Lost and Found:

Pathways from disruption to employment

brookfield institute

for innovation + entrepreneurship

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In our rapidly changing economy, we face a collective challenge. On one hand, it is essential to enable workers whose jobs may be threatened by disruption to secure gainful employment elsewhere. On the other, it is equally critical to meet the evolving skills demands of local employers so they can remain competitive.[1,2,3] In an ideal scenario, these two forces would overlap.

However, traditional responses have not adequately addressed key components of this challenge. While there are many potential alignments between workers looking for jobs and employers looking for talent, a range of barriers prevent workers and employers from becoming aware of, acting on, or successfully realizing those opportunities. This is a labour market failure that hurts both workers and employers.

For people experiencing job loss, the exact pathways from shrinking jobs to growing opportunities are not always readily apparent, even with access to labour market information (LMI). For instance, when firms post open positions with specific job titles, many workers who might be very good candidates given their skills and experience simply do not apply because they find the specific job title unfamiliar or irrelevant to their search.

In many cases, firms might not post position openings at all, relying instead on networks to find candidates. Similarly, firms often overlook strong candidates with relevant skills and experience because the specific job titles and credentials in their resumes do not match the titles of the positions for which they are hiring.

Even when we can identify promising pathways based on skills and experience rather than job titles and credentials, workers still face a range of barriers to pursuing those pathways successfully. Many factors conspire to keep otherwise suitable workers out of positions that need them, including: individuals' well-being and psychological readiness to pursue new opportunities after job loss; financial and geographic mobility constraints; firm hiring practices; and residual skills gaps and training needs.

Given these barriers, workers and firms in Canada are missing out on many mutually beneficial opportunities. This report proposes a framework for identifying and realizing these opportunities, which could help guide the design of policies and programs aimed at supporting mid-career transitions.

PURPOSE OF REPORT

In this report, we identify a methodology for illuminating possible job transition pathways for workers experiencing disruption and offer clarity on a range of barriers that they face, many of which could be mitigated through better policies and strategies. In particular, this report:

1. Articulates key informational challenges facing job seekers and employers, and presents a framework that uses existing LMI to identify job transition pathways. Our model focuses on identifying key areas of vulnerability and strength in a local labour market and, using the underlying skills required in an occupation, illuminates potential pathways where labour may be better allocated.

2. Discusses factors beyond skills that affect a worker's journey, thereby grounding the model in practical realities. We demonstrate that exploring job pathways must go beyond skills requirements to reflect the realities of how people make career transitions.

3. Applies the model to identify and validate two high-potential job pathways in the GTHA, and highlights the lessons learned that can be applied elsewhere. This involved interviews with local employers, training organizations, and policymakers about the challenges they see in realizing the pathways identified by the model, as well as the strategies needed to help workers successfully pursue these pathways.

It is our hope that these insights will inform stakeholders across the public and private sectors to identify and support high-potential job pathways for vulnerable workers and help firms secure the talent they need in their local labour market.

METHODOLOGY DISCUSSION

To identify job transition pathways, we examined the fit between occupations. This proved to be helpful for identifying jobs with significant skills overlap between which it may be theoretically easier for job seekers to transition. Alone, however, this analysis failed to sufficiently narrow down the selection. We found it necessary to augment this data with a variety of alternative sources of LMI, including employment growth statistics, wages, and occupational projections to locate feasible transition pathways between areas of decline in the GTHA and promising jobs that are growing, appear more resilient, and pay well.

Through this work, it also became clear to us that data alone is insufficient. As such, we included an explicit qualitative component in our model, which involved interviews with a variety of local stakeholders with an intimate knowledge of factors impacting the feasibility of these pathways.

STRUCTURE

The report is structured as follows:

1. We examine two distinct approaches to mid-career training.

2. We outline our stepwise approach to creating our model, highlighting specific data we used and how we used it.

3. We examine in detail two promising pathways identified in the GTHA, highlighting insights that we gleaned from the data, as well as through interviews with employers, educators, and training providers.

4. Finally, we discuss the lessons learned and how they might be applicable to the broader policy and workforce training community aimed at mid-career job transitions.

Recent technological changes and restructuring decisions by large employers like General Motors (GM) have garnered significant attention from policymakers and have been met with substantial investments to help workers adapt to disruption. There is growing recognition that providing support for mid-career job transitions is important, but the exact means to do so is less than clear. While skills training is often viewed as a panacea for the challenges that many of these workers face, existing workforce development policies and programs often fall short of their intended impacts. It is clear that more attention must be paid to identifying appropriate opportunities for workers and providing the necessary supports that workers need to realize job transitions.

Current workforce development programs and policies are largely underpinned by the assumption that once someone has acquired a skill, they can secure a job in which they can be productive and earn a living wage.[4] Yet, skills training programs—in particular those aimed at more vulnerable segments of the population—are often unable to deliver on helping workers secure gainful long-term employment.[5,6]

For mid-career workers, focusing solely on skills and skills development is likely insufficient. They not only need to be sure that they are learning skills relevant for employers, but are also receiving supports tailored to the needs of both firms and workers in order to support and realize a successful job transition.

For example, workforce training programs provided by the Government of Ontario have largely taken a supply-side approach, focusing almost entirely on the development of workers' skills. The available suite of skills development and employment services often fail to ensure workers are being trained in areas where there is significant local need, and often lack the kinds of supports needed by vulnerable workers to find and keep a new job.[7] One such program is Second Career, which is a mainstay of the Ontario government's workforce training programs. This program funds skills training for recently laid-off workers seeking employment in high-demand occupations.[8] However, according to the Auditor General's 2016 Annual Report, only 38 percent of SC clients were employed upon program completion, and only 14 percent of those individuals found employment in their field of training, a professional occupation, or a more suitable job compared to their status before the start of the program.[9]

In response, organizations have been exploring other approaches to workforce development that take a dual-customer approach—brokering relationships between employers and their

prospective hires—collectively known as workforce intermediaries. Broadly speaking, they help identify areas where talent is needed, then work with employers and training providers to foster a talent pipeline tailored to the needs of workers and local firms. They also identify and work to overcome broader sets of institutional barriers that can prevent job transitions from taking place.[10] As a result, supporting workforce intermediaries is increasingly viewed as an attractive strategy to generate career advancement and recruitment opportunities for less-educated workers.[11]

Some workforce intermediary programs—such as the BioWork course in North Carolina—identify and respond to credentialing mismatches, locate prospective pools of talent, and support workers by providing comprehensive services such as targeted skills training and structured job placements.[12] The BioWork course is delivered through community colleges in close collaboration with industry and subject-matter experts with the goal of meeting the talent needs of firms while being accessible to workers being displaced from traditional manufacturing industries. This allowed individuals

with a high school education and no previous sector experience to enroll.[13] Other programs such as Project QUEST, based in San Antonio, Texas, provide comprehensive supports to workers to help them overcome the numerous personal barriers they face when making a job transition. In addition to job placement assistance, this program provides a number of personal supports including financial assistance, transportation, personal and academic counselling, referrals to outside agencies for assistance with bills, and childcare, as well as weekly meetings focused on building life skills. Project QUEST has shown signs of success: after nine years of running, program participants earned on average $5,239 more than a control group.[14]

All of this suggests that while skills development is central, supporting successful job transitions require an understanding of who is losing their jobs, who needs workers, and whether these two groups can be reasonably linked. It is just as critical to identify and address the numerous barriers that may add significant friction into the job transition process, such as overly stringent credential requirements.

Palette Inc.

Palette is a national nonprofit based in Toronto. Launched in 2017 in partnership with the Brookfield Institute, it focuses on helping fast-growing employers meet their talent needs by upskilling mid-career workers experiencing career disruption. Palette launched its first pilot program in early 2019, called SalesCamp. SalesCamp aims to help mid-career workers with non-tech sales backgrounds transition into sales roles in technology companies across the Greater Toronto Area.

Palette's goal is to develop a new approach to workforce development through the creation of a national upskilling platform. Using a three-pronged approach, Palette supports mid-career workers by equipping them with appropriate skills, creating industry networks, and building sector-specific experience.

It does this by working with rapidly growing companies in the innovation economy to identify common high-demand skills, then partnering with training providers to create intensive upskilling programs tailored to the needs of mid-career workers. The Palette model uses a work-integrated learning approach with a mix of in-class and workplace training. This complements more traditional multi-year educational offerings by colleges and universities, which can be less accessible to mid-career workers who are seeking a more rapid career transition.

THE JOB PATHWAYS MODEL IN BRIEF

If you're...

...an employer looking to identify a new source of talent...

You likely know the destination job you need to fill, and you'll need the appropriate occupation code. But if not, consider the following.

...a policymaker or workforce developer looking to support workers who are being affected by disruption...

On which area or region are you focused?

...an employer undergoing a workforce reduction and want to know how to support affected employees...

You'll want to start with determining the occupation codes for the jobs you are reducing.

Choose a destination occupation

Destination jobs are future-oriented jobs into which individuals from an origin occupation can be reasonably expected to transition. They are growing, competitive, and relatively resilient to shocks.

Choose an origin occupation

Origin jobs are those already showing signs of employment decline regardless of the source of disruption.

Other factors you should consider

- Determine if the wages are competitive relative to the origin job

- Determine if destination jobs are within reasonable commuting distance

- Determine if destination jobs are likely to grow in the near future

- Determine if employers are hiring for this job, and if they employ enough people relative to the origin job

- Determine if this job is experiencing large proportional declines within the chosen geographic area

Is there a reasonably large skills overlap with the chosen origin/destination job?

- Credential and experience requirements (e.g. special licensing requirements such as Red Seal certifications) in destination jobs that might pose significant barriers to workers from the origin job.

- How long it could take for a worker to transition from an origin job.

- The interests and needs of workers in the origin job.

- Barriers to career transitions that might be specific to your area or region of focus.

- Barriers to career transitions that might be specific to your industry of focus.

- The supports workers needs to help them transition successfully could include upskilling programs, increasing access to physical and mental health supports, professional networks, childcare, or relocation support.

- How employers are hiring for candidates, and the signals of hireability they look for in this occupation or sector. This also includes employer hiring practices align or misalign with how job seekers are looking for work.

To create a model designed to identify job pathways in the GTHA, we sought to address three separate questions:

1. How might we identify how closely related jobs are, not by credentials or areas of the economy in which they are situated, but rather by the underlying skills, abilities, knowledge, and work activities they require?

2. How might we ground this analysis in the conditions of the local labour market, to ensure that we are creating links between jobs that might be vulnerable to disruption and that are growing in order to create gainful opportunities locally?

3. How might we account for factors that the data may fail to pick up, but that could prevent an otherwise desirable job pathway from being realized?

The following section outlines our process and the underlying data and approaches we took when applying this model in the GTHA.

Step 1: Fit between Occupations
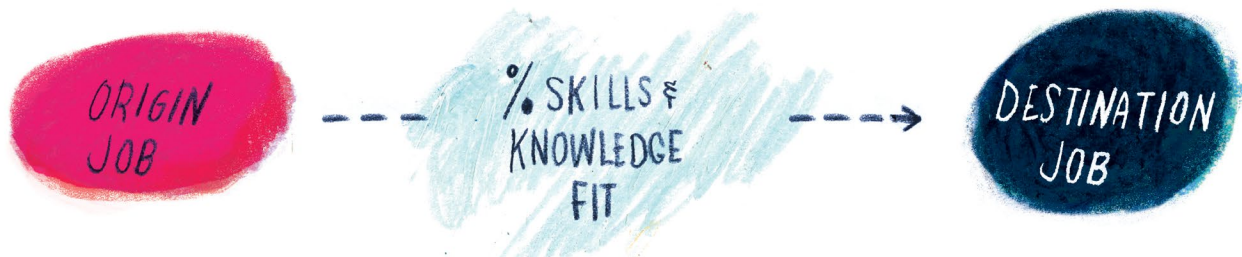
Traditional sources of LMI often fall short when it comes to providing specific and timely information about job opportunities and the skills that people need to fill them. This makes it difficult to identify potential matches between jobs that need people and people who could successfully do those jobs. In response, some organizations have created tools to augment traditional LMI with more granular skills-based data, such as RBC Upskill and the MaRS + Google planext tool, which aim to identify the potential fit between jobs to help people plan their career transitions based on their underlying skills. These tools generally focus on individual users while we are seeking to augment a similar approach for application in a different use case. This model is aimed at policymakers and program designers, to help them get ahead of or respond to job disruption and employer talent demand on a macro scale.

In the tools that are emerging, there is a growing recognition that every occupation requires some combination of skills and that there may be significant overlap between the skill requirements of different occupations.[15] Theoretically, the closer the skills fit between the occupations, the easier it will be for workers to make the transition and perform well in the new role with minimal training.

An examination of the fit between occupations is at the foundation of our model. We partnered with MaRS, and leveraged and adapted the planext tool to calculate similarity scores between occupations across eight attributes: skills, knowledge, abilities, work activities, work values, work styles, interests, and work context (see Appendix A for further details).

