages spoken (At home)
	Citizenship Status	Place of birth
		Year of arrival
		Citizenship status
	Racial identity	Self-identification as member of racialized group
	Disability	Self-identified disability

	Outcome	Indicators
Employment status and history	Employment	Employment status
		Nature of employment (permanent, temporary, full/part-time)
	Earnings	Hours worked / week
		Wages
		Annual earnings
	Industry and occupation of employment	NAICS code of job
		NOC code of job
	Work history	Time since last employed
		NOC code of job
		NAICS code of job
	Income source	Income sources
Intermediate outcomes	Program completion	Successful completion of planned activities
	Participant satisfaction	Satisfaction with program
		Perceived Utility of Program
		Likelihood to recommend
Customized intermediate outcomes	Skills gains	Measured gains in specific skills
	Program-specific credential attainment	Attainment of program-specific credentials

Appendix B

| Table 19 | Descriptions of streams provided by post-secondary partners

Post-secondary Institution Training Partner	Stream Title	Descriptions
University of Calgary Continuing Education	Product Management with a Specialization in Digital Product Marketing	Covers various concepts, tools and techniques specific to product management (including many activities, from strategic to tactical), which can help push a company's product to the next level of performance. Participants in this program acquire a Digital Marketing specialization.
Southern Alberta Institute of Technology	Data Analytics with Cleantech Foundations	Helps participants develop the knowledge, skills and aptitude to apply fundamental principles of data analytics — i.e., creating accurate and meaningful data — to provide actionable insights and support business decision-making processes. Students receive foundational knowledge of the cleantech landscape and the principles of Environmental, Social, and Governance (ESG) across multiple perspectives, with an aim to enable understanding of clean technologies and examine and explore their impacts and viability.
	Cyber Security for Today's World	Prepares learners to enter the security profession with confidence and solid fundamental knowledge to help businesses identify information security threats and risks.
	Data Analytics	Develops participants develop the knowledge, skills and aptitude to apply fundamental principles of data analytics to support business decision-making processes, creating accurate and meaningful data to provide actionable insights.
Bow Valley College	Full Stack Software Development	Teaches skills needed to enter the software development workforce and gain a strong foundation in a fast-growing and ever-changing field.
	IT Network Management	Provides learners with understanding of numerous networking roles, such as network engineer/architect and network administrator, using the Cisco Network Academy.
Mount Royal University Faculty of Continuing Education and Amazon Web Services	AWS re/Start (Cloud Computing)	Helps build skills around Amazon Web Services (AWS) Core Services and covers foundational introductions to Cloud concepts, such as the advantages of Cloud technologies, key technologies offered through the Cloud (computing, storage, networking, security and databases), and programming concepts and technical skills, including Linux and Python.

Future Skills Centre
Centre

Centre des
Compétences futures

Blueprint