Step 2: Suitability
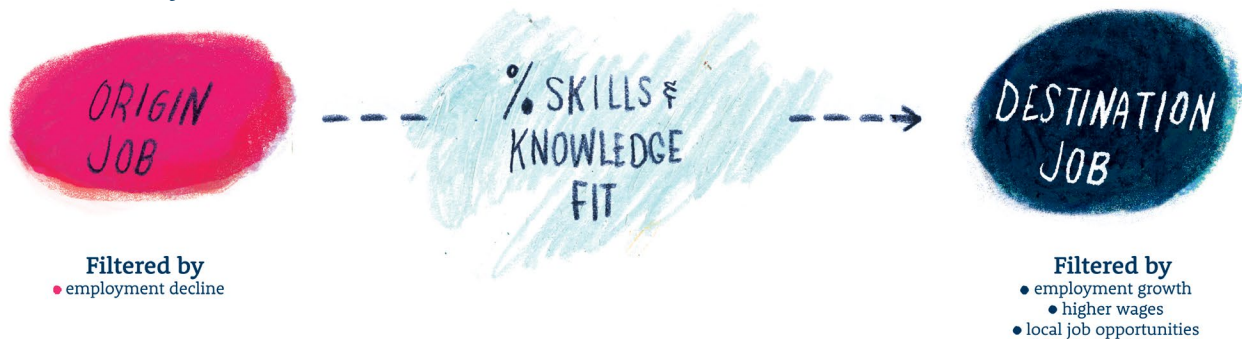
A job transition might be possible, but that does not necessarily make it desirable. Even if individuals disrupted out of their job find another occupation that fits their skills profile, they may find themselves underemployed, taking a pay cut, or simply transitioning into a job that is also

vulnerable to disruption in the short term. Ideally, a job pathway should be aimed at transitioning individuals into jobs that are growing, hiring, paying well, and are reasonably resilient to future shocks.

Looking beyond automation as a source of disruption

Many researchers are focused on the past and potential future employment implications of automation technologies. While many of these studies have informed our understanding of the interaction between technology and employment, the forces that disrupt labour markets are much broader. Globalization, climate change, changing demographics, and shifting business strategies are also key variables.[16, 17]

Many predictive models typically rely only on technological possibilities—that is, they examine new and emerging technologies, map the tasks in a job that could be performed by technology, and extrapolate occupational change and job loss from those possibilities. However, the extent to which technology practically affects jobs depends on what firms actually do with new technologies— including the extent to which they adopt such technologies, and the strategies they pursue when tasks and occupations change as a result.[18]

Even when automation is a major influence prompting job disruption, it is hard to quantify the impacts on actual workers. As automation replaces human labour in a variety of tasks, it may eliminate certain jobs where the share of automated tasks among total tasks is high. Automation can also augment the performance of key tasks and serve as a complement to human labour, increasing productivity and subsequent demand for additional labour. The implementation and effective use of automation technologies can also generate new tasks and occupations directly or indirectly associated with the technologies themselves, including making, operating, monitoring, and maintaining automation technologies, as well as filling tasks associated with entirely new businesses and industries. These combined effects have historically offset any job losses associated with automation.[19]

Origin occupations

We began by identifying origin occupations. Origin occupations, as we define them, are the jobs that have already experienced disruption, regardless of its source—whether it be automation, globalization, or other influences. This model could also be employed in response to a planned layoff, or in the case where employers are looking for new sources of talent. The choice to begin with origin occupations was made to reflect how the model could be used to identify and support workers in occupations that are particularly vulnerable, but are not necessarily a part of a highly publicized layoff.

Focusing on the GTHA, we chose occupations that have a high share of local employment. We measured this based on whether the four-digit NOC code represented a higher proportion of total employment in the GTHA compared to Canada overall. We also examined occupations that employ a minimum of 5,000 workers[20] to ensure that we are focusing on occupations that reflect job disruption or job opportunities impacting larger numbers of people.

Using Census 2016 data, we identified 50 occupations that met these criteria. Table 1 describes the five occupations from this list that experienced the largest proportional decline in employment in the GTHA from the 2006 to the 2016 Census (see Appendix A for further details). We labeled these as **origin occupations**.

To enable a sufficiently robust study of the job transition pathways that might be available to people in these occupations, we selected two occupations from this subset for further investigation. We wanted our pathways to reflect multiple industries, and also considered share of employment, and level of employment decline in making our selections. **This led us to select *Banking, Insurance and Other Financial Clerks,* and *Motor Vehicle Assemblers, Inspectors and Testers* as our origin occupations of focus.**

Table 1: Origin Occupations

Occupation	Concentration difference	GTHA Employment 2006	GTHA Employment 2016	Employment change 2006 to 2016	Percent change 2006 to 2016
Banking, Insurance and Other Financial Clerks	8%	12,080	7,835	–4,245	–35%
User Support Technicians	7%	16,535	11,420	–5,115	–31%
Securities Agents, Investment Dealers and Brokers	8%	8,945	6,230	–2,715	–30%
Motor Vehicle Assemblers, Inspectors and Testers	26%	30,775	23,185	–7,590	–25%
Sales and Account Representatives—Wholesale Trade (Non-Technical)	15%	36,925	28,580	–8,345	–23%

Destination occupations

To illuminate promising job pathways from these two origin occupations, we addressed four questions:

1. Is the destination job a good fit based on the underlying skills of the occupations?

2. Does the destination job offer a competitive salary relative to the origin occupation?

3. Are there job opportunities locally?

4. Does the destination job have favourable future prospects?

We identified a number of indicators associated with each of the four questions to guide our pathway selection. Since the purpose of our model is not to identify a single "right" job pathway, we did not want to combine the indicators and impose a specific weight for each factor. We left room for different choices shaped by preferences about whether an indicator should be used as a filter or a descriptive variable, where cut-offs should be, and the various other priorities stakeholders might have.

We used some indicators as filters (i.e., criteria that must be met for a pathway to remain in the considered set) while data for other indicators were used as descriptive statistics to characterize our selection, helping us understand the differences between the pathways to ensure diversity in our selection.

1. **Fit**

We examined skill similarity scoresbetween each occupation and all other occupations (four-digit NOCs) in Canada. The thresholds for similarity scores between origin and destination occupations vary depending on the number of promising opportunities that met our other criteria.

For example, for *Banking, Insurance and Other Financial Clerks*, we examined all occupations with a similarity score of 90 percent or greater, meaning there was at least a 90 percent overlap across the eight O*Net attributes. We were able to use this fairly strict threshold as the skills required in this occupation are more broadly applicable across the economy, and therefore had more overlap with a variety of other occupations that were also growing and paid well. The threshold was lowered to 80 percent for *Motor Vehicle Assemblers, Testers, and Inspectors* as the skills required in this occupation are much more specific to the manufacturing sector, and opportunities to transition into growing, well-paying jobs are not as readily available. This highlights how pathways for jobs requiring a significant degree

of industry or firm-specific knowledge may be more difficult to realize.

2. Good pay

In addition to fit, we also assessed whether the destination job is desirable in terms of pay. We focused on occupations that pay equal to or more than the origin occupation to avoid the possibility of a worker taking a pay cut. To conduct this analysis, we used employment income levels from the 2016 census. However, we recognize that income is only one component of job quality. Future analysis might consider adopting Statistics Canada's more robust assessment of job quality, which considers pay along with other indicators such as work intensity and worktime quality.[21]

3. Job opportunities

Our third criterion for selection was whether there are sufficient job opportunities locally. To determine this, we examined both the stock and flow of workers within an occupation. We measured stock as the number of workers employed in the occupation in the GTHA in 2016. We excluded occupations with fewer than 2,000 employees in 2016, but this figure could be altered depending on preferences and the employment levels in the origin occupation. To measure the flow of workers, we examined the number of job postings attributed to each NOC in the Toronto Economic Region in the first quarter of 2019 (see Appendix A for further details).

4. Future prospects

We wanted to be reasonably confident that a destination occupation has favourable future prospects and is relatively resistant to future disruption. To get a sense of the employment trajectory of each occupation, we examined how employment has changed in the GTHA between 2006 and 2016. This gave us an indication of whether workers in an occupation are benefitting from or being negatively impacted by disruptive forces.

We only considered occupations that have experienced positive growth in the last decade. Within the subset of potential destination occupations that met this filter and all other criteria, we prioritized those with the most significant growth in employment. This was a choice; other analyses may want to prioritize other metrics, such as the stock and flow of employees.

Additionally, we considered the short- and medium-term future prospects of each occupation using Employment and Social Development Canada's (ESDC) Employment Outlooks 2018–2020 for the Toronto Economic Region. We only considered occupations where the short- to medium-term potential for employment is equal to or higher than the average in the Region. Further indicators of future resilience, including the proportion of job tasks considered "routine" might strengthen future analyses.

5. Ease of entry

Additionally, we wanted to ensure that identified destination occupations did not have significant barriers to entry. As a result, we used a qualitative approach to examine the credential and experience requirements of destination jobs. If there were special licensing requirements such as a Red Seal certification or more than two years of formal training and education, it was excluded from our analysis.

Mechanical Engineering Technologists and Technicians

Electrical and Electronics Engineering Technologists and Technicians

87.4% SKILLS & KNOWLEDGE FIT

84.3% SKILLS & KNOWLEDGE FIT

Motor Vehicle Assemblers, Inspectors, and Testers

88.8% SKILLS & KNOWLEDGE FIT

Electricians (Except Industrial and Power System)

85.3% SKILLS & KNOWLEDGE FIT

Air Pilots, Flight Engineers and Flying Instructors
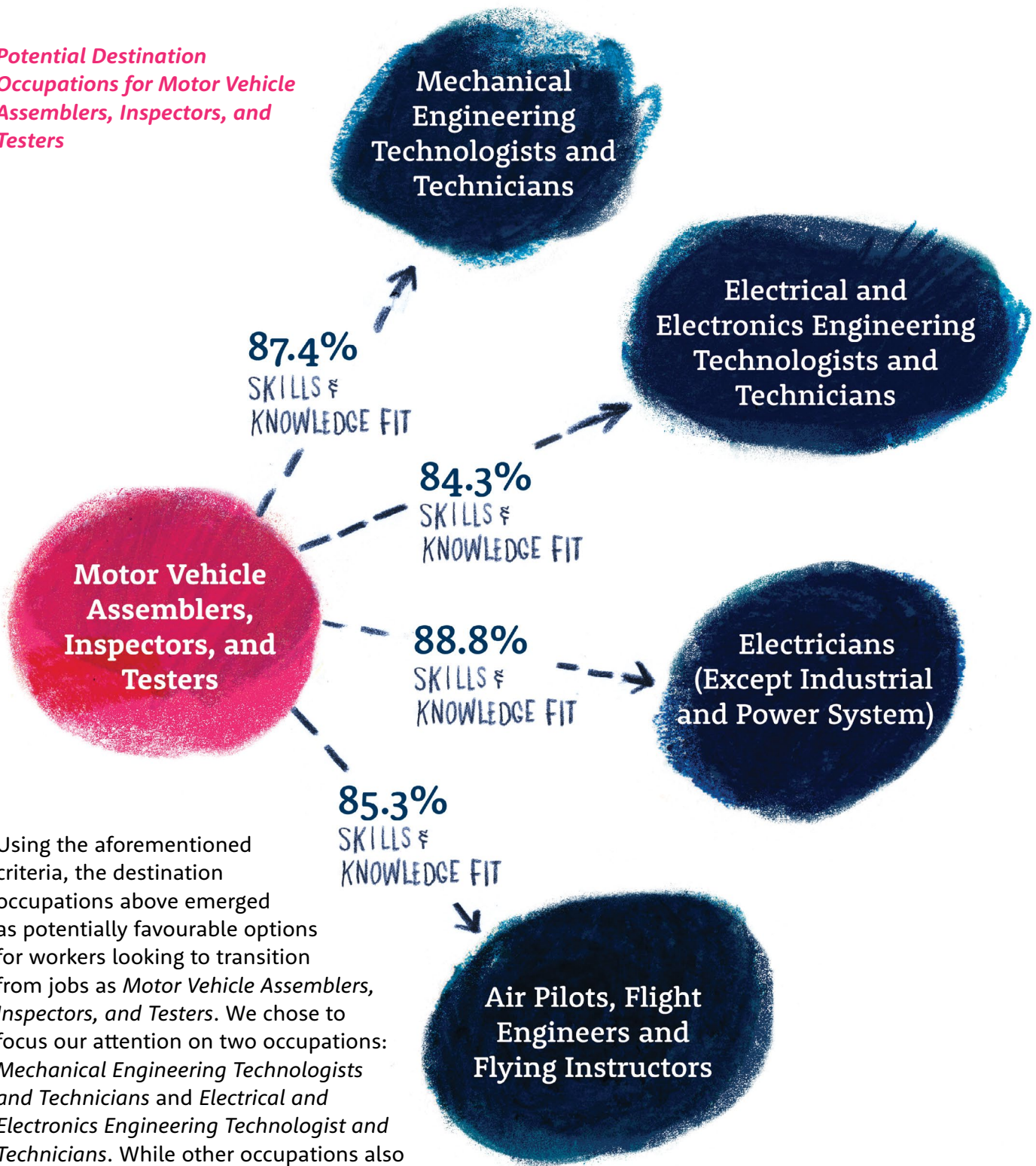
Using the aforementioned criteria, the destination occupations above emerged as potentially favourable options for workers looking to transition from jobs as *Motor Vehicle Assemblers, Inspectors, and Testers*. We chose to focus our attention on two occupations: *Mechanical Engineering Technologists and Technicians* and *Electrical and Electronics Engineering Technologist and Technicians*. While other occupations also appeared to be favourable options, they were excluded because of the extensive licensing and credentials involved.

These pathways are predominantly intra-industry, primarily because there are generally closer skills matches when transitioning within a sector and people travelling along a job pathway within an industry are more likely to carry useful, sector-specific knowledge. However, the pathways model can also be applied to identify inter-industry pathways, although transitions between industries might require additional supports for the worker in question.

Financial Sales Representatives

Human Resources and Recruitment Officers

90.4%
SKILLS & KNOWLEDGE FIT

92%
SKILLS & KNOWLEDGE FIT

Banking, Insurance, and Other Financial Clerks

95.3%
SKILLS & KNOWLEDGE FIT

Executive Assistants

91.6%
SKILLS & KNOWLEDGE FIT

Insurance Agents and Brokers
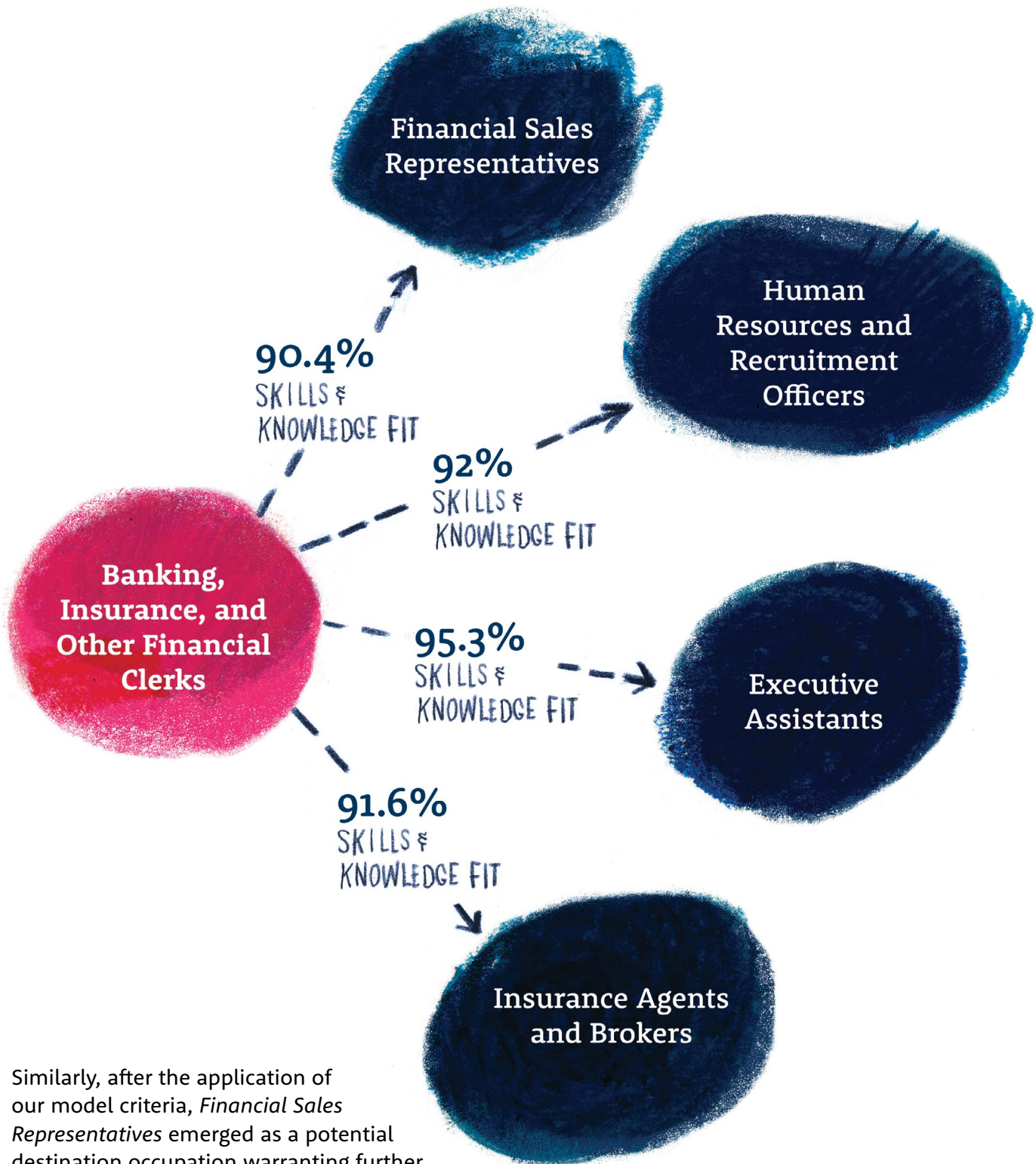
Similarly, after the application of our model criteria, *Financial Sales Representatives* emerged as a potential destination occupation warranting further attention for workers looking to move from jobs related to the occupation of *Banking Insurance and Other Financial Clerks*.

Step 3: The Complete Model

Duration between jobs

Age + gender

Health, well-being, access to support

DESTINATION JOB

% SKILLS & KNOWLEDGE FIT

Credentials

Financial resources

Access to professional networks

ORIGIN JOB

Proximity + access to transportation

Experience in the destination job/sector

Filtered by
● employment decline

Making a job transition is not simply about having the right skills and whether there are good opportunities. A data-only model cannot capture individuals' underlying capacity, willingness and ability to make transitions, how employers seek out talent, nor the many other factors that can facilitate or impede transitions involving real people and organizations.

Our complete model begins with fit and suitability, but also includes qualitative assessments of the constraints that should inform the design of an intervention. In practice, this involved scanning the literature and conducting 17 in-depth interviews with relevant employers, training providers, and educators.

WHAT ARE SOME CONSTRAINTS THAT MIGHT AFFECT A JOB TRANSITION PATHWAY?

While the constraints we list below are not exhaustive, we used them as a foundation for our qualitative assessments of the pathways identified through the data.

Individual-level considerations

Work plays an enormous role in individual identity formation and self-esteem. When it comes to making a job transition, considerations such as an individual's sense of self, their physical and mental health and well-being, relationships with friends and family, and lifestyle all have an influence on the outcomes.[22] Job loss, unemployment, and even lack of job security and fear of unemployment can contribute to financial instability and emotional turmoil which, in turn, can generate added difficulties when searching for and securing new employment.

In addition to job options that require and engage a worker's skills, a number of individual and environmental factors could help or hinder the ability to cope with the stress of job loss and the transition into a new career.[23]

1. Health, well-being, and access to support

In most cases, involuntary job loss can bring about substantial turmoil to an individual's mental and physical health, intersecting with considerations such as sudden changes in lifestyle, social status, and vocational identity.[24] This turmoil could be mitigated or exacerbated depending on someone's personal attitudes, motivations, and activities.[25] Someone who is experiencing involuntary job loss might also struggle with a loss of identity, particularly if they have worked in one company or industry for a long period of time.[26] This can be a challenge to efforts to find employment elsewhere. Job seekers with concentrated experience in one job or industry might find that they are unsure how to identify open jobs that would welcome their skills and knowledge,

or how to communicate in a way that resonates with the employer they are seeking out. Job loss can also have a "poisoning effect" that generates feelings of cynicism, uncertainty, and lower commitment and self-esteem that carry over into job transition efforts or into future job roles.[27]

Additionally, a person's access to support from family, friends, and colleagues may also be a significant consideration. Following job loss, social support contributes to a sense of value and higher self-esteem that helps drive people to transition toward career growth.[28]

> *"Because I work with people who are marginalized, even if it were highly likely that someone could be a mechanical engineering technician or millwright, their own personal outlook and disposition would affect whether they even consider that job.*
>
> *People are reasonable, but irrationally take the cause of unemployment to be personal—they think 'What did I do wrong?', or 'It's a good thing I paid off my mortgage', or, 'That was too good to last'. It's the* think *part, the human emotion part. People don't see all the possibilities in between because it isn't sold to them the way that Netflix shows are.*
>
> *Pathways are complicated; you have to fiddle around to get on the path. Most Canadians think there are maybe 5–6 jobs—or maybe 12, based on what their aunts or uncles do. People try to be rational and realistic, and they're conservative around how they look for jobs and what they think they can do."*
> —Workforce developer interviewee

> *"If we're working with older workers, in their minds they say, 'I've had my chance. No one will want someone as old as I am', or 'I'll never make the same salary'. They create a new story to replace their old one, and it's usually based in low self-esteem."*
> —Workforce developer interviewee

2. Older workers face real and perceived barriers to transitioning

Age is a recurring concern as an obstacle to career transitions for a number of reasons. Lengthy education and training programs, such as degrees and diplomas, pose significant time and cost barriers for older workers, who can be perceived—or may perceive themselves—as not having the flexibility or capacity to seek training or employment that is too different from the work they have been doing.[29] Older workers may also experience a significant shock in pursuing further formal education, which can lead to substantial frustration and anxiety.[30]

> *"For that person who is maybe 40 years old, when they were in school, a lot of it was still pen and paper, calculator, etc. That's not to say that they wouldn't have used a computer, but definitely not to the degree that students are learning today. With online courses, micro-credentialing, e-learning, those types of things that … you take that risk dealing with the person who is 40 years old, when they've never learned that way. So they've almost got to relearn how to learn."*
> —Employer interviewee

3. Gender barriers

Women tend to face additional barriers to making successful job transitions. They often have less time and fewer resources for reskilling or searching for employment as a result of carrying a greater share of unpaid care work, more limited access to networks, and less

access to roles where they are traditionally underrepresented.[31]

4. Financial resources can be a major inhibitor to the job search process

Depending on factors such as an individual's savings, sources of income, the length of unemployment, and their access to credit, job loss will have weaker or stronger financial impacts on an individual's lifestyle and financial stability.[32] This may limit their options to enroll in training and education programs and potentially reskill. Available financial resources usually translate into the amount of time in which a job seeker must find a new position and the extent to which they can avail themselves of training and other supports.

> *"People have mortgages, they have kids, they have cars, whatever that may be. So really, when you talk about the micro-credentialing and other training stuff, the biggest hurdle would be having the time and income to be able to be off of work, but still be able to provide for your lifestyle."*
> —Employer interviewee

> *"The skills we need to do jobs just keeps rising and people living in poverty aren't given the opportunities to continually improve their skills. These supports exist, but often without imparting knowledge of where to direct people to jobs that are accessible from a life perspective and skills perspective."*
> —Workforce developer interviewee

5. Geography affects the options available to job seekers

Where someone resides when they experience job loss and where desirable jobs are located are major factors that determine whether a successful transition can take place. Destination jobs that are not located within commuting

distance of someone present a major barrier to a worker who might otherwise be a successful fit.

A Statistics Canada report drawing from its 2016 General Social Survey found that a majority of unemployed people aged 15 to 64 would not be willing to move elsewhere in their province or to another province for a job offer. Respondents cited a desire to stay close to family and friends, to take care of relatives, or having a spouse or children that would not be willing to move.[33] Of the people surveyed, only roughly one-third reported that they faced no challenges to moving to a different province for employment. Unemployed people who were under 40 or unmarried were more open to accepting job offers from other provinces.

6. Duration of unemployment

The impacts of job loss on an individual can also depend on the duration of unemployment. Research suggests that the longer the period of unemployment, the more difficult it becomes for someone to return to employment. There could be a number of reasons for this, such as mental health and attitudes affected by job loss. The initial effect of shock and feelings of hopelessness lead to feelings of resignation over time.[34] People who have been unemployed in the long term may lose some skills over time—additionally, they do not benefit from on-the-job training and learning. Someone who remains unemployed for long periods of time may be less able to keep their skills up to date with changing technologies or practices, or naturally forget skill requirements and practices and find that they are less attractive to employers.[35]

7. Mindset is a key factor

As innovation and continuous improvement become more important at all levels of organizations, interviewees highlighted that they often look beyond the specific skillsets of a given candidate, focusing more on identifying a "growth mindset". A recent report examining the talent needs of tech companies in Canada

highlighted the need for employees who are self-driven continuous learners, adaptable, and capable of solving a wide variety of problems.[36] According to some employers, this mindset is more important than specific technical skills, which as they pointed out, can often be taught. A growth mindset could also enable workers to adjust within jobs, making them more resilient to future changes related to the tasks required in a particular job.

> "It's somebody that's already doing things, already solving problems. If you've got somebody that's got a bit of initiative, and isn't afraid of mechanical things, with the combination of some training, I would say there's dozens of jobs for that person."
> —Employer interviewee

There is more work that could be done to delve into the lived experiences of workers and job seekers to pinpoint critical factors and criteria impacting their job transitions. While the considerations above tended to be the most cited in literature and interviews, there were others that represent potential grounds for further research. This could include, for instance, a closer examination of how individual constraints play out in a job search process. We heard from interviewees that the conventional approach to job searching itself can present a barrier to job seekers—while most employment support programs start with resume-writing support or submitting a CV, the first challenge for many people who experience job loss or other barriers is to understand their own interests and skills, and identify opportunities that might fit them well.

The design of any interventions or reskilling programs should consider the specific needs of people with different backgrounds and facing various barriers, to successfully support them through their transitions. One-size-fits-all approaches tend to miss these nuances.

Firm-level considerations

On the firm side of the equation, a number of hiring practices can result in otherwise qualified workers being screened out, especially if they come from non-traditional career paths. Employers lack complete information about potential candidates during the hiring process and thus often rely on a variety of mixed-quality proxy indicators to evaluate candidates' fit.[37] But relying on these proxies poses challenges for firms and workers alike—in particular, for workers looking to transition to different areas of the economy, and firms looking to tap into non-traditional pools of labour.

A number of factors and signals affecting how employers hire—particularly those regarding a reference or connection from a professional network—were underlined by literature, interviewees, and a series of roundtables in Ontario run by Palette Inc. in partnership with the Brookfield Institute.

1. **Educational credentials remain a major, but imperfect, hiring signal**

   For employers, educational credentials—defined as the degrees and certifications earned in the formal education system—provide a useful tool to assess candidates. According to human capital theory, prospective employees acquire a variety of skills and abilities through formal education that will directly translate into higher productivity.[38] Signaling theory, on the other hand, emphasizes the role of education as a sorting mechanism, acting more as a signal for previous skills and abilities that may be correlated to job performance.[39] A recent study of Norwegian workers suggests that 70 percent of people returning to education are motivated by the perceived productivity-enhancing effect of education, and 30 percent by its perceived signalling function.[40]

   Insofar as credentials (and similar institutions such as occupational licenses) are not the most accurate signal of a candidate's skills and ability to be productive on the job, they can artificially limit the potential pool of talent available to an employer.[41, 42] While each of these institutions serves a critical function in terms of skills development, signaling, and maintaining quality and safety standards, they pose significant hurdles for workers who may have relevant skills but lack the formal training or resources to pursue certification, which can sometimes be costly.

Another concern with employers' reliance on formal credentials is that many educational institutions struggle to keep up with increasing and rapidly evolving skills demands.[43] According to a 2015 report produced by McKinsey & Company, even though 83 percent of education providers feel that youth are adequately prepared for the workforce, only 44 percent of youth and 34 percent of employers feel the same way.[44]

> *"It almost as if you've got to credentialize, because otherwise you can't really show that you're better than someone else."*
> —*Employee interviewee*

2. **Social and cultural capital strongly affect hiring decisions**

In addition to credentials, employers also rely heavily on referrals and networks when hiring new employees.[45] These allow employers to tap new pools of talent and target their search more effectively. They act as another signal of the candidate's overall ability to perform the job tasks and fit within the organization.[46] Relatedly, employers often factor in cultural similarities between themselves and prospective employees when making hiring decisions to ensure that the individual will integrate well within the existing norms and culture of the organization.[47]

> *"We asked employers: what are the indicators you use when hiring someone? The first was professional networks. If someone will validate you and say you're good at the job, that's extremely important."*
> —Employer/trainer interviewee

This reliance on networks and cultural similarities can also pose significant barriers for workers looking to embark on a job transition. Individuals from different areas of the economy will likely have less access to relevant personal and professional networks to act as signals to prospective employers. Employers may be more likely to screen these individuals out in favour of people with whom they share a network or cultural similarities and norms.[48] Interventions aimed at identifying the importance of, and cultivating networks, may help workers overcome some of these barriers.[49]

> *"More and more firms that are going through a highly referral-based process to do recruiting are under a lot of scrutiny. Banks, pension funds, asset management companies, [we] are being asked more and more by our stakeholders how we can run a more fair and transparent recruitment process ... You're not going to have a very dynamic team if you're just hiring from a very small network. I think equally though, that the ability to reference certain candidates in their jobs is still very important."*
> —Employer interviewee

Individual- and employer-level constraints around job-seeking and hiring are often misaligned, with different expectations of what hiring processes look like. We heard from interviewees that employers hire primarily through networks or, failing that, through public job postings, which often limits their talent pools to individuals with relevant networks, experience in similar roles, familiar credentials, and the confidence to apply. This presents particular challenges for mid-career job seekers who are looking to move

into a different job from the one they have or transition from a period of unemployment. These challenges are further compounded for those facing other obstacles to successful job transition, which could include language barriers, lack of networks, or lack of familiarity with hiring practices.

> *"Employers believe that it is somewhat self-evident what is needed for someone to know that there is a job, put in an application in the right time frame, and follow up ...Simultaneously, there are people looking for work in a place where everyone says only the strong survive ... They're looking for fruit that's hanging way lower on the horizon whereas employers are hanging their fruit way higher up in the sky.*
>
> *[Most employers] put their postings on Monster.com, or on LinkedIn, and those are the crudest possible ways to find folk, because of the way algorithms filter skills and requirements. These platforms assume that the candidates have the needed skills and the confidence to apply.*
>
> *Then you add multiple barriers of mental health, physical health, single parenthood, transportation needs, and it's easier to get a job at the local grocery store even if someone has a masters degree. The most efficient way to find someone is word of mouth, and then employers wonder why they keep hiring people's brothers or sisters.*
>
> *You put all those things together and it's amazing that anyone gets a job other than someone who is university-educated, speaks English, has strong personal and professional networks, and has ample support systems that allow them the freedom to poke around for a few months."*
> —Workforce developer interviewee

PART 3: DIVING INTO TWO HIGH-POTENTIAL JOB PATHWAYS IN THE GTHA

In this section, we outline two high-potential job pathways illuminated by our model in the GTHA. We also share insights gleaned from interviews surrounding how feasible it would be for a worker to make an employment transition along these pathways. Although it should be acknowledged that there is often considerable overlap with individual constraints, this section will focus primarily on occupation-specific considerations and barriers.

Using the model, we generated a number of high-potential pathways and selected two:

1. *Motor Vehicle Assemblers, Inspectors, and Testers* to *Mechanical Engineering Technologists and Technicians*, and

2. *Banking, Insurance, and Other Financial Clerks* to *Financial Sales Representatives*.

Upon closer examination of potential pathways, some destination jobs were excluded from further exploration based on the likelihood of a successful transition. For instance, one potential destination job fit for *Motor Vehicle Assemblers, Inspectors, and*
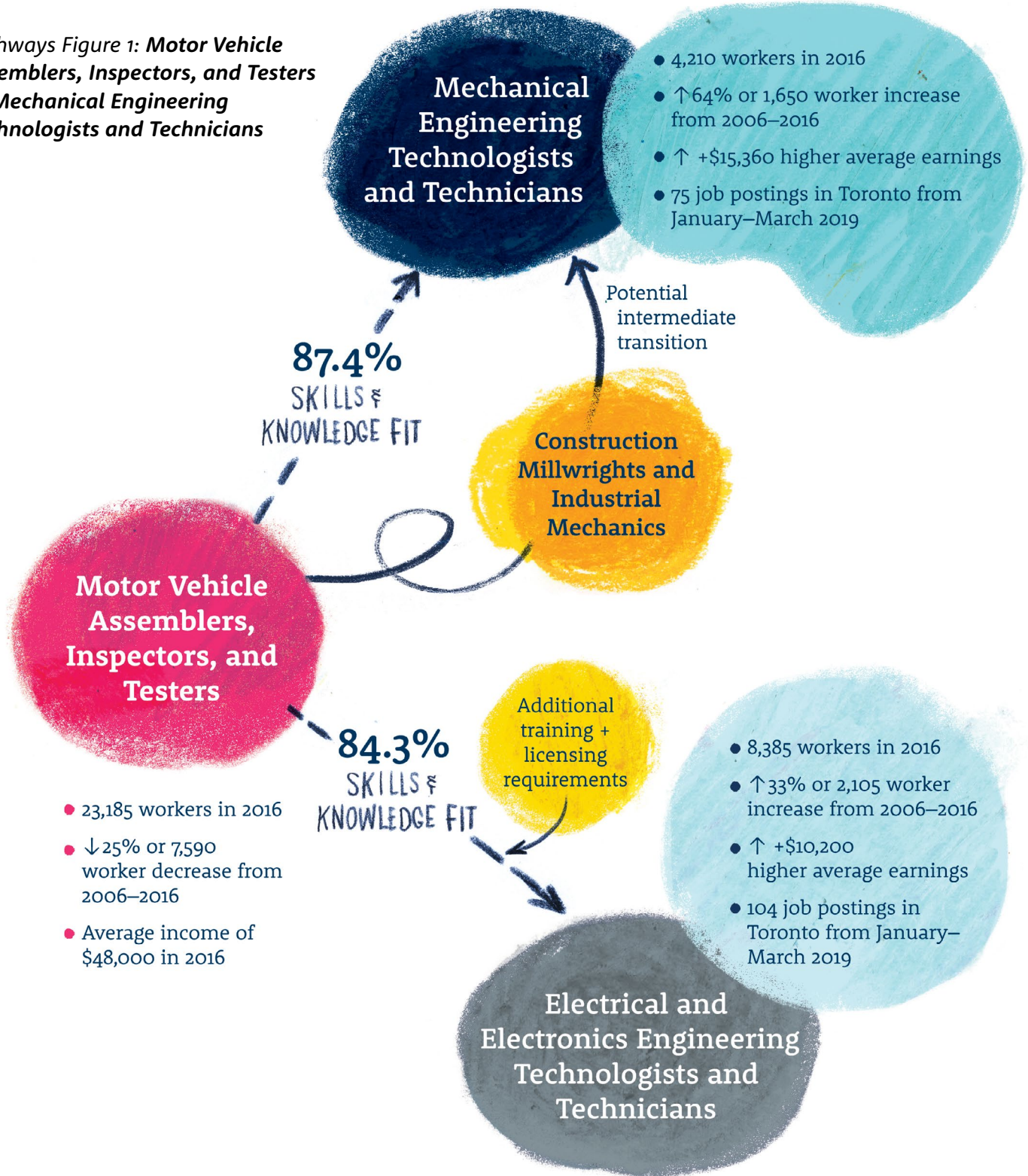
Testers was *Electrical and Electronics Engineering Technologists and Technicians*. However, in the process of interviewing employers we heard that there were fewer avenues for people to transition into doing electrical work without strict formal training and licensing, which would be a barrier particularly if someone was hoping to make a relatively quick job transition, or to learn on the job.

> *"So do you have any experience in electrical, or can you can get it at home? It's not as easy. It's almost illegal to be wiring stuff without having your papers. We could do it, but it's not right." —Employer Interviewee*

As we dug deeper into each pathway identified in our model, we found that some hurdles that we thought might be insurmountable, such as formal training and licensing requirements, are already being chipped away at by firms and educators. Meanwhile, other issues that the data failed to point out may be the source of significant challenges for workers, such as barriers rooted in work environments and hiring practices.

Pathways Figure 1: **Motor Vehicle Assemblers, Inspectors, and Testers** to **Mechanical Engineering Technologists and Technicians**

Mechanical Engineering Technologists and Technicians

- 4,210 workers in 2016
- ↑64% or 1,650 worker increase from 2006–2016
- ↑ +$15,360 higher average earnings
- 75 job postings in Toronto from January–March 2019

87.4% SKILLS & KNOWLEDGE FIT

Potential intermediate transition

Construction Millwrights and Industrial Mechanics

Motor Vehicle Assemblers, Inspectors, and Testers

- 23,185 workers in 2016
- ↓25% or 7,590 worker decrease from 2006–2016
- Average income of $48,000 in 2016

84.3% SKILLS & KNOWLEDGE FIT

Additional training + licensing requirements

- 8,385 workers in 2016
- ↑33% or 2,105 worker increase from 2006–2016
- ↑ +$10,200 higher average earnings
- 104 job postings in Toronto from January–March 2019

Electrical and Electronics Engineering Technologists and Technicians

Origin occupation: *Motor Vehicle Assemblers, Inspectors and Testers*

Motor Vehicle Assemblers, Inspectors and Testers assemble and install prefabricated motor vehicle parts and components to form subassemblies and finished motor vehicles.

In 2016, there were 23,185 workers employed in this occupation in the GTHA, found primarily in the motor vehicle parts manufacturing industry (10,560 workers) and the motor vehicle manufacturing industry (9,260 workers).

Despite employing a fairly sizeable number of workers in the GTHA, employment in this occupation has declined by 25 percent since 2006, representing a loss of roughly 7,590 workers.

Destination Occupation: *Mechanical Engineering Technologists and Technicians*

Mechanical Engineering Technologists and Technicians provide technical support and services in a variety of mechanical engineering fields. Work in this occupation includes the design, development, maintenance, and testing of machines in a variety of settings including manufacturing plants. As manufacturing in Ontario becomes increasingly advanced and reliant on highly technical equipment and processes, it is clear that demand for workers to design, implement, and maintain machinery and equipment is increasing.

In 2016, there were 4,210 workers employed as *Mechanical Engineering Technologists and Technicians* in the GTHA. They are primarily employed in the architectural, engineering and related service industry (580 workers), the motor vehicle parts manufacturing industry (325 workers), the electrical power generation, transmission and distribution industry (320 workers), and the aerospace product and parts manufacturing industry (315 workers).

Mechanical Engineering Technologists and Technicians are well-paid, earning on average $15,360 more than *Motor Vehicle Assemblers,*

Inspectors and Testers in the GTHA in 2016. The total number of workers is not particularly large, as there were roughly 18 *Mechanical Engineering Technologists and Technicians* for every 100 *Motor Vehicle Assembler, Inspector and Tester* in the GTHA in 2016. This means that a large-scale transition might not be feasible and may depress wages.

However, firms are hiring for this occupation locally. In the first quarter of 2019, there were 75 job postings in the Toronto Economic Region. Between 2006 and 2016, employment in this occupation grew substantially—by 64 percent, or 1,650 workers.

The employment outlook for the occupation between 2018 and 2020 in the Toronto economic region is fair—employment growth is expected to lead to a moderate number of new positions, and a moderate number of positions will become available due to retirements.

There is an 87.4 percent similarity between *Motor Vehicle Assemblers, Inspectors and Testers* and *Mechanical Engineering Technologists and Technicians.*

The major skill gaps between the two occupations are centred around analyzing a company's technology and equipment needs, then designing, adapting, and maintaining the appropriate technology and equipment.

The largest knowledge gaps relate to:

+ engineering and technology—defined as "knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services"; and

+ design—defined as "knowledge of design techniques, tools, and principles involved in production of precision technical plans, blueprints, drawings, and models."

Pathway considerations

An evolving sector with evolving skills demands

Manufacturing in Ontario has witnessed a significant decline in both employment and output since the early 2000s.[50] A recent Brookfield Institute study examining trends in the sector found that as manufacturing becomes increasingly automated and sophisticated, employers are in need of highly skilled personnel involved in repairing and inspecting machinery and production management roles, as well as general skills applicable to social interactions, judgment, design, quality control, and continuous improvement.[51]

This transition is feasible, and some workers are already making it

From interviews with employers in the advanced manufacturing sector, this transition is feasible. Because *Motor Vehicle Assemblers, Inspectors and Testers* already have experience in a manufacturing setting and understand assembly processes, building on their existing skills and knowledge with additional technical skills needed for advanced manufacturing work can make them valuable assets as *Mechanical Engineering Technologists and Technicians*.

Particularly in the case of mid-career workers, employer interviewees emphasized that a positive and flexible mindset would help workers progress along the pathway. As many employers in advanced manufacturing look to adopt lean manufacturing processes—which broadly reflect practices for increasing quality while eliminating waste—there is also a renewed focus on learning from employees and making bottom-up incremental improvements. This makes the perspective of employees with motor vehicle assembling, inspecting, and testing experience particularly valuable.

From interviews, we heard that there is ample room for on-the-job and self-directed learning that could result in advancement for people in *Motor Vehicle Assembler, Inspector and Tester* roles.

> *"We have examples where we have had people on the floor that have become process technicians, where HR department would normally say that we needed a chemical engineer for that. We have had people learn from the ground up, and it's an equally powerful education."*
> —Employer interviewee

Formal training is often required, but there are ways to accelerate the process

As previously mentioned, there are some formal training requirements to become a *Mechanical Engineering Technologist and Technician*. For instance, mechanical engineering technician roles typically require a one- to two-year college program in mechanical engineering technology, compared to a two- to three-year program for mechanical engineering technologists.

According to Ontario Colleges, there are a variety of program offerings that can help individuals break into *Mechanical Engineering Technologists and Technicians* roles. These course offerings range from one-year introductory courses focusing on mechanical techniques that can help an individual secure an entry-level position and continue their career development, all the way to three-year mechanical engineering technology courses that offer more specialized training.[52]

There are also opportunities for *Motor Vehicle Assemblers, Inspectors and Testers* to pursue additional training to fast track this transition if they have some of the skills required for *Mechanical Engineering Technologist and Technician* roles. For example, Humber College offers prior learning assessment and recognition services that allow students to receive credit for relevant skills that they already have, whether those skills were acquired on the job, through independent study, or through hobbies and volunteer activities.[53]

Keeping in mind that there are differences in roles and titles across sectors and companies, we heard that additional training and certifications will be required. However, this process can be made

easier in working environments where managers have a strong focus on employee training and advancement. In some instances, we heard that when employers recognize the talent of an individual, they can facilitate learning opportunities and carve out new roles similar to *Mechanical Engineering Technologists and Technicians*, but without the HR or certification requirements. Avenues for accelerating transitions along this job pathway exist, but they are sometimes informal and ad hoc; where they have been formalized, they are not offered as widely as they could be.

> *"So the motor vehicle assembler, tester, inspector, they can transition and they wouldn't have a lot of problems into acquiring more skills through courses so they can have broader experience as technologists. We have a PLAR, a prior learning assessment and recognition. If they can show for example, that they worked as a motor vehicle assembler, or in a role related to automotive, as long as they can demonstrate the hands-on skills, we can give them credit for that."*
> —Educator/trainer interviewee

> *"An assembler might not have deep mechanical design knowledge. But once they get this design experience, they can move from being an assembler or an inspector into a designer. In the same vein, they don't necessarily know a lot about computer-aided manufacturing, which is basically how to produce parts using the new three- or five- or seven-axis CNC machines or numerically controlled manufacturing equipment, so they might have seen it, but they don't know how to program it. But when they get this programming experience, with their manufacturing experience, they can design the manufacturing process from the beginning."*
> —Educator/trainer interviewee

There are potential intermediate steps between origin and destination jobs

In the vein of on-the-job training and advancement, a potential intermediary step between the two roles was unearthed in the interview process. A *Motor Vehicle Assembler, Inspector and Tester* looking for advancement could aim to transition into a position as a millwright, which would help them lay a foundation of skills and knowledge for eventual advancement to *Mechanical Engineering Technologists and Technicians*.

A millwright position could also be an ideal destination role for many others. We heard in interviews that millwright positions can feel more realistic and attainable relative to *Mechanical Engineering Technologists and Technician* roles, particularly for older workers. This pathway did not initially appear among the destination jobs we generated because on average, millwright salaries tend to be lower than *Mechanical Engineering Technologists and Technician* salaries.

> *"But people know, they came at it from different angles. So, you know, if you said mechanical engineering technologist, comma technicians, comma millwright, I now think you would have that guy at age 50 who might say, 'Oh, I could do that.'"*
> —Employer interviewee

Not all Mechanical Engineering Technologists and Technicians have a college education—and many Motor Vehicle Assemblers, Inspectors and Testers do

A college education may not be as large a barrier as we initially believed. In 2016, roughly 4,090 workers or 18 percent of *Motor Vehicle Assemblers, Inspectors and Testers* in the GTHA had a college, CEGEP, or other non-university equivalent education. While this is less than the 43 percent of *Mechanical Engineering Technologists and Technicians* with the same level of education, in absolute terms, there are nearly 2,300 more *Motor Vehicle Assemblers, Inspectors and Testers* with a college education.

Additionally, there are nearly 700 individuals employed as *Mechanical Engineering Technologists and/or Technicians* in the GTHA, who are not in possession of formal education past high school, suggesting that a transition without formal education may be possible, likely depending on previous skills and experience. It is possible, however, that formal education requirements have changed subsequent to these individuals entering these roles.
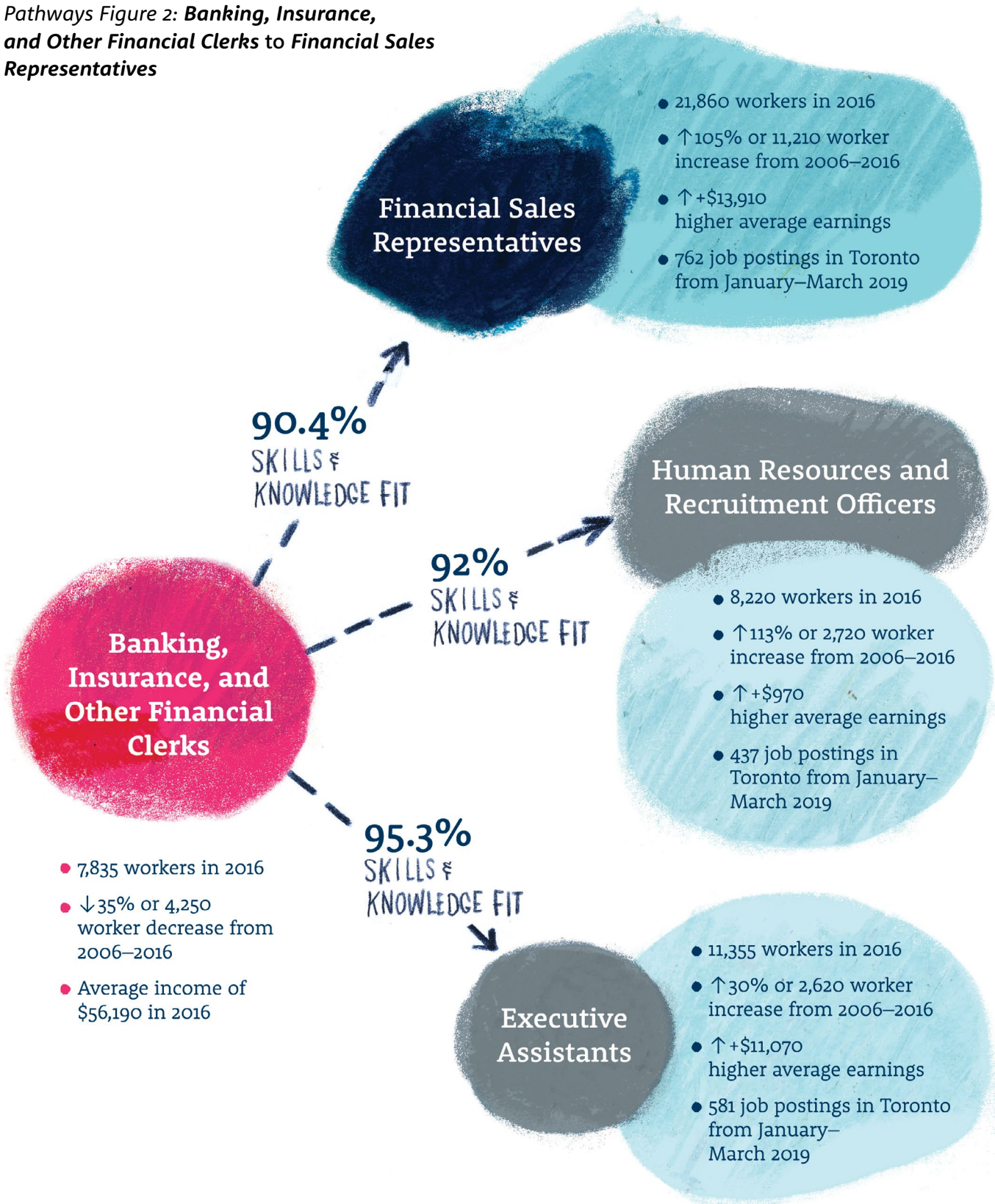
Pathway barriers are rooted in workplace culture and hiring practices

Many of the barriers to this pathway, cited by employer and trainer interviewees, overlap with those outlined in individual constraints: we heard that older workers could face additional challenges because they are more likely to have to undergo a process of unlearning work habits to embrace a more flexible mindset. They also mentioned that mid-career workers would likely have less capacity for self-directed learning or pursuing formal education due to financial and time constraints, or caring for dependants.

Another cultural barrier that emerged in interviews concerned workers moving from union to non-union environments. We heard from some employers that as a result of very public tensions around recent plant closures and downsizing— for example, negotiations and transformation planning around GM's plans to cease production at its Oshawa plant by the end of 2019—there could be lingering employer concerns that similar tensions could emerge through hiring employees from unionized workplaces. While we have not interviewed union representatives as of the time of writing this report, we aim to incorporate union insights into future phases of research.

Pathways Figure 2: **Banking, Insurance, and Other Financial Clerks** to **Financial Sales Representatives**

Financial Sales Representatives

- 21,860 workers in 2016
- ↑105% or 11,210 worker increase from 2006–2016
- ↑ +$13,910 higher average earnings
- 762 job postings in Toronto from January–March 2019

90.4%
SKILLS & KNOWLEDGE FIT

92%
SKILLS & KNOWLEDGE FIT

Human Resources and Recruitment Officers

- 8,220 workers in 2016
- ↑113% or 2,720 worker increase from 2006–2016
- ↑ +$970 higher average earnings
- 437 job postings in Toronto from January–March 2019

Banking, Insurance, and Other Financial Clerks

- 7,835 workers in 2016
- ↓35% or 4,250 worker decrease from 2006–2016
- Average income of $56,190 in 2016

95.3%
SKILLS & KNOWLEDGE FIT

Executive Assistants

- 11,355 workers in 2016
- ↑30% or 2,620 worker increase from 2006–2016
- ↑ +$11,070 higher average earnings
- 581 job postings in Toronto from January–March 2019

Origin occupation: *Banking, Insurance, and Other Financial Clerks*

Banking, Insurance and Other Financial Clerks compile, process and maintain banking, insurance, and other financial information. They are employed by banks, credit companies, private and public insurance establishments, investment firms, and other financial establishments throughout the private and public sectors.

In 2016, there were 7,835 *Banking, Insurance, and Other Financial Clerks* in the GTHA. Workers in this occupation in the GTHA are primarily found in the depository credit intermediation industry (3,520 workers), followed by insurance carriers (1,440 workers), and agencies brokerages and other insurance related activities (980 workers).

Between 2006 and 2016, this occupation experienced the sharpest employment decline in the GTHA, with a 35 percent reduction in employment—the equivalent of 4,250 workers—over the decade.

Destination occupation: *Financial Sales Representatives*

Financial Sales Representatives sell basic deposit, investment, and loan products and services to individuals and businesses. They work in banks, credit unions, trust companies, and similar financial institutions.

In 2016, there were 21,860 *Financial Sales Representatives* in the GTHA—or roughly 279 workers for every 100 *Banking, Insurance, and Other Financial Clerk*. They are primarily employed in the depository credit intermediation industry (14,345 workers).

Financial Sales Representative roles have expanded substantially in the GTHA in recent years, growing by 105 percent between 2006 and 2016, the equivalent of 11,210 workers. There were also 762 job postings for this occupation in the Toronto Economic Region in the first quarter of 2019. *Financial Sales Representatives* earned, on average, $13,910 more than *Banking, Insurance, and Other Financial Clerks* in the GTHA in 2016.

The employment outlook is fair for *Financial Sales Representatives* in the Toronto economic region for the 2018–2020 period. Employment growth is expected to lead to a moderate number of new positions, supplemented by a number becoming available due to workers retiring.

There is a 90 percent similarity between *Banking, Insurance, and Other Financial Clerks* and *Financial Sales Representatives*

The major skill gaps between the two occupations are centred around persuasion, monitoring, analyzing, and evaluating systems, and the instruction and management of financial resources.

The two primary knowledge gaps are:

+ sales and marketing—defined as "knowledge of principles and methods for showing, promoting, and selling products or services… [including] marketing strategy and tactics, product demonstration, sales techniques, and sales control systems"; and

+ economics and accounting—defined as "knowledge of economic and accounting principles and practices, the financial markets, banking and the analysis and reporting of financial data."

Pathway considerations

Jobs and skills demands are evolving in the sector

Financial services firms, and the jobs associated with them, have been rapidly evolving in response to many internal and external pressures including: the emergence of new technologies, shifting consumer demands, increased competition, and the need to develop new business models.[54] As a result, we have heard that the demand for skills in financial services has been moving away from those associated with more transactional work, and toward more customer-oriented, and advice-centered skills, in addition to some roles requiring more technical digital skills.[55]

This pathway is feasible, but success is largely dependent on the level of the Financial Sales Representative *role and its environment*

We have heard consistently from interviewees in the financial services sector that financial sales roles can greatly differ across levels and companies. Depending on the seniority of the role and where it is situated, some *Financial Sales Representative* roles may require more intimate financial expertise or product knowledge from the point of hiring, whereas other roles offer more flexibility to learn on the job for a potential employee with an adaptable sales mindset and strong customer service skills.

The variance among roles is where validating this pathway on a more granular level becomes particularly difficult. For instance, one type of *Financial Sales Representative* role might primarily entail selling products such as credit cards and RESPs, whereas another might involve identifying client needs and providing financial advice.

"[Banking, Insurance, and Other Financial Clerks] may not have the business acumen for a financial sales role dependent on the types of tasks, like if they were to provide people with significant financial advice."
—*Employer interviewee*

"[On whether it would be difficult to transition into a Financial Sales Representative role from a different job or sector] I think it depends on the leveling. For someone more early in their career or the more junior your position is, people would be more looking for some of those soft skills. So, knowledge of financial services market, for example, or particular product or specialist areas that they would want them to have experience in, which could be gained either through doing courses or an industry certification."
—*Employer interviewee*

Occupational licensing is strict in the financial services sector

Some licensing and credential barriers can seem quite prohibitive at first glance. For *Financial Sales Representative* roles where a major component is providing financial advice and selling financial products to clientele that serve investment, retirement, and estate planning needs there are a number of formal credential and licensing requirements.[56] This typically requires federal licensing and registration with the securities regulatory authority in the province or territory of employment and can take many years to complete.

According to the employment requirements for *Financial Sales Representatives* outlined by ESDC, there are three major barriers that an individual breaking into the occupation would have to overcome.

First, employers typically look for workers who have completed a bachelor's degree or college diploma related to commerce or economics. Second, a mutual funds license is typically required. According to the Canadian Securities Institute (CSI), to become registered as a Mutual Fund Sales Representative, a candidate must fulfill proficiency requirements set out by regulators, which can be completed in a number of ways. One way is to complete CSI's Investment Funds in Canada course, which "provides foundational knowledge that prepares Advisors to give effective advice to clients on mutual fund investments based on a client's objectives, timeline and risk tolerance."[57] This course takes a year to complete, with roughly 90–140 hours of study, culminating in a formal three-hour examination. Third, in Ontario a firm must sponsor an individual to become registered as a financial sales representative with the Ontario Securities Commission, which also requires an individual to meet certain education and experience requirements.[58]

However, depending on the role and employer, licensing may not be an insurmountable barrier

Interviewees told us that workplaces are shifting away from credentials and networks as primary signals for hiring, and are actively seeking out people from broader backgrounds, particularly for lower-level *Financial Sales Representative* roles. For these roles, the need for financial product knowledge, sales and customer service skills, and ability to connect with target clients supersedes the need for specific credentials or work history. We also heard that employers can and do hire people for more junior sales-oriented roles, connect them to the necessary regulatory bodies, and help them acquire the necessary credentials and licenses to advance in their careers.

In the GTHA in 2016, individuals working in *Financial Sales Representative* roles are more likely to hold a university certificate, diploma, or degree at a bachelor's level or above (at 53 percent). However, a sizable proportion (43 percent) of *Banking, Insurance, and Other Financial Clerks* also held equivalent education. This provides some indication that not only is there room to break into *Financial Sales Representative* roles without holding a bachelor's or above, but also that many people working as *Banking, Insurance, and Other Financial Clerks* have a baseline level of education which they can likely use as a jumping-off point should they decide to pursue *Financial Sales Representative* work as a career path.

> *"A lot of these types of jobs, at least in financial services, are increasingly going to need a level of certification and licensing. So it's not just having the skill—some of these things like a full financial advisor, it's five to seven years to get all the licensing and experience. Honestly, I'm not entirely sure why that's necessary. I think some of those requirements are a little bit excessive, [and are in place] just to be safe. But what it is doing is making it so that we've got a shortage of financial services talent."*
> —Employer interviewee

Pathway barriers are rooted in workplace culture and hiring practices

From interviewees, we heard that approaches to hiring *Financial Sales Representatives* often focus on people similar to the person who was last in the role, who they personally resonate with, or who most closely fit the job posting specifications—which may not always be what is best for the role. However, we have also heard that practices are slowly shifting in some workplaces.

> *"The thing that troubles me the most is the extent that you're reliant on the hiring manager—and most companies delegate when it comes to hiring ... they either look for someone like themselves, someone like the last person in the role, or the final alternative is there is a formal job description that might not really be accurate to what they need. And that's what they hire. But then they often have a really tough time seeing how somebody from a different industry could work because they'll get over focused on technical knowledge, and not to people that have good social skills, critical thinking skills, and who are hard-working. If you put those things together you can solve a lot of problems, but many managers really over-focus on narrow technical work. And quite frankly, to some extent I think it's because it's what they're comfortable with. It's what they've seen work. So anything that is new seems like risk."*
> —Employer interviewee

> *"Many employers know you don't need a degree to succeed in sales so they're more open to these people; but they're usually only willing to do so if there's been some sort of pre-validated assessment."*
> —Educator/trainer interviewee

> *"In the past, hiring managers had a specific idea of who a good salesperson is ... I would say that that is beginning to shift, although we have a lot of work to do to continue to shift that perspective. As recruiters, when we're talking to someone who might come across as introverted, those people can make fantastic individuals for sales. Folks who are later in their careers might be more experienced and able to have more mature conversations depending on the client. So trying to bring our hiring managers along the journey of being open-minded is a trend that I'm seeing."*
> —Employer interviewee

> *"I think that the opportunity to structure a confidence-building period into the contract, or way to get to know strong talent going forward is going to be really impactful to so that people don't make the wrong hires for significant positions in their organization."*
> —Employer interviewee

A sales mindset is an asset

One potentially limiting factor for an individual seeking to embark on this pathway concerns a more intangible concept—a sales mindset. We have heard from several interviewees that the most important factor for employers when hiring is whether they feel a candidate has the disposition, confidence, and interpersonal skills required to be a good salesperson.

A sales mindset may be a critical factor in hiring for sales positions, but it is often not a consideration when employers are hiring *Banking, Insurance, and Other Financial Clerks*. This is not to say that *Banking, Insurance, and Other Financial Clerks* lack a sales mindset or sales-oriented skills altogether, but it is likely that many do not develop these skills, depending on the nature of their specific role. For instance, one employer interviewee observed that a clerk responsible for validating insurance claims would likely be unprepared to transition into a sales role.

It is interesting to note that a sales mindset and sales-oriented skills are not restricted to any single industry, which could open up many more pathways from different origin jobs into *Financial Sales Representative* roles.

> *"To me, what's more relevant is the skill itself versus the industry you're coming from. Because if you have strong sales skills, and if you're a strong sales person, you can sell anything. So you can go from sector to sector and you can sell, because that's just technical knowledge that you'd have to pick up."*
> —Employer interviewee

> *"Thinking about the NOC occupation for Banking, Insurance, and Other Financial Clerks, for example, there are roles like [insurance] claim people, and when you think of what they do on a day-to-day basis, the actual skills that are being used are focused on validating claims, but that wouldn't be a natural fit for sales roles."*
> —Employer interviewee

PART 4: LESSONS FROM THE PATHWAYS MODEL

Over the course of this research, we generated a number of insights about the utility of using a mixed-methods model for identifying high-potential pathways, as well as how such a model could be aligned—or misaligned—with the challenges faced by people experiencing job loss and the ways in which employers hire. While these insights are not comprehensive, they represent what we learned while developing and applying the model, as well as a breadth of experience shared by employers and training organizations situated along both high-potential pathways identified in this report. It is our hope that these insights will help orient policy and service design efforts, while also laying the groundwork for further research.

WHAT SHOULD A WORKFORCE DEVELOPER TAKE AWAY FROM THIS REPORT?

From a workforce development or labour market policy perspective, the advantage of the LMI component of our model is its capacity to identify high-level trends. The combination of data in the pathways model enables the identification of potential pathways along which someone could move where disruption and unmet demand are occurring at scale. This kind of approach could be well-positioned to identify areas where responses may be most warranted.

However, just as important is the qualitative component of our model, since data alone cannot capture an individual's willingness and ability to make a transition, how employers search for and

hire people, or the numerous elements that could enable these transitions or prevent them from taking place. Through our interviews, it became abundantly clear that there are many factors that need to be accounted for when validating or activating the identified pathways.

It is clear that while data can be used to inform where a response may be warranted it fails to identify the myriad factors that must be considered when validating a pathway and designing an intervention. These range from strict occupational licensing and credential requirements to an individual's capacity and willingness to embark on a particular job transition.

Therefore, for any stakeholders involved in supporting job transitions, the combination of data we employ can be a helpful start but is insufficient on its own. It is just as important to convene and consult with workers and employers as well as educators and training institutions to validate the pathways, identify barriers, and devise strategies to overcome them.

WAS SKILLS ADJACENCY DATA HELPFUL?

Yes. Examining the skills overlap between origin and destination occupations provided a helpful jumping off point to link occupations across the economy. Many of the destination occupations seemed to reflect natural and intuitive transitions from the origin jobs, and one could see how an individual in the origin occupation might view the potential destination occupations as viable options.

However, there were also some results that showed a high overlap in skills, but were clearly not viable options. For example, there could be credential or experience requirements that would create challenging barriers.

WHAT CAN WE LEARN BY LAYERING ON OTHER LOCAL LMI?

Adding additional LMI as filters and descriptive statistics was absolutely essential to not only identifying origin jobs experiencing disruption, but also to narrowing down the selection. Each layer of data helped to answer separate and equally necessary questions, from employment rates and growth trajectories to hiring activity and income. Employment data for each occupation is of particular importance since it allows us to measure individuals employed in, or unemployed from, the particular occupation in a given time period.

However, there are many limitations with the data. For example, using censuses for employment data was necessary due to data granularity, but these have considerable time delays. As such, we are responding to trends that have occurred between 2006 and 2016, which reflects a span of time in which a major recession occurred. Statistics Canada's Labour Force Survey could provide more timely and regular data on employment trends, but has less data on specific occupations at more granular geographic levels. It was also necessary to link the separate occupation codes used in both censuses using an existing crosswalk. Due to time and resource constraints, we examined only occupations that had a one-to-one match, but this meant that 54 occupations were excluded from the growth portion of our analysis.

Therefore, while the use of local LMI is a necessary complement to skills data, its limitations may mask certain job transition pathways. Some of these limitations could be addressed by, for example, repeating this approach with data from future censuses or linking it to other data sources which are updated more frequently, such as Burning Glass Technologies. Ultimately, LMI will only ever provide a helpful jump-off point rather than a perfectly accurate picture.

CAN I ADOPT THIS APPROACH, BUT FOCUS ON DIFFERENT DATA POINTS?

Yes. The overall approach we outline is designed to be instructive. Throughout this report, we made efforts to communicate that the process involved many subjective decisions—such as the thresholds we employed—that can be altered depending on priorities and preferences.

While each of the four broad criteria we employed to narrow down our selections are important, it is possible and perhaps advantageous in some instances to emphasize certain criteria over others. For example, we place an emphasis on employment growth. This was done to prioritize jobs that were expanding and had favourable employment outlooks so that we could ensure we were not suggesting transitions into jobs that might also be contracting. However, other metrics could be employed—for example, prioritizing jobs that employ a large number of workers and are hiring for a large number of roles despite not exhibiting significant employment growth.

Varying applications of the model are likely to produce different but acceptable pathways. It is up to the user to manipulate available data to focus on areas of the economy that they feel warrant the most attention.

COULD THIS MODEL BE APPLIED TO A LAYOFF SITUATION, OR TO INFORM DEMAND-LED TALENT STRATEGIES?

Yes. The data and approach that we employed could also be reoriented to focus on other job pathways. For instance, in the case of responding to an anticipated or recent layoff, it is possible to adopt an approach similar to the one we used to map out potential pathways, with some small changes. Instead of using employment changes to identify origin occupations, one could identify the occupation codes of the jobs that are being eliminated. These jobs could then be mapped

to destination occupations based on fit, pay, job opportunities, and future prospects, and then validated through user and/or stakeholder interviews.

Similarly, if local employers are struggling to fill roles, our approach could be reverse engineered to start with destination occupations to locate untapped potential pools of talent—again, with an emphasis placed on qualitative assessments of the identified pathways. In this scenario, high-potential pathways could be mapped starting with destination jobs and matched via skills fit and pay to local origin occupations experiencing declining employment in which workers might be more likely to be looking for new opportunities.

THE SELECTED PATHWAYS REFLECT TRANSITIONS WITHIN AN INDUSTRY. IS THERE POTENTIAL FOR INTER-INDUSTRY PATHWAYS?

Yes. The model we employed did not include a filter for inter-industry transitions. While both of the selected pathways showcased transitions largely within industries, pathways between industries are also possible.

Based on what we heard in interviews, a transition within industries may have a higher likelihood of success because existing skills and knowledge are more likely to be transferable and cultural fit poses less of a barrier. However, if a skill similarity between two occupations is high, a gap in knowledge or understanding of how to navigate certain companies or industries may not be insurmountable. For instance, sales-oriented skills and a sales mindset emerged as key enablers in the potential pathway between *Banking, Insurance, and Other Financial Clerks* and *Financial Sales Representatives*. However, interviewees emphasized that a job seeker with strong sales skills and a sales mindset could transition into sales positions across sectors.

CONCLUSION

Public concern over job loss often peaks in the midst of large-scale layoffs, such as a manufacturing plant closure in a small town or city. However, labour market disruptions are a constant undercurrent in our economy—forces such as automation, globalization, and changing consumer demands are constantly shifting the employment landscape. It is the job of policymakers, educators, training organizations, and economic developers, among others, to ensure that workers have the skills, supports, and opportunities they need to develop new skills that respond to market needs.

However, retraining efforts to date have often come up short of their intended impacts, especially those aimed at supporting less educated and mid-career workers. For people experiencing job loss, the exact pathways from shrinking jobs to growing opportunities are not always readily apparent. Even when we can identify areas where these workers might be able to transition, they still face a range of barriers to pursuing those pathways successfully. A multitude of factors can conspire to keep otherwise suitable workers out of positions that need them, including: individuals' well-being and psychological readiness to pursue new opportunities after job loss, their financial and geographic mobility constraints, as well as firms' hiring practices, residual skills gaps, and training needs.

This report describes a model for identifying potential pathways from jobs that are being disrupted to jobs that are growing. It highlights the value of different sources of labour market data and applies a data-driven approach to illuminate two illustrative, high-potential pathways in the GTHA. Equally important, however, are the factors that may make a pathway more or less desirable or feasible, and that would need to be reflected in any job transition supports, but that cannot be illuminated by data alone. A qualitative assessment was built into the model to address many of the considerations that could influence the success of a given pathway, both from an individual and a firm perspective. These factors were used as a foundation for our interviews with those associated with the pathways, including employers, educators, and training providers. Speaking to these individuals helped not only validate the pathways, but also understand the many frictions that may need to be overcome to ensure a transition can be successful.

When working to identify promising pathways in a local labour market, LMI can be an effective tool: it can be applied and combined in different ways depending on the preferences and priorities of the user. However, data is only useful insofar as it highlights pathways between areas of weakness and opportunity in the local economy. Ensuring that a pathway is viable and designing

an effective intervention requires a much more in-depth understanding of the many hurdles that might need to be overcome, and the key users and actors that need to be engaged. This work requires significant on-the-ground engagement and convening of workers, firms, and any stakeholders involved in workforce development and/or training, to develop supports that are customized to the specific pathway(s).

Creative approaches that are responsive to both worker and employer needs and interests are required to improve the fluidity of our labour market and help both firms and workers adjust to changing skill requirements and employment realities. We hope that the model described in this report helps policymakers and program designers focused on workforce development or talent strategies direct their efforts to where they are most needed, and design interventions that reflect the realities of what makes a job transition pathway work in practice. In a subsequent phase of research, we plan to speak directly with workers and job seekers. Designing effective workforce development strategies is not a simple task, but it can be made easier and more effective by combining local LMI with an understanding of the needs, interests, and constraints of employers and job seekers.

APPENDIX A: DATA

CENSUS DATA 2006 AND 2016

To examine employment changes over time, as well as employment itself, we used Statistics Canada's 2006 and 2016 Censuses of the Population. The Censuses provided the most reliable information on employment at sufficient granularity—we examined the data for the most granular National Occupation Classification (NOC) categories at the four-digit level. The 2016 census was also used to determine employment income levels for each four-digit NOC.

However, linking census data presented a challenge since the 2006 Census uses the 2006 NOCs, whereas the 2016 Census uses the NOC structure developed in 2011. We leveraged Statistics Canada's concordance tables to link the two classifications. However, there were many cases where the occupations did not neatly align. Due to resource constraints, any occupations that were not a direct one-to-one match were excluded from the analysis. This resulted in 54out the possible 500 occupations missing from the analysis.

MEASURING FIT

We calculate similarity by comparing the origin occupation with every other NOC occupation at the four-digit level, across eight attributes: skills, abilities, knowledge, work activities, work values, work styles, interests, and work context. Each of these attributes is composed of several elements that vary in relevance by occupation. For example, User Support Technicians require a high degree of knowledge in Computers and Electronics, whereas Real Estate Agents require more knowledge in Sales and Marketing, and both occupations require knowledge in Customer and Personal Service.

The data we use to calculate our similarity scores comes from the Occupational Information Network (O*NET), a database that describes over 900 occupations in terms of the eight attributes and their underlying elements. Table 1 shows the structure of the data for a given occupation:

Table 1: O*NET data structure

Attribute	# of Elements	Element Value
Abilities	52	Level x Importance
Skills	35	Level x Importance
Knowledge	33	Level x Importance
Work Styles	16	Importance
Work Values	6	Extent
Work Context	57	Context
Work Activities	41	Level x Importance
Interests	6	Occupational Interests

To calculate our similarity score, we represent each of the eight attributes as a vector. The number of elements in each vector is given in the second column of Table 1. We normalize each scale to range from zero to one as O*NET measures the elements of each attribute based to different scales (column 3 of Table 1).

Then, for any two occupations we can take a weighted average of the cosine similarity between each of the eight attribute vectors, assigning equal weight to each attribute as shown in Equation 1.

Job Similarity Function(Job A, Job B) =
(1/8)*Cosine Similarity[Skills A, Skills B]
+ (1/8)*Cosine Similarity[Knowledge A, Knowledge B]
+ (1/8)*Cosine Similarity[Abilities A, Abilities B]
+ (1/8)*Cosine Similarity[Interests A, Interests B]
+ (1/8)*Cosine Similarity[Work Activities A, Work Activities B]
+ (1/8)*Cosine Similarity[Work Styles A, Work Styles B]
+ (1/8)*Cosine Similarity[Work Context A, Work Context B]
+(1/8)*Cosine Similarity[Work Value A, Work Value B]

A note about using O*NET data, and linking to Canadian occupation classifications

We use O*NET because it is the most widely used source of standardized descriptive occupational information in the world. However, O*NET occupations are based on the Standard Occupational Classification (SOC) system used in the US, and are not directly related to occupations in the NOC system used in Canada.

As such, we use an existing mapping of NOC to O*NET occupations get descriptive data for our origin and destination occupations. However, since there are more SOCs then NOCs at the four-digit level, when two or more SOCs comprised one NOC, we took the average cosine similarity score of the SOCs and applied it to a single NOC.

EMPLOYMENT OUTLOOKS

Employment outlooks represent a three-year period, in this case 2018–2020, and are produced for each occupation in each province, territory, and economic region when possible.

The employment outlooks provide a star rating (out of three) to indicate whether the outlooks in this occupation are: Good (three stars), Fair (two stars), or Limited (one star).

The main sources of information used in developing the employment outlooks include the following; however other pertinent data sources may also be consulted:

+ Census / National Household Survey (Statistics Canada)

+ Labour Force Survey (Statistics Canada)

+ Canadian Occupational Projections System (ESDC)

+ E-Data from the Conference Board of Canada

+ Employment Insurance administrative data (ESDC)

The key labour market indicators include:

+ Employment growth rate, which is measured by impacts of industrial growth on employment in which the occupation is found. Trends affecting the progression of employment by occupation within these industries may also be considered.

+ Index of experienced unemployed workers available at the beginning of the projection period, which is measured by the proportion of Employment Insurance beneficiaries over total employment adjusted by the average length of benefits.

+ Attrition rate which is measured by the proportion of projected retirements, deaths, and other attrition over total employment. This rate is related to the age structure within an occupation.

+ Net needs which are measured by the sum of employment growth and attrition, less the experienced unemployed workers available at the beginning of the period, divided by the projected average employment for the occupation.

JOB POSTINGS DATA

Our data on job postings comes from Vicinity Jobs, a big data analytics and Internet search company, by way of the Labour Market Information Council. Vicinity gathers online job postings data in Canada to deliver a detailed real-time insight into the latest regional trends in the demand for labour. This data includes information on industry, occupations, region, and skill level.

GEOGRAPHY

For this study, we focus on the Greater Toronto Hamilton area (GTHA), encompassing Toronto CMA, Oshawa CMA, and Hamilton CMA. This broadly includes municipalities and regions commonly cited to be within the GTHA. We highlight differences and alignments below.

Municipality	Within GTHA[59]	CMA	Population impacted (as % of total population in the region)[60]
Ajax	Yes	Toronto	
Aurora	Yes	Toronto	
Brampton	Yes	Toronto	
Brock	Yes	non-CMA	11,642 (0.18%)
Burlington	Yes	Hamilton	
Caledon	Yes	Toronto	
Clarington	Yes	Oshawa	
East Gwillimbury	Yes	Toronto	
Georgina	Yes	Toronto	
Halton Hills	Yes	Toronto	
Hamilton	Yes	Hamilton	
King	Yes	Toronto	
Markham	Yes	Toronto	
Milton	Yes	Toronto	
Mississauga	Yes	Toronto	
Newmarket	Yes	Toronto	
Oakville	Yes	Toronto	
Oshawa	Yes	Oshawa	
Pickering	Yes	Toronto	
Richmond Hill	Yes	Toronto	
Scugog	Yes	non-CMA	21,617(0.34%)
Toronto	Yes	Toronto	
Uxbridge	Yes	Toronto	
Vaughan	Yes	Toronto	
Whitby	Yes	Oshawa	
Whitchurch-Stouffville	Yes	Toronto	
Bradford West Gwillimbury	No	Toronto	35,325 (0.55%)
New Tecumseth	No	Toronto	34,242 (0.53%)
Orangeville	No	Toronto	28,900 (0.45%)
Mono	No	Toronto	8,609 (0.13%)
Chippewas of Georgina Island First Nation	No	Toronto	261 (0.004%)
Grimsby	No	Hamilton	24,314 (0.38%)

ACKNOWLEDGEMENTS

1. World Economic Forum, *The Future of Jobs Report 2018 Insight Report Centre for the New Economy and Society* (Geneva: 2018), http://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

2. J. Manyika, et al., *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation* (McKinsey Global Institute, 2017), https://www.mckinsey.com/~/media/mckinsey/featured%20insights/Future%20of%20Organizations/What%20the%20future%20of%20work%20will%20mean%20for%20jobs%20skills%20and%20wages/MGI-Jobs-Lost-Jobs-Gained-Report-December-6-2017.ashx

3. C. Lamb, D. Munro, & V. Vu, *Better, Faster, Stronger: Maximizing the Benefits of Automation for Ontario's Firms and People* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Brookfield-Institute-Better-Faster-Stronger-2.pdf

4. H. A. Goldstein, N. Lowe, & M. Donegan, "Transitioning to the New Economy: Individual, Regional and Intermediation Influences on Workforce Retraining Outcomes," *Regional Studies* 46, no. 1 (2012): 105–118.

5. *Ibid.*

6. J. Selingo, "The False Promises of Worker Retraining," *The Atlantic*, January 8, 2018, https://www.theatlantic.com/education/archive/2018/01/the-false-promises-of-worker-retraining/549398/

7. D. Olsen & R. Chakarova, *Help Wanted: Modernizing Employment and Skills Training Services in Ontario* (Toronto:Toronto Region Board of Trade, United Way of Greater Toronto, & Metcalf Foundation, 2019), https://metcalffoundation.com/wp-content/uploads/2019/06/2019-06-18-Help-Wanted-Report.pdf]

8. Institute for Competitiveness, *The Labour Market Shift: Training a highly skilled and resilient workforce in Ontario* (Toronto: 2017), https://www.competeprosper.ca/uploads/The_labour_market_shift_in_Ontario_Sept_2017.pdf

9. D. Olsen & R. Chakarova, *Help Wanted: Modernizing Employment and Skills Training Services in Ontario* (Toronto: Toronto Region Board of Trade, United Way of Greater Toronto, & Metcalf Foundation, 2019), https://metcalffoundation.com/wp-content/uploads/2019/06/2019-06-18-Help-Wanted-Report.pdf

10. H. A. Goldstein, N. Lowe, & M. Donegan, "Transitioning to the New Economy: Individual, Regional and Intermediation Influences on Workforce Retraining Outcomes," *Regional Studies* 46, no. 1 (2012): 105–118. J. Fitzgerald, "Moving the workforce intermediary agenda forward," *Economic Development Quarterly* 18, no. 1 (2004): 3–9, https://doi.org/10.1177/0891242403259992 A. Tibando & A. Do, A., *Breaking into Tech* (Toronto: Communitech, Brookfield Institute for Innovation + Technology, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Communitech_FinalReport.pdf

11. H. A. Goldstein, N. Lowe, & M. Donegan, "Transitioning to the New Economy: Individual, Regional and Intermediation Influences on Workforce Retraining Outcomes," *Regional Studies* 46, no. 1 (2012): 105–118.

12. *Ibid.*

13. D. Rivera, S. Villeneuve, D. Breznitz, & A. Zehavi, *Pathways to Inclusive Innovation: Insights for Ontario + Beyond* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2018), https://brookfieldinstitute.ca/wp-content/uploads/DSIP-Pathways-to-Inclusive-Innovation-Final-Report-online.pdf

14. A. Roder, & M. Elliott, M. *Nine Year Gains: Project Quest's Continuing Impact* (New York: Economic Mobility Corporation, 2019), https://economicmobilitycorp.org/wp-content/uploads/2019/04/NineYearGains_web.pdf

15. Royal Bank of Canada, *Humans Wanted: How Canadian Youth Can Thrive in the Age of Disruption* (2018), https://www.rbc.com/dms/enterprise/futurelaunch/_assets-custom/pdf/RBC-Future-Skills-Report-FINAL-Singles.pdf

16. J. Thornton, H. Russek, & T. O'Neil, *Turn and Face the Strange: Changes impacting the future of employment in Canada* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2019), https://brookfieldinstitute.ca/wp-content/uploads/Turn-and-Face-the-Strange-FINAL-online-1.pdf

17. A. Murray, *The Effect of Import Competition on Employment in Canada: Evidence from the 'China Shock'* (Ottawa: Centre for the Study of Living Standards, 2017), http://www.csls.ca/reports/csls2017-03.pdf

18. C. Lamb, D. Munro, & V. Vu, *Better, Faster, Stronger: Maximizing the Benefits of Automation for Ontario's Firms and People* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Brookfield-Institute-Better-Faster-Stronger-2.pdf

19. *Ibid.*

20. This number was selected at our discretion and could be changed depending on the size of the labour market or other preferences.

21. W-H. Chen & T. Mehdi, *Assessing Job Quality in Canada: A Multidimensional Approach* (Statistics Canada, 2018), https://www150.statcan.gc.ca/n1/pub/11f0019m/11f0019m2018412-eng.htm

22. J.C. Latack & J.B. Dozier, "After the Ax Falls: Job Loss as a Career Transition," *The Academy of Management Review* 11, no. 2 (1986): 375–392.

23. *Ibid.*

24. Y. Liu, M. Englar-Carlson, & V. Minichiello, "Midlife career transitions of men who are scientists and engineers: A narrative study." *Career Development Quarterly* 60, no. 3 (2012): 273–288.

25. J.C. Latack, & J.B. Dozier, "After the Ax Falls: Job Loss as a Career Transition." *The Academy of Management Review* 11, no. 2 (1986): 375–392.

26. Interview

27. *Ibid.*

28. *Ibid.*

29. R. Mendenhall, A. Kalil, L.J. Spindel, & C.M.D. Hart, "Job Loss at Mid-life: Managers and Executives Face the 'New Risk Economy,'" *Social Forces* 87, no. 1 (2008): 185–209.

30. D.S. Griffiths, D. Winstanley, & Y. Gabriel, "Learning shock: The trauma of return to formal learning," *Management Learning* 36, no. 3 (2005): 275–297.

31. A. Madgavkar, A., et al., *The Future of Women at Work: Transitions in the age of automation*, (Mumbai: Mckinsey Global Institute, 2019), 1–30.

32. Ibid.

33. R. Morissette, *Barriers to labour mobility in Canada: Survey-based evidence* (Statistics Canada, 2017), https://www150.statcan.gc.ca/n1/pub/11-626-x/11-626-x2017076-eng.htm

34. *Issue Briefing: Unemployment and mental health* (Toronto: Institute for Work & Health, 2009), https://www.iwh.on.ca/sites/iwh/files/iwh/reports/iwh_issue_briefing_mental_health_2009.pdf

35. D. Acemoglu, "Public Policy in a Model of Long-Term Unemployment," *Economica* 62, no. 246 (1995): 161–78, https://doi.org/10.2307/2554901

36. A. Tibando, & A. Do, A., *Breaking into Tech* (Toronto: Communitech, Brookfield Institute for Innovation + Technology, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Communitech_FinalReport.pdf

37. D. B. Bills, "Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment," *Review of Educational Research* 73, no. 4 (2003): 441–449.
D.B. Bills, V. Di Stasio, & K. Gërxhani, "The Demand Side of Hiring: Employers in the Labor Market. *Annual Review of Sociology* 43, no. 1 (2017): 291–310, https://doi.org/10.1146/annurev-soc-081715-074255

38. D.B. Bills, V. Di Stasio, & K. Gërxhani, "The Demand Side of Hiring: Employers in the Labor Market. *Annual Review of Sociology* 43, no. 1 (2017): 291–310, https://doi.org/10.1146/annurev-soc-081715-074255

39. *Ibid.*

40. G. Aryal, M. Bhuller, & F. Lange, *Signaling and Employer Learning with Instruments* (Cambridge, MA: National Bureau of Economic Research, 2019), http://www.nber.org/papers/w25885

41. P.Q. Blair & B.W. Chung, *How Much of a Barrier to Entry is Occupational Licensing?* (Cambridge, MA: National Bureau of Economic Research, 2018), https://www.nber.org/papers/w25262

42. D.B. Bills, "Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment," *Review of Educational Research* 73, no. 4 (2003): 441–449.
D.B. Bills, V. Di Stasio, & K. Gërxhani, "The Demand Side of Hiring: Employers in the Labor Market. *Annual Review of Sociology* 43, no. 1 (2017): 291–310, https://doi.org/10.1146/annurev-soc-081715-074255
D. B. Bills, "Congested credentials: The material and positional economies of schooling," *Research in Social Stratification and Mobility* 43 (2016): 65–70, https://doi.org/10.1016/j.rssm.2016.03.002

T. Bol & I. Drange, "Occupational closure and wages in Norway," *Acta Sociologica (United Kingdom)* 60, no. 2 (2017): 134–157, https://doi.org/10.1177/0001699316659768
Stasio et al., "What makes education positional? Institutions, overeducation and the competition for jobs"," *Research in Social Stratification and Mobility* 43 (2016): 53–63.

43. D.B. Bills, "Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment," *Review of Educational Research* 73, no. 4 (2003): 441–449.

44. C. Lamb & S. Doyle, *Future-proof: Preparing young Canadians for the future of work* (Toronto: Brookfield Institute for Innovation + Entrepreneurship & Royal Bank of Canada 2017) http://www.rbc.com/community-sustainability/_assets-custom/pdf/FINAL-FP-report-Online.pdf

45. D.B. Bills, V. Di Stasio, & K. Gërxhani, "The Demand Side of Hiring: Employers in the Labor Market. *Annual Review of Sociology* 43, no. 1 (2017): 291–310, https://doi.org/10.1146/annurev-soc-081715-074255

46. D.B. Bills, "Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment," *Review of Educational Research* 73, no. 4 (2003): 441–449.

47. D.B. Bills, V. Di Stasio, & K. Gërxhani, "The Demand Side of Hiring: Employers in the Labor Market. *Annual Review of Sociology* 43, no. 1 (2017): 291–310, https://doi.org/10.1146/annurev-soc-081715-074255

48. D.B. Bills, "Credentials, Signals, and Screens: Explaining the Relationship Between Schooling and Job Assignment," *Review of Educational Research* 73, no. 4 (2003): 441–449.

49. G. Bonoli, "Networking the Unemployed: Can policy interventions facilitate access to employment through informal channels?," *International Social Security Review* 67, no. 2 (2014): 85–106, https://doi.org/10.1111/issr.12040

50. C. Lamb, D. Munro, & V. Vu, *Better, Faster, Stronger: Maximizing the Benefits of Automation for Ontario's Firms and People* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Brookfield-Institute-Better-Faster-Stronger-2.pdf

51. *Ibid.*

52. "Mechanical Engineering Tech," Ontario Colleges, 2019, https://www.ontariocolleges.ca/en/programs/professions-and-trades/mechanical-engineering-tech

53. "Credit for Learning from Work of Life Experience: (PLAR) Prior Learning Assessment and Recognition," Humber College, 2019, https://humber.ca/transferoptions/transfer-in/plar.html

54. C. Lamb, D. Munro, & V. Vu, *Better, Faster, Stronger: Maximizing the Benefits of Automation for Ontario's Firms and People* (Toronto: Brookfield Institute for Innovation + Entrepreneurship, 2018), https://brookfieldinstitute.ca/wp-content/uploads/Brookfield-Institute-Better-Faster-Stronger-2.pdf

55. *Ibid.*

56. "Mutual Funds Sales Representative," Canadian Securities Institute, 2019, https://www.csi.ca/student/en_ca/career/financial/mfsr.xhtml?lang=en_ca

57. "Investment Funds in Canada," Canadian Securities Institute, 2019, https://www.csi.ca/student/en_ca/courses/csi/ifc_info.xhtml

58. "National Instrument 31-103: Registration requirements, exemptions, and ongoing restraint obligations," Government of Ontario, 2017, https://www.osc.gov.on.ca/documents/en/Securities-Category3/ni_20150825_31-103_unofficial-consolidated.pdf

59. We take the definition of the GTHA from Metrolinx's Regional Planning definition: http://www.metrolinx.com/en/regionalplanning/rtp/Metrolinx%20-%202041%20Regional%20Transportation%20Plan%20-%20Chapters%201%20&%202.pdf.

60. The Total Population in the Region used is the summation of the population in the 2016 Census for all municipalities under the Metrolinx GTHA region (6,417,516 people).

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